This report covers the activities of the Diablo Canyon Independent Safety Committee (DCISC) for the period July 1, 2010 through June 30, 2011. This is the twenty-first annual report of the DCISC. The report is presented in two volumes.

**Volume I** includes a report summary and Conclusions and Recommendations (Executive Summary), a brief introduction and history regarding the DCISC, Committee activities, and documents received by the DCISC during the reporting period (Section 1.0), DCISC public meetings (Section 2.0), a review and evaluation of Nuclear Regulatory Commission (NRC) assessments and issues (Section 3.0), Committee Member and Consultant investigation topical summaries (Section 4.0), DCPP performance indicators monitored by the DCISC (Section 5.0), open items being followed by the Committee (Section 6.0), follow-up of Pacific Gas and Electric (PG&E) actions on previous DCISC recommendations (Section 7.0), input to the Committee by members of the public (Section 8.0), and PG&E's response (Section 9.0) to recommendations in this report. The conclusions and recommendations also appear in boldface type throughout the main body of the report with a discussion of the subject involved.

**Volume II** contains a list of documents received by the DCISC (Exhibit A), public meeting notices and agendas and minutes (Exhibit B), a DCPP operations summary for the reporting period and organization charts (Exhibit C), full investigation reports by Committee Members and Consultants (Exhibit D), a record of plant tours by the DCISC (Exhibit E), the DCISC Open Items List (Exhibit F), communications and correspondence with members of the public (Exhibit G), DCISC recommendations and PG&E responses for the previous period (Exhibit H), the DCISC informational brochure (Exhibit I), and a glossary of terms (Exhibit J).

The DCISC invites questions and comments on this report.
History and Introduction

The Diablo Canyon Independent Safety Committee (DCISC) was established as part of the June 24, 1988 settlement agreement which arose from the rate proceedings for the Diablo Canyon Power Plant (DCPP). The DCISC was formed in late 1989 with the appointments of Committee Members and began formal review activities and meetings on January 1, 1990. The original settlement agreement (D.88-12-083) was terminated by the California Public Utilities Commission (CPUC) in its decision to open the state electricity markets to competition on January 1, 1998; however, under the provisions of the Commission’s Decisions 97-05-088, issued on May 21, 1997, and 04-05-055, issued on May 27, 2004, the DCISC will continue to function and fulfill its responsibilities as established under the terms of the 1988 settlement agreement.

On May 27, 2004, the CPUC issued Decision 04-05-055. In its decision, the CPUC changed the nomination procedures by eliminating from the process the participation of PG&E and the Dean of Engineering at the University of California at Berkeley; modified the requirements for membership on the DCISC to add “knowledge and background in nuclear safety issues” to the “experience in the field of nuclear power facilities” and modified the DCISC’s mandate to require it to undertake public outreach in the community. The Decision concluded the DCISC should retain the discretion to determine how best to accomplish its mandate and that the DCISC shall otherwise continue to exist and to operate and continued funding through cost-of-service rates. To implement this directive the DCISC has continued to expand its public outreach as described in Section 8.0 Public Input and Outreach and continues to consider additional outreach activities.

On January 25, 2007, the CPUC issued Decision 07-01-028. The CPUC had previously adopted new practices and expectations for the DCISC without concurrently restating the Committee’s charter to reflect the changes. In its decision, the CPUC granted the DCISC application for authority to restate its charter including the incorporation into the Restated Charter of several terms, conditions, changes and clarifications necessitated by, and previously authorized by, the CPUC which govern the composition, responsibilities and operations of the Committee. In its decision, the CPUC found the Restated Charter to be in the public’s interest as it reflects the latest authority and obligations of the DCISC. The Committee’s application was unopposed.

The original settlement agreement provided for a three-member Independent Safety Committee for the purpose of “reviewing and assessing the safety of operations of DCPP”. The members serve three-year staggered terms and remain on the DCISC until a new appointment or their reappointment is made. To fill an expired term or a vacancy the CPUC issues a public notice soliciting interested persons. Under the revised process in accordance with the restated charter, candidates are selected by the CPUC from the applications plus the incumbent, if willing to serve. The candidates must be “persons with knowledge, background and experience in the field of nuclear safety issues”.

On June 2, 2011, the CPUC issued Decision 11-06-038. The CPUC had previously adopted new practices and expectations for the DCISC without concurrently restating the Committee’s charter to reflect the changes. In its decision, the CPUC granted the DCISC application for authority to restate its charter including the incorporation into the Restated Charter of several terms, conditions, changes and clarifications necessitated by, and previously authorized by, the CPUC which govern the composition, responsibilities and operations of the Committee. In its decision, the CPUC found the Restated Charter to be in the public’s interest as it reflects the latest authority and obligations of the DCISC. The Committee’s application was unopposed.
nuclear power facilities and nuclear safety issues.” From the list of candidates, the new or returning member is appointed by the Governor of California, the Attorney General of California or the Chairperson of the California Energy Commission (CEC), whichever made the original appointment.

The Committee Members during this period were as follows:

- **Dr. Robert J. Budnitz**, a scientist with the University of California Lawrence Berkeley National Laboratory, appointed by the California Attorney General, served as a Member for the period October 10, 2007 – June 30, 2010 and was reappointed for a second three-year term beginning July 1, 2010. Dr. Budnitz served as Chair for the full period. Dr. Budnitz’s term ends June 30, 2013.

- **Dr. Per F. Peterson**, Professor of Nuclear Engineering and Chair of the Nuclear Engineering Department at the University of California – Berkeley, appointed by the California Attorney General, served as a Member for the period September 2, 2004 – October 9, 2007. Dr. Peterson was subsequently appointed by the Governor of California to a three-year term ending June 30, 2011.

- **Dr. Peter Lam**, Administrative Judge Emeritus of the U.S. Nuclear Regulatory Commission, appointed by the Chair of the California Energy Commission, commencing July 1, 2009 and ending June 30, 2012.

Overview of Activities during the Current Period

The Committee regularly performs the following activities:

- Three sets of two-day public meetings each year in the vicinity of the plant
- Three tours of the Diablo Canyon Nuclear Power Plant (DCPP) each year with members of the public
- Numerous fact-finding visits by individual Committee Members and Consultants to assess issues, review plant programs and activities, and interview PG&E personnel
- Visits by the DCISC Members and legal counsel to offices of the CPUC and appointing officials (the Governor of California, California Attorney General and California Energy Commission) to update them on DCISC Activities
- Use of several regular part-time technical consultants to perform assessments and reviews
- Use of legal counsel to advise the Committee on its activities
- Use of expert consultants, as needed

The DCISC issues a report for each reporting year, which runs from July 1 to June 30. The report is approved by the Committee Members at the fall public meeting following the end of the reporting period. The first six-month interim report and subsequent twenty annual reports covered the periods January 1, 1990 – June 30, 2010.

This twenty-first annual report covers the period July 1, 2010 – June 30, 2011.
Three public meetings were held in the vicinity of the plant in San Luis Obispo, California during this reporting period. The following significant items were reviewed:

- DCPP performance and operational events
- Refueling outage overviews, plans and results
- Review of DCPP performance indicators
- Human error performance improvement program
- Nuclear Safety Oversight Committee (NSOC) activities
- Steam Generator replacements
- Radiation exposure during refueling outages
- On-Site Spent Fuel Storage Plans (Independent Spent Fuel Storage Installation [ISFSI])
- Plant security review for effects on plant safety
- Problem Identification and Resolution Program (Corrective Action Program)
- Operating Experience Program
- Online Maintenance
- Radiological Release Reports
- Transformer malfunctions and oil leaks
- Reactivity Management Program
- Engineering, Operations and Maintenance Organizations
- Emergency Preparedness (EP)
- Management Review Committee
- Fire Protection
- Public Outreach
- Equipment Reliability
- Response to Winter Ocean Storms
- Troubleshooting
- Error Prevention tools and Human Performance and Safety Training
- Component Mispositioning
- Single Point Vulnerabilities
- Employee Concerns and Differing Professional Opinion Program
- Containment Fan Cooler Reverse Rotation
- INPO (Institute of Nuclear Power Operations) Evaluations
- Natural Phenomena (earthquakes and tsunamis)
DCPP Business Plan Support of Safety

- Quality Verification Organization, Performance Reports and Audits
- Regular discussions with NRC Resident Inspectors

Many other items were reviewed in eleven fact-finding visits, inspections and tours at DCPP by individual Committee Members and consultants. DCISC Members visited representatives from the Attorney General’s Office and California Energy Commission to provide updates on DCISC Activities, to discuss agency concerns and comments, and to provide copies of the Committee’s Annual Report.

Public input and questions were received at the public meetings, and by telephone, letter and E-mail. Members of the public spoke at two of the three DCISC public meetings. The DCISC has responded to all of their questions, concerns and requests during this period.

Overall Conclusion

The DCISC concludes that PG&E operated DCPP safely during the period July 1, 2010 – June 30, 2011.

Specific Conclusions

Based on its activities, the DCISC has the following specific conclusions from the major review topics examined during the current reporting period (references to sections of this report are shown in parentheses). Conclusions are based on, but may vary from, information contained in Committee Fact-finding Reports in Exhibit D in Volume 2 of this report.

1. The DCISC received regular reports on the Nuclear Regulatory Commission (NRC) Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its public meetings as well as copies of these documents throughout the reporting period.

   The Committee notes that, although the NRC concluded that, “Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety...,” it identified 36 Non-cited Violations, four Severity Level IV violations, and continued a substantive crosscutting issue. The increase in number of these violations and the crosscutting issue (in problem identification and resolution) are concerns to the DCISC. The DCISC plans to augment its review of DCPP NRC regulatory performance during the next reporting period. (Section 3.5)

2. Operations had performed satisfactorily in the normal operation of the plant. Actions to address component mispositionings, steam generator iron and sulfate concentrations, and operator burdens appeared to be appropriate. The Operational Focus Action Plan was well conceived and appeared to be getting good results. Implementation of the Operations Revitalization Action Plan appeared to be obtaining good overall results with respect to improving the relationship between Operations managers and workers. One worker concern
was being addressed by DCPP management and was reviewed and appeared to have no impact on nuclear safety. (4.1.3)

3. The DCPP Maintenance Program appeared to be functioning satisfactorily. No concerns were identified pertaining to nuclear safety. However, a sharp decline was observed during the past five years with regard to personnel awareness of the elements of Post Maintenance Testing (PMT) and its importance. This was concluded to be due primarily to the attrition of key experienced personnel. Improvements to better support PMT were also found to be needed in a number of areas such as clarity of procedures and work packages, Operations Verification Testing, and the involvement of a Senior Reactor Operator early in the process. DCPP’s Foreign Material Exclusion (FME) Program performance was noted to have degraded during refueling outages 2R15 and 1R16 but showed an improving trend after 1R16 in October 2010. DCPP was making improvements in the program to better address outage and non-outage FME performance. The DCPP On-Line Maintenance (OLM) Program, continued to improve by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level. (4.2.3)

4. Collectively, the topics, issues, and activities associated with addressing DCPP problem evaluation were extensive and detailed. DCPP had developed an extensive action plan and had begun to utilize a wide array of performance indicators to track progress on this issue. Many actions were well underway. The DCPP Air Operated Valve (AOV) Program appeared to be satisfactory. Valves were appropriately categorized for priority and testing and were tested on a schedule during outages. Testing had been successful. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations but did reveal some gaps to excellence and enhancements, which were documented in the Program Health Report for action and tracking. The DCPP Environmental Qualification Program (EQP) for safety-related electrical equipment appeared sound. A self-assessment found the EQP to be effective in meeting the regulatory requirements of 10CFR50.49. The EQP appeared to be in a good position to assure applicable DCPP equipment is compliant with the 20-year plant life extension. The nearly completed initial Phase I work of the Environmental Qualification (EQ) Program had provided a good foundation for moving forward with Phase II, the main project initiative.

DCPP’s Margin Management Program appeared to be functional and healthy. Margin issues had been identified and prioritized. Responsibilities, actions, and completion dates/horizons had been established for identified issues. The Margin Management Committee appeared to be serving as a vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts. Improvements in the System Engineering Program combined with those in the Plant Health Committee process appeared to have good potential for maintaining DCPP systems healthy. DCPP system health had improved since these changes were made. DCPP had responded aggressively to the significant performance gaps identified in its engineering evaluation thoroughness and rigor. DCPP had developed a detailed, comprehensive Evaluation Thoroughness Action Plan that appeared to address the identified performance gaps; however, DCPP had not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010. (4.3.3)
5. DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset, which is an indicator of outstanding performance. Most departments are within their goals with one, Operations, slightly better than goal. (4.4.3)

6. The Premier Survey, like other employee surveys conducted on a regular basis, remained effective both as a communication tool between management and employees and as a measure of employee thinking. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. The results of the survey were reported to be similar to those of earlier DCPP surveys. The action plan resulting from the Premier Survey was under development. The action plan to increase visibility of the DCPP Employee Concerns Program appeared to be appropriate. (4.5.3)

7. DCPP's Performance Improvement Program continues to be strengthened with the addition of the Performance Improvement Review Board, a management board which monthly meets to review the program and specific items, which are lagging, and the Performance Improvement Action Plan, a multi-faceted plan to integrate the results of several assessments and reviews of the program.

DCPP's Corrective Action Program (CAP) has for some time continued to undergo significant reviews, assessments and audits by both internal and external organizations. Actions continue to be taken to respond to the reviews. The NRC has identified a substantive crosscutting issue in the DCPP Problem Identification and Resolution area, indicating unsolved problems with the CAP. The DCISC will continue to monitor the CAP.

DCPP's Operating Experience (OE) Program appears to be in jeopardy of becoming resource-limited if the function is reduced to just a single person performing OE duties. The DCISC will monitor this situation (4.6.3)

8. Responses to the July 7, 2010 simulated event by Control Room personnel were generally methodical and effective. However, improvements were needed in the performance of the Operational Support Facility with respect to on-site radiological controls. Media briefings in the Joint Information Center (JIC) appeared to have improved substantially.

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective.

At DCISC’s June 2011 Public Meeting, DCPP’s presentations of strengths and areas for improvement regarding the EP drill rehearsal in July 2010, the NRC’s graded emergency exercise in August 2010, and the unplanned release of carbon dioxide in June 2010 were focused, self-critical, and consistent with information accumulated by the DCISC.

Significant enhancements and expansions have been completed on DCPP emergency dose
assessment systems, which exceed regulatory requirements and increase the level of protection for the public in the event of an unplanned radiological release. (4.7.3)

9. DCPP’s Probabalistic Risk Assessment (PRA) Group is being returned to a somewhat satisfactory staffing level, following several years of decline and use of contractors to accomplish its analyses. The decline came about due to loss of key personnel who have been difficult to replace. The Group is progressing well on several important PRA fronts, including a Fire PRA, updated Seismic PRA, and the performance-based PRA analysis to support the move to National Fire Protection Association (NFPA) Standard 805. DCPP has finally caught up with industry in its use of Safety Monitor, which is used to gauge the risk of removing components from service for on-line maintenance. The DCISC will continue to closely monitor PRA activities at DCPP. (4.8.3)

10. DCPP performed a mid-cycle assessment of its progress in satisfying the Areas for Improvement (AFIs) from the 2009 Institute of Nuclear Power Operations (INPO) evaluation. DCPP was preparing for its August 2011 evaluation. The DCPP Nuclear Safety Oversight Committee (NSOC) is satisfactorily staffed with strong external members and their review of issues is appropriately intrusive, focusing on the most important safety issues. (4.9.3)

11. DCPP radiation releases this period, as in previous periods, were very small fractions of Technical Specification and regulatory limits. The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem. The replacement of the Reactor Vessel Closure Head and Integrated Assembly contributed 36.2 Person-Rem to the total exposure, compared to a planned exposure of 32.6 Person-Rem for the project. This total exposure, however, places DCPP in the industry fourth quartile, a position RP is working to improve. Performance in Outage 2R16 was significantly improved with total radiation dose of 29.7 person-Rem due primarily to reduced in-containment major equipment work. RP is taking a forward-looking approach to the next sets of outages to keep lowering the exposures. The DCISC will continue to monitor DCPP’s progress in radiation protection. (4.10.3)

12. QV continues to identify items that need correction, in particular gaps in the DCPP Corrective Action Program evaluation thoroughness, which was also identified by the NRC as a substantive cross-cutting issue. The Key Gaps that are listed are clear and well supported. The process of highlighting continuing Key Gaps and escalating issues as deemed necessary appears sound and effective. Because of the number and significance of QV-escalated items and Top Concerns, the DCISC will increase its monitoring and review in the QV area. (4.11.3)

13. DCPP nuclear fuel has performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely by DCPP and its fuel vendor, Westinghouse. DCPP is also evaluating a transition to a 24-month refueling outage interval, which would avoid the need to have more than one refueling outage per year and would simplify outage planning. The DCISC should follow this issue. (4.12.3)
14. DCPP appeared to be managing the Equipment Reliability (EP) Program well. ER at DCPP had improved as a result of the Preventive Maintenance (PM) Program and PM Optimization. (4.13.3)

15. During 2010 DCPP received important support from the STARS association of nuclear plants in a number of important areas such as cross-cutting issues, corrective action, self-assessment, and licensing basis verification. DCPP’s overall composite performance indicator for the first three quarters of 2010 compared favorably within the STARS group and within the nuclear industry as a whole. DCISC’s next review of DCPP’s participation in STARS need not be until about two years hence. (4.14.3)

16. DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP’s Plant Health Committee has been improved to focus more on system/component health and meet more frequently, and overall system health has improved. The System Engineer/Component Program continues to be effective. (4.15.3)

17. All eight DCPP new, replacement steam generators (SG) were determined to be in very good condition after their first inspections, which were required by Plant Technical Specifications to be performed during their first refueling outage after the SG replacements. (4.16.3)

18. DCPP successfully completed its 1R16 and 2R16 refueling outages in which most goals were met, except that outage durations were longer than predicted due to emergent work and some rework. Nuclear safety was upheld. (4.17.3)

19. DCPP appears to have an effective program for maintaining its safety/security interface and satisfactory plans and resources to implement its cyber-security program. The DCISC will follow up on both of these during the next reporting period. (4.18.3)

20. DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations. DCPP is ordering additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full. (4.19.3)

21. DCPP is in a unique seismic area with the potential for large earthquakes, and its design basis takes this into account. The DCISC notes that little progress appears to have made during the period late 2010 – early 2011 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. Performance appears to have improved considerably in the area of DCPP’s Seismically Induced Systems Interaction Housekeeping Program since mid-2010. The preliminary results of the PG&E analysis of the Shoreline Fault rupture showed that the DCPP seismic design basis remained valid for any of three possible scenarios: either (1) as a single segment, or (2) as all three segments together, or (3) as all three segments together combined with a Hosgri rupture. (4.20.3)

22. DCPP continues develop its analysis to support conversion from NRC’s current deterministic fire protection regulations to the performance-based, risk-informed National Fire Protection Association (NFPA) 805 standard, which has been accepted by NRC. DCPP’s Fire Protection
System is currently in White (acceptable) health; however, it had been Red and Yellow (both unacceptable, but operable) for a long time, and the DCISC will continue to monitor it closely. (4.21.3)

23. Although the July 2010 DCPP self-assessment of Technical and Engineering Training Programs was based upon comparisons to industry best practices rather than to minimum acceptable performance. The Negative Comments in the assessment report both individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs. The DCISC will continue to follow this issue in the next reporting period. (4.22.3)

24. The DCPP License Renewal proceeding continues to progress with NRC’s draft favorable Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There are several open technical issues with the NRC, but these are being resolved, meaning that the technical portion of the application is being completed. The NRC has admitted four contentions by intervener San Luis Obispo Mothers for Peace. It appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on-schedule and the contentions were to be satisfactorily settled in the hearings; however, on April 10, 2011, PG&E submitted a request to the NRC to defer its issuance of the DCPP license renewal until certain seismic reviews are completed in 2015.

The DCISC has responded to the California Energy Commission’s request that it look into whether there is a nexus between the Hosgri and Shoreline Faults and reactor vessel pressurized thermal shock (PTS). The DCISC concluded that there is no direct relationship between having earthquakes, even very large earthquakes, and PTS issues associated with neutron embrittlement of the reactor vessel. This is in agreement with both PG&E’s and NRC’s initial conclusions (4.23.3)

25. A possible mandate for plant retrofit to use closed, salt-water cooling towers in the future could have major impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. The DCISC will continue to take seriously the charge to review the safety impacts of the elimination of Once Through Cooling (OTC) at DCPP and provide analysis and input to the process. (4.24.3)

26. As a result of the Japanese Fukushima Nuclear Plant earthquake and tsunami damage, the U.S. Nuclear Regulatory Commission, nuclear industry groups, and individual plants are reviewing plants’ capabilities to handle “beyond design basis” events, i.e., events beyond which the plants were originally designed. Because of substantial design margins and differences between U.S. and Japanese designs and operating and emergency response procedures, U.S. plants, especially Pressurized Water Reactors similar to DCPP, have different capabilities than Japan to handle beyond design basis events. PG&E has established a formal team to determine the plant’s capabilities and recommend improvements. Based on Fact-finding meetings and public meetings on this subject, the DCISC believes that PG&E is taking the appropriate actions. (4.25.3)

Concerns:
Concerns are items which, while not necessarily warranting recommendations, the DCISC believes need continuing Committee review and improvement or attention by PG&E. Concerns are monitored more actively and at a higher-level by the Committee than other items. The DCISC concerns are as follows:

1. NRC identified 36 Non-cited Violations, four Severity Level IV violations, and continued a substantive crosscutting issue. The increase in number of these violations and the crosscutting issue (in problem identification and resolution) are concerns to the DCISC. The DCISC plans to augment its review of DCPP NRC regulatory performance during the next reporting period. (3.1.6)

2. DCPP’s Corrective Action Program (CAP) has continued to undergo significant reviews, assessments and audits by both internal and external organizations. Actions are being taken to respond to the reviews. The NRC has continued its substantive crosscutting issue in the DCPP Problem Identification and Resolution area, indicating unsolved problems with the CAP, a similar situation which occurred in 2004. The DCISC will step up its review of the CAP. (4.6.3)

3. Although the studies examining the possible installation of a Once Through Cooling capability for DCPP’s main condensers are still in progress, the DCISC expresses a significant initial concern regarding the potential impact that such a modification would have on nuclear plant safety and reliability (4.24.3)

Recommendations

DCISC recommendations are listed below along with references to sections where recommendations originate. Recommendations are based on, but may vary from, information contained in Committee Fact-finding Reports in Exhibit D, Volume II of this report.

Recommendation R11-1

Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit. (3.5)

Basis for Recommendation:

Licensee Event Reports, Violations, and the Substantive Crosscutting Issue in PI&R are related issues because they all deal with the identification and resolution of plant events. If there is a common cause or similar causes for these negative trends, DCPP should identify and resolve them. The DCISC notes that the DCPP Corrective Action Program has undergone many reviews and assessments in the last several years apparently without an effective, sustainable resolution.

The DCISC had a similar recommendation in the previous reporting period as follows:

Recommendation R10-1: Due to the increases in the numbers of Licensee Event Reports and Severity Level IV Violations and because of the newly re-identified NRC Substantive Crosscutting
Issue in Problem Identification and Resolution, the DCISC recommends that DCPP perform a comprehensive analysis to determine the cause of these negative regulatory trends.

DCPP responded as follows:

“PG&E has performed multiple analyses, as documented in the Corrective Action Program, for these events. A common cause analysis was performed to examine the number of traditional enforcement violations (as documented on SAP Notification 50331845). This common cause analysis was approved by the Corrective Action Review Board on October 5, 2010.

The substantive cross-cutting issue in problem evaluation was analyzed in the Corrective Action Program via a root cause analysis (as documented in SAP Order 60024480). This root cause analysis was approved by the Corrective Action Review Board on June 7, 2010.

Both these Corrective Action Program documents were the subject of an inspection by Nuclear Regulatory Commission inspectors in December 2010. The NRC inspectors concluded that the corrective actions appear to be appropriate and on target, but lacked sufficient run-time to demonstrate their effectiveness at the time of the inspection.”

The conclusions in the December 2010 inspection report are encouraging, but the DCISC notes that the substantive cross-cutting issue still exits.

Recommendation R11-2

The DCISC recommended that DCPP initiate and promptly complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010. (4.3.3)

Basis for Recommendation:

The DCISC Fact-finding Team requested the Engineering Evaluation Rigor Improvement Action Plan self-assessment (a self-assessment to be conducted in late 2010 concluding performance is improving); however, it had been improperly performed, was not complete at the time, and a definitive completion date was not provided. This is a concern to the DCISC because this was to have been the first significant measure of a significant problem at DCPP. The DCISC should recommend that this self-assessment be promptly completed.

Recommendation R11-3

DCPP’s Post Earthquake Response Procedure should be expanded to require examination of Spent Fuel Pool (SFP) levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should also consider providing permanently installed, remote wide-range SFP level monitoring capability. (4.20.3)
Basis for Recommendation:

DCPP’s Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. It is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.

Recommendation R11-4

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety. (4.20.3)

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during 2011. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager’s office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

Finally, the DCISC appreciates PG&E’s cooperation in arranging and providing information for DCISC Fact-finding meetings and tours at DCPP and for the high quality and professional presentations at DCISC public meetings.
In Memoriam: William Conway

The members and staff of the Diablo Canyon Independent Safety Committee were saddened by the loss of their friend and colleague, former Committee Member William F. Conway on October 26, 2011. Our sincere sympathies go out to his wife Marie and to his sons Paul, Chris and Matt and daughters-in-law Sue, Jacqui and Ester.

Bill Conway served as the California Energy Commission's appointee to the Committee from February of 2005 through June 2009. His technical knowledge, industry experience, honesty and integrity made him an invaluable resource among his colleagues.

Bill joined the Arizona Public Service Company in May 1989 as executive vice president-nuclear, having overall responsibility for the Palo Verde Nuclear Generating Station, the largest commercial nuclear generating facility in the United States.

From 1988 to 1989 Bill was senior vice president of nuclear operations at Florida Power & Light Company where he was responsible for their four nuclear units. Prior to this, he served as the group vice president for industry and government relations at the Institute of Nuclear Power Operations (INPO) in Atlanta where he was responsible for the Institute's interaction with the Nuclear Regulatory Commission and the Department of Energy and had responsibility for personnel performing periodic evaluations of U.S. nuclear power plants. During the previous 18 years Bill was employed by the Vermont Yankee Nuclear Power Corporation where he held several positions including plant manager, vice president and president and chief executive officer. Bill was a member of the original plant staff at Vermont Yankee.

Bill Conway was a member of the American Nuclear Society and served on the board of directors of the Nuclear Utilities Management and Resources Council and its Issues Management Committee and chaired the Nuclear Energy Institute Severe Accident Management Committee. Bill served on the Research Advisory Committee of the Electric Power Research Institute (EPRI) and was chairman of the Institute's Nuclear Power Division Advisory Committee.

He was the organizer and former chairman of the ABB Combustion Engineering Owners Group Executive Committee and served on its Advanced Light Water Reactor Executive Advisory Committee.
A Dedication in Memoriam of William F. Conway (1931–2011), Member, Diablo Canyon Independent Safety Committee, DCISC

Committee. He was also a member of the INPO board of directors and served on its Advisory Council. Additionally, Bill served as a member of the Accrediting Board of the National Academy for Nuclear Training.

William Conway was a member of the board of directors of First Energy Corporation and chairman of its nuclear committee as well as a member of its audit committee. He was a retired trustee of Northeast Utilities Company where he served as a member of its nuclear committee. He served as a nuclear safety committee member at several nuclear power plants. He testified on nuclear issues on both national and state levels and delivered presentations at American Nuclear Society meetings and INPO Chief Executive Officer conferences. Mr. Conway was also a participant in discussions leading to the formation of the World Association of Nuclear Operations (WANO) and was one of the U.S. representatives at the United Nations World Conference on Chernobyl held in Vienna, Austria following the Chernobyl accident in 1986.

This publication, the Twenty-first Annual Report of the Diablo Canyon Independent Safety Committee, is respectfully dedicated to William F. Conway in appreciation of his many valuable services to the Committee and to the people of the State of California.
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January 31, 2011

PG&E Letter ISC-12-001

Dr. Peter Lam
c/o The Diablo Canyon Independent Safety Committee
857 Cass Street, Suite D
Monterey, CA 93940


Dear Dr. Lam:


We are pleased that the DCISC has once again concluded that PG&E operated the Diablo Canyon Power Plant (DCPP) safely during the report period. As you are aware, operating the plant conservatively to protect public health and safety is our highest priority, and we will continue to ensure that we fulfill this commitment.

As discussed in the enclosure, we have reviewed and are taking actions to address your recommendations. We welcome the Committee's recommendations, and believe that addressing them will further contribute to the safe operation of DCPP.

Sincerely,

James R. Becker

pwb/4097
Enclosure

cc/enc:

Robert Budnitz
David C. Linnen
Recommendations:

R11-1

Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit. (3.5)

PG&E shares the DCISC’s concern about the trend in the number of violations assigned to Diablo Canyon by the NRC.

PG&E recognizes this gap to excellence and is addressing it via one of the five station initiatives identified in the DCPP 2012 – 2015 Operating Plan. The Regulatory Excellence Initiative describes how Diablo Canyon organization will improve its regulatory performance by fully understanding regulatory requirements, recognizing gaps and risks, taking prompt interim action to close the gaps, and applying Performance Improvement techniques to address the risks. This will include closing the substantive cross-cutting issue in problem evaluation thoroughness, accurately identifying all reportable conditions, making timely notifications, and improving communications with NRC Resident and Regional Inspectors. The strategies we will use to achieve this are:

- Establish standards and reinforce expectations and tools for station personnel who interact with NRC inspectors to ensure we provide timely, complete, and accurate communications.
- Effectively use the Corrective Action Program to address and close performance gaps related to regulatory performance, and do so in a timely manner.
- Increase the use of regulatory operating experience to prevent missed surveillances, safety system functional failures, and to identify Diablo Canyon performance deficiencies in station design.
- Consistently use regulatory operating experience, self-assessments and readiness review boards to ensure proper preparation for NRC inspections.
- Provide the necessary training to station personnel to ensure the level of competency needed to identify, assess compliance with, and make changes to the current licensing basis.

Specific actions to implement these strategies are tracked via the Regulatory Excellence
Action Plan.

R11-2

The DCISC recommended that DCPP initiate and promptly complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010. (4.3.3)

PG&E agrees with the DCISC regarding the continued monitoring and assessment of the effectiveness of the corrective actions taken to improve the thoroughness and rigor of engineering (and other station) evaluations.

The self-assessment identified in the recommendation was cancelled at the direction of the Director, Engineering Services. The subject self-assessment was considered redundant to effectiveness evaluation required by the Corrective Action Program.

On November 17, 2011, PG&E completed, and the Corrective Action Review Board approved, an interim effectiveness evaluation for the corrective actions to prevent recurrence for the Root Cause Evaluation associated with problem evaluation thoroughness in November 2011. This assessment was performed because one of the corrective actions to prevent recurrence will not be complete until the end of 2014 - The Licensing Basis Verification Project (LBVP). PG&E wanted to assure that the other actions taken were providing the desired result.

The assessment concluded, "...that significant progress has been made to date regarding station program improvements and ownership. However, inconsistency in the application of the generic governance across station programs is preventing full achievement of the desired outcomes. Interim corrections to achieve the desired long term outcomes defined by the RCE effectiveness criteria are necessary." Actions to address these observations are being tracked in the Corrective Action Program and as part of the Evaluation Thoroughness Action Plan. All tasks identified to-date in the action plan, with the exception of the LBVP, will be complete by June 2012. PG&E will continue to monitor the effectiveness of actions taken and make adjustments as necessary.

R11-3

DCPP's Post Earthquake Response Procedure should be expanded to require examination of Spent Fuel Pool (SFP) levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should also consider providing permanently installed, remote wide-range SFP level monitoring capability. (4.20.3)

PG&E agrees with the DCISC that the lessons learned from the events at the Fukushima Daiichi power plant should be evaluated and incorporated at Diablo Canyon, as determined to be appropriate by those evaluations.

Casualty Procedure CP M-4, “Earthquake” Revision 27 was made effective on January 19, 2012 as a result of this recommendation. When Spent Fuel Pool level indication is suspect, the procedure directs the dispatch of an operator to verify that the Spent Fuel Pool levels are stable and that adequate Spent Fuel Pool cooling is in service.
Diablo Canyon has representatives participating in a number of nuclear industry efforts to assure that all applicable lessons learned are captured and acted upon. These industry efforts, as well as soon-to-be-issued direction from the Nuclear Regulatory Commission will result in a significant number of actions (including enhanced Spent Fuel Pool level monitoring capability) that, once finalized, the Diablo Canyon Organization will implement to assure the continued safe operation of the facility.

R11-4

*DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety. (4.20.3)*

PG&E agrees with the DCISC that the safety of Diablo Canyon Plant staff, including from seismic threats, is of paramount importance.

It should be noted that PG&E maintains high levels of seismic awareness and control of materials within the power plant itself via the Seismically Induced System Interaction Program. The concerns raised by the Committee revolve around similar concerns in the context of office environments.

PG&E’s standard to address this concern is Utility Procedure: RE-2002P-01, “Bracing Cabinets and Storage Racks Procedure.” Diablo Canyon is committed to comply with this standard.

The examples noted by the Committee in a project work area also do not meet the Diablo Canyon standards for general area housekeeping. This deviation has been entered into, and will be addressed by, the Corrective Action Program.

With regard to the more general concern of preventing office furniture from tipping during a seismic event, Diablo Canyon believes that this concern has been addressed by an alternative to bracing. The file cabinets that were observed in the Control Room briefing area (as well as the remodeled floors in the Administration Building) were procured with counterweights installed in base of the units. The weights are sufficient to assure a sufficiently low center of gravity that they will not tip. They comply with the requirements contained in the above-referenced procedure without additional bracing.

One of five station initiatives identified in the DCPP 2012 – 2015 Operating Plan, the Site Modernization Initiative assures the station remains focused on a number of areas including the concerns identified in this recommendation. It provides a schedule for assuring that all Diablo Canyon-related facilities are upgraded to meet current standards.
For more information about DCISC contact:

Diablo Canyon Independent Safety Committee
Office of the Legal Counsel
857 Cass Street, Suite D
Monterey, California 93940

Telephone:

In California call 800-439-4688
Outside of California call 831-647-1044

Send E-mail to: dcsafety@dcisc.org
1.0 Introduction, DCISC 21st Annual Report - July 1, 2010 thru June 30, 2011

1.1 Formation of the Independent Safety Committee
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The DCISC held three two-day public meetings in the vicinity of the plant and three public tours of Diablo Canyon Power Plant (DCPP) as part of its public outreach program.

2.1 Public Meetings

During the current reporting period July 1, 2010 - June 30, 2011 the Diablo Canyon Independent Safety Committee (DCISC) heard presentations from PG&E on DCPP activities and from Committee Members and Consultants on Committee activities and provided the opportunity for public input at the following DCISC public meetings:

November 17 & 18, 2010 Avila Lighthouse Suites, Avila Beach, CA
February 15 & 16, 2011 Embassy Suites, San Luis Obispo, CA
June 21 & 22, 2011 Avila Lighthouse Suites, Avila Beach, CA

Minutes of the meetings are located in this report as described below. Copies of the Committee’s Annual Reports are located in the Library Reference Department at the California Polytechnic Institute in San Luis Obispo, California. Each meeting is streamed live on the internet on www.slospan.org and shown at various later times on one of the local public access television channels.

2.1.1 November 17 & 18, 2010 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.1) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee’s service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.2, and minutes of the meeting are included in Volume 2, Exhibit B.3.

A public tour of DCPP was conducted during the November 17, 2010 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DCISC Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.

2.1.2 February 15 & 16, 2011 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.4) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee’s service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.5, and minutes of the meeting are included in Volume 2, Exhibit B.6.
A public tour of DCPP was conducted during the February 15, 2011 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DSICS Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.

2.1.3 June 21 & 22, 2011 Public Meetings

A Notice of Meeting (see Volume 2, Exhibit B.7) was published in the local newspapers, along with several display advertisements, and was mailed to the media and those persons on the Committee’s service list (see Volume 2, Exhibit B.10). The meeting agenda is shown in Volume 2, Exhibit B.8, and minutes of the meeting are included in Volume 2, Exhibit B.9.

A public tour of DCPP was conducted during the June 22, 2011 Public Meeting. Members of the public were given the opportunity to see much of the plant and hold discussions with DSICS Members and Consultants as well as with PG&E personnel. The public tour is described in Volume 1, Section 8.
This section of the DCISC Annual Report describes the DCISC review of PG&E’s interface with the US Nuclear Regulatory Commission (NRC). The NRC is the Federal regulatory entity charged with assuring the safety and security of domestic nuclear power plants; by agreement with the State, NRC also performs these functions for the State of California. As regulator, the NRC employs two full-time Resident Inspectors at the plant (and other specialist inspectors at its US headquarters and regional locations), performs and reports on its inspections at DCPP on matters of nuclear safety and security, investigates significant plant events, maintains a set of plant performance indicators, and performs an annual assessment of DCPP regulatory performance which it reports at a Public Meeting in the plant vicinity. The NRC also must approve significant changes, additions and deletions to plant designs, procedures and Technical Specifications.

PG&E is required to submit routine, periodic reports to the NRC on selected activities and submit special reports when triggered by off-normal plant incidents, events or occurrences.

The DCISC monitors the aforementioned activities and resulting documents in the following ways: (1) receipt and review of correspondence and reports between PG&E and the NRC, (2) on-site review (at Fact-finding meetings at the plant) of selected NRC inspections, investigations and reports, (3) meetings with the NRC Resident Inspectors, and (4) presentations by PG&E at DCISC public meetings on NRC matters.

3.1 Summary of License Event Reports

3.1.1 Discussion and Required LERs

License Event Reports (LERs) are reports required of the nuclear power plant licensee by Nuclear Regulatory Commission (NRC) regulations when an off-normal event occurs. These events include operations or conditions outside of or in violation of station Technical Specifications (TS), procedures or NRC regulations. Events are to be promptly reported by telephone and by written report within 60 days of the event or initial knowledge of the event. Voluntary LERs are submitted for events which NRC should know about or are significant but are not specifically required by NRC. Each of these reports is reviewed in DCISC public meetings and is mailed to each DCISC Member and Consultant.

The LER is the responsibility of the Licensee, in this case PG&E. Therefore, it is the Licensee who makes the determination of the level of risk or significance to safety of the event. The NRC has a Significance Determination Process which sets forth its rules for making these determinations; however, events may be complex or may not easily fit the rules. The NRC may concur or it can question or challenge the Licensee’s determination. Discussions or meetings may be required to
Ten LERs were reported during this time period (and an eleventh for a reactor trip as reported below) and corresponding corrective action was as follows:

1. LER 1-2010-001-01 was revised and issued on August 27, 2010, to update the cause and corrective actions of failure of three control room ventilation system radiation monitors in October 2009. Cause was due to a manufacturing defect and the failure was not safety-significant in that the monitors failed to the safe mode. There was no actual radiation release.

2. LER 1-2010-002-01 and 2 were issued July 2, 2010 and September 24, 2010, to update the reporting criteria, apparent cause, assessment of safety consequences, and planned corrective actions for the potential loss of safety-related pumps due to degraded voltage during postulated accidents. Determined not to be safety-significant due to the high improbability for the event.

3. LER 2-2010-002-00 was issued on August 5, 2010, to report an unanalyzed condition with the 2R15 optimization modification of the U-2 safety injection system test line. U-2 was not at power operation.

4. LER 1-2010-003-00 was issued August 6, 2010, to report a historical evaluation for the 230 kV System operability for both units and conditions prohibited by Technical Specifications (T/S). DCPP now has a greater understanding of the operability of the 230 kV System. There were a few times when maintenance was being performed and the system was configured such that both units were aligned to be receiving off-site power through a single transformer for a period in excess of the allowed time. This could have potentially overloaded the transformer, although when the capacity of the transformers was reviewed it was found they would have been within their Institute of Electrical and Electronic Engineers (IEEE) code rating.

5. LER 1-2010-004-00 was issued August 25, 2010, to report a condition that allowed the plant pressurizer level to be controlled outside the Final Safety Analysis Report (FSAR) design basis. This was discovered through review of past outage experience where an operating procedure during shutdown provided the pressurizer level control to be operating in manual and would be outside of the normal control band. In almost all circumstances the power-operated relief valves would mitigate this event as they have sufficient air to cycle the valves and actually relieve the pressure should a design basis accident occur that was associated with miscontrol of the pressurizer level; however, there was one condition where the number of cycles was 106 cycles that back-up could provide while the actual total was 109 cycles for that evolution and this could, potentially, have resulted in the system going solid and putting water out through the pressurizer safeties. The condition has been corrected.

6. LER 1-2011-001-00 was issued on January 5, 2011, to report an improper mode transition with an inoperable turbine-driven auxiliary feedwater pump 1-1 and violation of Technical Specification (TS). A declaration of inoperability was made due to the new governor not taking control at the expected speed, resulting in the operating speed of the pump being too high and it was a violation of TS to make a mode transition with the pump in that condition. The two redundant motor driven pumps were available and there was no challenge to the
ability to perform specified safety function. [A major contributor to the initiation of the accident at Three Mile Island Nuclear Generating Station was failure of an auxiliary driven feedwater pump to function correctly due to its having been valved off incorrectly. DCPP’s actions on January 5, 2011, demonstrated a philosophy to catch and monitor errors at levels of very low safety significance and taking appropriate corrective actions.] Because there was only some small amount of decay heat within the reactor, one motor auxiliary feedpump would have been sufficient to remove any heat to mitigate an event in Mode 3 condition, and the steam driven auxiliary feedpump has twice the capacity of the motor driven pumps.

7. LER 1-2011-002-00 was issued March 11, 2011 to report discovery on January 10, 2011, of an Auxiliary Building Ventilation System design flaw that created a single failure vulnerability. The System was in the process of realigning to its non-safeguards function when a damper failed to reposition and the logic system caused the entire Auxiliary Building Ventilation System to fail and to be unable to perform its safeguards function to provide charcoal filtration. The system logic can be reset by operators from the Control Room and the Auxiliary Building Ventilation System would then have been functional. An alarm and annunciator were activated in the Control Room and procedures are in place to provide for these actions. The Auxiliary Building Ventilation System design contained an inherent flaw and DCPP is working to correct it and is meanwhile maintaining the System in its safeguards configuration.

8. LER 2-2011-001-00 was issued May 25, 2011 to report a manual reactor trip which occurred on March 26, 2011, due to failure of a main feedwater pump. The pump failure occurred due to a non radioactive water leak on its control panel. The pump trip was recognized and the plant was manually shut down. An improperly torqued flange bolt on the pump was found to be the cause of the leak resulting from inadequate procedural guidance.

9. LER 1-2011-003-00 was issued April 28, 2011, following the events at the Fukushima Daiichi plant in Japan to report deviation from the security plan made pursuant to 50.54(x) as a result of a tsunami warning which required DCPP to reposition some of its security personnel. There was no significant tidal surge at DCPP due to the earthquake off the coast of Japan. This was also a reportable event and was reported under Security rules (see below).

10. LER 1-2011-003-01 was issued May 10, 2011, to provide security reporting detail due to the deviation from the security plan caused by the tsunami warning.

3.1.2. Special Report LERs

There were no special LERs submitted by DCPP during the reporting period.

3.1.3 Voluntary LERs

There were no voluntary LERs submitted by DCPP during this period.

3.1.4 Reactor Trips Reported in LERs

During the reporting period, LER 2-2011-001-00 was issued May 25, 2011 to report a reactor manual trip on March 26, 2011 that was necessitated by the failure of a Main Feedwater Pump with
the Unit operating above 80 percent power. The event stemmed from a steam leak from the gasket of a relief valve on the shell (steam) side of a feedwater heater. This leak grew to the point where it wetted nearby control/annunciator loops for Main Feed Pump 2-1, causing that pump to trip. Since Unit 2 was operating above 80 percent power at that time, the Unit 2 reactor was tripped manually in compliance with station operating procedures that required such a trip due to the loss of a Main Feed Pump above 80 percent power. The reason for this manual trip was that an analysis of Unit 2 performance had determined that the loss of one Main Feed Pump would lead to a continuing decrease in Steam Generator water levels to below 15 percent, which would then result in an automatic reactor trip. The deliberate manual trip, therefore, maintained a larger water inventory in the steam generators during the shutdown transient and allowed the operators to exercise direct control of reactor and plant status. The station’s subsequent review of this event determined causal factors to include the installation of the wrong gasket material in the pipe flange to the particular relief valve that eventually developed the leak and inadequate torquing of the flange in which the gasket had been installed.

3.1.5 Other Reports to NRC

An Unusual Event was declared and reported to NRC and San Luis Obispo County on December 25, 2010, due to an indication of high peak wind speeds in excess of 80 miles per hour. This event was investigated and found to be caused by a faulty wind speed signal due to probable water intrusion into the instrument causing the incorrect signal. The event declaration was retracted on January 28, 2011. DCPP has reported the event to the industry in an operating experience report. DCPP has redundant wind speed indicators at different elevations on the meteorological tower, as well as indicators of a different design on the secondary, backup, meteorological tower, none of which indicated the same high peak wind speed provided by the erroneous indicator. The wind speed indicator has now been sealed to prevent water intrusion.

In the past five DCISC reporting periods the following numbers of trips have occurred:

<table>
<thead>
<tr>
<th>Reporting Period</th>
<th>Automatic</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/2007</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2007/2008</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2008/2009</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2009/2010</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010/2011</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

The number of trips continues to be commendably low.

3.1.5 LER Trends

The following table depicts the LER history for DCPP for the last five DCISC reporting periods:

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Number of LERs Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DCISC notes that the number of LERs has been increasing over the last two periods and will continue to monitor both the number and significance of DCPP LERs.

During the current reporting period, the reported events were reported within the requirement of within 60 days of event discovery. All of the ten LERs were self-identified by PG&E and one was initially identified by NRC.

### 3.1.6 DCISC Evaluation and Conclusions

The DCISC recognizes that events will occur in any large complex system. The goal is to identify them and understand them, and take action to minimize the consequences and likelihood of any significant increase in risk. The design basis for nuclear power plants involves defense-in-depth. This recognizes that in real systems, unanticipated events will occur, so protective systems are designed to provide protection even if systems do not always perform as anticipated. For this reason, it is important to investigate events and to share information about them with other plants.

Each of the ten Licensee Event Reports was investigated by DCPP to determine the plant conditions before and during the event, background and detailed event description, root cause and contributory causes, immediate and preventive corrective action, and previous LERs on identical or similar problems. No LER was significant enough to seriously affect operational safety. No significant cause code trends were observed. LER investigation reports were submitted to all DCISC Members and Consultants for review; DCPP reported on each LER at DCISC public meetings.

DCPP LER investigations appeared generally adequate and corrective actions appeared to be appropriate for all LER events. There appears to be little or no recurrence of reportable events. The DCISC will continue to monitor LERs, their causes, and DCPP’s actions to correct and prevent them in future fact-finding and public meetings.

The number of DCPP License Event Reports (LERs) had remained consistently low at 2-to-3 per year until the previous two reporting periods in which there were five and seven LERs, respectively, and the current period with ten LERs. The DCISC considers this to be cause for concern and will track this negative trend in future periods.

### 3.2 NRC Inspection Reports and Enforcement Actions

#### 3.2.1 Discussion

The NRC performs inspections at each nuclear power plant. The purpose is to determine how well the plant personnel are implementing and following NRC regulations, plant Technical
Specifications, and other requirements, procedures, or commitments. Generally, better regulatory performance results in fewer inspections. NRC meets with the nuclear plant operator twice per year to review plant safety performance under the NRC Reactor Oversight Process (see Section 3.4 below). These meetings are usually public.

Inspections are performed by the plant Resident NRC Inspectors, inspectors from the NRC Region Office, experts from other NRC organizations, and NRC consultants. The bulk of inspections are routine, announced visits focusing on one or more specific areas of operation such as As Low As reasonably Achievable (ALARA) radiation dose minimization program, maintenance, chemistry, security, operator examinations, or corrective actions. Special inspections are often made for investigation into previous events affecting plant safety and into special programs, such as NRC Generic Letter 89-10, Testing of Motor-Operated Valves.

Each inspection usually concludes with an exit meeting with licensee personnel, followed by a written inspection report. Inspections can result in the following categories of findings:

- **“Unresolved Items”** are items for which information is not yet available or awaiting licensee response or action.
- Individual **“strengths”** are used to point out good practices and weaknesses for the licensee’s attention for improvement and/or to prevent future problems.
- **“Deviations”** are variances from NRC regulations and/or licensee procedures or other requirements or commitments which are not as severe as outright violations.
- **“Concerns”,** typically including more than one individual weakness in a single area, are to alert the licensee to situations which could become violations if not corrected.
- **“Non-cited Violations”** are violations for which NRC credits the licensee for identifying the violation and/or for prompt, effective corrective action completed before or taken during the inspection. These are usually non-recurring, non-safety-significant items.
- **“Violations”** of NRC regulations, plant Technical Specifications, and other commitments, procedures, etc. require a formal response and corrective action. Violations carry four severity levels as described in Section 3.3, NRC Enforcement Actions.

Fewer violations generally mean better performance. Some in the industry think having a significant number of non-cited violations indicates an effective, aggressive regulatory program, meaning the licensee quickly finds and corrects its own problems/violations rather than the NRC finding them.

NRC considers items not in compliance with its regulations or with the licensee’s commitments or procedures to be violations. Corrective action is required for all violations. NRC identifies four severity levels for violations.

Level I is the most severe, representing the most significant regulatory concern which usually involves actual or high potential impact on the safety of the public. Level IV violations are more than minor concern and should be corrected so as to prevent a more serious concern. Civil penalties
(monetary fines) are usually imposed for Level I and II violations, are considered for Level III, and usually not imposed for Level IV violations. Most low-level violations are reported as Non-cited Violations provided the licensee places the violation into its corrective action program and provided the violation is not willful or repetitive. NRC has increased its scrutiny of corrective action programs. The categorization of violations in this report follows NRC’s actual classification in each notice of a violation.

During the period July 1, 2010 - June 30, 2011, there were eight inspection reports received from the NRC for DCPP. This compares with 7, 10, 8, 12, and 9 inspection reports in the previous five periods, respectively. PG&E’s regulatory performance with NRC has been good. The eight inspections during this period were as follows:

NRC inspection reports were issued for:

1. NRC Component Design Basis Inspection (IR 2010-007, 07/23/10)
2. Resident Integrated Inspection (IR 2010-003, 08/10/10)
3. NRC Problem Identification & Resolution Inspection (IR 2010-006, 09/09/10)
4. Resident Integrated Inspection (IR 2010-004, 11.01/10)
5. Resident Integrated Inspection (IR 2010-005, 02/07/11)

Regarding NRC cross-cutting issues, DCPP is seeing an adverse trend with respect to conservative assumptions and decision making and a common cause analysis was recently performed. The driver from the common cause analysis was found to be similar to that for the problem evaluation common cause and the corrective actions for the problem evaluation cause analysis were also applicable to the conservative assumption analysis. There were also four events with a thresholds common cause. DCPP has taken a number of actions with respect to identifying and ensuring every problem is uniquely identified. The letter received from the NRC with DCPP’s mid-cycle performance review cited a problem with DCPP’s analysis of issues identified with the problem identification and resolution (PI&R) cross-cutting aspects. There were a number of common issues, particularly in terms of 10 CFR 50.59 documentation problems. DCPP has performed an additional root cause analysis for 10 CR 50.59 documentation issues and substantial 10 CFR 50.59 training has taken place along with retraining with respect to FSAR expectations.

Non-Cited Violations

1. A NCV was received when operators in training could not perform required accident analysis actions within the time estimates of the analysis (Cross-Cutting (CC) Aspect H.1(b) Conservative Assumptions).

2. A NCV was received for PG&E failing to maintain adequate design control associated with the
emergency diesel generator (EDG) (starting air/turbo air) air tanks (C-C Aspect H.1(b) Conservative Assumptions).

3. A NCV was received for a design documentation error for failure to identify and correct non conforming conditions for EDG design basis (instrument inaccuracy and worst case loading) (C-C Aspect H.1(b) Conservative Assumptions).

4. A NCV was received for failure to appropriately evaluate and correct a condition adverse to quality as instructed by surveillance test procedure P-RHR-A22 (C-C Aspect P.1(c) Evaluation).

5. A NCV was received for PG&E failing to correct a non conservative TS regarding EDG load testing in a timely manner (C-C Aspect P.1(c) Evaluation).

6. A NCV was received for PG&E failing to perform Containment concrete inspections in accordance with American Society of Mechanical Engineers (ASME) Section XI (No C-C Aspect).

7. A NCV was received for five discharged fuel assemblies which were located in the Spent Fuel Pool at locations not permitted per procedure TS6.ID2 (PG&E identified, no C-C Aspect).

8. A NCV was received for PG&E having operated U-2 without an operable vital component cooling water loop for greater than 14 hours, associated with concern over sustained degraded voltage for an extended period of time (C-C Aspect H.1(b) Conservative Assumptions).

9. A Level IV violation was received for PG&E failing to include current plant design basis for 230 kV degraded voltage protection scheme in the FSAR. The actual design criteria that was intended was not identified (C-C Aspect P.1(c) Evaluation).

10. A NCV was received for PG&E failing to complete an adequate operability assessment of the offsite power undervoltage protection scheme. This was associated with the 230 kV degraded voltage assessment being based upon plausible degradation as opposed to the full range of what the protection scheme would have to respond to (C-C Aspect P.1(c) Evaluation).

11. A NCV was received for PG&E failing to verify TS 3.3.5, second level undervoltage relay time delay (no Cross-cutting (C-C) Aspect).

12. A NCV was received for multiple mechanical and electrical documentation errors associated with motor operates valves (no C-C Aspect).

13. A NCV was received for PG&E failing to proceduralize the use of Diablo Canyon Creek as an auxiliary feedwater water source. Although a remote possibility, DCPP did not have an acceptable procedure that would allow operators to do this (C-C Aspect P.1(c) Evaluation).

14. A Level IV violation was received for PG&E failing to update the FSAR to remove reference to an analysis that no longer applies to DCPP (no C-C Aspect).

15. A Level IV violation was received for PG&E failing to update the FSAR to correctly identify the design class I makeup water sources (no C-C Aspect).

16. A NCV was received for PG&E failing to appropriately incorporate Regulatory Guide 1.9 testing into plant test procedures (no C-C Aspect).
17. A NCV was received for PG&E failing to maintain the integrity of a frequently used fire door (C-C Aspect P.1(a) Threshold).

18. A NCV was received for PG&E failing to adequately manage risk by allowing removal of some equipment from service which put the system into yellow status during a planned maintenance activity (C-C Aspect P.1(d) Timeliness).

19. A NCV was received for PG&E failing to perform a risk assessment for changing plant conditions due to removing some equipment from service without performing a risk assessment when that equipment was declared inoperable (C-C Aspect H.4(b) Procedure Compliance).

20. A NCV was received for PG&E failing to promptly evaluate two non conforming conditions for operability associated with the quality classification of an auxiliary saltwater line vent and also with diesel performance and, in particular, Regulatory Guide compliance (C-C Aspect P.1(c) Evaluation).

21. A NCV was received for PG&E failing to maintain adequate design control measures associated with the Auxiliary Saltwater System associated with the quality classification of the auxiliary saltwater vent line (no C-C Aspect).

22. A NCV was received when PG&E failed to maintain the integrity of Fire Door 155 (Cross-Cutting (C-C) Aspect P.1(d) Timeliness).

23. A NCV was received for PG&E failing to maintain established combustible material control in the U-1 12kV switchgear room while U-1 was shutdown and U-2 was operating (C-C Aspect H.2(c) Documentation).

24. A NCV was received for PG&E failing to adequately document the basis for operability of two degraded conditions in accordance with plant procedures (C-C Aspect H.1(b) Conservative Assumptions).

25. A NCV was received for PG&E failing to control postulated post-accident flow path from the reactor cavity reactor vessel nozzles to the post accident recirculation containment sumps in accordance with design (C-C Aspect H.2 (c) Documentation).

26. A NCV was received for PG&E failing to establish an adequate testing program for full load rejection testing of a emergency diesel generator (EDG) (C-C Aspect P.1(c) Evaluation).

27. A NCV was received for PG&E failing to address an adverse trend in the problem evaluation process in the 2008 QV audit of the CAP (C-C Aspect P.3(c) Audits).

28. PG&E identified a violation for its failure to establish a reactor coolant system (RCS) vent path before reducing RCS pressure below 90°F.

29. PG&E identified a violation for its failure to obtain NRC approval before implementing a procedure to allow operators to control pressurizer level outside the programmed control board.

30. PG&E identified a violation for its failure to maintain RCS flow restrictors on RCS pressure boundary test lines.

31. PG&E identified a violation for its failure to revise the auxiliary feedwater pump test
procedures following replacement of the speed governor which affected its performance characteristics.

32. PG&E identified a violation for its failure to control use of fibrous insulation inside containment in accordance with design analyses. Insulation was found at some hidden piping penetrations to the reactor vessel and the metal insulation around the pipes shielded the penetration and the fibrous insulation inside.

33. NCV (Green) - Inadequate Design Control for the Preferred Offsite Power System (NRC Cross-Cutting (C-C) Aspect P.1(c) Evaluation).

34. NCV (Green) - Failure to Document Design Basis of Containment Fan Cooler Unit (CFCU) Cooling Coil Casings (C-C Aspect H.2(c) Accurate Documents).

35. NCV (Green) - Inadequate Design Control for the Auxiliary Building Ventilation System Control Panel Modification (C-C Aspect H.4(a) Human Error Techniques).

36. PG&E Identified – PG&E identified that three-hour fire barriers internal to conduits were missing or not installed in accordance with design requirements.

Level IV Violations

1. A Level IV violation was received for PG&E failing to provide complete and accurate information with regard to a proposed license amendment request 10-01 (revision of non conservative TS 3.8.1) information that was not complete and accurate in all respects. The license amendment request was withdrawn (C-C Aspect P.1(c) Evaluation).

2. A Level IV violation was received for PG&E failing to properly report a design deficiency of the 230 kV degraded voltage protection system (C-C Aspect P.1(c) Evaluation).

3. A Level IV violation was received for PG&E failing to perform 10 CFR 50.59 evaluation for modifications to the offsite power protection scheme for the low voltage protection scheme on the 230 kV System (C-C Aspect H.1(b) Conservative Assumptions).

4. A Level IV violation was received for PG&E failing to perform an adequate 10 CFR 50.59 evaluation, during the 1990's and in early 2000's, but recently discovered, for two EDG related changes (C-C Aspect P.1(c) Evaluation).

There have been nine violations with the cross-cutting aspect of conservative assumptions used in decision making and this is now an area being closely watched. A common cause analysis was performed and a number of corrective actions have been implemented which have resulted in significantly improved performance for the past six months. DCPP maintains a dialogue with the NRC to demonstrate DCPP recognizes that a problem exists, has been appropriately identified and analyzed, and the station is demonstrating behavior that the NRC recognizes as an appropriate response.

Problem Identification and Resolution (PI&R) corrective action evaluation has been an ongoing topic and a significant cross-cutting issue is assigned to DCPP by the NRC in problem evaluation. A root cause evaluation (RCE) has been completed and a number of corrective actions implemented focusing on the station’s evaluations programs. Station performance has improved but it has not
stopped all of the problems and problem evaluations. DCPP had problems with PI&R during the period of 2003-2004, Cross-cutting issues were assigned by the NRC to PI&R and to Human Performance during this period. These cross-cutting issues were addressed by the inception of a significant amount of station performance monitoring and by implementing the monthly reviews now conducted with the DCPP leadership team. However, DCPP has not improved at the same rate as the industry and there may have been some deterioration in rigor.

DCPP site leadership’s actions related to the significant Cross-Cutting Issue of Evaluation of Thoroughness by the NRC were inclusion of Thoroughness Evaluation as a focus area of the 2011-2015 Operating Plan; development of an action plan; and completion of the pilot review of the License Basis Verification Project (LBVP). DCPP is following up on the NRC’s inspection and the proposed violation resulting from the 2008 CAP audit when and where these problems should have been reported. An ACE has identified key corrective actions including: the use of the Quality Assurance (QA) training program to ensure proficiency in key functions; revision and improvement of audit checklists to include review of operating experience and NRC trends; establishment of recurring QA training for specific high level, risk significant ‘evaluative’ areas; and ensuring all QV work functions are appropriately represented within the QV Curriculum Review Committee (CRC). The NRC’s resident inspector has also suggested revising RCEs to provide for and include a role for QA. RCE measures will be made more clear and quantifiable and the RCE process will be institutionalized to review missed opportunities for QV’s insight. Contributing factors and insights include governance and metrics needing more run time and he stated that appropriate actions are being taken regarding this gap in station performance.

DCPP maintains a tracking spreadsheet Quality Verification (QV) for all NRC violations, NOVs and NCVs, to ensure the issue identified by the NRC is adequately addressed. An AR-NCV (Action Request for Non-cited Violation) is initiated for each potential NCV at the exit NRC inspection interview, and appropriate Corrective Action Program (CAP) documents are initiated and their status is reviewed and verified periodically, typically biweekly, through the resolution period. PG&E believed that the NRC’s implementation of its Reactor Oversight Process (ROP) has increased the numbers of NCVs, which do not require a formal response, and reduced the numbers of NOVs, which are reserved under the new Reactor Oversight Process for risk-significant issues.

During the period July 1, 2010 - June 30, 2011, NRC cited no Level I, II, or III violations and identified 36 non-cited violations and 4 Severity IV violations. The identification breakdown for these is as follows:

<table>
<thead>
<tr>
<th>DCISC Reporting Period</th>
<th>Number of Inspections</th>
<th>Violation Severity Level</th>
<th>Violations Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/06 – 6/30/07</td>
<td>10</td>
<td>– – 20</td>
<td>20</td>
</tr>
<tr>
<td>7/1/07 – 6/30/08</td>
<td>8</td>
<td>– – 7</td>
<td>7</td>
</tr>
<tr>
<td>7/1/08 – 6/30/09</td>
<td>12</td>
<td>– – 18</td>
<td>18</td>
</tr>
</tbody>
</table>

The history of violations for this and the last four DCISC reporting periods is as follows:
NRC violations are included in the CAP Trending Program and are not trended separately. An Event Trend Record (ETR) is issued for each NCV associated with an AT-NCV AR (A-type Non-Cited Violation Action Request). Periodic evaluation of the ETRs is undertaken to identify adverse trends.

3.2.2 DCISC Review of Trends of Non-Cited Violations and NRC-Identified Issues

Non-Cited Violations (NCVs) are usually items of very low safety significance. All NCVs are entered into the DCPP Correction Action Program (CAP), and a Notification is issued. Notifications are reports used to identify and document plant problems in the CAP. The NCVs are reviewed for their safety significance, and cross-cutting issues. DCPP will perform an Apparent Cause Evaluation (ACE) for the NCV as determined by plant director-level management.

3.2.3 DCISC Evaluation and Conclusions

The numbers of NRC inspections in this period and the previous four periods has been fairly consistent at about 8 or 9. This relatively low number is a result of good regulatory performance as measured primarily by NRC Performance Indicators (see Section 3.5 below).

The DCISC heard presentations by DCPP on each non-cited violation, finding and LER at its public meetings and has reviewed each cited violation and DCPP’s corrective actions, where applicable. DCPP corrective actions appeared adequate. There were no individual items of significance to warrant DCISC recommendations or actions.

All of DCPP’s 36 NCVs were classified by the NRC as having very low safety significance; however, the DCISC notes that DCPP received four Severity Level IV violations. Though these Non-cited and Severity Level IV violations were determined by NRC to be of low safety significance, the DCISC is concerned about the sharp increase in their numbers from previous periods and will follow up on this negative trend.

3.3 NRC Performance Evaluations

The Nuclear Regulatory Commission (NRC) inspection, assessment, and enforcement programs for commercial nuclear power plants takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC-licensed plants.

The NRC Revised Reactor Oversight Process (RROP) monitors licensee performance in three broad areas (called strategic performance areas):

1. Reactor Safety (avoiding accidents and reducing the consequences of accidents if they occur)
2. Radiation Safety (protecting plant employees and the public during routine operations)
3. Safeguards (protecting the plant against sabotage or other security threats).
The process focuses on licensee performance within each of “Seven Cornerstones” of safety in the three areas:

<table>
<thead>
<tr>
<th>Reactor Safety</th>
<th>Radiation Safety</th>
<th>Safeguards</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Initiating Events</td>
<td>• Occupational</td>
<td>• Physical Protection</td>
</tr>
<tr>
<td>• Mitigating Systems</td>
<td>• Public</td>
<td></td>
</tr>
<tr>
<td>• Barrier Integrity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Emergency Preparedness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To monitor these Seven Cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations:

1. Inspections
2. Performance Indicators

Inspection findings are evaluated according to their potential significance for safety, using the significance determination process, and assigned colors of GREEN, WHITE, YELLOW, or RED.

- GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance.
- WHITE findings indicate issues that are of low to moderate safety significance.
- YELLOW findings are issues that are of substantial safety significance.
- RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance Indicator data are compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, or RED.

- GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections.
- WHITE corresponds to performance that may result in increased NRC oversight at the Resident Inspector or Regional level.
- YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight at the NRC Region level.
- RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety. NRC response at the Agency level could include Public Meeting, utility-developed performance improvement plan, and/or special inspection team.
The assessment process integrates performance indicators and inspections so the agency can reach objective conclusions regarding overall plant performance. The NRC uses an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

The NRC Performance Indicators (PIs) for DCPP through the second quarter are depicted in Table 3.1 at the back of Section 3.0.

The NRC inspection program uses a risk-informed approach to select areas of the plant to inspect within each cornerstone. The selection is based on potential risk, past operational experience, and regulatory requirements.

Each calendar quarter, NRC inspectors and the regional office review plant performance indicators and inspection findings. Each year, NRC regional and headquarters offices make a final review, to include a more detailed assessment of plant performance over the 12-month period, preparation of a performance report, and preparation of a six-month inspection plan. The report is sent to each plant and discussed in a public meeting.

**NRC End-of-Cycle Report for 2010**

NRC generated one performance review and assessment letter for DCPP as follows:

Annual Assessment Letter (March 4, 2011)

NRC reported that for the period January 1 through December 31, 2010

“The NRC determined that overall, Diablo Canyon Power Plant operated in a manner that preserved public health and safety and met all cornerstone objectives. The NRC determined the performance at Diablo Canyon during the most recent quarter was within the Licensee Response Column of the NRC's Reactor Oversight Process (ROP) Action Matrix because all inspection findings had very low (Le., Green) safety significance, and all PIs indicated that your performance was within the nominal, expected range (Le., Green). Therefore, the NRC plans to conduct ROP baseline inspections at your facility.

“In its assessment letter dated March 3, 2010, (ML 100620897), the NRC opened a substantive cross-cutting issue in the problem identification and resolution area associated with the aspect of thoroughness of problem evaluation [P.1 (c)]. To address the substantive cross-cutting issue, your staff completed an additional root cause evaluation in June 2010 to more fully evaluate the depth and breadth of the issue, and developed a range of additional corrective actions and performance measures. We
also noted that you commenced a licensing basis verification project, which you presented to the NRC at a public meeting in September 2010. The NRC previously identified fourteen findings with this cross-cutting aspect in our midcycle assessment and concluded your actions had not yet proven effective in substantially mitigating the adverse trend in problem evaluation at that time. Since then, you have taken additional corrective action which has resulted in some improvement. However, we continue to identify findings associated with the thoroughness of problem evaluation, especially in engineering evaluations. Based on the findings we continue to identify in this area, we concluded your actions to address the theme have not yet proven effective. Therefore, the substantive cross-cutting issue in problem identification and resolution associated with the thoroughness of problem evaluation \[P.1 (c)\] will remain open.

“The NRC plans to conduct additional inspection to evaluate the effectiveness of your performance improvement efforts. Specifically, the NRC intends to perform additional focused problem identification and resolution inspection as described in Section 13.03 of Inspection Manual Chapter 0305, "Operating Reactor Assessment Program:' Accordingly, we request you provide us a letter informing us of Diablo Canyon Power Plants readiness for inspection of your corrective actions in addressing the safety culture theme in problem evaluation. The NRC will then perform an inspection focusing on the station's progress in developing and implementing corrective actions and the metrics and measures used to determine performance improvement effectiveness. The substantive cross-cutting issue in problem identification and resolution will remain open until we determine through our inspection that your corrective actions have been effective and the station has demonstrated sustained and measurable improvement. Of note, this is the third consecutive assessment with a substantive cross-cutting issue in problem identification and resolution associated with the thoroughness of problem evaluation.

“We understand that you recently completed a safety culture survey in February 2011. We intend to review the results of this safety culture assessment during the focused problem identification and resolution inspection described above. We are specifically interested in any weaknesses identified by the assessment, your planned corrective actions to address these weaknesses, and how you intend to apply the assessment results and corrective actions to improve overall station performance in problem identification and resolution. We also request you address your improvement efforts in problem identification and resolution during our annual end-of-cycle assessment meeting.

“During this assessment period the NRC also identified a cross-cutting theme in the area of human performance associated with the use of conservative assumptions in decision making \[H.1 (b)\]. Specifically, eight findings were identified in this assessment period with this cross-cutting aspect. This theme was also present at the midcycle 2010 assessment. At that time, we determined that your staff had appropriately
recognized the declining trend, entered the trend into the corrective action program, and developed corrective actions; however, a reasonable duration of time had not passed to determine the effectiveness of your corrective actions. In our current evaluation of the scope of your efforts and progress in addressing the cross-cutting theme in conservative decision making, we note that we have identified only one finding with this cross-cutting aspect since you fully implemented corrective actions to address the issue. Therefore, the NRC has determined that your efforts to date have demonstrated improved performance in this area, and a substantive cross-cutting issue does not exist at this time. The NRC will continue to monitor your staffs effort and progress in addressing this theme through the baseline inspection program.”

The DCISC understands this to mean acceptable regulatory performance and no increased inspections above baseline, except for the substantive cross-cutting issue in the problem identification and resolution area. The DCISC has similar concerns regarding the DCPP Corrective Action Program, specifically in the problem evaluation area. The DCISC will continue to follow this area closely.

Though the DCISC concurs with the NRC assessment that, overall, DCPP “…operated in a manner that preserved public health and safety...,” it is concerned with DCPP performance degradation in the corrective action and problem evaluation areas.

3.4 DCISC Meeting with NRC Resident Inspector

The DCISC held two meetings with the NRC Resident Inspector.

In January 2011 Fact Finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector at DCPP and Mr. Jonathan Braisted, NRC Resident Inspector. Mr. Peter Bedesem, Technical Assistant to the DCPP Site Services Director, was also present. Discussion focused on seismic design licensing bases involving the Hosgri Earthquake, the Operating Basis Earthquake (OBE), and the Safe Shutdown Earthquake (SSE). Their respective damping functions, as they are related to the station’s seismic design and licensing documents, were also reviewed. Discussion also extended to the potential influence of the Shoreline Fault on the station’s current licensing basis and on DCCP’s application to the NRC for an extension to its operating license.

In April 2011 the DCISC Fact-finding Team met with Michael Peck, NRC Senior Resident Inspector (SRI); Jeff Miller, NRC Region IV Branch Chief; Kirsten Dennison, NRC Intern; and Pete Bedesem, DCPP Liaison to DCISC; to discuss DCPP regulatory matters. The DCISC last met with the Senior Resident Inspector in January 2011, for a discussion on the DCPP seismic design licensing basis and the potential influence of the recently discovered Shoreline Fault. Dr. Peck had identified an Unresolved Item (URI) questioning whether the current seismic design with respect to the Hosgri Fault is within the current design basis and acceptable ground accelerations. This was being reviewed by NRC’s Office of Nuclear Reactor Regulation (NRR) at NRC Headquarters.

NRC had no comment on the Japanese Fukushima event, except to say that the SRI was in the process of reviewing DCPP’s procedures and equipment designed to cope with severe accidents.
and beyond-design-basis events. The review was initiated by NRC Temporary Instruction 2515-183, “Follow Up to the Fukushima Daiichi Nuclear Station Fuel Damage Event.” His conclusions were planned to be documented in a stand-alone inspection report to be released in mid-May 2011.

Dr. Peck provided the status of NRC’s open item on the DCPP design basis for the 230 kV offsite power system, an item the DCISC has been following. At question is whether the system has enough emergency power capacity to support shutdown of both units simultaneously. This is being reviewed by NRC NRR. The NRC conclusions are expected to be reported in the first quarter integrated inspection report.

Regarding the NRC-identified Substantive Cross-Cutting Issue in the area of Problem Identification and Resolution (PI&R), NRC is awaiting the March 2011 DCPP safety culture review results at which time NRC will perform a re-inspection of DCPP’s Corrective Action Program (CAP).

The NRC is focusing its attention and resources at issues it deems important to plant safety. The DCISC will continue to follow the actions and results of the NRC efforts.

3.5 DCISC Evaluation and Conclusions:

Conclusions:

The DCISC received regular reports on the NRC Performance Indicators, DCPP License Event Reports (LERs) sent to NRC, and NRC Inspection Reports and Enforcement Actions (violations) at each of its Public Meetings as well as copies of these documents throughout the reporting period. The Committee notes that, although the Nuclear Regulatory Commission (NRC) concluded that, “Overall, Diablo Canyon Power Plant, Units 1 and 2, operated in a manner that preserved public health and safety…,” it identified 36 Non-cited Violations, four Severity Level IV violations, and continued a substantive crosscutting issue. The increase in number of these violations and the crosscutting issue (in problem identification and resolution) are concerns to the DCISC. The DCISC plans to augment its review of DCPP NRC regulatory performance during the next reporting period.

Recommendation R11-1:

Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations in an assist visit.

Basis for Recommendation:

Licensee Event Reports, Violations, and the Substantive Crosscutting Issue in PI&R are related issues because they all deal with the identification and resolution of plant events. If there is a common cause or similar causes for these negative trends, DCPP should identify and resolve
The DCISC notes that the DCPP Corrective Action Program has undergone many reviews and assessments in the last several years apparently without an effective, sustainable resolution.

The DCISC had a similar recommendation in the previous reporting period as follows:

Recommendation R10-1: Due to the increases in the numbers of Licensee Event Reports and Severity Level IV Violations and because of the newly re-identified NRC Substantive Crosscutting Issue in Problem Identification and Resolution, the DCISC recommends that DCPP perform a comprehensive analysis to determine the cause of these negative regulatory trends.

DCPP responded as follows:

“PG&E has performed multiple analyses, as documented in the Corrective Action Program, for these events. A common cause analysis was performed to examine the number of traditional enforcement violations (as documented on SAP Notification 50331845). This common cause analysis was approved by the Corrective Action Review Board on October 5, 2010.

The substantive cross-cutting issue in problem evaluation was analyzed in the Corrective Action Program via a root cause analysis (as documented in SAP Order 60024480). This root cause analysis was approved by the Corrective Action Review Board on June 7, 2010.

Both these Corrective Action Program documents were the subject of an inspection by Nuclear Regulatory Commission inspectors in December 2010. The NRC inspectors concluded that the corrective actions appear to be appropriate and on target, but lacked sufficient run-time to demonstrate their effectiveness at the time of the inspection.”

The conclusions in the December 2010 inspection report are encouraging, but the DCISC notes that the substantive cross-cutting issue still exists.

Table 3.1 – NRC Performance Indicators for Diablo Canyon Power Plant Second Quarter 2010

* Trend Indication Arrows     Improving     Stable     Degrading
** Index = sum of unavailability + unreliability of the system

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Unit 1 Value/ NRC White Threshold/ Color</th>
<th>Unit 2 Value/ NRC White Threshold/ Color</th>
<th>DCPP Station Goal</th>
<th>Two-Year Trend*</th>
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<tbody>
<tr>
<td>Cornerstone: Initiating Events</td>
<td>0</td>
<td>0.9</td>
<td>0.8</td>
<td></td>
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<tr>
<td>Unplanned scrams (automatic &amp; manual) per 7000 critical hours over previous 4 quarters</td>
<td>3 Green</td>
<td>3 Green</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Unplanned scrams with complications Per previous 12 quarters</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Unplanned power charges per 7000 Critical hours over previous 4 quarters</td>
<td>Green</td>
<td>0.9</td>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Cornerstone: Mitigating Systems**

| Mitigating System Performance Index** – AC Power System (average of previous 12 quarters) | -4.3x10^-7 | 4.7x10^-7 | 0 |
| Mitigating System Performance Index** Safety – High Pressure Safety Injection (average of previous 12 quarters) | -4.4x10^-9 | 3.0x10^-8 | 0 |
| Mitigating System Performance Index** – Heat Removal Systems (average of previous 12 quarters) | -1.0x10^-7 | -1.2x10^-7 | 0 |
| Mitigating System Performance Index** – Residual Heat Removal System (average of previous 12 quarters) | -4.2x10^-8 | -2.7x10^-8 | 0 |
| Mitigating System Performance Index** – Cooling Water System (over the previous 12 quarters) | 3.0x10^-9 | -4.0x10^-8 | 0 |
| Safety System Functional Failures (over the previous 4 quarters) | 5 | 5 | 0 |

**Cornerstone: Barrier Integrity**

| Reactor Coolant System Specific Activity (maximum monthly values % of Technical Specifications) | 0.0% | 0.1% | 0.05% |
| Reactor Coolant System Leak Rate (maximum monthly values – % of Technical Specifications) | 0.9% | 0.5% | 1.28% |

**Cornerstone: Emergency Preparedness**

| Emergency Response Organization (ERO)–Drill/exercise performance – percentage of success/opportunities for classifications, notifications and PARs during drills, exercises, events over the prior 8 quarters | 96.5% | 96.2% |
| ERO Drill Participation (percentage of key ERO personnel that have participated in a drill, exercise, or actual event) | 98.1% | 98.7% |
| Event in the previous 8 quarters | Alert and Notification System Reliability
(percentage of total ANS sirens tested during the previous 4 quarters) | 100.0%
94%
Green | 100.0%
| Cornerstone: Occupational Radiation Safety | Occupational Exposure Control Effectiveness (number of 10CFR20 non-compliances for (1) high and (2) very high radiation area occurrences and (3) unintended exposure occurrences) | 0.0
2
Green | 0 |
| Cornerstone: Public Radiation Safety | Offsite release performance (number of effluent events that are reportable per 10CFR20, 10CFR50 App.1, ODCM, or TS) for previous 4 quarters | 0
1
Green | 0 |
| Cornerstone: Physical Protection | Protected Area Security Equipment Performance Index | (Security information not publicly available.) |
21st Annual Report, Volume 1, Section 4.0, Summary of Major DCISC Review Topics

The DCISC reviews a broad spectrum of topics and issues at DCPP. Detailed reports of these topics are contained in Volume 2, Exhibit B – DCISC Public Meeting Notices, Agendas and Reports and Volume 2, Exhibit D – DCISC reports on Fact-finding meetings. This section contains summaries of these reports along with conclusions and any recommendations.
The DCISC monitors selected performance indicators (PIs) to help measure the safety performance of the Diablo Canyon Power Plant. These PIs are updated for each DCISC public meeting and presented with more detailed supporting information by PG&E and/or are reviewed in DCISC fact-finding meetings. The PIs in the enclosed table represent those presented at the DCISC June 21 & 22, 2011 Public Meetings. The PIs are contained in Figure 5.1.

Figure 5.1 Performance Indicators – Diablo Canyon Power Plant 7/1/10- 6/30/11
21st Annual Report, Volume 1, Exhibit 6.0, DCISC Open Items List

The DCISC Open Items List is a database used to track items for follow-up and monitoring. The List is updated and reviewed at each public meeting. The Open Items List included in Exhibit F in Volume II was used at the DCISC June 21 & 22, 2011 Public Meetings.
The DCISC has made 212 recommendations in its previous 20 Annual Reports. The recommendations, PG&E responses and DCISC dispositions from the previous DCISC reporting period are included in Exhibit H in Volume II, along with references to the location for the basis for each recommendation.

PG&E’s responses to the two DCISC recommendations in the 2009-2010 Annual Report were included in Section 9.0 of that report. At its February 15 & 16, 2011, the DCISC found the responses acceptable.

The PG&E responses to the four recommendations made in the current report are contained in Section 9.0. PG&E’s response will be reviewed during the first public meeting in 2012 and reported on in the meeting minutes and in the next annual report.

The DCISC concludes that the actions taken by PG&E relative to past DCISC recommendations have been satisfactory and have helped to maintain or improve safety and reliability.
The DCISC has welcomed and encouraged input from the public since its inception in 1990. As part of its Public Outreach Program, the Committee has established a number of channels of communication opportunities in an effort to foster public outreach. These are mainly in the form of three public meetings and plant tours per year in the local community. The Committee’s public meetings are webcast in real time, available for subsequent viewing on the web through archived, streaming video, linked to each meeting agenda, and cablecast for subsequent broadcasts on the San Luis Obispo Public Education and Government television channel. The Committee also maintains a toll-free telephone line, a newer and expanded website and e-mail and mailing addresses. The DCISC also issues public notices, press releases and advertisements. Input from the public has been received from many of these channels as described in this section of the report.

8.1 Telephone Calls and E-mails Received by DCISC
8.2 DCISC Internet – Worldwide Web Page Activity
8.3 Comments Received at DCISC public meetings
8.4 DCISC Public Tours of DCPP
8.5 DCISC Evaluation
## July 2010 DCISC
List of Documents Transmitted Electronically

### A. Licensing Basis Impact Evaluations

<table>
<thead>
<tr>
<th>Date</th>
<th>LBIE No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>07/12/10</td>
<td>2010-011</td>
<td>DCP 1000000332, Allow Bypass of P-12 Interloc</td>
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<tr>
<td>07/14/10</td>
<td>2010-012</td>
<td>Physical Security Plan, Rev 3, Change 1</td>
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### B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<thead>
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<th>Date</th>
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<tr>
<td>07/02/10</td>
<td>DCL-10-069</td>
<td>Licensee Event Report 1-2010-002-0; &quot;Potential Loss of Safety-Related Pumps due to Degraded Voltage During Postulated Accidents&quot;</td>
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<tr>
<td>07/02/10</td>
<td>DCL-10-072</td>
<td>Supplement to Response to NRC Request for Additional Information Regarding License Amendment Request 09-06, &quot;Critical Damping Value for Structural Dynamic Qualification of the Control Rod Drive Mechanism Pressure Housings&quot;</td>
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<tr>
<td>07/06/10</td>
<td>DCL-10-068</td>
<td>Support for NRC Review of CS Innovations Advanced Logic System and Lockheed Martin Deterministic Star Safety System Topical Reports</td>
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<td>07/07/10</td>
<td>DCL-10-073</td>
<td>Response to NRC Request for Additional Information for the Diablo Canyon License Renewal Application</td>
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<td>07/09/10</td>
<td>DCL-10-075</td>
<td>Emergency Plan Implementing Procedure Update</td>
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<tr>
<td>07/15/10</td>
<td>DCL-10-076</td>
<td>Response to NRC Letter dated June 29, 2010. Request for Additional Information (Set 6) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>07/16/10</td>
<td>DCL-10-078</td>
<td>Response to NRC Regulatory Issue Summary 2010-08, Preparation and Scheduling of Operator Licensing Examinations</td>
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<td>07/19/10</td>
<td>DCL-10-080</td>
<td>10 CFR 50.46 Annual Report of Emergency Core Cooling System Evaluation Model Changes for 2009</td>
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<tr>
<td>07/19/10</td>
<td>DCL-10-077</td>
<td>Response to NRC Letter dated June 21, 2010, Request for Additional Information (Set 5) for the Diablo Canyon License Renewal Application</td>
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<td>DCL-10-083</td>
<td>Response to NRC Environmental Audit Request for the Applicant's Environmental Report - Operating License Renewal Stage</td>
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<td>07/22/10</td>
<td>DCL-10-085</td>
<td>Commitment Regarding License Amendment Request 09-02, &quot;Revision to Technical Specification 3.4.15, 'RCS Leakage Detection Instrumentation,' Operability Requirements and Actions for RCS Leakage Detection Instrumentation&quot;</td>
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<td>07/28/10</td>
<td>DCL-10-091</td>
<td>Response to NRC Letter dated June 18, 2010, Request for Additional Information (High Energy Piping) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>07/28/10</td>
<td>DCL-10-092</td>
<td>Response to NRC Letter dated July 6, 2010, Request for Additional Information (Set 7) for the Diablo Canyon License Renewal Application</td>
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### C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>06/21/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs-Set 5</td>
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<tr>
<td>06/29/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs-Set 6</td>
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<tr>
<td>07/06/10</td>
<td>Request For Additional Information Related To The Environmental Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC Nos. ME2825 and ME2826)</td>
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<tr>
<td>07/06/10</td>
<td>Response to letter requesting NRC staff halt its review of the DCPP Plant, Units 1 and 2 (DCPP) License Renewal Application Until State-Requested Seismic Studies Have Been Completed.</td>
</tr>
<tr>
<td>07/06/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897)</td>
</tr>
<tr>
<td>07/07/10</td>
<td>Response To The Pacific Gas And Electric Company Request For Diablo Canyon Power Plant Technical Specification Interpretation Of 230 Kilovolt System Operability (TAC NOS. ME3346 and ME3347)</td>
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<tr>
<td>07/08/10</td>
<td>Summary Of Telephone Conference Call Held On June 24, 2010, Between The U.S. NRC and PG&amp;E Concerning Draft RAI Related To The DCPP, Units 1 And 2, License Renewal Application-Aging Management Programs</td>
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<tr>
<td>07/13/10</td>
<td>Diablo Canyon Power Plant, Units 1 And 2 - NRC Security Inspection Report 05000275/2010403 AND 05000323/2010403 – Security Related-Cover Letter Only</td>
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<td>07/14/10</td>
<td>Request for Information Related to the Review of the DCPP LRA - (Set 8) Aging Management Programs-Set 8</td>
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<td>07/15/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC Nos. ME2896 and ME2897) - Scoping And Screening And Aging Management Review- Set 10</td>
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<tr>
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<td>Audit Report Regarding The Diablo Canyon Nuclear Power Plant License Renewal Application Scoping And Screening Methodology (TAC NOS. ME2896 AND ME2897)</td>
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<td>07/19/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs-Set 9</td>
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<tr>
<td>07/20/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Scoping And Screening-Set 13</td>
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<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Reactor Vessel Internals – Set 11</td>
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<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Aging Management Programs And Aging Management Review – Set 12</td>
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C. NRC Incoming Correspondence (Continued)

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<td>Summary of Telephone Conference Call Held on July 8, 2010, Between the U.S. Nuclear Regulatory Commission And Pacific Gas And Electric Company Concerning Draft Request FOR Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Scoping and Screening and Aging Management Review</td>
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<td>07/22/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897)-Aging Management Review and Aging Management Programs</td>
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<td>07/22/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2S96 AND ME2S97) -Aging Management Review and Time Limited Aging Analyses</td>
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<td>07/23/10</td>
<td>Diablo Canyon Power Plant, Unit No.1 -Approval of Request for Relief NDE-RCS-SE-1R16 From Examination Requirements of ASME Code, Section XI, Appendix VIII, Supplement 10, Root Mean Square Error (TAC NO. ME3942)</td>
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D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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<tr>
<td>05/24/10</td>
<td>NRC RIS 2010-05: Applicability of 10CFR21 Requirements to Applicants for Standard Design Certifications</td>
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<td>05/25/10</td>
<td>NRC Regulatory Issue Summary 2010-04 Monitoring The Status Of Regulated Activities During A Pandemic</td>
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<td>05/28/10</td>
<td>NRC Information Notice 2010-10: Implementation Of A Digital Control System Under 10 CFR 50.59</td>
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<tr>
<td>06/01/10</td>
<td>NRC Regulatory Issue Summary 2010-06, Inservice Inspection and Testing Requirements of Dynamic Restraints (Snubbers)</td>
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<td>06/08/10</td>
<td>NRC Regulatory Issue Summary 2010-07, Regulatory Requirements for Application of Weld Overlays and Other Mitigation Techniques in Piping Systems Approved for Leak-Before-Break</td>
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<tr>
<td>06/16/10</td>
<td>NRC Information Notice 2010-11: Potential For Steam Voiding Causing Residual Heat Removal System Inoperability</td>
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<td>06/18/10</td>
<td>NRC Information Notice 2010-12: Containment Liner Corrosion</td>
</tr>
<tr>
<td>06/28/10</td>
<td>NRC Regulatory Issue Summary 2010-08: Preparation and Scheduling of Operator Licensing Examinations</td>
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### E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

<table>
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<th>Date</th>
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<td>PSRC Minutes</td>
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<td>04/21/10</td>
<td>2010-012</td>
<td>DCP 1000000307, Cask Transporter Upgrade (ISFSI); OM7.ID1, Rev. 34 – Problem Identification and Resolution; Inservice Testing Program Plan, Rev. 3, Third The-Year Interval</td>
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<td>06/30/10</td>
<td>2010-021</td>
<td>DCP 1000000332, Allow Bypass of P-12 Interlock; AD7.DC6, On-Line Maintenance Risk Management; LER 1-2010-002-01, Potential Loss of Safety-Related Pumps Due to Degraded voltage During Postulated Accidents</td>
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<td>07/14/10</td>
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<td>Revision to the Physical Security Plan; LAR 09-05, Plant Cyber Security Plan and Revision to the Facility Operating Licenses</td>
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<td>Calc. 9000006525 (N-100); DCPP/ISFSI FSAR; DCP 1000000119; DCP 1000000018; LER 1-2010-001-01; LER 2-2010-002-00; LER 1-2010-003-00</td>
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### F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>TS 3.7.7 Violation - CDBI</td>
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<td>Caustic Spill at U1 Polisher Buttress</td>
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<td>Determine if Coating Used is Authorized</td>
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<td>2010PIR: Missed OP Determination-230kV</td>
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<td>Deficient LER Submitted for PSRC Review</td>
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## G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<td>Schedule</td>
<td>Internal and External Audit Schedule</td>
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<td>Short Form Assessment</td>
<td>Radiation Monitor Emerging Issues</td>
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## H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<td>DCPP Performance Monitoring and STARS Round Robin</td>
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<td>Engineering Outsourcing Design Quality Process Evaluation</td>
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<td>Self Assessments</td>
<td>Controls for High Radiation Areas</td>
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<td>Mid-Cycle Assessment</td>
<td>Final Report</td>
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<td>Benchmarking</td>
<td>DCPP Leadership Academy Initial Benchmarking</td>
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## I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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K. Operational Documents (ODM Minutes, POAs)

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<td>50326418</td>
<td>TCV-2 Oscillations</td>
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<td>50326942</td>
<td>Reconveyance of ODM for Unit 1 TCV-2 Oscillations</td>
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<td>POA</td>
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L. Miscellaneous

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<td>DCPP Site Status Report</td>
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<td>Stop Work Order Memo from Director - QV</td>
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M. Subcommittee Documents

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N. Documents Previously Transmitted during the Month

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<td>06/10/10 – 07/20/10</td>
<td>QV Real Time Report</td>
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### A. Licensing Basis Impact Evaluations

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<td>08/12/10</td>
<td>2010-017</td>
<td>DCP 1000000340, Backup SFP Cooling System</td>
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### B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<thead>
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<tr>
<td>08/02/10</td>
<td>DCL-10-081</td>
<td>Response to NRC Environmental Audit Information Request for the Applicant's Environmental Report - Operating License Renewal Stage</td>
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<tr>
<td>08/02/10</td>
<td>DCL-10-082</td>
<td>Response to NRC Letter dated July 6, 2010, Request for Additional Information for the Applicant's Environmental Report - Operating License Renewal Stage</td>
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<tr>
<td>08/02/10</td>
<td>DCL-10-097</td>
<td>Response to NRC Letter dated July 19, 2010, Request for Additional Information (Set 9) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>08/05/10</td>
<td>DCL-10-086</td>
<td>Licensee Event Report 2-2010-002-00, Diablo Canyon Power Plant Unit 2 SI Test Line Unanalyzed Condition</td>
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<tr>
<td>08/06/10</td>
<td>DCL-10-088</td>
<td>Licensee Event Report 1-2010-003-00, Diablo Canyon Power Plant 230kV Historical Evaluation of Condition Prohibited by Technical Specification</td>
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<tr>
<td>08/09/10</td>
<td>DCL-10-102</td>
<td>Response to NRC Request for Additional Information Regarding License Amendment Request 10-03, &quot;Damping Values for the Seismic Design and Analysis of the Reactor Vessel Integrated Head Assembly&quot;</td>
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<tr>
<td>08/12/10</td>
<td>DCL-10-096</td>
<td>Response to NRC Letter dated July 14, 2010, Request for Additional Information (Set 8) for the Diablo Canyon License Renewal Application</td>
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<td>DCL-10-098</td>
<td>Response to NRC Letter dated July 15, 2010, Request for Additional Information (Set 10) for the Diablo Canyon License Renewal Application</td>
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<td>08/12/10</td>
<td>DCL-10-103</td>
<td>ASME Section XI Inservice Inspection Program Relief Request NDE-RCS-SE-2R16 Use of Alternate Sizing Qualification Criteria Through a Protective Clad Layer - Proprietary Info</td>
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<tr>
<td>08/17/10</td>
<td>DCL-10-100</td>
<td>Response to NRC Letter dated July 20,2010, Request for Additional Information (Set 11) for the Diablo Canyon License Renewal Application</td>
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<td>DCL-10-101</td>
<td>Response to NRC Letter dated July 20, 2010, Request for Additional Information (Set 12) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>08/17/10</td>
<td>DCL-10-104</td>
<td>Response to NRC Letter dated July 20,2010, Request for Additional Information (Set 13) for the Diablo Canyon License Renewal Application</td>
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<td>DCL-10-107</td>
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<td>08/18/10</td>
<td>DCL-10-109</td>
<td>Emergency Plan Implementing Procedure Update</td>
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<tr>
<td>08/18/10</td>
<td>DCL-10-105</td>
<td>Response to NRC Letter dated July 22, 2010, Request for Additional Information (Set 15) for the Diablo Canyon License Renewal Application</td>
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<td>Withdrawal of Superseded Cyber Security License Amendment Requests</td>
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<td>08/25/10</td>
<td>DCL-10-090</td>
<td>Licensee Event Report 1-2010-004-00 - Diablo Canyon Power Plant Pressurizer Level Control During Ramps and Degassing Operations</td>
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<tr>
<td>08/27/10</td>
<td>DCL-10-079</td>
<td>Licensee Event Report 1-2010-001-01 - Common Cause Control Room Ventilation Radiation Detector Failures</td>
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<td>DCL-10-106</td>
<td>Response to NRC Letter dated July 6, 2010, Request for Additional Information for the Applicant's Environmental Report - Operating License Renewal Stage</td>
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<td>08/30/10</td>
<td>DCL-10-113</td>
<td>Response to NRC Letter dated August 3, 2010, Request for Additional Information (Set 16) for the Diablo Canyon License Renewal Application</td>
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#### C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>07/23/10</td>
<td>Diablo Canyon Power Plant - NRC Component Design Bases Inspection Report 05000275/2010007 AND 05000323/2010007</td>
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<tr>
<td>07/30/10</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Issuance of Amendments re: Critical Damping Values FOR Control Rod Drive Mechanism Pressure Housings (TAC NOS. ME2995 and ME2996)</td>
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<tr>
<td>08/03/10</td>
<td>RAI Related to the Review of DCPP License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Review and Aging Management Programs – Set 16</td>
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<tr>
<td>08/09/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) – Scoping and Screening and Aging Management Review</td>
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<tr>
<td>08/25/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) – Metal Fatigue</td>
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<td>08/26/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) - Time Limited Aging Analyses And Aging Management Programs (Set 17)</td>
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<td>08/26/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs</td>
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## D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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## E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>2010-023</td>
<td>Calculation 9000006525 (N100)</td>
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<td>07/30/10</td>
<td>2010-024</td>
<td>LER 1-2010-001-01</td>
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<td>2010-025</td>
<td>DCP 100000340, Backup SFP Cooling System</td>
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<td>2010-026</td>
<td>Calculation 9000006525 (N-100) -- Max. Flow from ECCS</td>
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<td>LER -- Pressurizer Level Control</td>
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<td>1R16 Outage Safety Plan</td>
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<td>MA1.ID14 OTSC -- Turbine Building Crane Operations</td>
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## F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>60025163</td>
<td>2010PIR - EDG load calc frequency</td>
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<td>CDBI - MOV Prog Errors and H.1.bCDBI - MOV Prog Errors and H.1.b</td>
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<td>H.1.b - Nonconservative Assumptions</td>
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<td>LTA LBIE for OP B-1A:X</td>
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<td>ACE</td>
<td>60027183</td>
<td>NRC Violation LBIE Screen -FLUR comp ms</td>
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<td>CDBI Violation: FSAR Feedline Ref.</td>
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<td>60027188</td>
<td>2010 CDBI: MWTP supply configuration</td>
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<td>60027326</td>
<td>TS SR 3.3.4.2 missed surveillance</td>
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<td>60027363</td>
<td>SLUR SSER9 not in FSAR</td>
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<td>OP F-1-III add P&amp;L</td>
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<td>60027425</td>
<td>QDEF-Sec Sups entering incorrect turnover</td>
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<td>60027560</td>
<td>NRC Non Cited Violation - Tact Course</td>
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<td>08/03/10</td>
<td>Short Form</td>
<td>Use of the Corrective Action Program During the 2010 Mid-Cycle Self Assessment</td>
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### H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<td>Self Assessment</td>
<td>On-Line Chemistry Data Management And Retrieval Capabilities Self-Assessment</td>
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<td>07/05/10</td>
<td>Self Assessment</td>
<td>Oversight / Command and Control Self-Assessment</td>
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<td>Mid-Cycle Assessment</td>
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<td>Refueling Outage Milestones Benchmark</td>
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<td>Plant Milestones</td>
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<td>FLOC (in SAP) - Self-Assessment Quick Hit (FLOC SAQH)</td>
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<td>Pre-NRC Triennial Heat Sink Inspection</td>
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<td>QHSA</td>
<td>Procedure and Document Services Procedure Upgrade Project Readiness for 2011</td>
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<td>OJT/TPE Quick Hit Self-Assessment</td>
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August 2010 DCISC
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I. Performance Information (PPIR, Operating Plan, Station Initiatives) Continued

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<tr>
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<td>Response to INPO Letter on Recent Industry Events</td>
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<td>Electrical Safety</td>
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<td>Engineering Evaluation Rigor Improvement</td>
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J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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K. Operational Documents (ODM Minutes, POAs)

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L. Miscellaneous

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<td>PG&amp;E @ Work – DCPP Edition</td>
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M. Subcommittee Documents

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N. Documents Previously Transmitted during the Month

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<td>QV Real Time Report</td>
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### A. Licensing Basis Impact Evaluations

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<td>2010-013</td>
<td>Revision of Calculation 90000006525 (N-100), Maximum Flow from ECCS</td>
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<td>2010-019</td>
<td>Pressurizer Level Increase in Modes 3, 4, and 5 FSARU</td>
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### B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<td>09/07/10</td>
<td>DCL-10-116</td>
<td>Response to NRC Letter dated August 9, 2010, Request for Additional Information (Set 18) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>09/07/10</td>
<td>DCL-10-117</td>
<td>Information to Support NRC Review of DCPP License Renewal Application (LRA)</td>
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<tr>
<td>08/19/10</td>
<td>DCL-10-111</td>
<td>Alert and Notification Design Report</td>
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<tr>
<td>08/19/10</td>
<td>DCL-10-112</td>
<td>Alert and Notification Design Report Failure Modes and Effects Analysis</td>
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<td>09/24/10</td>
<td>DCL-10-120</td>
<td>Response to NRC Letter dated August 26, 2010, Request for Additional Information (Set 17) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>09/22/10</td>
<td>DCL-10-121</td>
<td>Response to NRC Letter dated August 25, 2010, Request for Additional Information (Set 19) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>09/22/10</td>
<td>DCL-10-122</td>
<td>Response to NRC Letter dated August 26, 2010, Request for Additional Information (Set 20) for the Diablo Canyon License Renewal Application and LRA Errata</td>
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<tr>
<td>09/24/10</td>
<td>DCL-10-115</td>
<td>Licensee Event Report 1-2010-002-02, Potential Loss of Safety Related Pumps due to Degraded Voltage During Postulated Accidents</td>
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<tr>
<td>09/29/10</td>
<td>DCL-10-123</td>
<td>Response to NRC Letter dated August 30, 2010, Request for Additional Information (Set 21) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>09/29/10</td>
<td>DCL-10-125</td>
<td>Notification Letter Designating Diablo Canyon Balance of Plant Systems within the Cyber Security Rule Scope</td>
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<tr>
<td>09/30/10</td>
<td>DCL-10-126</td>
<td>Response to NRC Letter dated September 1, 2010, Request for Additional Information (Set 22) for the Diablo Canyon License Renewal Application</td>
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#### C. NRC Incoming Correspondence (including Inspection Reports)

<table>
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<tr>
<td>07/22/10</td>
<td>Summary of Telephone Conference Call Held on July 1, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application-Aging Management Programs</td>
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<tr>
<td>08/04/10</td>
<td>NRC Information Notice 2010-14: Containment Concrete Surface Condition Examination Frequency and Acceptance Criteria</td>
</tr>
<tr>
<td>08/10/10</td>
<td>Diablo Canyon Power Plant - NRC Integrated Inspection Report 05000275/2010003 AND 05000323/2010003</td>
</tr>
<tr>
<td>08/11/10</td>
<td>Audit Report Regarding The Diablo Canyon Nuclear Power Plant License Renewal Application (TAC NOS. ME2896 AND ME2897)</td>
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<tr>
<td>08/13/10</td>
<td>Summary of Telephone Conference Call Held on August 3, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Scoping and screening and Aging Management Review</td>
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<tr>
<td>08/13/10</td>
<td>Safety Project Manager Change for the License Renewal Project for DCPP (TAC Nos. ME2896 and ME2897)</td>
</tr>
<tr>
<td>08/13/10</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Project Manager Assignment</td>
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<tr>
<td>08/25/10</td>
<td>Diablo Canyon Power Plant, Unit nos. 1 and 2 - Withdrawal of an Amendment Request (TAC NOS. ME2667 and ME2668)</td>
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<tr>
<td>08/27/10</td>
<td>Summary of Telephone Conference Call Held On August 17, 2010, Between the U.S. Nuclear Regulatory Commission And Pacific Gas And Electric Company Concerning Draft Request For Additional Information Related To The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application -Metal Fatigue</td>
</tr>
<tr>
<td>08/27/10</td>
<td>Acceptance Review for Diablo Canyon License Amendment Request For Cyber Security Plan (ME4290 and ME4291)</td>
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<tr>
<td>08/30/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) -Aging Management Review and Time-Limited Aging Analyses (Set 21)</td>
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<tr>
<td>09/01/10</td>
<td>Request For Additional Information Related To The Review Of The Diablo Canyon Nuclear Power Plant, Units 1 And 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) -Aging Management Programs (Set 22)</td>
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A-14
C. NRC Incoming Correspondence (including Inspection Reports) cont'd

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<td>09/01/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs (Set 22 Clarification on Responses)</td>
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<td>09/01/10</td>
<td>Mid-Cycle Performance Review And Inspection Plan – Diablo Canyon Power Plant</td>
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<td>Mid-Cycle Security Performance Review And Inspection Plan – Diablo Canyon Power Plant (Security Related)</td>
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<td>09/01/10</td>
<td>Diablo Canyon Power Plant Unit 1 – Notification of Inspection (NRC Integrated Inspection Report 05000275/2010005) and Request for Information</td>
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<tr>
<td>09/09/10</td>
<td>Diablo Canyon Power Plant - NRC Problem Identification and Resolution Inspection Report 05000275/2010006 AND 05000323/2010006</td>
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<td>09/15/10</td>
<td>Summary of Telephone Conference Call Held On August 12, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<td>09/15/10</td>
<td>Summary of Telephone Conference Call Held On August 18, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<td>09/17/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) - Scoping and Screening (Set 26)</td>
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<td>09/17/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) - Aging Management Programs (Set 24)</td>
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<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) - Time Limited Aging Analyses (Set 25)</td>
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D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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<td>NRC Information Notice 2010-13: Failure to Ensure that Post-Fire Shutdown Procedures can be Performed</td>
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### E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>Ten Percent Steam Dump Valve Revitalization</td>
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### F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>60027710</td>
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<td>60027942</td>
<td>NRC PI: RCS Leakage U2 Exceeds Threshold</td>
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<td>BEACON neutron model inconsistencies</td>
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### G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assesments)

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<td>QV Status Report</td>
<td>DCPP Site Status Report</td>
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### H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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### I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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<td>09/03/10</td>
<td>Action Plan</td>
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<td>Action Plan</td>
<td>Electrical Safety – Operating Supply</td>
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<td>09/15/10</td>
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<td>Engineering Evaluation Rigor Improvement</td>
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<td>09/17/10</td>
<td>Action Plan</td>
<td>Integrated Security Action Plan</td>
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### J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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<td>INPO PI Assist Report</td>
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### K. Operational Documents (ODM Minutes, POAs)

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<td>50307598</td>
<td>LTCA 2010PIR DG Lic Bases load exceeded</td>
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<td>50340417</td>
<td>DG Nonconformance with RG 1.9 Rev. 0</td>
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### L. Miscellaneous

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### M. Subcommittee Documents

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<tr>
<td>08/25/10 – 09/28/10</td>
<td>QV Real Time Report</td>
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## A. Licensing Basis Impact Evaluations

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<th>LBIE No.</th>
<th>Title</th>
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<tbody>
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<td>Integrated Head Assembly (IHA)</td>
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<td>2010-015</td>
<td>CFCU Anti-reverse Rotation Device</td>
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<td>10/15/10</td>
<td>2010-016</td>
<td>CFCU Anti-Reverse Rotation Device</td>
</tr>
<tr>
<td>10/09/10</td>
<td>2010-020</td>
<td>No Longer Credit Use of Creek Water</td>
</tr>
<tr>
<td>10/01/10</td>
<td>2010-019</td>
<td>Pressurizer Level Increase in Modes 3, 4, &amp; 5</td>
</tr>
<tr>
<td>10/23/10</td>
<td>2010-023</td>
<td>FSARU 15.4.3 Steam Generator Tube Rupture Revised Analysis for Margin to Overfill</td>
</tr>
<tr>
<td>10/30/10</td>
<td>2010-024</td>
<td>Replace RCDT Hatch Covers with Grating</td>
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</table>

## B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<thead>
<tr>
<th>Date</th>
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<tr>
<td>10/12/10</td>
<td>DCL-10-128</td>
<td>Response to NRC Letter dated September 13, 2010, Request for Additional Information (Set 23) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/12/10</td>
<td>DCL-10-130</td>
<td>Response to NRC Letter dated September 17, 2010, Request for Additional Information (Set 24) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/12/10</td>
<td>DCL-10-132</td>
<td>Response to NRC Letter dated September 17, 2010, Request for Additional Information (Set 26) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/13/10</td>
<td>DCL-10-127</td>
<td>Material Status Report for the Period Ending August 31, 2010</td>
</tr>
<tr>
<td>10/21/10</td>
<td>DCL-10-139</td>
<td>Diablo Canyon Units 1 and 2 - 3Q2010 - PI Data Elements (QR) and (CR)</td>
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<tr>
<td>10/21/10</td>
<td>DCL-10-131</td>
<td>Response to NRC Letter dated September 23, 2010, Request for Additional Information (Set 25) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/25/10</td>
<td>DCL-10-141</td>
<td>Revision to the Unit 1 Reactor Vessel Material Surveillance</td>
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### Program Withdrawal Schedule

<table>
<thead>
<tr>
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<tr>
<td>10/27/10</td>
<td>DCL-10-124</td>
<td>Information to Support NRC Review of DCPP License Renewal Application (LRA) Environmental Report – Operating License Renewal Stage</td>
</tr>
<tr>
<td>10/27/10</td>
<td>DCL-10-135</td>
<td>Response to NRC Letter dated September 30, 2010, Request for Additional Information (Set 28) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/27/10</td>
<td>DCL-10-138</td>
<td>Response to NRC Letter dated September 29, 2010, Request for Additional Information (Set 27) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>10/28/10</td>
<td>DCL-10-042</td>
<td>Emergency Plan Implementing Procedure Update</td>
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### C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>09/30/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) - Fire Protection (Set 28)</td>
</tr>
<tr>
<td>09/13/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 AND ME2897) - scoping and screening (Set 22)</td>
</tr>
<tr>
<td>09/22/10</td>
<td>Summary of Telephone Conference Call Held on August 5, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (Set 2)</td>
</tr>
<tr>
<td>09/27/10</td>
<td>Meeting Summary for the Licensing Basis Verification Project Public Meeting on September 22, 2010 for DCPP</td>
</tr>
<tr>
<td>09/28/10</td>
<td>Summary of telephone conference call held on September 2, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and</td>
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<tr>
<td>Date</td>
<td>Description</td>
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<tr>
<td>09/29/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897) – Aging Management Review (Set 27)</td>
</tr>
<tr>
<td>09/29/10</td>
<td>Summary of Telephone Conference Call Held on August 31, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (Sets 2 and 13)</td>
</tr>
<tr>
<td>09/29/10</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Issuance of Amendments Re: Revision to Final Safety Analysis Report Update Section 3.7.1.3, &quot;Critical Damping Values&quot; (TAC NOS. ME4056 and ME4057)</td>
</tr>
<tr>
<td>10/08/10</td>
<td>Request for Withholding Information From Public Disclosure for Diablo Canyon Power Plant, Unit Nos. 1 and 2 (TAC Nos. ME4094 and ME 4095)</td>
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<tr>
<td>10/15/10</td>
<td>Summary of Telephone Conference Call Held on September 16, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application - Time Limited Aging Analysis</td>
</tr>
<tr>
<td>10/15/10</td>
<td>Summary of Telephone Conference Call held on September 22, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application – Aging Management Programs</td>
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<tr>
<td>10/15/10</td>
<td>Summary of Telephone Conference Call Held on September 27, 2010, between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning the Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application - Aging Management Review</td>
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<td>Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<td>10/20/10</td>
<td>Request for Withholding Information from Public Disclosure for Diablo Canyon Power Plant, Unit Nos. 1 AND 2 (TAC Nos. ME4094 and ME4095)</td>
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<td>10/25/10</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Project Manager Assignment</td>
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<td>10/25/10</td>
<td>Request for Withholding Information from Public Disclosure for Diablo Canyon Power Plant, Unit No.2 (TAC No. ME4577)</td>
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<tr>
<td>10/29/10</td>
<td>Diablo Canyon Power Plant, Unit No.1 - Approval OF Proposed Reactor Vessel Material Surveillance Program Withdrawal Schedule (TAC No. ME4924)</td>
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D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters,
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Regulatory Issue Summaries, Administrative Letters)

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E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>Minutes</td>
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<td>10/05/10</td>
<td>2010-010</td>
<td>Inservice Testing Program Plan, Rev. 3; OIM7.ID1, Rev. 33</td>
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<td>09/29/10</td>
<td>2010-033</td>
<td>LBIE 2010-019</td>
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<td>10/13/10</td>
<td>2010-032</td>
<td>Pressurizer Level Increase in Modes 3, 4 and 5</td>
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<td>10/18/10</td>
<td>2010-034</td>
<td>IHA DCP U1 (and U2 document change only)</td>
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<td>10/18/10</td>
<td>2010-035</td>
<td>Discontinue Use of Diablo Creek Water</td>
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<td>10/20/10</td>
<td>2010-036</td>
<td>POA Update for Unit 1 Cycle 17 Core Reload</td>
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<td>10/23/10</td>
<td>2010-037</td>
<td>FSARU 15.4.3 SGTR MTO Analysis</td>
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<td>10/26/10</td>
<td>2010-038</td>
<td>Reactor Vessel Head Plenum Heavy Load Lift</td>
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<td>10/28/10</td>
<td>2010-039</td>
<td>RFR Subjects</td>
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<td>10/30/10</td>
<td>2010-040</td>
<td>U1 Replace RCDT Hatch Covers</td>
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F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>RCAs</td>
<td>60027841</td>
<td>Security Issue – Protected Area Boundary</td>
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<tr>
<td>ACE</td>
<td>60026984</td>
<td>QAAF: Fire doors OOT (STP M-70C) (ACE)</td>
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<td>60027840</td>
<td>Security Issue – Exercise Performance</td>
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<td>60027842</td>
<td>Security Issue – System Performance</td>
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<td>60028062</td>
<td>Jul 2010 Training S/A Negative Comment 5</td>
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<td>60028064</td>
<td>Jul 2010 Training S/A Negative Comment 6</td>
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<td>Jul 2010 Training S/A Negative Comment 3</td>
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<td>60028092</td>
<td>Adverse Trend: CALFIRE Delays in PA Accs</td>
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<td></td>
<td>60028165</td>
<td>QAAF-Personnel inaccurate rpt of TO</td>
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<td>60028268</td>
<td>QDEF-Procedure non-compliance SP 420</td>
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<td>60028366</td>
<td>QAAF-SGI not marked as required</td>
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<td>60028433</td>
<td>Fuel placed in wrong SFP location</td>
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<td></td>
<td>60028490</td>
<td>Loss of charging flow during CCP swap</td>
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<td>60028570</td>
<td>Intake Top Deck Conduit Damaged</td>
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<td>60028758</td>
<td>Sim Guide development/revision issues</td>
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<td>60028759</td>
<td>QDEF-PI data entry without qual</td>
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<td>60028809</td>
<td>Security Testing Not Completed on Time</td>
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<td>60028888</td>
<td>QAAF – Insider Mitigation Findings</td>
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<td></td>
<td>60028928</td>
<td>HT ACE: NCV: CAs Not Prompt, DG</td>
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<tr>
<th>Doc. No.</th>
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<tbody>
<tr>
<td>60029015</td>
<td>QDEF-Defense Strategy Matrix inaccurate</td>
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<tr>
<td>60029685</td>
<td>Temperature below PTLR requirement</td>
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If none, then state, "No Evals for this month"

### G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc. No.</th>
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<tbody>
<tr>
<td>10/27/10</td>
<td>103010045</td>
<td>Short Form Assessment Peer Review Station Activities 1R16</td>
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<tr>
<td>10/19/10</td>
<td>102840006</td>
<td>Short Form Assessment Follow-up for Unresolved Issue from 2nd Period 2010 QPAR</td>
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### H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<tr>
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<td></td>
<td>&quot;Quick Hit Self-Assessment (QHSA) Schedule&quot;</td>
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<tr>
<td></td>
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<td>Formal Benchmarking and Self-Assessments Schedule</td>
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</table>

### I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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<tr>
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<tbody>
<tr>
<td>10/07/10</td>
<td>Action Plan</td>
<td>Problem Evaluation Thoroughness Action Plan</td>
</tr>
<tr>
<td>10/30/10</td>
<td>Action Plan</td>
<td>Performance Improvement Focus Area Action Plan</td>
</tr>
<tr>
<td>11/03/10</td>
<td>Action Plan</td>
<td>Operations Revitalization Plan</td>
</tr>
<tr>
<td>10/12/10</td>
<td>Action Plan</td>
<td>Engineering Evaluation Rigor Improvement Action Plan</td>
</tr>
<tr>
<td>10/06/10</td>
<td>Action Plan</td>
<td>Response to INPO Letter on Recent Industry Events</td>
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<tr>
<td>10/05/10</td>
<td>Action Plan</td>
<td>Increase Employee Concerns visibility and promote as an alternate resolution path</td>
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</tbody>
</table>

### J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

<table>
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<td>Please see PPIR for INPO Performance Indicator Table</td>
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### K. Operational Documents (ODM Minutes, POAs)

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<tr>
<th>ODMs</th>
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<tbody>
<tr>
<td>50358276</td>
<td>U-2 High Swell Warning 11-2-10</td>
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<tr>
<td>50353699</td>
<td>U-2 Condenser dp</td>
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<tr>
<td>POA</td>
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<tr>
<td>50340070</td>
<td>U-1 Increased RCS Leakage by R-10C</td>
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<tr>
<td>50328013</td>
<td>IFW: Node Communication failure alarms</td>
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<tr>
<td>50351839</td>
<td>RMI not found in Bio-wall penetrat</td>
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<tr>
<td>50352240</td>
<td>Unit Two DMIMS loss of power</td>
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<tr>
<td>50354652</td>
<td>U2 TMS Train B Failure</td>
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<td>50301767</td>
<td>CETC TT54 spiking causing SCMM alarms</td>
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<td>50313348</td>
<td>Leakby on FCV-2-924-Polisher Vessel 2-2</td>
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<tr>
<td>50297191</td>
<td>U-2 PK 0508 RCS Vlv Stem Lkage Alarm</td>
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<tr>
<td>50312260</td>
<td>Bus 22D/E ground in &amp; out</td>
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<tr>
<td>50348358</td>
<td>Battery 2-1 Ground Indicated</td>
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<tr>
<td>50352578</td>
<td>Unit 2 – Rods stepped in 3 and ½ steps</td>
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<tr>
<td>50350918</td>
<td>Unit 2 – Insulation in Bio-wall penetrate</td>
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<tr>
<td>50355265</td>
<td>Post Loca recirculation Flow</td>
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L. Miscellaneous

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M. Subcommittee Documents

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<td>09/27/10</td>
<td>T-1 Critique</td>
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<td>09/29/10 – 11/03/10</td>
<td>QV Real Time Report . . .</td>
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A. Licensing Basis Impact Evaluations

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<tr>
<td>11/17/10</td>
<td>LBIE 2010-025</td>
<td>Auxiliary building Control Board Replacement -Phase 4B</td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<tr>
<td>11/16/10</td>
<td>DCL-10-143</td>
<td>Core Operating Limits Report for Unit 1 Cycle 17</td>
</tr>
<tr>
<td>11/24/10</td>
<td>DCL-10-146</td>
<td>Response to Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<td>11/24/10</td>
<td>DCL-10-147</td>
<td>Response to Draft Requests for Additional Information (Sets 31 &amp; 33) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>11/24/10</td>
<td>DCL-10-148</td>
<td>Response to NRC Letter dated November 03, 2010, Request for Additional Information (Set 29) for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>11/24/10</td>
<td>DCL-10-149</td>
<td>Response to NRC Request for Additional Information Regarding the 180-Day Steam Generator Report for Diablo Canyon Nuclear Power Plant Unit 2 Fifteenth Refueling Outage</td>
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<tr>
<td>11/24/10</td>
<td>DCL-10-151</td>
<td>Response to Telephone Conference Call Held on November 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>11/30/10</td>
<td>DCL-10-152</td>
<td>Update to Notification Letter Designating Balance of Plant Systems within the Cyber Security Rule Scope</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>11/01/10</td>
<td>Diablo Canyon Power Plant - NRC Integrated Inspection Report 05000275/20100004 AND 05000323/20100004</td>
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<tr>
<td>11/02/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Time Limited Aging Analysis – (Set 30)</td>
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<td>11/03/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897) – Aging Management Programs (Set 29)</td>
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<td>Electric Company Concerning Requests for Additional Information</td>
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<td>License Renewal Application - Scoping and Screening</td>
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<tr>
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<td>Summary of Telephone Conference Call Held on October 14, 2010,</td>
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<td>Electric Company Concerning Request for Additional Information</td>
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<td>License Renewal Application Time-Limited Aging Analyses</td>
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**D. NRC Generic Correspondence** (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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**E. NSOC/PSRC Documents** (NSOC Minutes, NSOC Responses, PSRC Minutes)

<table>
<thead>
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<th>Date</th>
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<td>10/31/10</td>
<td>2010-041</td>
<td>RFR Follow-up Items</td>
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<td>11/02/10</td>
<td>2010-042</td>
<td>Insulation in Bio-Shield Wall Penetrations (Mode 4 RFR)</td>
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<td>11/03/10</td>
<td>2010-043</td>
<td>RFR Binder (Mode 4 to 3)</td>
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<td>2010-044</td>
<td>Results of Walkdown of Modification for Flowpath to Sump. Results of</td>
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<td>the 1R16 Testing Program</td>
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<td>11/07/10</td>
<td>2010-045</td>
<td>Results of Walkdown of Modification for Flowpath to Sump. Results of</td>
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<td>the 1R16 Testing Program - Follow-up. Heater 2 Drip Tank Movement.</td>
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<td>RFR Program</td>
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<td>11/17/10</td>
<td>2010-046</td>
<td>DCP 1*321, LBIE 2010-025: Aux Building Control Board Replacement</td>
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<td>- Phase 4B</td>
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**F. CAP Documents** (RCAs, ACEs, CAP Effectiveness Evaluations)

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<tr>
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<td>ACE</td>
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<td>HT ACE: NRC Violation LBIE Screen – FLUR</td>
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<td>60028694</td>
<td>RCP 1-4 Cause Analysis Determination</td>
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<td>60029016</td>
<td>Evaluate Adherence to PSP – Watch Tours</td>
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<td>60029082</td>
<td>Scissor Lift Tipping Event in Cavity</td>
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<td>60029083</td>
<td>RRVCH Documentation not RMS Unit 2</td>
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<td></td>
<td>60029136</td>
<td>Perform an Equipment ACE</td>
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### November 2010 NSOC/DCISC
List of Documents Transmitted Electronically

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<tr>
<td>60029165</td>
<td>Avila Main Gates</td>
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<td>60029240</td>
<td>Adverse Trend for Sec FMR Waivers</td>
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<tr>
<td>60029352</td>
<td>QDEF-Unqualed Point of Origin Search</td>
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<tr>
<td>60029396</td>
<td>QAAF-Sec Procedures Inadequate</td>
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<tr>
<td>60029684</td>
<td>Fire Barrier Seal Removed without Auth.</td>
</tr>
<tr>
<td>60029920</td>
<td>3Q10 Insp – Risk Assessment TS 3.3.4</td>
</tr>
<tr>
<td>60029921</td>
<td>3Q10 NRC Exit – Door 223</td>
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<tr>
<td>Eff. Eval</td>
<td>EFF EVAL FOR N0002150, “Power Cable to CCW Pump 2-3 Shorted to Ground”</td>
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#### G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<td>103220024</td>
<td>Checklist for Evaluation of Third-Party Audits of FFD Programs – Quest Diagnostics</td>
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<td>11/09/10</td>
<td>102840006</td>
<td>Short Form Assessment: Follow-up for Unresolved Issue from 2(^{nd}) Period 2010 QPAR</td>
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<td>10/30/10</td>
<td>Schedule</td>
<td>Diablo Canyon Power Plant Internal &amp; External Audit Schedule</td>
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#### H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<td>Self Assessment</td>
<td>2010 Check Valve Program Self Assessment</td>
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<td>07/15/10</td>
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<td>Foreign Material Exclusion Program Self Assessment</td>
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<td>10/13/10</td>
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<td>Self Assessment of Shift Manager and Shift Technical Advisor Training Programs</td>
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<td>07/26/10</td>
<td></td>
<td>Human Performance Self Assessment</td>
</tr>
<tr>
<td>08/16/10</td>
<td></td>
<td>Technical and Maintenance Training Self Assessment Objectives 1-6</td>
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<tr>
<td>04/21/10</td>
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<td>DCPP Component Design Basis Inspection</td>
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<tr>
<td>05/11/10</td>
<td>Benchmarking</td>
<td>Strategic Projects Benchmarking</td>
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<td>Byron Benchmarking – Station Leadership Review of CAP Products</td>
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### November 2010 NSOC/DCISC
#### List of Documents Transmitted Electronically

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<td>DCPP Engineering Programs Quick Hit</td>
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<td>2010 SISI Program</td>
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<td>09/20/10</td>
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<td>Security Material Equipment Condition Action Plan Progress</td>
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<td>UFSAR Fidelity and Change Control</td>
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<td>Engineering Program for the Civil Maintenance Rule</td>
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### I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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<tr>
<td>11/08/10</td>
<td>Action Plan</td>
<td>Cost Performance Action Plan</td>
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<td>11/16/10</td>
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<td>2010 Electrical Safety Action Plan</td>
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<td>11/19/10</td>
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<td>Operational Focus</td>
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<tr>
<td>11/28/10</td>
<td></td>
<td>Engineering Evaluation Rigor Improvement Action Plan</td>
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<tr>
<td>11/29/10</td>
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<td>2009 Premier Survey</td>
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<td>12/01/10</td>
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<td>2010 Problem Evaluation Thoroughness Action Plan</td>
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<td>12/02/10</td>
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<td>2010-2011 Operating Plan Performance Improvement Focus Area Integrated Action Plan</td>
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<td>12/07/10</td>
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<td>Large Power Transformer Reliability</td>
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### J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

<table>
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<th>Doc. No.</th>
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### K. Operational Documents (ODM Minutes, POAs)

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<tr>
<td>ODMs</td>
<td>50361403</td>
<td>U-2 Control Rod Issue</td>
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<td>50361780</td>
<td>U-2 Control Rod Issue</td>
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<tr>
<td>POA</td>
<td>50032999</td>
<td>RCP 2-3 #1 seal leak-off spiking</td>
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<tr>
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<td>50033830</td>
<td>CETC TT20 irratic indications</td>
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<td>50034595</td>
<td>U2 PK11-22 and PK11-15 RM alarms</td>
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<td>50035560</td>
<td>LTCA: AIR DRYER 0-1 panel redesign req'd</td>
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<td>50245278</td>
<td>U-1 Calorimetric Pwr Oscilation</td>
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<td>50266116</td>
<td>LTCA Calculation N-114 non conservative</td>
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<td>50282379</td>
<td>CETC TT38 spiking high</td>
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<td>50301167</td>
<td>LTCA CDBI: Unanalyzed Condition 230 kV</td>
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<td>50319489</td>
<td>GE Fans require 2 operators to start</td>
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<td>50359646</td>
<td>Replace RCS-1-8076 &amp; restore TS-67 relay</td>
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### List of Documents Transmitted Electronically

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<td>50360369</td>
<td>Cel 82 is spiking</td>
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<td>50361190</td>
<td>TT-17 spiking high</td>
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<td>50361857</td>
<td>DEG21 annunciators lit and won't clear</td>
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<td>50361919</td>
<td>Monitoring not in effect – U2 Pol. Roof</td>
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<tr>
<td>50362589</td>
<td>DEG21 LOW STARTING AIR PRES ALARM</td>
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<tr>
<td>50363088</td>
<td>Ground on 21D</td>
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<td>50363094</td>
<td>MSR 1-2 C Hp Drain Tank LCV 152</td>
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<td>50363380</td>
<td>PRT pressure rise (4.5 psig in 2 hours)</td>
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### L. Miscellaneous

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<tr>
<td>11/16/10</td>
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<td>2010 Professional Assessment and Consultation, Inc. Audit</td>
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<td>102770004</td>
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<td>11/30/10</td>
<td>DCL-10-153</td>
<td>Diablo Canyon Units 1 and 2 Annual Review of the Emergency Action Levels</td>
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<td>11/30/10</td>
<td>DCL-10-154</td>
<td>Diablo Canyon Units 1 and 2 Annual Review of the Emergency Action Levels</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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### M. Subcommittee Documents

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<tr>
<td>Maintenance</td>
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<td>T-1 Critique</td>
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<td>T-1 Critique</td>
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<td>11/18/10</td>
<td>T-1 Critique</td>
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<td>11/24/10</td>
<td>T-1 Critique</td>
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<td>12/01/10</td>
<td>T-1 Critique</td>
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<td>Date</td>
<td>Title</td>
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<tr>
<td>11/03/10 – 12/01/10</td>
<td>QV Real Time Report</td>
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# December 2010 NSOC
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### A. Licensing Basis Impact Evaluations

<table>
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<tr>
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### B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<tr>
<td>12/06/10</td>
<td>DCL-10-150</td>
<td>Response to NRC Letter dated November 24, 2010, Request for Additional Information for the Applicant's Environmental Report – Operating Renewal Stage</td>
</tr>
<tr>
<td>12/06/10</td>
<td>DCL-10-155</td>
<td>Response to NRC Letter dated November 2, 2010, Request for Additional Information (Set 30) for the Diablo Canyon License Renewal Application</td>
</tr>
<tr>
<td>12/21/10</td>
<td>DCL-10-157</td>
<td>Snubber Visual Examination and Functional Testing Related to the Inservice Inspection Program Third 10-Year Interval</td>
</tr>
<tr>
<td>12/29/10</td>
<td>DCL-10-158</td>
<td>10 CFR 54.21 (b) Annual Update to the DCPP License Renewal Application and License Renewal Application Amendment No. 34</td>
</tr>
<tr>
<td>12/08/10</td>
<td>DCL-10-159</td>
<td>Emergency Plan Implementing Procedure Update</td>
</tr>
<tr>
<td>12/13/10</td>
<td>DCL-10-160</td>
<td>Response to Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>12/13/10</td>
<td>DCL-10-162</td>
<td>Response to NRC Draft Request for Additional Information (Draft Set 34), dated November 10, 2010, for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>12/13/10</td>
<td>DCL-10-163</td>
<td>Response to Telephone Conference Call Held on November 18, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>12/13/10</td>
<td>DCL-10-164</td>
<td>Response to NRC Draft Request for Additional Information (Draft Set 35), dated November 29, 2010, for the Diablo Canyon License Renewal Application</td>
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<tr>
<td>12/26/10</td>
<td>DCL-10-171</td>
<td>Notification of Unusual Event, December 25, 2010</td>
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<tr>
<td>12/31/10</td>
<td>DCL-10-172</td>
<td>Delay of Submittal – PG&amp;E Shoreline Fault Zone Final Report</td>
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**December 2010 NSOC**  
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### C. NRC Incoming Correspondence (including Inspection Reports)

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<tbody>
<tr>
<td>11/17/10</td>
<td>Diablo Canyon Power Plant - NRC license renewal inspection Report 05000275/20100008 and 05000323/2010008</td>
</tr>
<tr>
<td>11/24/10</td>
<td>Request for Additional Information Related to the Environmental Review of the Diablo canyon nuclear power plant. Units 1 and 2, License Renewal Application: Sama Clarifications (TAC Nos. ME2825 and ME2826)</td>
</tr>
<tr>
<td>12/01/10</td>
<td>Summary of Telephone Conference Call Held on November 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company, Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897)</td>
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<tr>
<td>12/08/10</td>
<td>Summary of Telephone Conference Call Held on November 10, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company, Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897)</td>
</tr>
<tr>
<td>12/20/10</td>
<td>Request for Additional Information Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897)-Time Limited Aging Analyses – Set 37</td>
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### D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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### E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>NONE</td>
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<tr>
<td>PSRC Minutes</td>
<td>2010-047</td>
<td>DDP 1<em>171 and DDP 1</em>367 U2 SI Test Header Project and U2 SI Travel Stop Project</td>
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### F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<thead>
<tr>
<th>Type</th>
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<td>60017741</td>
<td>Feedwater Heater 1-6A High Level</td>
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December 2010 NSOC
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<tr>
<td>60020961</td>
<td>NRC Violation 2009 3rd Q: FSAR Update</td>
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<td>60025684</td>
<td>Task performed w/o proper Qualification</td>
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<td>60027187</td>
<td>CDBI Violation: FSAR Feedline Ref.</td>
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<td>60028064</td>
<td>Jul 2010 Training S/A Negative Comment 6</td>
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<tr>
<td>60028933</td>
<td>U1 CST Code Break Valves</td>
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<td>60029436</td>
<td>12kv D&amp;E bus bar insul. Found cracked</td>
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<td>60029681</td>
<td>Possible Rigging Adverse Trend</td>
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<td>60029838</td>
<td>3Q10 NRC Exit – Operability Evaluations</td>
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<tr>
<td>60029920</td>
<td>3Q10 Insp – Risk Assessment TS 3.3.4</td>
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<td>60030163</td>
<td>1R16 FME Perf &amp; Monitoring Weak</td>
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<td>60030886</td>
<td>Clearance Reported Off Early</td>
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<td>60030938</td>
<td>QAAF-Inadequat imp of Sec Training Prog</td>
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<td>60030939</td>
<td>FCV-146, Steam Leak at Actuator Housing</td>
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G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<thead>
<tr>
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<th>Doc. Type</th>
<th>Title</th>
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<tr>
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<td>QPAR</td>
<td>Quality Performance Assessment Report (QPAR), Third Period 2010</td>
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<tr>
<td>12/20/10</td>
<td>Audit Report</td>
<td>2010 Security Program Audit</td>
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No new Schedule for this month
No Short Form Assessments for this month

H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<thead>
<tr>
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<th>Doc. Type</th>
<th>Title</th>
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<tbody>
<tr>
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<td>Benchmarking</td>
<td>NRC Regional Utility Group Region IV Meeting</td>
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<td>08/21/10</td>
<td>Security</td>
<td>Security Morale Benchmark Trip, South Texas Project</td>
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<tr>
<td>05/27/10</td>
<td>Benchmarking</td>
<td>Benchmark for Iron Transport: Feed Water Dispersant</td>
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<tr>
<td>12/15/10</td>
<td>QHSA</td>
<td>Chemistry Laboratory Reagent and Standard Inventory Practices</td>
</tr>
<tr>
<td>12/21/10</td>
<td>Design</td>
<td>Design Criteria Memoranda Quick Hit Self-Assessment</td>
</tr>
<tr>
<td>01/03/11</td>
<td>BM Schedule</td>
<td>Benchmarking 2010 Schedule</td>
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<tr>
<td>01/03/11</td>
<td>SA Schedule</td>
<td>Self-Assessment 2010 Schedule</td>
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### I. Performance Information (PPIR, Operating Plan, Station Initiatives)
<table>
<thead>
<tr>
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<th>Doc. No.</th>
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<tr>
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<td>November PPIR . . .</td>
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<td>No updated Station Initiatives . .</td>
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### J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
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<td>Please see PPIR for INPO Performance Indicator Table</td>
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### K. Operational Documents (ODM Minutes, POAs)
<table>
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<tr>
<th>Date</th>
<th>Doc. No.</th>
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<tbody>
<tr>
<td>ODMs</td>
<td>50361780</td>
<td>U-2 Unexpected Inward Rod Motion</td>
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<td></td>
<td>50365066</td>
<td>U-1 Megawatt Step Change</td>
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<tr>
<td>POA</td>
<td>50368801</td>
<td>Rev 1: EDG Load Reject SR Non-conserv</td>
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### L. Miscellaneous
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<thead>
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<th>Date</th>
<th>Doc. No.</th>
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<tr>
<td>12/16/10</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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### M. Subcommittee Documents

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<tr>
<th>Subcommittee</th>
<th>Date/Doc</th>
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<tr>
<td>Maintenance</td>
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<td>T+1 Critique</td>
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<td>12/16/10</td>
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### N. Documents Previously Transmitted during the Month
<table>
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<th>Date</th>
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<tbody>
<tr>
<td>12/01/10 – 01/04/11</td>
<td>QV Real Time Report</td>
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A. Licensing Basis Impact Evaluations

<table>
<thead>
<tr>
<th>Date</th>
<th>LBIE No.</th>
<th>Title</th>
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<tbody>
<tr>
<td></td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Letter No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>01/05/11</td>
<td>DCL-11-004</td>
<td>License Event Report 1-2011-001-00: Mode Transition With Turbine-Driven Auxiliary Pump 1-1</td>
</tr>
<tr>
<td>01/07/11</td>
<td>DCL-10-166</td>
<td>Response to Telephone Conference Call Held on December 8, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>01/07/11</td>
<td>DCL-10-168</td>
<td>Response to NRC Letter dated December 20, 2010, Request for Additional Information (Set 37) for the Diablo Canyon License Renewal Application</td>
</tr>
<tr>
<td>01/07/11</td>
<td>DCL-11-006</td>
<td>Response to Telephone Conference Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>01/07/11</td>
<td>DCL-11-005</td>
<td>Report on the Analysis of the Shoreline Fault Zone, Central Coastal California</td>
</tr>
<tr>
<td>01/12/11</td>
<td>DCL-10-167</td>
<td>Response to NRC Letter dated December 20, 2010, Request for Additional Information (Set 36) for the Diablo Canyon License Renewal Application</td>
</tr>
<tr>
<td>01/12/11</td>
<td>DCL-11-001</td>
<td>Response to Telephone Conference Call Held on December 14, 2010, Between U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>01/21/11</td>
<td>DCL-11-002</td>
<td>Response to Telephone Conference Call Held on December 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>01/25/11</td>
<td>DCL-11-012</td>
<td>Change in Status for Senior Reactor Operator License</td>
</tr>
<tr>
<td>01/28/11</td>
<td>DCL-11-009</td>
<td>Emergency Response Data System Transition from Existing Modem to Virtual Private Network Technology</td>
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<thead>
<tr>
<th>Date</th>
<th>Doc. No.</th>
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<tr>
<td>01/31/11</td>
<td>DIL-11-001</td>
<td>License Amendment Request 11-001: Revision to Technical Specifications 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of Technical Specifications 2.3 and 3.1.4; and Request for an Exemption from the Requirements of 10 CFR 72.236(f)</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>01/05/11</td>
<td>Summary of December 9, 2010, Pre-Licensing Meeting with Pacific Gas and Electric Company on Plans to Submit a License Amendment to Incorporate Management of New Geotechnical Seismic Information into its Design and Licensing Basis (TAC NOS. ME5033 and ME5034)</td>
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<tr>
<td>01/05/11</td>
<td>Generic Fundamentals Section of the Written Operator Licensing Examination</td>
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<tr>
<td>01/10/11</td>
<td>Diablo Canyon Power Plant Cyber Security Plan (ME4290 and ME4291)</td>
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<tr>
<td>01/10/11</td>
<td>Summary of Telephone Conference Call Held on December 1, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Draft Request for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)</td>
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<tr>
<td>01/10/11</td>
<td>Summary of Telephone Conference Call Held on December 8, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)</td>
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<tr>
<td>01/10/11</td>
<td>Safety Evaluation Report with Open Items Related to the License Renewal of Diablo Canyon Nuclear Power Plant Units 1 and 2</td>
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<tr>
<td>01/13/11</td>
<td>Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (TAC NOS. ME5033 and ME5034)</td>
</tr>
<tr>
<td>01/14/11</td>
<td>Diablo Canyon, Units 1 and 2, Notification of NRC Initial Operator Licensing Examination 05000275/2011301; 05000323/2011301</td>
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<tr>
<td>01/18/11</td>
<td>1/27/11 Public Meeting to Discuss the Region IV License Renewal Inspection Results</td>
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D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<th>Minutes</th>
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<tr>
<td>12/15/10</td>
<td>2010-048</td>
<td>OM7.ID1, Problem Identification and Resolution</td>
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<tr>
<td>01/05/11</td>
<td>2011-001</td>
<td>LER 2011-1-0, Mode Transition with Turbine-Driven Auxiliary Feedwater Pump 1-1 Inoperable</td>
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<tr>
<td>01/12/11</td>
<td>2011-002</td>
<td>RAI Regarding Scoping &amp; Screening, E-Plan Section 7 Rev 4 Change 7</td>
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#### F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<thead>
<tr>
<th>Type</th>
<th>Doc. No.</th>
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<tbody>
<tr>
<td>RCAs</td>
<td>60031440</td>
<td>TRNG Assessment Challenge Board results</td>
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<tr>
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<td>60031440</td>
<td>TRNG Assessment Challenge Board results (approved by CARB)</td>
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<tr>
<td>ACE</td>
<td>60028006</td>
<td>Security – Green NCV</td>
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<td></td>
<td>60028092</td>
<td>Adverse Trend: CALFIRE Delays in PA Accs</td>
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<td></td>
<td>60031122</td>
<td>Evaluate AFW pump as left data</td>
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<td>60031122a</td>
<td>Evaluate AFW pump as left data (Re-perform a HT ACE)</td>
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<td>60031194</td>
<td>QAAF – Problems removed from CAP</td>
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<td>60031763</td>
<td>4Q NRC Inspection – Violation on OM8.ID4</td>
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<td>Eff. Eval</td>
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#### G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<td></td>
<td></td>
<td>No new Schedule for this month</td>
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<tr>
<td>01/31/11</td>
<td>103190005</td>
<td>Short Form Assessment – Licensing Basis Verification Project, Phase 1</td>
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#### H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<thead>
<tr>
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<th>Doc. No.</th>
<th>Title</th>
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<tr>
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<td>No updated Quick Hit Self-Assessment (QHSA) Schedule</td>
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<tr>
<td>01/13/11</td>
<td>103500025</td>
<td>QA Self Assessment – Quality Verification</td>
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<td></td>
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<td>No QHSA for this month</td>
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</table>
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**I. Performance Information** (PPIR, Operating Plan, Station Initiatives)

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc. No.</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>PPIR</td>
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<td>January PPIR will be in next transmittal</td>
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<tr>
<td>Station Initiative</td>
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**J. INPO Documents** (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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<th>Title</th>
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<tbody>
<tr>
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<td>Please see PPIR for INPO Performance Indicator Table</td>
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**K. Operational Documents** (ODM Minutes, POAs)

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc. No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>ODMs</td>
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<td>Unit 2, #2 Htr Drain Pump</td>
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<tr>
<td>POA</td>
<td>50370698</td>
<td>ABVS M-4A/B Single Failure Vulnerability</td>
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**L. Miscellaneous**

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<tr>
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<th>Title</th>
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<tbody>
<tr>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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<tr>
<td>01/19/11</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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<td>01/27/11</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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<tr>
<td>01/20/11</td>
<td>110200109</td>
<td>Timeliness of 10CFR50.54(t) Assessment of Emergency Preparedness</td>
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**M. Subcommittee Documents**

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<thead>
<tr>
<th>Subcommittee</th>
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<tbody>
<tr>
<td>Maintenance</td>
<td>201052</td>
<td>T-1 Critique</td>
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<td>Maintenance</td>
<td>201101</td>
<td>T-1 Critique</td>
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**N. Documents Previously Transmitted during the Month**

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<tr>
<td>01/04/11 – 01/25/11</td>
<td>QV Real Time Report</td>
</tr>
<tr>
<td>01/25/11</td>
<td>DCPP Site Status Report - January</td>
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List of Documents Transmitted Electronically

### A. Licensing Basis Impact Evaluations

<table>
<thead>
<tr>
<th>Date</th>
<th>LBIE No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>02/01/11</td>
<td>2011-002</td>
<td>Fire Protection Program Change – Alt Comp Measure</td>
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<tr>
<td>02/18/11</td>
<td>2011-003</td>
<td>BBRE Guard Towers #s 1-6</td>
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### B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Letter No.</th>
<th>Title</th>
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<tr>
<td>02/01/11</td>
<td>DCL-11-003</td>
<td>Response to Telephone Conference Call Held on December 14, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>02/08/11</td>
<td>DCL-11-014</td>
<td>Response to Request for Additional Information E-mail dated January 10, 2011, from the U.S. Nuclear Regulatory Commission (ME4290 and ME4291) Concerning the Diablo Canyon Power Plant, Units 1 and 2, Cyber Security Plan License Amendment Request 09-05</td>
</tr>
<tr>
<td>02/11/11</td>
<td>DCL-11-013</td>
<td>Inservice Inspection Report for Unit 1 Sixteenth Refueling Outage</td>
</tr>
<tr>
<td>02/11/11</td>
<td>DCL-11-007</td>
<td>Licensee Event Report 1-2010-003-01, Supplement to Diablo Canyon Power Plant 230 kV Historical Evaluation of Condition Prohibited by Technical Specification</td>
</tr>
<tr>
<td>02/17/11</td>
<td>DCL-11-018</td>
<td>License Amendment Request 11-02 – Revision to Technical Specification 3.7.1, “Main Steam Safety Valves (MSSVs)”</td>
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### C. NRC Incoming Correspondence (including Inspection Reports)

<table>
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<th>Date</th>
<th>Title</th>
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<tbody>
<tr>
<td>01/10/11</td>
<td>Diablo Canyon Power Plant, Units 1 and 2 – NRC Emergency Preparedness Annual Inspection Report 05000275/2010501 and 05000323/2010501</td>
</tr>
<tr>
<td>01/11/11</td>
<td>Summary of Telephone Conference Call Held on November 18, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)</td>
</tr>
<tr>
<td>01/11/11</td>
<td>Summary of Telephone Conference Call Held on December 9, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information</td>
</tr>
<tr>
<td>Date</td>
<td>Description</td>
</tr>
<tr>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>01/19/11</td>
<td>Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC NOS. ME2896 and ME2897)</td>
</tr>
<tr>
<td>01/20/11</td>
<td>Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (TAC NOS. ME5284 and ME5285)</td>
</tr>
<tr>
<td>01/21/11</td>
<td>Summary of Meeting with Pacific Gas and Electric Company Regarding the Results of the Shoreline Fault Zone Seismic Report</td>
</tr>
<tr>
<td>01/24/11</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Issuance of Amendments Re: Revision to Technical Specification 3.4.15. “RCS Leakage Detection Instrumentation” (TAC No. ME1644 and ME1645)</td>
</tr>
<tr>
<td>01/25/11</td>
<td>Summary of Telephone Conference Call Held on December 16, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)</td>
</tr>
<tr>
<td>01/25/11</td>
<td>Summary of Telephone Conference Call Held on December 22, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)</td>
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<tr>
<td>01/26/11</td>
<td>Forthcoming Meeting With Industry and Licensee Representatives Re: Transition of Non-Pilot Licensees to National Fire Protection Association Standard 605</td>
</tr>
<tr>
<td>01/26/11</td>
<td>Forthcoming Meeting with Representatives of Pacific Gas and Electric Company (PG&amp;E) (TAC NOS. ME5352 and ME5353)</td>
</tr>
<tr>
<td>02/07/11</td>
<td>Summary of Telephone Conference Call Held on December 14, 2010, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Response Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)</td>
</tr>
<tr>
<td>02/07/11</td>
<td>Diablo Canyon Power Plant – NRC Integrated Inspection Report 05000275/2010005 and 05000323/2010005</td>
</tr>
<tr>
<td>02/07/11</td>
<td>Summary of Telephone Conference Call Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Numbers ME2896 and ME2897)</td>
</tr>
<tr>
<td>02/14/11</td>
<td>Summary of Telephone Conference Call Held on January 19, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Open Items Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, Safety Evaluation Report (TAC Numbers ME2896 and ME2897)</td>
</tr>
<tr>
<td>02/16/11</td>
<td>Summary of the Public Meeting to Discuss the Results of the Diablo</td>
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<tr>
<th>Date</th>
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<td>02/23/11</td>
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<td>Summary of January 26, 2011, Pre-Licensing Meeting with Pacific Gas and Electric Company on Responses to the U.S. Nuclear Regulatory Commission Staff's Questions From the Previous Public Meeting on December 9, 2010 (TAC NOS. ME503 and ME5034)</td>
</tr>
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</table>

D. NRC Generic Correspondence (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc. No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>01/31/11</td>
<td>IN 2011-02</td>
<td>Operator Performance Issues Involving Reactivity Management at Nuclear Power Plants</td>
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</table>

E. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<th>Date</th>
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<td>NSOC</td>
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<td>PSRC</td>
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<td>01/26/11</td>
<td>2011-003</td>
<td>DIL 11-xxx (LAR 11-xxx), Revision to TS 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of TS 2.3 and 3.1.4; and Exemption from the requirements of 10 CFR 72.236(f)</td>
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<td>02/01/11</td>
<td>2011-004</td>
<td>OM8.ID4, Fire Protection Program Change, Alternate Compensatory Measure Fire Areas 10-76 and 20-76</td>
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<td>02/09/11</td>
<td>2011-005</td>
<td>LER 1-2010-003-01, &quot;Supplement to DCPP 23kV Historical Evaluation of Condition Prohibited by TS:&quot; LAR 11-02, Revision to TS 3.7.1, &quot;Main Steam Safety Valves (MSSVs),&quot; OP2.ID2, &quot;Tagging Requirements&quot;</td>
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<tr>
<td>02/18/11</td>
<td>2011-006</td>
<td>DCP 1000000403, Rev. 0, LBIE 2011-003 Installation of six new Bullet and Blast Resistant Enclosure (BBRE) guard towers at various locations inside the plants protected are to enhance plant's security system.</td>
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<tr>
<td>02/23/11</td>
<td>2011-007</td>
<td>- PHIP# 2009-S018-004, Transition to NFPA 805 License Basis; Request PSRC permission to establish a PSRC subcommittee for review of NFPA 805 LAR documentation. - OP2.ID2, Tagging Requirements - OM7.ID1, Problem Identification and Resolution</td>
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### F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>60027845</td>
<td>HT ACENRC Violation: inadequate 50.59 DG</td>
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<td>60028005</td>
<td>BEACON neutron model inconsistencies</td>
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<td>60028092</td>
<td>Adverse Trend: CALFIRE Delays in PA Accs</td>
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<td>60028433</td>
<td>Fuel placed in wrong SFP location (Operation 31)</td>
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<td>Fuel placed in wrong SFP location (Operation 32)</td>
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<td>60028490</td>
<td>Loss of charging flow during CCP swap (Operation 31)</td>
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<td>QDEF-Unqualed point of origin search (Operation 31)</td>
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<td>3Q10 NRC Exit – ASW Code Break Valve</td>
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<td>QAAF-Inadequate imp of Sec Training Prog</td>
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<td>Evaluate AFW pump as left data</td>
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<td>60031124</td>
<td>QAAF – Problems removed from CAP</td>
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<td>60031425</td>
<td>Eval. Design options for CFCU circuit</td>
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<td>60031441</td>
<td>Poor 1R16 Schedule Discipline</td>
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<td>60032500</td>
<td>U2 ABVS DAMPER M-4A FAILED ON SWAP</td>
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<td>60032771</td>
<td>U 1 SR 3.0.3 ENTRY FOR MISSED SR 3.3.1.4</td>
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### G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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February 2011 NSOC
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<td>100330019</td>
<td>Audit of 1R16 Design Changes</td>
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<td>02/23/11</td>
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<td>Audit Schedule Diablo Canyon and Humboldt Bay Power Plants Internal &amp; External Audit February 23, 2011</td>
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<td>01/26/11</td>
<td>110380042</td>
<td>Short Form Assessment – HBPP Multi Agency Radiological Site Survey and Investigation Manual (MARSSIM) Characterization Survey Planning and Execution: Characterization Survey of the Liquid Fuel Oil Storage Tank Footprint Survey Number HBPP-CHAR-OOL10-01-01</td>
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<td>02/22/11</td>
<td>110550005</td>
<td>Short Form Assessment – HBPP Multi Agency Radiological Site Survey and Investigation Manual (MARSSIM) Characterization Survey Planning and Execution: Characterization Survey of the Liquid Fuel Oil Storage Tank Footprint Survey Number HBPP-CHAR-OOL10-01-02</td>
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<td>DCPP Site Status Report</td>
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H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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<td>PPIR</td>
<td>02/14/11</td>
<td>Plant Performance Improvement Report</td>
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<td>03/17/11</td>
<td>Plant Performance Improvement Report</td>
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<td>Station Initiative</td>
<td>02/28/11</td>
<td>95002 Inspection Readiness Action Plan</td>
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<td>02/25/11</td>
<td>Evaluation Thoroughness Action Plan</td>
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<td>02/25/11</td>
<td>Electric Power Reliability Initiative Action Plan</td>
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<td>02/28/11</td>
<td>Employee Industrial Safety Initiative, 2011 – 2015 Nuclear Generation Operating Plan</td>
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<td>02/22/11</td>
<td>Site Modernization Initiative Action Plan</td>
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<td>03/16/11</td>
<td>2010-2011 Operating Plan, Performance Improvement Focus Area Integrated Action Plan</td>
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<td>01/31/11</td>
<td>Operational Focus</td>
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J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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<th>Date</th>
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K. Operational Documents (ODM Minutes, POAs)

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<td>Operational Decision Making Report, RCP 1-3 No 2 Seal Leakage</td>
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<td>Operational Decision Making Report, PRT Pressure Rise (4.5 psig in 2 hrs)</td>
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<td>Operational Decision Making Report, SFP Hx 2-1 CCW Leak</td>
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<td>POA</td>
<td>50290655</td>
<td>LTCA: Wyle Test Set-up Error</td>
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<td>50373996</td>
<td>CCW Surge Tank RV Backpressure</td>
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<td>EDG Fuel Oil Day Tank min volume not met</td>
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L. Miscellaneous

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<td>PG&amp;E @ Work – DCPP Edition</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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<td>02/01/11</td>
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<td>PG&amp;E @ Work – Bulletin</td>
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M. Subcommittee Documents

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<tr>
<td>01/26/11-3/2/11</td>
<td>QV Real Time Report</td>
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A. Licensing Basis Impact Evaluations

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<td>2011-004</td>
<td>Revision 4 of the Physical Security Plan</td>
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<td>03/09/11</td>
<td>2010-014</td>
<td>Changes to the DCPP UFSAR and ISFSI UFSAR</td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<tr>
<td>03/04/11</td>
<td>DCL-11-015</td>
<td>Emergency Plan Implementing Procedure Update</td>
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<tr>
<td>03/14/11</td>
<td>DCL-11-022</td>
<td>Pacific Gas and Electric Company Supplements a Response to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>03/17/11</td>
<td>DCL-11-034</td>
<td>Pacific Gas and Electric Company’s Response to Document Request List for NRC 95002 Inspection – Sections A and B</td>
</tr>
<tr>
<td>03/18/11</td>
<td>DCL-11-032-Public</td>
<td>Request for Exemption from Specific 10 CFR Part 73 Requirements</td>
</tr>
<tr>
<td>03/23/11</td>
<td>DIL-11-002</td>
<td>Annual Radioactive Effluent Release Report for 2010</td>
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<td>03/25/11</td>
<td>DCL-11-020</td>
<td>10 CFR 54.21(b) Update to the DCPP License Renewal Application</td>
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<tr>
<td>03/25/11</td>
<td>DCL-11-023</td>
<td>Response to Summary of Telephone Conference Call Held on February 28, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information for the Diablo Canyon License Renewal Application</td>
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<td>03/25/11</td>
<td>DCL-11-036</td>
<td>Update Regarding the Intake Structure and Discharge Conduits Inspections</td>
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<tr>
<td>03/25/11</td>
<td>DCL-11-037</td>
<td>Response to Telephone Conference Calls Held on February 2 and 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Responses to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<td>License Amendment Request 11-03, Revision to Technical Specification 3.8.1, &quot;AC Sources – Operating&quot; for Traveler TSTF-163, Revision 2, and Exception to Regulatory Guide 1.9, Revision 0</td>
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<td>03/31/11</td>
<td>DCL-11-039</td>
<td>Decommissioning Funding Report for Diablo Canyon Power Plant Units 1 and 2</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>02/16/11</td>
<td>Diablo Canyon Power Plant – Notification of Inspection (NRC Inspection Report 05000275/2011004; 05000323/2011004) and Request for Information</td>
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<tr>
<td>02/17/11</td>
<td>Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>03/04/11</td>
<td>Summary of February 3, 2011, Third Pre-licensing, Phase 0 Meeting with Pacific Gas and Electric Company to Discuss the Architecture for the Digital Upgrade Replacement of the Eagle 21 Process Protection System (TAC Nos. ME5284 and ME5285)</td>
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<tr>
<td>03/04/11</td>
<td>Annual Assessment Letter for Diablo Canyon Power Plant Units 1 and 2 (Report 05000275/2011001 and 05000323/2011001)</td>
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<tr>
<td>03/17/11</td>
<td>Summary of Telephone Conference Calls Held on February 2 and 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application (TAC Nos. ME2896 and ME2897)</td>
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<td>03/23/11</td>
<td>Forthcoming Meeting with Pacific Gas and Electric Company</td>
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<td>03/29/11</td>
<td>Diablo Canyon Power Plant, Unit No. 2 – Approval of Request for Relief NDE-RCS-SE-2R16 From Examination Requirements of ASME Code, Section XI, Appendix VIII, Supplement 10, Root Mean Square Error (TAC No. ME4577)</td>
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<td>2011-009</td>
<td>- FSAR Change – Various Sections: LBIE 2011-014; LER 1-2011-002-00; Diablo Canyon Power Plant Units 1 and 2 Auxiliary Building Ventilation System Single Failure Vulnerability and Loss of Unit 2 Auxiliary Building Ventilation</td>
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<td>03/10/11</td>
<td>2011-010</td>
<td>LER 1-2011-002-00; Diablo Canyon Power Plant Units 1 and 2 Auxiliary Building Ventilation System Single Failure Vulnerability and Loss of Unit 2 Auxiliary Building Ventilation</td>
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<td>- E-Plan, Section 7 – Facilities and Equipment</td>
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<td>- 2R16 Outage Safety Plan and Schedule</td>
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<td>- LAR, Rev. to TS 3.8.1</td>
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<td>2011-012</td>
<td>- OP1.DC1, Administrative Program to Control the Return to Power After a Reactor Trip – Review</td>
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<td>- OP1.DC1, Administrative Program to Control the Return to Power After a Reactor Trip – Review; Unit 2 Restart</td>
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F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>60027560</td>
<td>NRC Non Cited Violation – Tact Course</td>
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<td>Security Issue – System Performance</td>
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<td>Intake Top Deck Conduit Damaged</td>
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<td>Security Testing Not Completed on Time</td>
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<td>QAAF – Insider Mitigation Findings</td>
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<td>QAAF-Sec Procedures Inadequate</td>
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<td>QAAF-Inadequate imp of Sec Training Prog (032)</td>
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<td>QAAF-Inadequate imp of Sec Training Prog (033)</td>
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<td>QDEF-Station Key Gap – FME</td>
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<td>Eval. design options for CFCU circuit</td>
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<td>LTA POA – 4Q10 NCV</td>
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<td>U 1 SR 3.0.3 ENTRY FOR MISSED SR 3.3.1.4</td>
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<td>60033060</td>
<td>Increased leakage during installation</td>
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<td>Deletion of Testing for Lighting</td>
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<td>4Q10 NCV: Insulation in bioshield</td>
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<td>4Q10 NCV: Blocked flowpath, shield plug</td>
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<td>60033305</td>
<td>QAAF – QA prog req's not met in SA's (030)</td>
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<td>QAAF – QA prog req's not met in SA's (031)</td>
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<td>Adverse trend—Non compliance OM6.ID12</td>
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<td>60033678</td>
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<td>60033679</td>
<td>NRC Violation: Test Control STP M-15</td>
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<td>60033689</td>
<td>DG 2-1 Fuel Leak</td>
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G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<td>03/17/11</td>
<td>110330004</td>
<td>STARS Plant Aging Management Center of Business Corrective Action Program Assessment</td>
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<td>03/31/11</td>
<td>110900014</td>
<td>Assessment of the ABVS Single Failure Vulnerability Emerging Issue</td>
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H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<td>11/30/10</td>
<td>SA Report 50313420</td>
<td>Fire Probabilistic Risk Assessment</td>
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<td>02/18/11</td>
<td>SA Report 50308550</td>
<td>Oversight of Supplemental Personnel</td>
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<td>03/28/11</td>
<td>SA Report 50308550</td>
<td>NEI 08-07 – Security Performance Objectives and Criteria</td>
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<td>08/17/10</td>
<td>BM Report 50314929</td>
<td>Benchmarking Report for System Engineering Managers Meeting</td>
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<td>BM Report 50314929</td>
<td>Benchmark Report – Work Planning: Work Package Quality</td>
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<td>01/03/11</td>
<td>BM 50368245</td>
<td>VC Summer Quick Hit Benchmark</td>
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<td>BM DA50356602 &amp; DN 50370396</td>
<td>INPO Benchmark Visit – Performance Improvement</td>
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<tr>
<td>02/23/11</td>
<td>BM 50383163</td>
<td>Benchmarking Report Project Management Working Group Meeting</td>
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<td>QHSA 50355603</td>
<td>Diablo Canyon Security Procedure Quality</td>
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<td>QHSA 50367137</td>
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<td>ASMP SAQH 50375314</td>
<td>Project Management Office Quick Hit Self Assessment</td>
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I. Performance Information (PPIR, Operating Plan, Station Initiatives)

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<td>Operating Plan</td>
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<td>2011 – 2015 Nuclear Generation Operating Plan, Rev. 1</td>
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<td>Station Initiative</td>
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<td>Performance Improvement – Operating Plan</td>
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<td>4/7/11</td>
<td>95002 Inspection Readiness Action Plan</td>
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<td>3/31/11</td>
<td>SOER 10-2 Recommendation 1.b, Communication of Station Priorities, SAPN # 50327321</td>
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J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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K. Operational Documents (ODM Minutes, POAs)

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<td>RCP 1-3 No 2 Seal Leakage (Follow-up ODM)</td>
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<td>3/9/11</td>
<td>U-1 FCV-179 Failed to mid-position</td>
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<td>3/17/11</td>
<td>U-1 PRT Pressure Rise (Follow-up ODM)</td>
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<td>LTCA SR 3.8.1.3/3.8.1.14 Non Conform</td>
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L. Miscellaneous

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<td>DCL-11-031</td>
<td>Unusual Event at the Diablo Canyon Power Plant</td>
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<td>PG&amp;E @ Work – DCPP Edition</td>
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M. Subcommittee Documents

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N. Documents Previously Transmitted during the Month

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<td>3/3/11 - 4/6/11</td>
<td>QV Real Time Report</td>
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A. Licensing Basis Impact Evaluations

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<td>2011-005</td>
<td>Replace RCDT Hatch Covers with Grating</td>
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<tr>
<td>04/28/11</td>
<td>2011-006</td>
<td>230 kV System Dual Unit Trip Licensing Change</td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<tr>
<td>04/01/11</td>
<td>DCL-11-028</td>
<td>2011 Annual Statement of Insurance for Pacific Gas and</td>
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<td>HBL-11-007</td>
<td>Electric Company's Diablo Canyon Power Plant and Humboldt Bay Power</td>
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<td>04/10/11</td>
<td>DCL-11-047</td>
<td>Request for Deferral of Issuance of Diablo Canyon Power Plant Renewed</td>
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<td>Operating Licenses</td>
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<tr>
<td>04/13/11</td>
<td>DCL-11-045</td>
<td>Request for Exemption from Specific 10 CFR Part 73 Requirements</td>
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<td>04/21/11</td>
<td>DCL-11-055</td>
<td>Supplement to License Amendment Request 11-02, Revision to Technical</td>
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<td>Specification 3.7.1, “Main Steam Safety Valves (MSSVs)”</td>
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<td>04/21/11</td>
<td>DCL-11-053</td>
<td>One Hundred Eighty-Day Steam Generator Report for Diablo Canyon Power</td>
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<td>Plant Unit 1 Sixteenth Refueling Outage</td>
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<td>04/28/11</td>
<td>DCL-11-050</td>
<td>2010 Annual Radiological Environmental Operating Report</td>
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<td>DCL-11-051</td>
<td>2010 Annual Nonradiological Environmental Operating Report</td>
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<td>04/28/11</td>
<td>DCL-11-052</td>
<td>Licensee Event Report 1-2011-003-00, Deviation From License</td>
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<td>Condition for Physical Protection Due to Tsunami Event</td>
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<td>DCL-11-056</td>
<td>Pacific Gas and Electric Company's Response to Schedule a NRC Focused</td>
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<td>Problem Identification and Resolution Inspection re: Cross-cutting</td>
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<td>Theme in Problem Evaluation</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

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<td>02/18/11</td>
<td>Summary of Telephone Conference Call Held on January 25, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and</td>
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<tr>
<td></td>
<td>Electric Company Concerning Item Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, Safety Evaluation Report (TAC NOs. ME2896</td>
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<td>and ME2897)</td>
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<td>04/05/11</td>
<td>Diablo Canyon Power Plant, Unit No. 2 - Evaluation Regarding the 2009 Steam Generator Tube Inspections (TAC No. ME3995)</td>
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<td>04/11/11</td>
<td>Summary of Telephone Conference Calls Held on February 28 and March 17, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific</td>
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<td>Gas and Electric Company Concerning Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and</td>
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<td>2, License</td>
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<td>04/12/11</td>
<td>Summary of Telephone Conference Call Held on January 4, 2011, Between the U.S. Nuclear Regulatory Commission and Pacific Gas and Electric Company Regarding the Severe Accident Mitigation Analysis for the Proposed License Renewal of Diablo Canyon Nuclear Power Plant Units 1 and 2</td>
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D. **NRC Generic Correspondence** (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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E. **NSOC/PSRC Documents** (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>PSRC Minutes</td>
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<tr>
<td>04/20/11</td>
<td>2011-014</td>
<td>LER 1-2011-003-00; Deviation From License Condition for Physical Protection Due to Tsunami Event</td>
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<td>2011-014</td>
<td>DCP 1000000453 and 1000000397; Replace RCDT Concrete Hatch Covers with Grating</td>
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<tr>
<td>04/28/11</td>
<td>2011-015</td>
<td>DCP 1000000470; 230 kV System Dual Unit Trip Licensing Change</td>
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<td>2011-015</td>
<td>SAPO 60024240; FLUR Load Shed Relay Setpoint Change</td>
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F. **CAP Documents** (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>Security Issue – System Performance</td>
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<td>ACE</td>
<td>60029083</td>
<td>RRVCH Documentation not RMS Unit 2</td>
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<td>60032191</td>
<td>Non-conservative SR 3.8.1.10</td>
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<td>60033290</td>
<td>U2 SFP Pump found tripped.</td>
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<td>60033679</td>
<td>NRC Violation: Test Control STP M-15</td>
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<td>60033723</td>
<td>QAAF – Training PD’s and APs</td>
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<td>60033724</td>
<td>QAAF – Inadequate CA follow-up</td>
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<td>60033905</td>
<td>QAAF – No Mech Maint ERO position 24/7 (-030)</td>
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<td>60033905</td>
<td>QAAF – No Mech Maint ERO position 24/7 (-031)</td>
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<td>60033985</td>
<td>Error Identified in U2 SNM Move Sheet</td>
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<td>Security Green NCV – SGI</td>
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<td>60034655</td>
<td>NRC 1Q11 Insp-12kV Bus Rm Fire Barrier</td>
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<td>QPAR</td>
<td>QPAR – First Period 2011 – November 12, 2010 to March 31, 2011</td>
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<tr>
<td>03/31/11</td>
<td>Audit Report</td>
<td>2011 Training and Qualification Program Audit</td>
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<td>04/04/11</td>
<td>110900014</td>
<td>Short Form Assessment – Assessment of the ABVS Single Failure Vulnerability Emerging Issue</td>
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<td>04/15/11</td>
<td>111240014</td>
<td>ISFSI Upgrade Equipment Inspection QV Short Form Assessment</td>
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<td>04/12/11</td>
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<td>DCPP Site Status Report</td>
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<td>Confined Space Quick-Hit Self-Assessment</td>
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<td>Plant Performance Improvement Report</td>
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<td>4/12/11</td>
<td>Evaluation Thoroughness Action Plan</td>
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<td>Fire Protection Action Plan</td>
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<td>4/18/11</td>
<td>Employee Industrial Safety Initiative 2011-2015 Nuclear Generation Operating Plan</td>
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<td>DCPP Nuclear Safety Culture Improvement Plan</td>
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<td>2010-2011 Performance Improvement Initiative Integrated Action Plan</td>
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J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)

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<tr>
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K. Operational Documents (ODM Minutes, POAs)

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<td>Vessel 2-4 Unisolable</td>
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<td>5/6/11</td>
<td>U-1 Megawatt Step change follow-up ODM</td>
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<td>POA</td>
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L. Miscellaneous

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M. Subcommittee Documents

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N. Documents Previously Transmitted during the Month

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<td>04/07/11 – 05/09/11</td>
<td>QV Real Time Report . . . . .</td>
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A. Licensing Basis Impact Evaluations

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<tr>
<th>Date</th>
<th>LBIE No.</th>
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<tr>
<td>05/05/11</td>
<td>2011-007</td>
<td>FLUR Load Shed Relay Setpoint Change</td>
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<td>05/18/11</td>
<td>2011-008</td>
<td>Unit 2 Cycle 17 Reload</td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<thead>
<tr>
<th>Date</th>
<th>Letter No.</th>
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<tr>
<td>05/10/11</td>
<td>DCL-11-060</td>
<td>Licensee Event Report 1-2011-003-01, Deviation From License Condition For Physical Protection Due to Tsunami Event</td>
</tr>
<tr>
<td>05/13/11</td>
<td>DCL-11-061</td>
<td>Emergency Plan Implementing Procedure Update</td>
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<td>05/25/11</td>
<td>DCL-11-063</td>
<td>Licensee Event Report 2-2011-001-00: Unit 2 Reactor Trip From Loss of Main Feedwater Pump 2-1</td>
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<tr>
<td>05/31/11</td>
<td>DCL-11-067CL</td>
<td>Presentation for Forthcoming Pre-Licensing Meeting for Process Protection System Replacement</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

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<tr>
<td>04/19/11</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Safety Evaluation for Topical Report, “Process Protection System Replacement Diversity &amp; Defense-In-Depth Assessment” (TAC Nos. ME4094 and ME4095)</td>
</tr>
<tr>
<td>04/21/11</td>
<td>Summary of Public Scoping Meetings Related to the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
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<tr>
<td>05/06/11</td>
<td>Environmental Project Manager Change for the License Renewal Project for Diablo Canyon Nuclear Power Plant (TAC Nos. ME2825 and ME2826)</td>
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<td>05/11/11</td>
<td>Diablo Canyon Power Plant – NRC Integrated Inspection Report 050000275/2011002 and 050000323/2011002</td>
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<td>05/13/11</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 – 2011 Decommissioning Funding Status Report – Request For Additional Information (TAC Nos. ME5476 and ME5477)</td>
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<td>05/13/11</td>
<td>Summary of March 31, 2011, Pre-Licensing Meeting with Pacific Gas and Electric Company on Responses to the U.S. Nuclear Regulatory Commission Staff’s Questions from the Previous Public Meeting on January 26, 2011 (TAC Nos. ME5033 and ME5034)</td>
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<td>Diablo Canyon Power Plant – NRC Temporary Instruction 2515/183 Inspection Report 050000275/2011006 and 050000323/2011006</td>
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<td>05/16/11</td>
<td>Forthcoming Pre-Licensing Meeting with Pacific Gas and Electric Company</td>
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<td>Public Meeting with Pacific Gas and Electric Company</td>
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<tr>
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<td>Summary of April 11, 2011, Meeting with Pacific Gas and Electric Company on National Fire Protection Association 805 Transition Project (TAC Nos. ME5888 and ME5889)</td>
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<td>Date</td>
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<td>05/31/11</td>
<td>Summary of May 18, 2011, Meeting with the Nuclear Energy Institute, Industry Representatives, and Licensees on Transitioning to National Fire Protection Association Standard 805</td>
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**D. NRC Generic Correspondence** (Information Notices, Bulletins, Generic Letters, Regulatory Issue Summaries, Administrative Letters)

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<td>05/09/11</td>
<td>Cyber Security Plan Implementation Schedule</td>
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**E. NSOC/PSRC Documents** (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>2011-017</td>
<td>MMD M000084; Unit 2 Cycle 17 Reload</td>
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<td>2011-018</td>
<td>LER 2-2011-001-00; Unit 2 Reactor Trip From Loss of Main Feedwater Pump 2-1</td>
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<td>05/25/11</td>
<td>2011-019</td>
<td>RFR - 480 V Bus H Transformer Spacers – SAPN 50399325</td>
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<td>RFR - FME – Effect of Conditions and Threats in Aggregate</td>
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<td>RFR – Fuel Assembly that was picked up incorrectly – SAPN 50397768</td>
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<td>RFR – Charging Pump 2-2</td>
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<td>RFR – POAs on Emergency Diesel Generators – 50307598, 50341329, 50368801, 50378557, 50382957</td>
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<td>RFR – POAs on Emergency Diesel Generators – 50307598, 50341329, 50368801, 50378557, 50382957</td>
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<td>RFR – Secondary Steam Leaks</td>
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<td>RFR – Start up Power</td>
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<td>2011-022</td>
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<td>RFR – Pressurizer Safety Valves</td>
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F. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>U2 Reactor Trip</td>
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<td>ACE</td>
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<td>HT ACE: NRC Finding IR 09-003: GDC</td>
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<td>QAAF-Inadequate RCA Sec Prog Health</td>
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<td>60034470</td>
<td>QAAF – Lost Parts</td>
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<td>2010 NRC Triennial HX Insp NCV</td>
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<td>QAAF: No HT ACE for ABVS SFV Issue</td>
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<td>60035111-030</td>
<td>U2 missed surveillance – STP I-13C</td>
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<td>Steam Leak at FWH 1-3A FW Outlet</td>
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<td>NRC IR 2011402 – SEC Failure to Use CAP</td>
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G. QV Documents (QPAR, Audit Reports, Audit Schedule, Assessments)

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<td>110050001</td>
<td>Emergency Preparedness Program Audit</td>
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<td>Audit Schedule</td>
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<td>Diablo Canyon and Humboldt Bay Power Plants Internal &amp; External Audit Schedule May 24, 2011</td>
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<td>Short Form Assessment – Implementation of the Maintenance Procedure MP M-50.20</td>
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<td>05/18/11</td>
<td>111380005</td>
<td>Short Form Assessment – Maintenance Peer Review: Station Activities 2R16</td>
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<table>
<thead>
<tr>
<th>H. Self Assessment/Benchmarking (SA/BM Reports/Schedules)</th>
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<thead>
<tr>
<th>I. Performance Information (PPIR, Operating Plan, Station Initiatives)</th>
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<th>J. INPO Documents (INPO Evaluations/Responses, Assist Visit Reports, INPO Indicators)</th>
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<th>K. Operational Documents (ODM Minutes, POAs)</th>
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M. Subcommittee Documents

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N. Documents Previously Transmitted during the Month

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<tr>
<td>05/10/11 – 06/02/11</td>
<td>QV Real Time Report</td>
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A. Licensing Basis Impact Evaluations

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<tr>
<th>Date</th>
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<th>Title</th>
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<tbody>
<tr>
<td>06/02/11</td>
<td>2011-010</td>
<td>Replace Unit 1 Westinghouse 7100 Process Control System</td>
</tr>
<tr>
<td>06/03/11</td>
<td>2011-009</td>
<td>Replacement LBIE Review – GFFD Removal</td>
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B. NRC Outgoing Correspondence (incl. LERs, LARs, etc.)

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<thead>
<tr>
<th>Date</th>
<th>Letter No.</th>
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<tbody>
<tr>
<td>06/08/11</td>
<td>DIL-11-003</td>
<td>Supplement to License Amendment Request 11-001, Revision to Technical Specifications 1.1, 2.0, 3.1.1, 3.1.2, 4.1.2, and 5.1.3; Addition of Technical Specifications 2.3 and 3.1.4; and, Request for an Exemption from the Requirements of 10 CFR 72.236(f)</td>
</tr>
<tr>
<td>06/10/11</td>
<td>DCL-11-065</td>
<td>Thirty-Day Response to NRC Bulletin 2011-01: &quot;Mitigating Strategies&quot;</td>
</tr>
<tr>
<td>06/10/11</td>
<td>DCL-11-071</td>
<td>Response to Requests for Additional Information Related to the Diablo Canyon Nuclear Power Plant, Units 1 and 2, 2011 Decommissioning Funding Status Report (TAC Nos. ME 5476 and ME5477)</td>
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<tr>
<td>06/18/11</td>
<td>DCL-11-073</td>
<td>Core Operating Limits Report for Unit 2 Cycle 17</td>
</tr>
<tr>
<td>06/23/11</td>
<td>DCL-11-075</td>
<td>Emergency Plan Implementing Procedure Update</td>
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<tr>
<td>06/24/11</td>
<td>DCL-11-076</td>
<td>Request for Extension of Enforcement Discretion and Commitment to Submittal Date for 10 CFR 50.48(c) License Amendment Request</td>
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<tr>
<td>06/30/11</td>
<td>DCL-11-078</td>
<td>Licensee Event Report 1-2011-004-00, Emergency Diesel Generators Actuated Upon 230 kV Isolation Due to Maintenance Activities on Relay Panel</td>
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C. NRC Incoming Correspondence (including Inspection Reports)

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<th>Title</th>
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<tbody>
<tr>
<td>05/31/11</td>
<td>Response to Request for Deferral of Issuance of Renewed Operating Licenses and Revision of Schedule for the Review of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application</td>
</tr>
<tr>
<td>06/02/11</td>
<td>Safety Evaluation Report Related to the License Renewal of Diablo Canyon Nuclear Power Plant, Units 1 and 2</td>
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<tr>
<td>06/07/11</td>
<td>Notice of 52-Month Delay and Order Requiring Status Reports</td>
</tr>
<tr>
<td>06/09/11</td>
<td>Forthcoming Meeting with Pacific Gas and Electric Company (TAC Nos. ME5033 and ME5034)</td>
</tr>
<tr>
<td>06/21/11</td>
<td>Diablo Canyon Power Plant, Unit Nos. 1 and 2 – Exemption from the</td>
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<tr>
<th>Date</th>
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<tbody>
<tr>
<td>06/28/11</td>
<td>Summary of Annual Performance Assessment Meeting with Pacific Gas and Electric Company</td>
</tr>
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### D. NSOC/PSRC Documents (NSOC Minutes, NSOC Responses, PSRC Minutes)

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<td>06/01/11</td>
<td>2011-023</td>
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<td>06/03/11</td>
<td>2011-024</td>
<td>Readiness for Restart Program/Transition to Modes 1 and 2</td>
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<td>06/28/11</td>
<td>2011-025</td>
<td>Physical Security Plan; EDG Actuated Upon 230 kV Isolation Due to Maintenance Activities on Relay Panel</td>
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### E. CAP Documents (RCAs, ACEs, CAP Effectiveness Evaluations)

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<td>Eff. Eval</td>
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### G. Self Assessment/Benchmarking (SA/BM Reports/Schedules)

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<td>SAPN 50383339</td>
<td>Safety Monitor Risk Assessment Program Benchmark, Location: Comanche Peak Nuclear Power Plant</td>
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<tr>
<td>04/29/11</td>
<td>SAPN 50391649</td>
<td>Trip/Benchmark Report, Location: Santa Maria de Garoña NPP</td>
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<td>01/2011</td>
<td>SAPN 50350426</td>
<td>Optimized Site-Specific ALARA Assessment PG&amp;E Diablo Canyon Power Plant</td>
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<td>04/11/11</td>
<td>SAPN 50373410</td>
<td>Self-Assessment of Licensed Operator Requalification Program and Simulator</td>
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<td>03/29/11</td>
<td>SAPN 50271688</td>
<td>STARS Gas Accumulation Self Assessment</td>
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<td>06/22/11</td>
<td>SAPN 50387975</td>
<td>Self-Assessment Report Performance Improvement</td>
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<td>10/05/09</td>
<td>SAPN 50271688</td>
<td>SONGS Chemistry training Self Assessment</td>
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<td>SAPN 50264066</td>
<td>DCPP Component Design Basis Inspection</td>
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<td>06/07/11</td>
<td>SAPN 50381702</td>
<td>License Basis Verification Project Quick Hit Self Assessment</td>
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<td>04/27/11</td>
<td>SAPN 50383028</td>
<td>NRC EP Rulemaking Project Quick Hit Self-Assessment</td>
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<td>SAPN 50410394</td>
<td>Snubber Program Assessment Quick Hit Self Assessment</td>
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<td>SAPN 50401548</td>
<td>2011 Response Tampering Event Quick Hit Self-Assessment</td>
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<td>Work Order Closure Documentation Quick Hit Self Assessment</td>
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</tbody>
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### H. Performance Information (PPIR, Operating Plan, Station Initiatives)

<table>
<thead>
<tr>
<th>Doc Type</th>
<th>Date</th>
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</thead>
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<tr>
<td>Operating Plan</td>
<td>05/12/11</td>
<td>2011 – 2015 Nuclear Generation Operating Plan, Rev. 2 -</td>
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<tr>
<td>PPIR</td>
<td>07/14/11</td>
<td>Plant Performance Improvement Report</td>
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<tr>
<td>Station Initiative</td>
<td>July 2011</td>
<td>Security Action for Excellence</td>
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<td>06/28/11</td>
<td>Employee Industrial Safety Initiative 2011-2015 Nuclear Generation Operating Plan</td>
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</table>
## June 2011 DCISC
List of Documents Transmitted Electronically

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
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<tbody>
<tr>
<td>07/17/11</td>
<td>Operations Block and Tackle</td>
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<tr>
<td>07/07/11</td>
<td>Diablo Canyon Power Plant Nuclear Safety Culture Improvement Plan</td>
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<td>07/08/11</td>
<td>Evaluation Thoroughness Action Plan</td>
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### I. Operational Documents (ODM Minutes, POAs)

<table>
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<th>Doc. No.</th>
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<td>POA</td>
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### J. Miscellaneous

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<td>06/27/11</td>
<td>PG&amp;E @ Work – DCPP Edition</td>
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<td>06/21/11</td>
<td>PG&amp;E @ Work – Bulletin</td>
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### K. Subcommittee Documents

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<tr>
<td>Maintenance</td>
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### L. Documents Previously Transmitted during the Month

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<tr>
<td>06/02/11 – 07/10/11</td>
<td>QV Real Time Report</td>
</tr>
</tbody>
</table>
1.0 PG&E/DCPP Organizations

The DCPP organization chart is included as an attachment.

2.0 Summary of Diablo Canyon Operations

2.0.1 Capacity Factor

During the assessment period of July 1, 2011, through June 30, 2011, Diablo Canyon’s Combined “Capacity Factor” averaged 89.3% (Net Maximum Dependable Capacity). Capacity factor is the amount of power produced expressed as a percentage of the maximum theoretical amount.

Unit 1 Operating Summary

During the 6-month reporting period ending June 2011, Unit 1’s Capacity Factor was 102.04% (Net Maximum Dependable Capacity). The table below includes descriptions of operating events that impacted Unit 1 generation.

Unit 1 Power Generation Events January 2011 – June 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Curtailed Power Level</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/02/10 – 11/13/10</td>
<td>Refueling Outage</td>
<td>0%</td>
<td>1R16 Refueling Outage</td>
</tr>
<tr>
<td>11/22/10</td>
<td>Curtailment</td>
<td>78%</td>
<td>Repair Main Feedwater Pump 1-2 Stop Valve</td>
</tr>
<tr>
<td>12/11/10</td>
<td>Curtailment</td>
<td>95%</td>
<td>Auxiliary Feedwater Pump Full Flow Test</td>
</tr>
<tr>
<td>3/07/11</td>
<td>Curtailment</td>
<td>87%</td>
<td>Failure of MSR 1-1C Flow Control Valve-179</td>
</tr>
<tr>
<td>3/25/11</td>
<td>Curtailed</td>
<td>71%</td>
<td>Repair Flow Control Valve-179</td>
</tr>
<tr>
<td>4/19/11</td>
<td>Curtailed</td>
<td>85%</td>
<td>Repair Stem Leak on Feedwater Heater 1-3A</td>
</tr>
</tbody>
</table>

Unit 2 Operating Summary

During the 6-month reporting period ending June 2011, Unit 2’s Capacity Factor was 76.68% (Net
Maximum Dependable Capacity). This period included a refueling outage.

The table below includes descriptions of operating events that impacted Unit 2 generation.

**Unit 2 Power Generation Events January 2011 – June 2011**

<table>
<thead>
<tr>
<th>Date</th>
<th>Type</th>
<th>Curtailed Power Level</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/25/10</td>
<td>Curtailed</td>
<td>52%</td>
<td>Clean Main Condenser Waterboxes of Marine Growth</td>
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<tr>
<td>11/02/10</td>
<td>Curtailed</td>
<td>28%</td>
<td>High Storm Seas</td>
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<tr>
<td>11/29/10</td>
<td>Curtailed</td>
<td>50%</td>
<td>Circ Water Tunnel Cleaning</td>
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<tr>
<td>1/30/11</td>
<td>Curtailed</td>
<td>95%</td>
<td>Repair Steam Leak on Feedwater Heater 2-2B Level Control Valve-32</td>
</tr>
<tr>
<td>3/26/11</td>
<td>Curtailed</td>
<td>&lt;1%</td>
<td>Feedwater Heater 2-1A Relief Valve-95 Leak</td>
</tr>
<tr>
<td>3/26/11</td>
<td>Forced Outage – Manual Trip</td>
<td>0%</td>
<td>Repair Relief Valve-95 &amp; Main Feedwater Pump 2-1 – 4.6 days</td>
</tr>
<tr>
<td>5/01/11 – 6/05/11</td>
<td>Refueling Outage</td>
<td>0%</td>
<td>2R16 Refueling Outage</td>
</tr>
</tbody>
</table>

**2.0.2 Refueling Outages**

The Unit 1 sixteenth refueling outage (1R16) was a significant outage, which included the Reactor Vessel Head Replacement Project and other moderately sized projects. The outage duration was 41.8 days vs. a goal of 29.5 days. Problems with the following extended the outage: several incorrect valve assemblies, pressurizer steam seated safety valves weeping, polar crane relays, and refueling equipment as well as several cases of inadequate resources. There were no nuclear safety events, no disabling injuries, and no human performance events. Collective radiation dose was 123.2 vs. a goal of 126.0 person-Rem, which was good performance.

Unit 2 sixteenth refueling outage (2R16) was also close to a “standard” outage, i.e., without major projects the size of steam generator or reactor vessel head replacements. The outage duration was 35.8 days vs. a goal of 33 days. Challenges causing extra time included problems with polar crane relays, refueling equipment, and a ceramic insulator as well as RHR testing delays. There were no nuclear safety events, no disabling injuries, and one human performance event (clock reset). Collective radiation dose was 29.7 vs. a goal of 68 person-Rem, which was excellent performance.

**2.0.3 Collective Radiation Dose Equivalent Exposures**

The bulk of personnel radiation exposure occurs during refueling outages. For this reason, the total annual exposure is largely dependent upon the outage planning effectiveness, radiation levels, outage duration, number of outages conducted in the year and emergent maintenance activities. Collective radiation doses for the two refueling outages was as follows:
Non-outage radiation doses typically amount to about eight person-Rem per year, though DCPP projects about six person-Rem for 2011.

### 2.0.4 Unplanned Reactor Trips

PG&E’s goal is to have no unplanned automatic reactor trips per unit per year while critical. Unnecessary reactor trips not only reduce plant capacity factor, they also represent unnecessary challenges to safety systems and may indicate substandard operating or maintenance practices. Manual trips are not counted because PG&E believes this might inhibit operator-initiated trips and actions to protect equipment. There was one unplanned manual trip on Unit 2 during the period July 1, 2010 – June 30, 2011 to shutdown for repair of Main Feedwater Pump 2-1, a 4.6-day outage.

### 2.0.5 Unplanned Safety System Actuations

This indicator is the sum of the number of unplanned emergency core cooling system (ECCS) actuations (whether the ECCS actuation set point has been reached or from a spurious or inadvertent ECCS signal) and the number of unplanned emergency AC power system actuations that result from the loss of power to a safeguards bus. For Diablo Canyon, ECCS actuations include actuations of the high-pressure injection system, the low-pressure injection system, or the accumulators. Such actuations should be avoided because the plant should be maintained in a safe configuration to preclude actuations, and unnecessary challenges to plant safety systems should be minimized. PG&E’s goal for this indicator continues to be no unplanned safety system actuations at DCPP. No actuations occurred during the reporting period.

### 2.0.6 Chemistry Effectiveness Indicator (CEI)

DCPP has adopted the industry Chemistry Effectiveness Indicator (CEI) to measure overall station chemistry effectiveness. The CEI includes metrics for the Primary Chemistry and the Secondary Chemistry and is a measure of chemical control as well as contaminant control.

The CEI can range from 0 to 100 with a lower value demonstrating better chemistry control. Currently the top quartile PWR plants have typical values of 3 or less.

Diablo Canyon unit 1 has an 18-month rolling composite of 1.37 for Unit 1 and 0.24 for Unit 2 as of June 2010. This represents Green (excellent) performance.

### 2.0.7 Fuel Reliability

The purpose of the fuel reliability indicator is to monitor progress in achieving and maintaining high fuel integrity. Failed fuel represents a breach in the initial barrier for preventing offsite release of fission products. Such failure also has a detrimental effect on operations and increases the radiological hazards to plant workers.
Based on measurement of both steady-state reactor coolant activity and transient iodine spiking, PG&E determined that both Units 1 and 2 operated without any failed rods during the period from July 1, 2010 to June 30, 2011. Unit 1 has operated without any failed rods since the beginning of Cycle 5. The Unit 2 radiochemistry data indicate that Unit 2 has been operating without fuel defects during Cycle 15 (April 2008 to date).

PG&E continues to follow its fuel reliability programs, including the aggressive preventive maintenance inspection of new and irradiated fuel, continued implementation of procedural guidelines to prevent fuel damage during both power and refueling operations, implementation of chemistry controls, fuel assembly reconstitution for identified rod failures, tracking and disposition of damaged fuel assemblies and strict controls to exclude foreign material from the reactor coolant system.
The DCISC tours the Diablo Canyon Power Plant during most fact-finding meetings to observe or inspect items it is reviewing. Also, the DCISC conducts plant tours with members of the public three times per year during its public meetings. For the two years following the terrorist events of September 11, 2001 no public tours were held. The DCISC resumed public tours at its June 2, 2004 public meeting. This exhibit includes a database of the areas of the plant DCISC and the public have toured.

**Table 1 – Ten-Year Record of DCISC Tours of DCPP (Through June 2010)**

<table>
<thead>
<tr>
<th>Area No.</th>
<th>Location</th>
<th>System/Area</th>
<th>Tour No(s) (See Table 2) (Bold = Public Tour)</th>
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<tbody>
<tr>
<td>TB-1</td>
<td>TB – Buttress Area</td>
<td>Condensate Polishing System, 09-9</td>
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<tr>
<td>TB-2</td>
<td>TB – El 73 NH/SH (U1&amp;2)</td>
<td>Condensate Pumps, Condensate Cooler, * 02-4, 05-7, 09-8</td>
<td></td>
</tr>
<tr>
<td>TB-3</td>
<td>TB EL 85 NH</td>
<td>Oily Water Separator Room, 02-8</td>
<td></td>
</tr>
<tr>
<td>TB-4</td>
<td>TB – El 85 NH/SH (U1&amp;2)</td>
<td>Condensate Booster Pumps, Letdown Storage Tanks, Main Feedwater Pumps, Condenser Water Box, 02-8, 02-4, 07-9, 02-4, 07-11, 02-5, 09-8, 05-7, 06-6, 05-7</td>
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<tr>
<td>TB-5</td>
<td>TB EL 85 (U1&amp;2)</td>
<td>Emergency Diesel Generators, 00-2, 02-4, 02-6, 04-2, 05-4, 05-7, 06-5, 07-7, 09-5, 09-8, 09-9, 10-2, 10-7, 02-4, 02-7, 07-2</td>
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<tr>
<td>TB-6</td>
<td>TB EL 85 (U1&amp;2)</td>
<td>4kV &amp; 12kV Non-vital Switchgear, 02-4, 02-7, 07-2</td>
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<td>TB-7</td>
<td>TB Buttress El 104 (U2)</td>
<td>Technical Support Center, 00-3, 02-1, 02-3, 03-1, 07-4, 10-3</td>
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<td>TB-8</td>
<td>TB EL 104 (U1&amp;2)</td>
<td>4kV Vital Cable Spread. Rms., 02-6, 05-7</td>
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<td>TB-9</td>
<td>Isophase Bus Cooling System</td>
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<td>TB El 104 (U1&amp;2) Main Lube Oil Resvr. /Cooler 11-1</td>
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<td>Feedwater Heaters *, 02-5</td>
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<td></td>
<td>Mid-Condenser &amp; Hoods</td>
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<td>Seawater Evaporators</td>
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<td>Steam Jet Air Ejectors *, 02-1, 02-8</td>
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<td>TB-10</td>
<td>4kV Vital Switchgear</td>
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<td>TB-11</td>
<td>Isophase Busses *</td>
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<td>LP Cond. Exhaust Hoods *</td>
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<td>TB-12</td>
<td>TB El 140 (Turbine Deck) (U1&amp;2) Main Turbines, Generators &amp; Steam Leads &amp; Valves *, 02-1, 02-4, 03-1, 03-2, 04-2, 04-3, 05-7, 06-4, 06-9, 08-7, 10-2, 10-5, 10-7,</td>
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<td>U1 TB 140 NH Operations Support Center 00-3</td>
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<td>AB El 55 Pipe Tunnel Area 02-8</td>
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<td>AB El 64 (U1&amp;2) Boron Injection Tanks</td>
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<td>Residual Heat Removal Pumps</td>
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<td>Gas Decay Tanks &amp; Comprrsrs. 09-1</td>
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<td>Radwaste Monitor Tanks 09-1</td>
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<td>Liquid Radwaste Storage Tanks 09-1</td>
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<td>AB El 73 (U1&amp;2) Residual Heat Removal HXs</td>
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<td>Boron Injection Tanks</td>
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<td>AB El 85 (U1&amp;2) Penetration Area 02-4</td>
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<td>AB El 85(U1&amp;2) Safety Injection Pumps</td>
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<td>Aux. Control Board 11-7</td>
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<td>Let down &amp; Seal Return HX</td>
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<td>AB-6</td>
<td>AB EL 85 Chemistry Offices &amp; Labs 02-8, 04-1</td>
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<td>RP Offices &amp; Labs 04-1</td>
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<td>AB El 85 Auxiliary Boiler</td>
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<td>AB El 100 (U1&amp;2) Aux. Feedwater Pumps</td>
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<td>AB El 100 (U1&amp;2) 480 V Vital Bus</td>
<td>09-9, 10-2, 10-7, 11-7</td>
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<td>AB El 115 (U1&amp;2) Penetration Area-MS &amp; FDW</td>
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<td>Radwaste Processing Area</td>
<td>09-1</td>
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<td>AB-12</td>
<td>AB El 115 (U1&amp;2) Vital Batteries, Chargers &amp; Inverters</td>
<td>11-6</td>
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<td>Rod Control Cabinets</td>
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<td>AB-13</td>
<td>AB El 115 (U1&amp;2) Plant Ventilation System</td>
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<td>AB El 128 (U1&amp;2) Cable Spreading Room</td>
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<td>AB-15</td>
<td>AB El 140 (U1&amp;2) Control Room Area</td>
<td>02-1, 02-2, 04-2, 05-4, 07-7, 08-7, 08-8, 09-9, 10-2, 10-5, 11-7</td>
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<td>AB-16</td>
<td>AB El 140 (U1&amp;2) SG Blowdown Tank</td>
<td>02-4, 04-1</td>
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<td></td>
<td>Containment Equipment &amp; Personnel Hatches</td>
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<tr>
<td>FH-1</td>
<td>FH El 85 (U1&amp;2) Fuel Handling Supply Fans &amp; Radiation Monitoring</td>
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<tr>
<td>FH-2</td>
<td>FH El 100 (U1&amp;2) Spent Fuel Pool Pumps/HXs</td>
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<td>FH-3</td>
<td>FH El 140 (U1&amp;2) Spent Fuel Pool</td>
<td>02-2, 02-4, 03-2, 04-2, 04-3, 06-1, 07-10, 08-8, 09-9, 10-8, 11-7</td>
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<td>Cask Decon (El 115)</td>
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<td>New Fuel Storage</td>
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<td>Firewater Pumps (El 115)</td>
<td>02-6, 09-6, 10-8</td>
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<td>FH-4</td>
<td>FH El 140 NH/SH Hot Machine Shop</td>
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<td>Containment (U1&amp;2) Containment Area</td>
<td>03-2, 04-3, 06-4, 11-7</td>
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<td>Reactor Coolant System</td>
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<td>Location</td>
<td>Building/Equipment</td>
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<td>Training Building</td>
<td>Training Building Simulator</td>
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<td>Maintenance Training Facility</td>
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<td>I-1</td>
<td>Intake Structure Area (U1&amp;2)</td>
<td>General Area &amp; Overlook</td>
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<td>O-1</td>
<td>Outside TB (east side)</td>
<td>Main &amp; Auxiliary Transformers</td>
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<td>Outside FH and Yard (U1&amp;2)</td>
<td>Condensate Storage Tank, Primary Water Storage Tank, Refueling Water Storage Tank</td>
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<td>O-3</td>
<td>Outside TB (east side)</td>
<td>Diesel Fuel Oil Storage Tank (buried)</td>
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<td>Warehouse Area</td>
<td>Main Warehouse, Warehouses A&amp;B</td>
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<td>O-5</td>
<td>Outside (U1&amp;2)</td>
<td>Cold Machine Shop</td>
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<td>O-6</td>
<td>Outside, Radwaste</td>
<td>Radwaste Storage Facility</td>
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<td>Area</td>
<td>Radwaste Storage Tanks</td>
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<td>O-7 Plant Overlook Area</td>
<td>Waste Water Holding &amp; Treatment System Facilities</td>
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<td>O-8 “Patton Flats” Area</td>
<td>Hydronautics System</td>
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<td>Hazardous Waste Stor. Bldg</td>
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<td>Fire Protection System</td>
<td>02-6, 09-6</td>
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<td>Paint Facility</td>
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<td>O-9 500 kV Switchyard</td>
<td>500 kV Switchyard &amp; Control Building</td>
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<td>03-1, 06-3, 06-8</td>
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<td>230 kV Switchyard &amp; Control Building</td>
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<td>O-11 Discharge Structure</td>
<td>Discharge Structure</td>
<td>03-1, 06-3, 08-2, 08-6, 08-9, 09-4, 09-7, 09-10</td>
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<td>Emergency Operations Facility</td>
<td>02-1, 02-3, 03-1, 05-1, 05-3, 07-4, 10-3, 02-3, 03-1, 05-1, 05-3, 07-4</td>
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<td>AB Asset Team Work Area</td>
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<td>AB Elect. Asset Team Work Area</td>
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<td>AB Fire Pumps, Piping &amp; Equipment</td>
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<td>02-6, 09-6</td>
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<td>AB Security System Components &amp; SAS</td>
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<td>Seismic Gap Modifications</td>
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<td>Expansion Joint Failures</td>
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<td>Temporary Jumpers</td>
<td>03-2, 08-4, 09-5</td>
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<td>Human Performance</td>
<td>09-1</td>
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<tr>
<td>Simulation Lab</td>
<td>02-1, 02-8</td>
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<tr>
<td>Radiation Monitoring System</td>
<td></td>
<td>05-6, 06-10</td>
<td></td>
</tr>
<tr>
<td>Outside Control Area, Firing Range, Protected Control Area (including selected alarm stations, delay barriers, check points, vehicle barriers, gun</td>
<td>06-3, 06-10, 07-4, 07-6, 08-2, 08-6, 08-9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ports, watch stations, and overall visible security features)

<table>
<thead>
<tr>
<th>Locations/Components Observed</th>
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</thead>
<tbody>
<tr>
<td>ISFSI Site</td>
</tr>
<tr>
<td>Admin Bldg Tall Bookcase</td>
</tr>
<tr>
<td>Seismic Bracing</td>
</tr>
<tr>
<td>Control Room Ready Room Tall Bookcase Seismic Bracing</td>
</tr>
</tbody>
</table>

* Systems/areas marked with “*” have also been visited on many tours due to their location along routes frequently traveled.

Legend:
- AB = Auxiliary Building
- FH = Fuel Handling Building
- TB = Turbine Building
- NH = North Half
- SH = South Half
- HX = Heat Exchanger
- EI = Elevation
- HVAC = Heating, Ventilation & Air Cond.
- U1&2 = Units 1 and 2 have separate facilities/equipment

**Table 2 – Ten-Year Chronological Record of Past DCISC DCPP Tours (Through June 2010)**

<table>
<thead>
<tr>
<th>Tour No.</th>
<th>Date(s)</th>
<th>Participants</th>
<th>Locations/Components Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-1</td>
<td>8/17/01</td>
<td>EGP, RFW</td>
<td>Radiation Monitoring System (TB, CR, Main Steam, Steam Jet Air Ejector, Plant Vent, CR Air Intake), Simulator, TSC, EOF</td>
</tr>
<tr>
<td>02-2</td>
<td>9/21/01</td>
<td>ADR, JEB</td>
<td>CR, ISFSI area, Intake Structure</td>
</tr>
<tr>
<td>02-3</td>
<td>11/16/01</td>
<td>PRC, JEB</td>
<td>Simulator, TSC, EOF, JMC</td>
</tr>
<tr>
<td>02-4</td>
<td>12/13/01</td>
<td>PRC, RFW</td>
<td>TB, Containment Access Portal, CCHX, Main Transformers, 12kV Switchgear, EDG, Condensate Booster Pumps, Condensate Pumps, Main Feedwater Pumps, Condenser, RCA Portal, Fuel Handling Bldg., Spent Fuel Pool</td>
</tr>
<tr>
<td>02-5</td>
<td>2/28/02</td>
<td>ADR, JEB</td>
<td>Condenser System</td>
</tr>
<tr>
<td>02-6</td>
<td>3/26/02</td>
<td>PRC, RFW</td>
<td>Fire protection System, U2 Cable Spreading Room, 12kV Switchgear, EDG, Fire Pumps, Fire Jockey Pumps,</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
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</tr>
<tr>
<td>02-7</td>
<td>4/17/02</td>
<td>PRC, JEB</td>
<td>12kV System (switchgear, buses, transformers)</td>
</tr>
<tr>
<td>02-8</td>
<td>6/3/02</td>
<td>EDG, RFW</td>
<td>Radiation Effluent Release Points &amp; Controls (U2 Vent Bldg., Plant Vent, TB Oily Water Separator, Steam Air Ejector), RP Counting Room, AB Pipe Tunnel (Gas Decay Tank Rad Monitor), U1 Primary Sample Sink</td>
</tr>
<tr>
<td>03-1</td>
<td>10/23/02</td>
<td>EGP, JEB</td>
<td>Control Room Simulator, Technical Support Center (TSC), Emergency Offsite Facility (EOF), Joint Media Center (JMC), Turbine Deck, Plant Discharge Structure, 230/500 kV Switchyard Control Room</td>
</tr>
<tr>
<td>03-2</td>
<td>2/11/03</td>
<td>EGP, RFW</td>
<td>Medical Center, Low Level Radioactive Waste (LLW) Storage, Unit 2 Containment, Unit 2 Spent Fuel Pool, Human Performance Simulation Lab</td>
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<tr>
<td>04-3</td>
<td>4/22/04</td>
<td>EGP, RFW</td>
<td>Outage Coordination Center, Protective clothing change area, Radiation control entry area, Unit 1 Containment, Unit 1 Spent Fuel Pool, Unit 2 Spent Fuel Pool, Turbine operating floor, RP outage offices, RP Containment remote A/V monitoring station</td>
</tr>
<tr>
<td>04-4</td>
<td>6/2/04</td>
<td>Public Tour</td>
<td>Plant Overlook, 230 kV &amp; 500 kV Switchyards, Control Room Simulator, Intake Overlook</td>
</tr>
<tr>
<td>05-1</td>
<td>9/22/04</td>
<td>PRC, RFW</td>
<td>Emergency Operations Facility, Joint Media Center</td>
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<td>05-2</td>
<td>10/5/04</td>
<td>Public Tour</td>
<td>Plant Overlook, 230 kV &amp; 500 kV Switchyards, Control Room Simulator, Intake Overlook</td>
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<tr>
<td>05-3</td>
<td>12/8/04</td>
<td>PFP, RFW</td>
<td>Emergency Operations Facility, Joint Media Center</td>
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<tr>
<td>05-4</td>
<td>1/14/05</td>
<td>ADR, JEB</td>
<td>Control Room, Emergency Diesel Generators, Main Yard</td>
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<tr>
<td>05-5</td>
<td>2/16/05</td>
<td>Public Tour</td>
<td>Plant Overlook, 230 kV &amp; 500 kV Switchyards, Control Room Simulator, Intake Overlook</td>
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<tr>
<td>05-6</td>
<td>4/7/05</td>
<td>PFP, RFW</td>
<td>Outside Control Area, Firing Range, Protected Control Area (including selected alarm stations, delay barriers, check points, vehicle barriers, gun ports, watch stations, and overall visible security features).</td>
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<tr>
<td>05-7</td>
<td>5/3/05</td>
<td>WFC, RFW</td>
<td>Turbine Building (operating deck and lower levels), Control Room, Emergency Diesel Generator (EDG) Room, Cable Spreading Room</td>
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<tr>
<td>Date</td>
<td>Month</td>
<td>Event Description</td>
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<tr>
<td>05-8</td>
<td>6/2/05</td>
<td>Public Tour</td>
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<td>9/8/05</td>
<td>Plant Overlook, 230 kV &amp; 500 kV Switchyards, Control</td>
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<td>Room Simulator, Intake Overlook</td>
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<td>06-2</td>
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<td>Auxiliary Salt Water System in Intake Structure</td>
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<td>10/13/05</td>
<td>Plant Overlook, 230 kV &amp; 500 kV Switchyards, ISFSI</td>
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<td>I&amp;C Components in Various Locations in AB, CR &amp; TB</td>
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<td>10/24/07</td>
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<td>9/18/07</td>
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<td>11/13/07</td>
<td>WFC, VSB, RFW</td>
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<td>08-5</td>
<td>12/19/07</td>
<td>ADR, JEB</td>
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<td>New Steam Generator Storage Area</td>
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<tr>
<td>Date</td>
<td>Date</td>
<td>Public Tour</td>
<td>Activity Details</td>
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<td>08-6</td>
<td>1/23/08</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
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<tr>
<td>08-7</td>
<td>2/27/08</td>
<td>RJB, JEB</td>
<td>Control Room, Turbine Floor &amp; SG Work in Yard</td>
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<tr>
<td>08-8</td>
<td>3/10/08</td>
<td>ADR, JEB</td>
<td>SG Work in Yard, Fuel Handling Bldg., Control Room, Outage Meeting</td>
</tr>
<tr>
<td>08-9</td>
<td>6/25/08</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>09-1</td>
<td>7/16/08</td>
<td>WFC, RFW</td>
<td>Radwaste Processing &amp; Storage, CVCS Filter Gallery, LRWS Ion Exchange Cubicles, Unit 2 Equipment Drains &amp; Tank, LRWS &amp; GRWS Discharge Radiation Monitors, Unit 2 Waste Gas Compressor and Decay Tank, Chemical Drain Tank, L&amp;HS Tank, B.5.b Equipment Storage</td>
</tr>
<tr>
<td>09-2</td>
<td>8/27/08</td>
<td>RJB, JEB</td>
<td>Intake Structure, ASW Pump, Main Bank Transformer</td>
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<tr>
<td>09-3</td>
<td>9/16/08</td>
<td>PFP, RFW</td>
<td>New Unit 1 SG Storage, Warehouse</td>
</tr>
<tr>
<td>09-4</td>
<td>10/7/08</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>09-5</td>
<td>11/5/08</td>
<td>RJB, RFW</td>
<td>Human Performance &amp; Safety Simulators, Unit 2 Turbine Building, EDGs 2-1 &amp; 2-3</td>
</tr>
<tr>
<td>09-6</td>
<td>12/17/08</td>
<td>PFP, JEB</td>
<td>Fire Protection Equipment</td>
</tr>
<tr>
<td>09-7</td>
<td>2/11/09</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>09-8</td>
<td>3/3/09</td>
<td>RJB, JEB</td>
<td>SG Replacement, Turbine Building, EDG 1-2, MFW Pumps, CDN Pumps, Condensate Storage Tank, Outage Control Center</td>
</tr>
<tr>
<td>09-9</td>
<td>5/19/09</td>
<td>PFP, DCL, RFW</td>
<td>Turbine Building, EDG 1-3, Control Room, Intake Area, Discharge Cove, RCA Portal, SFPs 1 &amp; 2, Hot/Cold Machine Shops, Yard Area, Transformers</td>
</tr>
<tr>
<td>10-1</td>
<td>7/22/09</td>
<td>PFP, DCL, JEB</td>
<td>ISFSI, Admin. Building Protective Window Film</td>
</tr>
<tr>
<td>10-2</td>
<td>8/10/09</td>
<td>PL, WFC, RFW</td>
<td>Turbine Building (all levels), Emergency Diesel Generator Room, Control Room, Alternate Shutdown Panel, Plant Yard, Main Transformers, Ocean Intake &amp; Discharge</td>
</tr>
<tr>
<td>10-3</td>
<td>9/2/09</td>
<td>RJB, JEB</td>
<td>Control Room Simulator, Technical Support Ctr, Emergency Operations Ctr, Joint Information Ctr</td>
</tr>
<tr>
<td>10-4</td>
<td>12/9/09</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>10-5</td>
<td>12/16/09</td>
<td>PFP, RFW</td>
<td>Turbine Deck Units 1 &amp; 2, Control Room</td>
</tr>
<tr>
<td>10-6</td>
<td>2/10/10</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>Date</td>
<td>Date (M/D/Y)</td>
<td>Location</td>
<td>Description</td>
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<tr>
<td>10-7</td>
<td>3/16/10</td>
<td>RJB, RFW</td>
<td>Control Room Simulator, Turbine Building, Alternate Shutdown Control Panel, Emergency Diesel Generator Room, Plant Yard, Main Transformers, Main Steam Safety Valves</td>
</tr>
<tr>
<td>10-8</td>
<td>5/12/10</td>
<td>PFP, RFW</td>
<td>Units 1 &amp; 2 Spent Fuel Pools, SFP Pump, SFP Cleanup System, SFP Heat Exchanger, Training Building Tall Bookcase Seismic Bracing, Operations Ready Room Tall Bookcase Seismic Bracing</td>
</tr>
<tr>
<td>10-9</td>
<td>6/2/10</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>11-1</td>
<td>7/6/10</td>
<td>PFP, DCL</td>
<td>Simulator, EOF, JIC</td>
</tr>
<tr>
<td>11-2</td>
<td>8/4/10</td>
<td>RJB, JEB</td>
<td>Main Lube Oil Room, CARDOX System</td>
</tr>
<tr>
<td>11-3</td>
<td>8/11/10</td>
<td>PFP, RFW</td>
<td>Simulator, EOF, JIC</td>
</tr>
<tr>
<td>11-4</td>
<td>11/17/10</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>11-5</td>
<td>2/15/11</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
<tr>
<td>11-6</td>
<td>4/19/11</td>
<td>PL, RFW</td>
<td>Unit 1 Vital Batteries and Racks, Battery Chargers, Switchgear, Vital Inverters and one train of Non-Vital Batteries and Chargers.</td>
</tr>
<tr>
<td>11-7</td>
<td>5/25/11</td>
<td>PFP, DCL</td>
<td>Auxiliary Building Control Panel, Control Room, Unit 2 Spent Fuel Pool, Containment, AB, TB</td>
</tr>
<tr>
<td>11-8</td>
<td>6/22/11</td>
<td>Public Tour</td>
<td>Control Room Simulator, Security Building, Intake, Overlook, ISFSI</td>
</tr>
</tbody>
</table>

* Systems/areas marked with “*” have also been visited on many tours due to their location along routes frequently traveled.

Legend:

ADR = David Rossin
AFW = Auxiliary Feedwater
CCW = Component Cooling Water
CFCU = Containment Fan Cooler Unit
CR = Control Room
CW = Circulating Water (condenser)
DCL = Dave Linnen
DFO = Diesel Fuel Oil
EDG = Emergency Diesel Generator
EGP = Gail dePlanque
EOF = Emergency Operations Facility
FDW = Feedwater
HC = Hyla Cass
HHW = Herb Woodson
ISFSI = Independent Spent Fuel Storage Inst
JEB = Jim E. Booker
JIC = Joint Information Center
OCC = Outage Coordination Center
PFP = Per Peterson
PL = Peter Lam
PRC = Phil Clark
RCA = Radiation Control Area
RFW = Ferman Wardell
RHR = Residual Heat Removal
RJB = Robert Budnitz
RTL = Bob Lancet
SFP = Spent Fuel Pool
SG = Steam Generator
SI = Safety Injection System
SPDS = Safety Parameter Display System
TB = Turbine Building
TSC = Technical Support Center
WEK = Bill Kastenberg
WFC = Bill Conway
WHO = Warren Owen
### 21st Annual Report, Volume 2, Exhibit F, Open Items List

The DCISC Open Items List is an on-going list of items the DCISC tracks for follow-up, monitoring, or action. The list is updated at each of the three DCISC Public Meetings per year.

**Open Item Types:**
- **M** = Monitor
- **F** = Follow-up
- **I** = Issue

**Items in Italicics are new or revised**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Type</th>
<th>Open Item Category/Description</th>
<th>Last Actions</th>
<th>Next Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO-5</td>
<td>M</td>
<td>Clearance Process Performance &amp; Improvements. [Reviewed 1R15 clearances at 7/09 FF – satisfactory.]</td>
<td>1/08 PM 10/09 PM</td>
<td>3Q11 FF</td>
</tr>
<tr>
<td>CO-7</td>
<td>M</td>
<td>Review DCPP storm response experience and strategy every 12 months during or after annual winter storm season. [Reviewed at 5/10 FF – satisfactory.]</td>
<td>7/09 FF 5/10 FF</td>
<td>2Q12 FF</td>
</tr>
<tr>
<td>CO-8</td>
<td>M</td>
<td>Monitor all reactor trips – automatic and manual (review trip LERs at public meetings).</td>
<td>1/07 PM 10/07 PM</td>
<td>Post-trip FFs &amp; PMs</td>
</tr>
<tr>
<td>CO-9</td>
<td>F</td>
<td>Reactivity Management – review annually. [Found satisfactory May 2010 FF]</td>
<td>5/10 FF</td>
<td>3Q11 FF</td>
</tr>
<tr>
<td>CO-10</td>
<td>M</td>
<td>Mispositioning Errors (Equipment Status) – monitor the status of mispositioning errors and actions to resolve. Follow corrective actions of the Outage 1R15 interruption of drain-down to Mid-Loop Operation due to mispositioning of RVRLIS valves. [Reviewed at 10/10 FF – satisfactory.]</td>
<td>10/09 FF 4/10 FF 10/10 FF</td>
<td>4Q11 FF</td>
</tr>
<tr>
<td>CM</td>
<td>Conduct of Maintenance (CM)</td>
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<tr>
<td>CM-7</td>
<td>I</td>
<td>Review PG&amp;E’s progress in complying with the amendment to 10CFR50.55a which provides the requirements for ISI of containment structures (degradation). Review the concrete report when available. [Report provided to DCISC by DCPP.]</td>
<td>7/01 FF</td>
<td>Check schedule w/ DCPP 3Q11 FF</td>
</tr>
<tr>
<td>CM-10</td>
<td>M</td>
<td>On-line Maintenance: review the implementation of on-line maintenance annually, including the 12-week Rolling Maintenance Schedule about how well it is working &amp; impacting risk. Review trend of amount of on-line maintenance. [Reviewed at April 2011 FF: satisfactory.]</td>
<td>06/07 FF 09/08 FF 02/11 FF</td>
<td>1Q12 FF</td>
</tr>
<tr>
<td>CM-13</td>
<td>M</td>
<td>Review Maintenance Department performance measures, staffing, etc. approximately annually. [I&amp;C Group reviewed at January 2010 FF – satisfactory.]</td>
<td>12/09 PM 1/10 FF</td>
<td>3Q11 PM</td>
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<table>
<thead>
<tr>
<th>EN</th>
<th>Engineering Program (EN)</th>
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<tbody>
<tr>
<td>EN-19</td>
<td>F</td>
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<tr>
<td>Pgm</td>
<td>Number</td>
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<tr>
<td>EN-20</td>
<td>F</td>
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<tr>
<td>EN-27</td>
<td>F</td>
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</table>

**HP**

**Human Performance: Human Errors and Improving Safety & Efficiency of Plant Performance**

<table>
<thead>
<tr>
<th>Pgm</th>
<th>Number</th>
<th>Category</th>
<th>Description</th>
<th>Date(s) Reviewed</th>
<th>Notes</th>
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</table>

<table>
<thead>
<tr>
<th>Pgm</th>
<th>Number</th>
<th>Category</th>
<th>Description</th>
<th>Date(s) Reviewed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-18</td>
<td>M</td>
<td>Review biennially operator aging, physical fitness, “no solo” issues, attention enhancement, stress management, &amp; incentives for operator focus and fitness. [Reviewed &amp; found acceptable at 3/10 FF]</td>
<td>11/07 FF 3/10 FF</td>
<td>3Q11 FF No Solo</td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Pgm</th>
<th>Number</th>
<th>Category</th>
<th>Description</th>
<th>Date(s) Reviewed</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-25</td>
<td>M</td>
<td>Further observations and improvements in the Management Observation Program should be</td>
<td>11/06 FF</td>
<td>4Q11 FF</td>
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<tr>
<td><strong>HP-26</strong></td>
<td>F</td>
<td>Mr. Conway observed a review of the threshold level for other types of events [than mispositioning] might be an appropriate subject for future fact-finding and Mr. Wardell stated a review will be placed on the Open Items List under the Human Performance category.</td>
<td>2/11 PM</td>
<td>4Q11 FF or 1Q12 FF</td>
<td></td>
</tr>
<tr>
<td><strong>HS</strong></td>
<td></td>
<td>Health, Nuclear Safety Culture and Safety Conscious Work Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HS-1</strong></td>
<td>M</td>
<td>Employee Concerns &amp; Differing Professional Opinion Programs – review annually. (Review at first PM of each year in addition to FFs). [Reviewed ECP Visibility Initiative February 2011: satisfactory.]</td>
<td>1/10 FF 2/11 FF</td>
<td>2Q12 FF</td>
<td></td>
</tr>
<tr>
<td><strong>HS-5</strong></td>
<td>F</td>
<td>Follow DCPP progress in establishing/improving its safety culture (and its subset Safety Conscious Work Environment) and that a responsible individual is identified. Jim Becker is the responsible officer to lead the safety culture initiative. [Reviewed Premier Safety Culture Survey August 2010 FF – satisfactory.]</td>
<td>2/10 PM 8/10 FF</td>
<td>3Q11 FF</td>
<td></td>
</tr>
<tr>
<td><strong>PI</strong></td>
<td></td>
<td>Performance Improvement Programs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PI-1</strong></td>
<td></td>
<td>DCPP Performance Improvement Programs: Corrective Action, Self-Assessment, Operating Experience, Benchmarking, etc. [Reviewed CAP self-assessment at 3/10 FF – satisfactory.] [Corrective Action Program reviewed at December 2010 FF – satisfactory.]</td>
<td>3/10 FF 4/10 FF 12/10 FF</td>
<td>3Q11 FF</td>
<td></td>
</tr>
<tr>
<td><strong>PI-2</strong></td>
<td>M</td>
<td>In response to an observation by Consultant Wardell, Mr. Linnen agreed the DCISC’s next actions should include identification of future corrective actions and tracking their implementation through the CAP. Dr. Budnitz commented the CAP was one of the more important issues reviewed by the DCISC and the Committee agreed to review these issues again in January or March 2010. [CAP assessments reviewed at December 2010 FF – satisfactory.] [Needs continued DCISC review.]</td>
<td>12/09 PM 3/10 FF 6/10 PM 12/10 FF</td>
<td>3Q11 FF</td>
<td></td>
</tr>
<tr>
<td><strong>EP</strong></td>
<td></td>
<td>Emergency Preparedness (EP)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>EP-2</strong></td>
<td>M</td>
<td>Attend and observe DCPP emergency drills and exercises annually, paying special attention to JMC communications to the media and public,</td>
<td>7/10FF 9/10 FF</td>
<td>Next full scope drills</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Type</td>
<td>Description</td>
<td>Date(s)</td>
<td>Status</td>
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<tr>
<td>EP-3</td>
<td>M</td>
<td>MIDAS Upgrade – monitor DCPP’s actions to evaluate upgrading to a new version of MIDAS, based on SLO County concerns reported at the 6/08 PMDCPP has initiated a project to evaluate. [Reviewed at January 2011 FF – satisfactory.]</td>
<td>12/09 PM 3/10 FF 1/11 FF</td>
<td>1Q12 FF</td>
<td></td>
</tr>
<tr>
<td>RA-6</td>
<td>M</td>
<td>The Committee agreed to follow up during future FF on DCPP’s shift from its ORAM Program to another safety monitoring program (Safety Monitor) to assess the risk associated with taking equipment out of service for online maintenance. [Reviewed at 10/13/09 FF – Safety Monitor being implemented.)</td>
<td>3/09 FF 5/09 FF 10/09 FF</td>
<td>3Q or 4Q11 FF</td>
<td></td>
</tr>
<tr>
<td>RA-7</td>
<td>M</td>
<td>Monitor DCPP’s process of converting to the National Fire Protection Association’s Regulation 805 (NFPA 805) standard. [Reviewed in the 1/25/11 FF - satisfactory.]</td>
<td>11/10 PM 1/11 FF</td>
<td>3Q11 FF</td>
<td></td>
</tr>
<tr>
<td>NS-5</td>
<td>M</td>
<td>Monitor NSOC meetings at least annually to observe their processes and their review of nuclear safety issues. [Reviewed at 1/11 FF - satisfactory.]</td>
<td>1/09 FF 1/11 FF</td>
<td>1Q12 FF</td>
<td></td>
</tr>
<tr>
<td>NS-9</td>
<td>M</td>
<td>Monitor DCPP’s program to track INPO Areas for Improvement. Review with DCPP INPO Coordinator. Review after mid-cycle review. [Reviewed INPO-type Mid-Cycle Assessment at September 2010 FF: satisfactory.] [Reviewed preparations for INPO evaluation at April 2011</td>
<td>5/10 FF 9/10 FF 4/11 FF</td>
<td>3Q11 FF</td>
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<tr>
<td></td>
<td>FF: satisfactory.</td>
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<tr>
<td>RP</td>
<td>Radiation Protection (RP)</td>
<td></td>
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<tr>
<td>RP-3</td>
<td>M</td>
<td>Regularly review RP outage performance. [Reviewed in December 2010 - satisfactory.]</td>
<td>12/09 PM 12/10 FF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP-12</td>
<td>M</td>
<td>Review annual DCPP radiological release report each year. Review at Summer or Fall FFs. [Reviewed at July 2010 FF acceptable.]</td>
<td>8/09 FF 7/10 FF</td>
<td></td>
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<tr>
<td>QP</td>
<td>Quality Programs (QP)</td>
<td></td>
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<tr>
<td>QP-3</td>
<td>M</td>
<td>Review the activities and results of QV audits as well as PG&amp;E’s outside biennial audits, including timeliness of corrective actions. Review annually – include 4th quarter QPAR with yearly results. [Reviewed at August 2010 FF: satisfactory.]</td>
<td>10/09 FF 2/10 PM 8/10 FF</td>
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<tr>
<td>NF</td>
<td>Nuclear Fuel Performance (NF)</td>
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<tr>
<td>ER</td>
<td>Equipment Reliability and Life Cycle Management (ER)</td>
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<tr>
<td>ER-5</td>
<td>M</td>
<td>Monitor the Equipment Reliability Process approximately annually. [Reviewed at August 2010 FF: satisfactory.]</td>
<td>8/09 FF 8/10 FF</td>
<td></td>
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<tr>
<td>OE</td>
<td>Organizational Effectiveness &amp; Development (OE)</td>
<td></td>
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<tr>
<td>OE-3</td>
<td>F</td>
<td>Review the status of STARS – Strategic Teaming and Resource Sharing Initiative periodically. [Reviewed at January 2011 FF - satisfactory.]</td>
<td>9/09 FF 1/11 FF</td>
<td></td>
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</tr>
<tr>
<td>SE</td>
<td>System and Equipment Performance/Problems (SE)</td>
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<tr>
<td>SE-26</td>
<td>M</td>
<td>Review reactor pressure vessel compliance status after next set of surveillance samples is analyzed and effective vessel lifetime projections are updated. [Reviewed specimen</td>
<td>1/07 FF 10/10 FF Following 2R17</td>
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<tr>
<td>SE-36</td>
<td>M</td>
<td>Review the Boric Acid Corrosion Control Program annually. [Reviewed BACC at August 2010 FF: satisfactory but awaiting final FF report.]</td>
<td>8/09 FF 8/10 FF 3Q11 FF</td>
<td></td>
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<tr>
<td>SE-38</td>
<td>F</td>
<td>Add Containment Fan Cooler Unit modifications to enable reduced maintenance for future FF review. [Reviewed 3/10 FF – final mods to be installed May 2011 in 2R16.]</td>
<td>10/08 FF 3/10 FF 3Q11 FF</td>
<td></td>
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<tr>
<td>SE-39</td>
<td>F</td>
<td>Review and tour following each refueling outage the inspections and repairs of concrete Intake Structures. [Reviewed at 7/09 FF – satisfactory.]</td>
<td>7/09 FF 3Q11 FF</td>
<td></td>
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<tr>
<td>SE-40</td>
<td>F</td>
<td>Monitor the status of transformer leakage and failures and corrective actions. [Reviewed at November 2010 PM – satisfactory &amp; follow up after 1R16.]</td>
<td>11/10 PM 3Q11 FF</td>
<td></td>
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<tr>
<td>SG</td>
<td>Steam Generator Performance (SG)</td>
<td></td>
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<tr>
<td>SG-6</td>
<td>M</td>
<td>Review Steam Generator performance metrics annually and the 5-year tube inspections.</td>
<td>11/10 PM 3Q11 FF</td>
<td></td>
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<tr>
<td>OM</td>
<td>Outage Management (OM)</td>
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<tr>
<td>OM-4</td>
<td>M</td>
<td>Review Outage Safety Plan, safety margin trends, and plans for mid-loop operation for each outage. Review outage results following each outage at FFs and PMs. [Reviewed 2R16 safety plan at February 2011 FF: satisfactory.]</td>
<td>6/09 PM 12/09 PM 5/11 FF 1Q12 FF</td>
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<td>SEC</td>
<td>Security (SEC)</td>
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<tr>
<td>SF</td>
<td>Independent Spent Fuel Storage Installation – ISFSI (SF)</td>
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<tr>
<td>SF-1</td>
<td></td>
<td>Monitor ISFSI operations, including cask transfer. [Reviewed ISFSI video March 2010 FF – satisfactory. Video was shown at June 2010 PM:</td>
<td>6/10 PM 12/10FF Following next campaign</td>
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<tr>
<td><strong>SC</strong></td>
<td>Seismic (SC)</td>
<td></td>
<td></td>
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<td><strong>SC-3</strong></td>
<td>M</td>
<td>Long-Term Seismic Program: review periodically. Review significant seismic events as they occur. Reviewed at 6/09 PM. [Reviewed 3/10 FF – progress satisfactory. Continue to monitor.]</td>
<td>3/10 FF 11/10 PM</td>
<td>2/11 PM (RJB)</td>
<td></td>
</tr>
<tr>
<td><strong>SC-4</strong></td>
<td>M</td>
<td>Monitor new DCPP risk-based Probabilistic Tsunami Hazard Analysis. [PG&amp;E has completed. Add to next PM.]</td>
<td>5/08</td>
<td>3Q11 FF (RJB)</td>
<td></td>
</tr>
<tr>
<td><strong>SC-5</strong></td>
<td>F</td>
<td>Review whether [DCPP] has any seismic safety program that looks at personnel safety and bracing of furniture, and to get a tour around the plant to inspect for potential seismic hazards associated with tall furniture. [Reviewed at May 2011 FF: recommendation for DCPP to develop schedule to fix.] [DCISC continue to monitor.]</td>
<td>5/10 FF 7/10 FF 5/11 FF</td>
<td>2Q12 FF (PFP)</td>
<td></td>
</tr>
<tr>
<td><strong>SC-6</strong></td>
<td>M</td>
<td>Mr. West confirmed, in response to Dr. Lam,s question, that system interaction is considered when addressing system deficiencies through coordination and identification of impacts by the system engineering supervisors, as well as with the Operations, Maintenance and Work Control organizations. Mr. West confirmed that his group would be the appropriate contact point for the Committee to pursue further discussion of system interaction. [Reviewed at July 2010 FF: status improving – continue to monitor.]</td>
<td>2/10 PM 7/10 FF 5/11 FF</td>
<td>1Q12 FF</td>
<td></td>
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<tr>
<td><strong>FP</strong></td>
<td>Fire Protection (FP)</td>
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<tr>
<td><strong>FP-5</strong></td>
<td>M</td>
<td>Review Fire Protection Program and Systems every two-three years, including QV audits and NRC triennial inspections. Review the health and correction of degraded systems every six months. [Reviewed at August 2010 FF: satisfactory] [Reviewed at January 2011 FF – satisfactory.]</td>
<td>9/09 FF 8/10 FF 1/11 FF</td>
<td>1Q13 FF</td>
<td></td>
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<tr>
<td><strong>LD</strong></td>
<td>Learning &amp; Development Programs (LD)</td>
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<tr>
<td><strong>LD-3</strong></td>
<td>M</td>
<td>Review technical, operations &amp; accredited training programs at least annually. [Reviewed licensed operator training program 9/08 FF – ]</td>
<td>3/07 FF 9/08 FF 1/11 FF</td>
<td>1Q12 FF</td>
<td></td>
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</table>

<p>| LD-6 | F | Observe operator re-qualification, other classes, management observation training, RP training, weekly, etc. periodically in FF meetings. [Reviewed operator simulator class at 3/10 FF – satisfactory.] | 9/08 FF 3/10 FF 3Q11 FF |
| OT | Overtime Control (OT) | | |
| OT-6 | F | Review and monitor DCPP implementation of new NRC work hour rules and the resulting effect on overtime. [Reviewed at September 2010 FF – satisfactory.] Review ACE on Fatigue Management Rule in 2011 FF. | 12/09 FF 9/10 FF 4Q11 FF |
| NR | Nuclear Regulatory Commission Items (NR) | | |
| NR-3 | M | Monitor the Non-Cited Violation Tracking &amp; Trending Program annually at the Jan/Feb Public Meetings. | 1/07 PM PMs |
| NR-4 | F | Meet with NRC Resident Inspectors annually. [Met with SRI at April 2011 FF.] | 4/11 FF 1Q12 FF |
| LR | License Renewal (LR) | | |
| LR-1 | F | CEC: The Committee should conduct an evaluation of issues and make recommendations for any mitigation plans related to reactor pressure vessel integrity...in connection with PG&amp;E’s application for a twenty-year license extension for the plant and should consider reactor vessel surveillance reports in context of changes predicted to the predicted seismic hazard in the vicinity of the plant site. [Reviewed at February 2011 FF: satisfactory. Continue to review.) | 11/10 PM 2/11 FF 2/11 PM On hold for DCPP LR re-start |
| CL | Closed Loop Cooling (CL) | | |
| CL-1 | F | Monitor DCPP’s responses and actions to the Environmental Protection Agency (EPA) proposed regulations on closed loop cooling (best technology available) for thermal power plants. [Reviewed at December 2010 FF – DCPP feasibility study satisfactory.] | 11/10 PM 12/10 FF 4Q11 FF |
| O | Other Items (O) | | |
| O-8 | M | Perform periodic reviews of staffing by department or function as can in FF meetings. | 10/11 PM |</p>
<table>
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<tr>
<th>Date</th>
<th>PM</th>
<th>FF</th>
<th>Issue Description</th>
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</table>
| 2/10 | F   |     | Mr. Conway inquired whether DCPP has a plan to address conversion from analog to digital I&C systems and Mr. Sharp replied the I&C group has an ongoing training process and he offered to ask DCPP's Director of Maintenance Services, Mr. Cary Harbor, to address Mr. Conway's question and to provide additional information. [No response as of 11/3/10.] [Reviewed in February 2011 FF: satisfactory. Close.]
| 11   | F   |     | In response to Dr. Peterson's inquiry about the rate of return [of survey responses], Mr. Burnside offered to provide that information at a fact-finding, however, he agreed with Mr. Wardell's observation that, from information received at a past fact-finding, the rate of return has been approximately 45-60%. Dr. Peterson remarked he believed that to be less than desirable and he queried whether there might be a correlation between willingness to fill out the survey and opinions on the different questions and he stated it might be worthwhile to further review what may be implied by having a low of a return rate. [Reviewed at August 2010 FF: satisfactory.] [Unable to schedule for December 2010 or January 2011 FFs.]
| 6/10 | F   |     | ACE 60022682 “Non Explosion Proof Light Used in Diesel Fuel Oil (DFO) Vault” - Operators took the wrong type of light into a confined space due to human error in not adequately reviewing procedures. As a result of this event and others, DCPP's Director of Operations issued an adverse trend ACE and Mr. Wardell recommended the Committee follow-up on the results of this ACE in approximately 6-8 months. [Old issue. Do we want to continue it?]
| 6    | F   |     | The [Spent Fuel Pool Cooling] system was found in good health, with no indications of problems with the heat exchanger and Mr. Wardell suggested the DCISC conduct a follow-up review of the Spent Fuel Cooling System during a future fact finding. Mr. Wardell agreed with Mr. Conway's observation that the Committee's follow-up activities should include review of the determination of the length of time the temporary backup cooling system could be operable if the heat exchanger had to be out of service for an extended period.

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<th>Date</th>
<th>Time</th>
<th>Issue Description</th>
<th>Status</th>
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<tr>
<td>10/10</td>
<td>11PM</td>
<td>A report on this issue [Containment Sump Debris Blockage] is not expected to be released until 2011 and Mr. Linnen recommended the Committee review this issue during the middle part of 2011.</td>
<td>10/10 FF</td>
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<tr>
<td>10/10</td>
<td>3Q11 FF</td>
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<tr>
<td>11/10</td>
<td>F</td>
<td>Mr. Conway commented the Committee should consider reviewing the downstream aspects of both [RHR] pumps, as there are two check valves in the discharge line of each, and determine whether those check valves are on outage maintenance lists. [Reviewed at April 2011 FF: satisfactory. Close.]</td>
<td>6/10 PM Close</td>
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<tr>
<td>10/10</td>
<td>3Q11 FF</td>
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<td>2</td>
<td>F</td>
<td>Mr. Linnen suggested the DCISC may want to review specific performance areas and determine if there is a need for improvement. The team also reviewed this issue from the standpoint of overall performance. Mr. Linnen stated the DCISC representatives recommend the Plant Performance Improvement Report include information concerning which indicators are weak and have not improved, similar to the information which is provided in the Plant Health Committee reports.</td>
<td>10/10 FF 3Q11 FF</td>
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<tr>
<td>Date</td>
<td>Time</td>
<td>F</td>
<td>Comment</td>
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<tr>
<td>12/11</td>
<td>PM</td>
<td>F</td>
<td>Dr. Budnitz stated the Committee should pursue this matter [EPA plan for closed cooling.] in future fact-finding. Close to Item CL-1.</td>
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<td>F</td>
<td>Mr. Conway observed a review of the threshold level for other types of events [other than mispositioning] might be an appropriate subject for future fact-finding and Mr. Wardell stated a review will be placed on the Open Items List under the Human Performance category.</td>
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<td>3</td>
<td></td>
<td>F</td>
<td>The DCISC found the safety-security interface at DCPP to be satisfactory, however, Mr. Wardell suggested the Committee should conduct follow-up at a fact-finding to review how specific modifications were addressed under the new regulatory guidance.</td>
</tr>
<tr>
<td>4</td>
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<td>F</td>
<td>Mr. Conway suggested as a subject for a future fact-finding review of procedure and documentation to ensure that as equipment is added to DCPP the margins associated with the emergency diesel generators are appropriately reviewed.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>F</td>
<td>Mr. Conway observed a review of the threshold level for other types of events might be an appropriate subject for future fact-finding and Mr. Wardell stated a review will be placed on the Open Items List under the Human Performance category. [HP-26 created. Close here.]</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>F</td>
<td>Mr. Conway suggested as a subject for a future fact-finding review of procedure and documentation to ensure that as equipment is added to DCPP the margins associated with the emergency diesel generators are appropriately reviewed.</td>
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<td>7</td>
<td></td>
<td>F</td>
<td>Mr. Conway inquired whether Dr. Lam reviewed with Dr. Peck any concerns Dr. Peck might have with the independent safety review programs at DCPP and the responsibilities of the NSOC. Dr. Lam stated he had not reviewed the topic during his fact-finding in January 2011, but would include discussion of this issue in a future meeting with Dr. Peck.</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>F</td>
<td>In response to Dr. Peterson’ question whether the County during emergency drills and exercises routinely orders precautionary evacuations before PG&amp;E makes a recommendation concerning such actions or whether the County has ordered an evacuation contrary to PG&amp;E’s recommendation, Mr. David stated he would</td>
</tr>
<tr>
<td>2/11</td>
<td>PM</td>
<td>F</td>
<td>Next meeting with Lam &amp; Peck</td>
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<tr>
<td>12/11</td>
<td>PM</td>
<td>F</td>
<td>Awaiting DCPP</td>
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<td></td>
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<td>review with Mr. Ginn the frequency of such events during combined drills with the County over the past three years to determine whether there could be a trend toward over-conservatism on the County’s part.</td>
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<td>9</td>
<td>F</td>
<td>Mr. Conway observed the [Safety Culture Monitoring Panel] report appeared to be workable but he stated the process could get sidetracked and, as the report measures safety culture, it will be necessary to find out if the process and resulting report are actually working.</td>
<td>12/11 PM</td>
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<tr>
<td>10</td>
<td>F</td>
<td>On motion of Dr. Budnitz, seconded by Dr. Peterson, the DCISC directed that a letter be drafted to acquaint the Nuclear-Fueled Power Plant Review Committee with the role, responsibilities and expertise of the DCISC. [Draft completed and reviewed by Committee. Letter sent?</td>
<td>12/11 PM</td>
</tr>
<tr>
<td>11</td>
<td>F</td>
<td>Mr. Linnen remarked with these [emergency preparedness meteorological dose assessment] changes DCPP is going beyond what is required by federal regulation and it might be advisable for the Committee to schedule a final presentation by DCPP at a public meeting to review the program.</td>
<td>12/11 PM</td>
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<tr>
<td>12</td>
<td>F</td>
<td>In response to Dr. Peterson’s request, Mr. Sharp agreed to provide the median number of full time equivalent PRA staff members as utilities, such as Exelon Corporation, which operate fleets of nuclear units may affect the data.</td>
<td>2/11 PM</td>
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<tr>
<td>13</td>
<td>F</td>
<td>Mr. Wardell concluded the morning meeting with the observation that, concerning item CM-7 on the current Open Items List, a concrete inspection report was completed for U-1 in November 2010 and will be provided for review.</td>
<td>2/11 PM</td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>Dr. Budnitz stated the DCISC will continue to take seriously the charge to review the safety impacts of the elimination of OTC [Once Through Cooling] at DCPP and provide analysis and input to the process. Close to Item CC-1.</td>
<td>12/11 PM</td>
</tr>
</tbody>
</table>
The following exhibits describe contacts by members of the public during the reporting period.

Exhibit G.1 DCISC Telephone/Correspondence Log
Exhibit G.2 DCISC Correspondence (PDF)
Exhibit G.3 Comments Received at public meetings
The DCISC makes recommendations in each of its annual reports based on reviews and investigations made during the reporting period. PG&E responds to each recommendation, and the responses are included in Section 9.0 of this annual report. This Exhibit H includes the previous DCISC reporting period recommendations, PG&E responses, and the status of DCISC disposition.

### Table 1 – DCISC Recommendations from Last Reporting Period (7/1/2009 – 6/30/2010)

**Cumulative Record No. 212**

<table>
<thead>
<tr>
<th>DCISC Recommendation</th>
<th>Recommendation Reference</th>
<th>PG&amp;E Response / Action</th>
<th>PG&amp;E Response / Action References</th>
<th>Status</th>
</tr>
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<tbody>
<tr>
<td>Due to the increases in the numbers of Licensee Event Reports and Severity Level IV Violations and because of the newly re-identified NRC Substantive Crosscutting Issue in Problem Identification and Resolution, the DCISC recommends that DCPP perform a comprehensive analysis to determine the cause of these negative regulatory trends.</td>
<td>Recommendation R09-1, 2009/2010 DCISC Annual Report, Section 3.5.</td>
<td>PG&amp;E: PG&amp;E agrees with the DCISC recommendation for a comprehensive analysis to determine the cause(s) of these adverse trends. PG&amp;E has performed multiple analyses, as documented in the Corrective Action Program, for these events. A common cause analysis was performed to examine the number of traditional enforcement violations (as documented on SAP Notification 50331845). This common cause</td>
<td>2009/2010 DCISC Annual Report, Section 9.0, PG&amp;E Response to DCISC Recommendations February 15-16, 2011 DCISC Public Meeting (Exhibit B.6)</td>
<td>Closed</td>
</tr>
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</table>
analysis was approved by the Corrective Action Review Board on October 5, 2010. The substantive cross-cutting issue in problem evaluation was analyzed in the Corrective Action Program via a root cause analysis (as documented in SAP Order 60024480). This root cause analysis was approved by the Corrective Action Review Board on June 7, 2010. Both these Corrective Action Program documents were the subject of an inspection by Nuclear Regulatory Commission inspectors in December 2010. The NRC inspectors concluded that the corrective actions appear to be appropriate and on target, but lacked sufficient run-time to demonstrate their effectiveness at the time of the inspection.

DCISC: The amended response is acceptable.
<table>
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<th>DCISC Recommendation</th>
<th>Recommendation Reference</th>
<th>PG&amp;E Response / Action</th>
<th>Response / Action References</th>
<th>Status</th>
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<tr>
<td>The DCISC recommends that DCPP managers and supervisors periodically share the specific lessons learned from the series of events involving containment sump valve interlocks with station personnel at all levels, especially before the commencement of outages. The DCISC further recommends that DCPP share this same information with the industry.</td>
<td>Recommendation R09-2, 2009/2010 DCISC Annual Report, Section 4.15.3.</td>
<td>PG&amp;E: PG&amp;E agrees with the DCISC that the lessons learned from the series of events that led to the inoperability of the containment sump recirculation valves should be appropriately institutionalized. The subject series of events were entered into the Corrective Action Program and were evaluated via a root cause analysis (as documented in SAP Order 60020753). The root cause analysis provides a vehicle for the systematic determination of both the causes and the corrective actions needed to prevent recurrence of the events that took place during the 2R14</td>
<td>2009/2010 DCISC Annual Report, Section 9.0, PG&amp;E Response to DCISC Recommendations February 15-16, 2011 DCISC Public Meeting (Exhibit B.6)</td>
<td>Closed</td>
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</table>
These actions included changes to the procedures that describe work on motor operated valves, changes to routine testing procedures, and changes to engineering calculations. The root cause analysis process also evaluates the benefit of communicating lessons learned with both the industry as well as the possibility of incorporating lessons learned into recurring training as part of the systematic approach to training. Lessons learned from the event were shared with the plant staff through a number of communication vehicles as the investigation proceeded as well as at the conclusion of the process. The
root cause analysis process concluded that the procedural changes will be the most effective method of institutionalizing the lessons learned from this event. With regard to communicating the lessons learned with the industry, a follow-up industry operating experience report (OE 30412) that shared all the lessons learned from PG&E's investigation was made available to the industry on January 21, 2010.
GENERAL INFORMATION ABOUT THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

INTRODUCING THE INDEPENDENT SAFETY COMMITTEE

The Diablo Canyon Independent Safety Committee ("DCISC") was created by the State of California's Public Utilities Commission ("PUC") and held its first meeting in May 1990. The DCISC is a three-person committee whose members are charged with reviewing and making recommendations concerning the safety of operations at Pacific Gas and Electric Company's ("PG&E") Diablo Canyon Nuclear Power Plant ("Diablo Canyon"), located on a 753-acre site along the central California coastline in San Luis Obispo County. Diablo Canyon provides electricity for more than two million northern and central Californians from operation of its two 1,100-megawatt Westinghouse 4-loop pressurized water reactors fueled by uranium dioxide. Diablo Canyon began commercial operation in 1985 and is currently licensed by the United States Nuclear Regulatory Commission ("NRC") to continue operating until 2035. The Committee members are assisted in their important work by technical consultants and legal counsel.

FORMATION OF THE INDEPENDENT SAFETY COMMITTEE

The DCISC was established as part of a settlement agreement entered into in June 1988 between the Division of Ratepayer Advocates ("DRA") of the PUC, the California Attorney General and PG&E concerning the operation of Diablo Canyon. The settlement agreement was approved in PUC Decision 88-12-063 and provided that:

"An Independent Safety Committee shall be established consisting of three members, one each appointed by the Governor of the State of California, the Attorney General and the Chairperson of the California Energy Commission, respectively, serving staggered three-year terms. The Committee shall review Diablo Canyon operations for the purpose of assuring the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members shall have any responsibility or authority for plant operations, and they shall have no authority to direct PG&E personnel. The Committee shall conform in all respects to applicable federal laws, regulations and Nuclear Regulatory Commission policies."

The DCISC publishes an extensive Annual Report for the fiscal year ending June 30. In addition to summarizing the Committee's activities and its review of Diablo Canyon operations, the Annual Report documents the members' conclusions, concerns and recommendations regarding Diablo Canyon's operational safety.

In twenty Annual Reports through 2003-2015, the DCISC has made 212 formal recommendations to PG&E for improving the safety of Diablo Canyon operations. PG&E's response to each becomes a part of the annual report. All the DCISC Annual Reports are available for review by any interested members of the public at the Reference Department at the R.E. Kennedy Library, located on the campus of California Polytechnic State University at San Luis Obispo and the latest Annual Reports are provided to local public libraries and published on the DCISC website, www.dcsic.org.

In May of 1987, in response to the electric utility rate deregulation, the PUC issued Decision 87-05-068 which, while setting aside the 1986 settlement agreement, found that the DCISC remained a key element of monitoring safety of operations at Diablo Canyon. In May of 2004, in Decision 04-05-056, the PUC concluded the DCISC should retain discretion to determine how best to accomplish its mission and modified requirements for DCISC membership and nomination procedures and added a requirement that the DCISC undertake public outreach in the local San Luis Obispo community. In January 2007, in Decision 07-01-028, the PUC granted the DCISC's application for a Restated Charter.

DCISC OPERATION: PUBLIC MEETINGS & FACT FINDINGS

The DCISC typically conducts three public meetings each year in the San Luis Obispo area. Each meeting usually occurs in four or five separate sessions during two days, Dates, times and locations for these meetings are posted on the Committee's website, advertised in local newspapers and notices are sent to state agencies, the news media and those persons who have requested advanced notice of the public meetings. Public meetings may also include a tour of the Diablo Canyon Power Plant which is open to a limited number of members of the public along with members of the media. All meetings include an opportunity for the public to address comments and provide information to the Committee Members. PG&E representatives are present to make informational presentations to the Committee on topics requested by the Members. The meeting agenda and supporting documents, as well as a transcript of discussion at the public meetings, are filed and available to members of the public at the Reference Department of the Cal-Poly Library, minutes of each public meeting are prepared and approved by the DCISC and included in the annual report, and the public meetings are broadcast in real-time, as well as webcast and archived, on www.clspsan.org and are video-taped for broadcast on the local public access television station.

The DCISC also conducts frequent fact-finding visits by individual Members and consultants to the plant site and to other locations as necessary to assess issues, review plant programs and activities, interview and meet with PG&E management and employees, follow-up on current items on the DCISC's Open Items List and to identify agenda items for future public meetings. These fact-finding visits generally occupy one or two intensive days of research and investigation concerning PG&E's current activities and programs. Committee representatives also frequently observe meetings of PG&E's internal safety review organizations and committees.

A detailed written report, summarizing their activities, is prepared for each fact-finding visit by the participants. Comments concerning these reports are sought from each of the other Members and consultants, oral reports are presented during public meetings and, when approved by the Committee at a public meeting, the fact-finding reports are provided to PG&E. All fact-finding reports are included as a part of the Committee's annual report.

APPOINTMENT OF DCISC MEMBERS

A request for applications is publicly noticed by the PUC. After receipt of the applications and an opportunity for public comment on the applicants, a short list of candidates is selected by the PUC. This list is provided to the nominating Agency which then appoints a member. As required by PUC decisions which created and continued the Committee, the PUC proposes as candidates only persons with knowledge, background and experience in the field of nuclear power facilities and nuclear safety issues. In July 1988, when PUC President G. Mitchell Wilk announced the initial list of nine candidates designated for appointment to the DCISC, he noted that "an independent safety committee clearly requires members who could demonstrate objectivity and independence. For this reason, none of the nominees has testified for PG&E or any other party before the PUC or the Nuclear Regulatory Commission in any proceeding regarding Diablo Canyon."

These restrictions have applied to all subsequent nominees, who are required to file annual conflict of interest reports in accordance with California's Fair Political Practices Act and the implementing provisions of the PUC decision which created the Committee.

PUBLIC OUTREACH, COMMENT, INFORMATION AND COMMUNICATION

The Committee's public outreach activities include conducting three noticed public meetings in the San Luis Obispo area each year, public tours of Diablo Canyon Power Plant, conducting advertised informal open houses, meeting with concerned citizens and groups, broadcast of its public meetings on the local public access television channel and on the internet and responding to questions and requests for information received by letter, telephone and email. The DCISC welcomes comments and communications from members of the public and provides an opportunity for such dialogue during every session of its public meetings. The DCISC provides extensive, publicly available information concerning the safety of Diablo Canyon operations. The office of the DCISC Legal Counsel also maintains a toll-free within-California 800 telephone number as well as the DCISC website, including a link to the DCISC's email address, to respond to the questions or requests for information from members of the public. On request, the DCISC will consider arranging a meeting with one or more members of the public and a Committee member.

Written comments or questions may also be directed to the DCISC Members by contacting the office of the DCISC Legal Counsel:

Diablo Canyon Independent Safety Committee
Office of the Legal Counsel
557 Cass Street, Suite D
Monterey, California 93940
(800) 438-4699 (In California)
(831) 647-1044 (Outside California)
Worldwide Web Page: www.dcsic.org
E-mail: dcsic@dcisic.org
21st Annual Report, Volume 2, Exhibit J, Glossary of Terms and Definitions Used by the Diablo Canyon Independent Safety Committee (DCISC)
are the current features and criteria upon which the nuclear plant is designed and are also the bases for Nuclear Regulatory Commission review and approval.

**Diesel Generator (DG)**

is a standby source of emergency electrical power needed to power pumps and valves to provide cooling water to the fuel in the reactor to prevent its overheating and possible melting. The diesel generator is designed to start up and provide power automatically if normal power is lost.

**Emergency Operations Center (EOC)**

is the facility away from the immediate vicinity of the plant which is used to direct the operations for mitigation of and recovery from an accident.

**Emergency Preparedness (EP)**

is the assurance that the plant and its personnel are practiced and prepared for postulated emergencies to be able to mitigate them and recover with a minimum of damage and health effects.

**Engineered Safety Features (ESF)**

are the features (systems and equipment) engineered into the plant to mitigate the effects of anticipated and postulated accidents.

**Erosion/Corrosion**

is a phenomenon which takes place in carbon steel power plant water systems. The inside metal pipe will continually corrode due to galvanic action, forming a magnetite coating as erosion (due to high water velocity and/or changes in flow direction) continually wears away the magnetite layer, permitting the corrosion layer to reform, etc. The continual combination of effects wears away and thins the pipe wall.

**Escalated Enforcement Action**

is action taken by NRC beyond a notice of violation of its requirements for a single severe violation or recurring violations. Examples include a civil penalty, suspension of operations, and modification or revocation of a license to operate a nuclear plant.

**Final Safety Analysis Report (FSAR)**

is the document which describes the plant design, safety analysis, and operations for Nuclear Regulatory Commission review and approval for licensing for plant operation.

**Fitness for Duty (FFD)**

describes the state of an employee (cleared to access the nuclear plant) being in sound enough physical and mental condition to adequately and safely carry out his or her duties without adverse effects.

**High Impact Team (HIT)**

is a term denoting a multi-disciplinary or multi-functional team of people put together to focus on solving a particular problem or perform a particular task. The disciplines included are those necessary to effectively accomplish the task.
High Level Waste (HLW)

is highly radioactive waste, usually in the form of spent fuel (or fuel which has been discharged from the reactor as waste) containing a high level (as defined by NRC regulations) of radioactive fission products. HLW is handled remotely, using water or a thick container as a radiation shield.

Individual Plant Examination (IPE)

is a level 2 Probabilistic Risk Assessment (PRA) analysis of plant accident sequences. The analysis includes core damage progression through the release of radioactive material to the containment and the subsequent containment failure but stops short of determining potential impact on the public or property. The NRC requested all nuclear plants be analyzed in this way to get a better understanding of severe accident behavior. An IPEEE is an IPE which is initiated by External Events to the plant.

INPO, the Institute of Nuclear Power Operators

is a nuclear industry group formed after the Three Mile Island accident to help improve nuclear plant operations through regular assessments of each nuclear plant, evaluations, best practices, and nuclear operator training accreditation.

ISFSI, or Independent Spent Fuel Storage Installation,

is the term for DCPP’s on-site storage facility for the dry cask storage of spent nuclear fuel.

Inservice Inspection (ISI) and Inservice Testing (IST)

are the practices of inspecting and testing certain selected components periodically during their service lives to determine degradation patterns and to repair, if necessary, any degradation beyond acceptable limits.

Leg

with reference to the Hot Leg or Cold Leg refers to piping trains leading to or from the reactor vessel. The Hot Leg removes heat and the Cold Leg provides cooling water to the vessel and nuclear core.

Licensee Event Reports (LERs)

are reports from the plant operator to the Nuclear Regulatory Commission describing off-normal events or conditions outside established limits at a nuclear plant.

Line Organization

refers to the direct reporting supervisory chain in an organization through which orders and information flow. It is also known as the “chain of command.”

Loss of Offsite Power (LOOP)

is an occurrence whereby the normal supply of electrical power from offsite is interrupted. Nuclear reactors need power from offsite when shutdown for spent fuel cooling and residual heat removal. There are usually several sources of offsite power; however, loss of all sources would result in the automatic start-up of the diesel generators to supply power.

Low Level Waste (LLW)
is waste containing a low level of radioactivity as defined by NRC regulations. LLW is usually in the form of scrap paper, plastic, tape, tubing, filters, scrap parts, dewatered resins, etc. LLW requires packaging to prevent the spread of contamination but little radiation shielding.

Maintenance Rule

is the NRC proposed rule which requires that nuclear power plant licensees monitor the performance or condition, or provide effective preventative maintenance of certain structures, systems and components against licensee-established goals. The Rule becomes effective July 10, 1996.

Microbiologically-Influenced (or Induced) Corrosion (MIC)

is corrosion, usually in the form of pitting, on steel piping systems containing stagnant or low-flow water conditions. The corrosion is caused by surface-attached microbe-produced chemicals which attack the piping surface. Depending on severity, MIC is controlled by mechanical and chemical cleaning combined with biocides.

Mid-Loop Operation

is an infrequently-used refueling outage procedure in which, after shutdown and a cooling period, reactor coolant is lowered below the hot and cold legs, permitting work to be performed in a relatively dry environment. The operation is a relatively high-risk condition due to the potential for loss of cooling.

Misposition

means a positionable component, such as a valve, placed or left out of the required position for existing plant conditions when the component's required position is tracked by a station status control tool, such as a procedure, drawing, or valve list.

Motor-Operated Valves

are valves opened or closed by remotely- or locally-operated integral electric motors. The valves are used in power plant piping systems to divert, block or control the flow of steam or water.

Notification

formerly known as an “Action Request” or “AR” is a document, which is used to identify and track resolution of a problem and incorporate it into the Corrective Action Program.

Nuclear Excellence Team (NET)

is a organization of several well-qualified senior people whose mission is "To improve plant performance through the use of performance-based self-assessments within the NPG (Nuclear Power Generation) organization." The Team is augmented by at least one other PG&E and one outside individual with expertise appropriate to the particular investigation.

Nuclear Regulatory Commission (NRC)

is the Federal agency which regulates and licenses the peaceful uses of domestic nuclear and radioactive applications such as nuclear power plants, experimental nuclear reactors, medical and industrial radioisotope applications, radioactive waste, etc.
is the nuclear reactor and its closely associated heat removal systems which produce steam for the turbine. The NSSS usually includes the nuclear reactor, nuclear fuel, reactor coolant pumps, pressurizer, steam generators, and connected piping.

Operational Capacity Factor

is the capacity factor as measured between, but not including, refueling outages.

Primary Side and Secondary Side

refer, respectively, to the Reactor Coolant System, which is used to remove heat from the nuclear reactor and the Main Steam and Feedwater Systems which provide cooling to the Steam Generators and generate and provide steam to the Turbines.

Probabilistic Risk Assessment (PRA)

is a formal process for quantifying the frequencies and consequences of accidents to predict public health risk.

Protected Area

is the outermost area of the nuclear plant which is protected by physical means, a security system, and security force to prevent unauthorized entry (see also Vital Area).

Quality Assurance (QA)

comprises all those planned and systematic actions necessary to provide confidence that a structure, system or component will perform satisfactorily in service.

Reactor Coolant System (RCS)

is the collection of piping, reactor vessel, steam generators, pumps, pressurizer, and associated valves which function to circulate water through the reactor to remove heat.

Reactor Oversight Process

is the process by which the NRC monitors and evaluates the performance of commercial nuclear power plants. Designed to focus on those plant activities that are most important to safety, the process uses inspection findings and performance indicators to assess each plant’s safety performance.

Refueling Outage

is a normal shutdown of a nuclear power unit to permit refueling of the reactor, along with maintenance, inspections and modifications. Typical DCPP refueling outages occur about every 18 months and last for about two months. The outages are numbered by unit number (1 or 2), "R", and the consecutive outage number. For example, "1R5" is the fifth refueling outage for Unit 1 since start-up.

Reliability Centered Maintenance (RCM)

is the practice of maintaining equipment on the basis of the logical application of reliability data and expert knowledge of the equipment, i.e., a systems approach. Normal preventive maintenance (PM) is performed on the basis of time, i.e., maintenance operations are performed on a schedule to prevent poor performance or failure.
Residual Heat Removal (RHR)

is the removal of the residual heat generated in the reactor fuel after reactor shutdown to prevent the fuel overheating and possibly melting. The heat removal is performed by a set of pumps, piping, valves and heat exchange equipment circulating water by the fuel while the reactor is shut down.

Safety System Functional Audit and Review (SSFAR)

is an investigation of a single plant safety system from all perspectives such as design basis, operations, maintenance, engineering, testing, materials, problems and resolutions, quality control, etc. The review is performed by a multi-functional team and can last several months.

Simulator

is a simulated nuclear power reactor control room with gauges, instruments and controls connected to a computer. The computer is programmed to behave like a nuclear reactor and respond to operator actions and commands. The simulator is used in training nuclear operators in controlling the reactor and responding to simulated transients and accidents.

Single Point Vulnerability (SPV)

is an individual component, which does not have a significant level of component redundancy and whose failure alone could adversely impact the system or plant performance. DCPP defines a SPV as “a High-Critical component whose failure results in a plant trip or derate >2%”.

Spent Fuel Pool (SFP)

is an in-plant stainless-steel-lined concrete pool of water into which highly radioactive spent nuclear fuel is stored when it has been discharged from the reactor. The spent fuel is maintained in the pool until its ultimate disposal is determined.

Steam Dump Valve

is a device to discharge (dump) steam from the power plant piping to lower its pressure and reduce the energy in the line. This is done to permit faster shutdowns.

Steam Generator

is a large, vertical, inverted-U-tube-and-shell heat exchanger with hot reactor coolant on its tube side transferring heat to and boiling the non-nuclear feedwater to form steam on the shell side. Besides transferring heat, the steam generator is important as a barrier between the nuclear and non-nuclear coolants.

Surveillance

is the process of testing, inspecting, or calibrating components and systems to assure that the necessary quality is maintained, operation is within safety limits, and operation will be maintained within limiting conditions.

Technical Specifications (TS)

are the rules and limitations by which the plant is operated. They consist of safety limits, limiting safety system and control settings, limiting conditions for operation, surveillance requirements, description of important design features, administrative controls, and required periodic and
special notifications and reports.

Technical Support Center (TSC)

is the in-plant facility which directs plant activities in mitigating accidents and minimizing their effects.

Trains

refers to individual functional lines of system piping, components, or wiring which are usually independent of other parallel lines, which have the same redundant function.

Trip (or scram)

is the shutting down of the nuclear reactor by inserting control rods which shut down the nuclear fission process. An automatic trip is initiated by plant monitoring systems when one or more parameters differ from preset limits. A manual trip is initiated by plant operators in an off-normal event to prevent preset limits from being exceeded or as a backup to the automatic system.

Vital Area

is an area inside the plant within the Protected Area which contains equipment vital for safe operation.
On October 10, 2007, Robert J. Budnitz, Ph.D., was appointed by California Attorney General Edmund G. Brown Jr. to a term on the Committee expiring June 30, 2010. On April 15, 2010, the Attorney General announced the reappointment of Dr. Budnitz to a second three year term on the Committee commencing July 1, 2010 through 30 June 2013.

Dr. Robert J. Budnitz has been involved with nuclear-reactor safety and radioactive-waste safety for many years. He is on the scientific staff at the University of California’s Lawrence Berkeley National Laboratory, where he works on nuclear power safety and security and radioactive-waste management. From 2002 to 2007 he was at UC’s Lawrence Livermore National Laboratory, during which period he worked on a two-year special assignment (late 2002 to late 2004) in Washington to assist the Director of the Department of Energy’s (DOE’s) Office of Civilian Radioactive Waste Management to develop a new Science & Technology Program. Prior to joining LLNL in 2002, he ran a one-person consulting practice in Berkeley CA for over two decades. In 1978-1980, he was a senior officer on the staff of the U.S. Nuclear Regulatory Commission, serving as Deputy Director and then Director of the NRC Office of Nuclear Regulatory Research. In this two-year period, Dr. Budnitz was responsible for formulating and guiding the large NRC research program that constituted over $200 million/year at that time. His responsibilities included assuring that all major areas of reactor-safety research, waste-management research, and fuel-cycle-safety research necessary to serve the mission of NRC were adequately supported. From 1967-1978, he was on the staff of the Lawrence Berkeley National Laboratory, serving in 1975-1978 as Associate Director of LBL and Head of LBNL’s Energy & Environment Division. During this period, the programs under his direction were in a large mix of diverse areas relevant to DOE, including energy-efficiency, deep-geologic radioactive waste disposal, solar energy, geothermal energy, fusion energy, transportation technology, chemical-engineering for alternate fuels, environmental instrumentation, air-pollution phenomena, and energy policy analysis. He earned a Ph.D. in experimental physics from Harvard in 1968.

Dr. Budnitz served as Chair for this report period, July 1, 2010 – June 30, 2011.
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21st Annual Report, Volume 1, Section 1.2.3, Appointment of Committee Member Per F. Peterson

On July 9, 2008, California Governor Arnold Schwarzenegger announced the appointment of Per F. Peterson, Ph.D., PE, to a term on the Committee expiring July 1, 2011. Prof. Peterson previously served as a Committee member from September 2, 2004, through October 9, 2007.

Per F. Peterson is Professor and a former Chair in the Department of Nuclear Engineering at the University of California, Berkeley. He received his BS in Mechanical Engineering at the University of Nevada, Reno, in 1982. After working at Bechtel on high-level radioactive waste processing from 1982 to 1985, he received a MS degree in Mechanical Engineering at the University of California, Berkeley in 1986 and a Ph.D. in 1988. He was a JSPS Fellow at the Tokyo Institute of Technology from 1989 to 1990 and a National Science Foundation Presidential Young Investigator from 1990 to 1995. He is past chairman of the Thermal Hydraulics Division (1996-1997) and a Fellow (2002) of the American Nuclear Society, a recipient of the Fusion Power Associates Excellence in Fusion Engineering Award (1999), and has served as Editor for three technical journals.

Prof. Peterson’s work focuses on problems in energy and environmental systems, including passive reactor safety systems, inertial fusion energy, and nuclear materials management. His research interests focus on thermal hydraulics, scaling, heat and mass transfer, fluid dynamics, and phase change. He is author of over 95 archival journal articles and over 110 conference publications on these topics.

On January 29, 2010, U.S. Department of Energy Secretary Dr. Stephen Chu announced Dr. Peterson’s appointment as a Member of the Blue Ribbon Commission on America’s Nuclear Future, established by President Obama to provide recommendations for developing a solution to managing the Nation’s used nuclear fuel and nuclear waste.
On June 3, 2009, Peter Lam Ph.D. was appointed by Chair Karen Douglas J.D. of the California Energy Commission (CEC) to a three year term on the Committee commencing July 1, 2009 and ending on June 30, 2012.

Dr. Peter Lam, Administrative Judge Emeritus of the U.S. Nuclear Regulatory Commission, is an international authority on nuclear reactor operating experience, and a leading expert of nuclear reactor safety and risk assessment. Dr. Lam is now the principal of EMM International, a consulting company with a group of experts in the nuclear industry. In his 18 years of public service as an Administrative Judge, Dr. Lam has presided over numerous public proceedings to decide technical issues of national and international significance involving the use of nuclear energy and materials. Judge Lam’s jurisdiction covered all 104 nuclear power plants, some 21,000 medical and material licensees, and nuclear waste storage in the United States. The ultimate resolution of these significant technical issues has contributed to the enhancement of nuclear reactor safety.

Prior to his judicial appointment 18 years ago, Dr. Lam had extensive technical and managerial experience in the nuclear energy business over a period of 20 years. He was a nuclear engineer at General Electric Company, participating in the design and analysis of BWR advanced fuels. Dr. Lam served as a program manager at Argonne National Laboratory, managing the research and development of advanced fast reactor metal fuels. He was a manager at Science Applications, Inc., and a consultant at NUS Corporation, both major consulting firms in the nuclear industry. Dr. Lam’s responsibilities there involved the management of probabilistic risk assessments of operating nuclear reactors. He managed a group of technical specialists in the U.S. Nuclear Regulatory Commission in the analysis and evaluation of nuclear reactor operating experience. Dr. Lam was also a visiting faculty member at California State University at San Jose, and at George Washington University.

Dr. Lam has published 71 technical papers and reports in national and international journals and in proprietary company publications, which focus on major issues in nuclear transport theory, nuclear reactor fuel design, nuclear reactor operating experience, and nuclear reactor safety. Judge Lam has also issued over 110 published judicial decisions related to some 50 cases of litigation. These judicial decisions resolve a wide range of technical and legal issues regarding nuclear reactor safety, nuclear waste disposal, and other civilian use of nuclear technology.

Dr. Lam has presented lectures at the International Atomic Energy Agency (IAEA) international conferences in Austria, Korea, and Spain, on significant results in comprehensive analyses of nuclear reactor operating experience. He has chaired an IAEA working group to develop a technical treatise for the analysis and evaluation of operating experience of the world’s nuclear reactors.
These activities contribute to the international exchange of important information to improve nuclear reactor safety.

Dr. Lam earned a Ph.D. and a M.S., both in nuclear engineering, from Stanford University in 1971, and 1968, respectively. He earned a B.S., in mechanical engineering, from Oregon State University in 1967. His 4-year undergraduate study at Oregon State University and his 4-year graduate study at Stanford University were fully funded by eight consecutive scholarships and fellowships.

Dr. Lam served as Vice-Chair for this report period, July 1, 2010 – June 30, 2011.
4.1.1 Overview and Previous Activities

The following are operations-related items the DCISC reviewed in the previous reporting period:

- Interruption of the Drain-down to Mid-loop with Unreliable Reactor Vessel Level Indication System (RVLIS) during 1R15
- 2008/9 and 2009/10 Winter Storm Activity & DCPP Response
- Clearance Performance during Outage Refueling Outage 1R15
- Operators’ Concerns and Issues
- Status/Trend of Component Mispositioning Errors
- Selected Aspects of Control Room Management
- Reactivity Management
- Apparent Cause Evaluation (ACE) 60022682 – Non-Explosion Proof Light Used in Diesel Fuel Oil (DFO) Pump 0-1 Vault

DCPP Operations appeared to have performed satisfactorily in its normal operation of the plant. Actions to address operators’ concerns, component mispositionings, equipment clearances, “no solo” management, and confined space practices appeared to be yielding good results. The DCPP Reactivity Management Program (RMP), winter ocean storm response, and response to an interruption of reactor vessel water level instrumentation event during refueling appeared to be effective.

4.1.2 Current Period Activities

During the current period, the DCISC had presentations on conduct of operations at six Fact-finding meetings. The following topics were reviewed:

- Operational Focus
- Operations Revitalization Action Plan
- Status of Component Mispositioning
- Chemistry Program
- Operator Burdens
- Union/Operator Concerns
Operational Focus (Volume II, Exhibit D.1, Section 3.5)

The Operational Focus Initiative was developed in recognition of the fact that during recent years, the station has necessarily been engaged in a number of capital and outage-related projects that have drawn the focus of station management. These included replacement steam generators, new reactor vessel integrated head assemblies, and a new independent spent fuel storage installation. As these above major efforts neared completion, it was determined that an intensified focus should be placed on some specific indicators that reflect how well the plant is operating and that an Action Plan should be developed to achieve desired improvements through this heightened operational focus.

Two existing composite indicators from the Plant Performance Improvement Report (PPIR) were selected as the measures of how well the station is performing with respect to an operational focus. These indicators are the Operational Focus (composite) index and the Work Management (composite) index. The individual performance indexes comprising the Operational Focus composite index are: Operational Workarounds, Corrective Maintenance Backlog, Operator Burdens, Elective Maintenance Backlog, Control Room Deficiencies, Temporary Alterations, Main Annunciator Deficiencies, Prompt Operability Assessments, and Clearances with Tags Hanging >90 days.

The ratings of these indicators were expressed as Green (no action needed), Yellow (action required), and Red (unsatisfactory). Each of these ratings depended upon a quantitative performance measure of each indicator. The Operational Focus performance indicator sheet in the Plant Performance Improvement Report (PPIR) contained broad statements of what DCPP intended to do to improve its operational focus. These broad statements then appeared in eight specific objectives of DCPP's Operational Focus Action Plan, which were, in turn, supported by over 100 individual actions. Over 90 percent of these individual actions had been completed. The specific actions in this Objective that remained open were scheduled to be completed by August 2010. The composite indicator for Operational Focus had improved noticeably from September 2009 to June 2010.

The individual indexes comprising the Work Management (composite) Index included the following: Scope Stability, Schedule Adherence, Planning Completion, Corrective Maintenance Backlog, and Elective Maintenance Backlog. The Work Management composite indicator had also improved noticeably from September 2009 to June 2010.

DCPP's approach to improving the Operational Focus of the station appeared to be well structured and resulting in steady improvement. The Operational Focus Action Plan, which was nearing full implementation, directly addressed the areas for improvement that were identified in DCPP's Plant Performance Improvement Report. Station performance, as measured by the Operational Focus composite indicator and the Work Management composite indicator had improved noticeably during the prior 9 months.

Operations Revitalization Action Plan (Volume II: Exhibit D.6, Section 3.4)
During the DCISC’s prior review of this topic in August 2009 it appeared that DCPP Operations management and represented operators had resolved their major concerns, grievances, and contract disputes. Also, there had been no apparent negative effect on the DCPP safety culture caused by operators’ concerns and issues. Nevertheless, operator concerns continued to linger and to affect the relationship between the operators and management. This resulted in the development of an Action Plan to address the lingering issues. The DCISC conducted this review in October 2010 to identify progress being made and to examine the extent to which this situation may be affecting plant operations.

The Operations Revitalization Action Plan had four focus areas:

- Clarify the union contract to obtain mutual agreement between labor and management on the interpretation of the contract
- Reconnect and rebuild teamwork in order to build and restore trust between management and operations employees
- Address and eliminate lingering complaints and organizational distractions that had contributed to conditions of ambiguity, distrust, and weak communication
- Provide a “world class working environment.”

The DCISC noted that overall, communications, collaboration, and teamwork had improved and that shift leadership had been engaging with employees to identify new actions to address any previously identified problems and to develop meaningful actions to continually improve the working environment.

One of the major influences on the relationship between operators and management was the most recent revision to the union contract which specified that operator qualifications, not seniority, should be the determining factor in selecting Senior Reactor Operators (SRO) candidates and that class size should be flexible, rather than predetermined. The revised contract was accepted by a vote of the operators.

Other factors involved the need for shift managers to engage operators more routinely regarding issues of significance to them and for information to be provided more effectively to operators on topics of interest to them. In this vein the Communications Department provided assistance regarding communications tools to use, and supervisors received training in communicating and maintaining relations with working level personnel.

A review of the Operations Revitalization Plan revealed that 53 of 70 action items were complete. Six of the remaining 17 involved improving furniture, storage, and the kitchen. Those actions and the 11 others did not appear to be items that would significantly affect operator attitudes toward management.

The DCISC Fact Finding Team examined the following operations-related performance factors to determine any weak areas that could then be examined for ties to operator attitudes:

- Operations Section Human Performance Indicator
Operator Mispositionings
Operations Protective Tagging Index
Plant Events Caused by Operators
Reactivity Management
Operations Crew Performance during the July 2010 Emergency Planning Drill
Operations Crew Performance during the August 2010 Emergency Plan NRC-Evaluated Exercise

The above indicators revealed no areas of concern regarding the performance of station operators.

With its Operations Revitalization Plan, DCPP management took a considerable number of actions to address operator concerns and revitalize the relationship with station operators. These efforts appeared to be achieving the desired results. Performance indicators that are influenced by the actions of station operators revealed no potential areas of concern.

Status of Component Mispositioning (Volume II, Exhibit D.6, Section 3.5)

A “Mispositioned Plant Component” is defined by Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, as follows: “Any positionable component placed or left out of the required position for existing plant conditions when the component's required position is tracked by one or more of the following status control tools: procedures, clearances, work management process (e.g. orders), other similar authorizing documents that align or re-align components, any positionable component placed or left out of the required position or existing plant conditions due to inadequate or incorrect status control tools described above. This includes situations where a lack of process exists that should have controlled the configuration of the component.”

The DCISC noted that over the past few years, the station had become more conservative with regard to what constitutes a non-consequential mispositioning. This category was changed to include those that have minimal or no impact on the station and that were immediately identified and corrected (Level 4). Also included were those where a component mispositioning was imminent or possible, but averted through the use of error prevention tools (Level 5). The above two classifications had been added since 2007. The table below shows the number of mispositionings in recent years:

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010 (thru IR16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consequential</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Non-consequential</td>
<td>32</td>
<td>21</td>
<td>48</td>
<td>35</td>
<td>19</td>
</tr>
</tbody>
</table>

Note: Using the less conservative definition from 2007 and earlier, the number of non-
consequential mispositionings in 2009 would be 19 and the number in 2010 would be 9.

The DCISC noted that an intensified focus had been placed on mispositioning reductions during the prior 12 months, especially due to the relatively high number of mispositionings that occurred during refueling outage 2R15 in the last quarter of 2009. During the first nine months of 2009, 18 mispositionings occurred (all were non-consequential and nine were Level 3). However, 13 more non-consequential mispositionings (8 were Level 3) occurred during the 35-day refueling outage 2R15, and after that outage four more occurred prior to end of 2009.

To address these performance issues a Common Cause Evaluation was performed after 2R15 by a combined Operations and Maintenance team. It was determined that the Maintenance mispositionings were largely due to very basic and simple mistakes that could be corrected by self-verification. Maintenance corrective actions involved performing Just-In-Time/Tailboard Training just prior to the outage. The causes of mispositionings by Operations personnel were more complex and often related to weaknesses in the application of operator fundamentals when using procedures. Corrective actions to address the Operations issues involved the following:

- Reinforcing the need to identify and address procedure issues
- Performing management mandated training for operations personnel
- Reviewing tools for using procedures, changing procedures, and for maintaining status control through the use of the Electronic Shift Operations Management System (eSOMS)
- Reinforcing the use of the STAR tool (Stop, Think, Act, Review). In some of the mispositionings the “think” function had failed to slow the evolution enough to identify the potential situations where mispositionings could occur.

In addition, an “observation blitz” was conducted just prior to refueling outage 1R16. Every manager in Operations performed field observations on Maintenance and Operations work activities, focusing on pre-job briefings, on adherence to the 2-minute rule (a period at the work site prior to commencement of work during which the workers were expected to view the work area and review the activities to be conducted while looking for possible situations where mispositionings could occur), and on worker adherence to the STAR rule (Stop, Think, Act, Review). Seventy observations were conducted in one week.

**DCPP devoted substantial attention and effort to reducing component mispositionings. Significant improvement was achieved during 2010 including the first 17 days of refueling outage 1R16.**

**Chemistry Program (Volume II, Exhibit D.8, Section 3.1)**

The DCISC review focused on the status of the station’s actions to address difficulties in controlling sulfates and iron in the feedwater systems. This was the DCISC’s first review focusing exclusively on these specific chemistry parameters.

The feedwater system returns condensed steam to the steam generators, which heat the feedwater back into steam, which spins the turbine generators and is then condensed back into
water, which is then again pumped back to the steam generators. The significance of having iron corrosion products in the feedwater is that these solid corrosion products accumulate inside the steam generators and will, over time, reduce the heat transfer capability of the new steam generators. The improved design of the new steam generators reduces the impact of accumulated iron compared to the impact on the old steam generators, but the issue still needed to be addressed. In part, this has entailed minimizing the corrosion products entering the system not only during operation but also during shutdown conditions. Strategies are also needed to mitigate feedwater iron after plant transients. The DCISC Fact Finding Team examined a detailed action plan to address the above issues. Many of the actions involved operational strategies to limit the amount of iron entering the feedwater system during various operating conditions and power levels, as well as during shutdown conditions. These actions were complete in 2009.

Nevertheless, no matter how small the content of iron in the feedwater, the iron still accumulates over time in the steam generators. This accumulation can be periodically reduced by opening a valve in the lower portion of the steam generator and blowing down this water containing iron and other impurities into a drain tank. However, the DCPP blowdowns had typically been no more that 5 percent efficient in reducing steam generator iron content. Through participation with other industry stations on this issue, DCPP learned that the addition of a chemical, polyacrylic acid, to the feedwater downstream of the final stage of feedwater heating will draw more iron into suspension and lead to greater efficiency of the steam generator blowdowns. Some other plants had experienced their blowdown efficiencies for iron increase to about 50 percent. Therefore, DCPP added testing the effect of this chemical dispersant to its action plan, and completion was expected in the first quarter of 2011. DCPP was also considering bypassing the full flow polishers as an additional remedy for this issue, but there is a tradeoff regarding this potential action because the plant uses saltwater from the Pacific Ocean as cooling water in its main condenser. As such, any tiny leakage in the main condenser would allow corrosive salt water to enter the condensate and feed systems. Having the full flow polishers in place allows the plant to remove the corrosive components of salt water and, therefore, to operate with tiny condenser leaks.

The second issue of having a higher level of sulfates than desired in Unit 1 feedwater was traced to the effluent of the above-mentioned polishers when the problem emerged in the second quarter of 2009. The polishers were determined to be the source of the sulfates, which can contribute to corrosion in the steam generators. This issue was complicated by the fact that bypassing the polishers to eliminate the sulfate intrusion would also eliminate the capability of removing any main condenser leakage of corrosive salt water from the water being fed to the steam generators. DCPP also had an extensive action plan to address this sulfate problem in Unit 1. Alternative polisher resin was being tested in one of the Unit 1 polisher beds, and performance at that time had been good. Final results were expected by the end of the second quarter of 2011.

The potential system leakage problems that could result from the iron and sulfate levels in DCPP’s feedwater systems appeared to present more of an operational reliability issue than a nuclear safety issue. DCPP had been implementing extensive action plans to address both issues.

Operator Burdens (Volume II, Exhibit D.8, Section 3.6)
Operator Burdens are defined as undesirable conditions/impediments that cause operators to perform otherwise unnecessary work during normal plant operation. Operator Workarounds are similar to Operator Burdens but they create otherwise unnecessary work for operators when responding to abnormal operating conditions or emergencies. To help determine DCPP’s performance with respect to Operator Burdens the DCISC Fact-finding Team conducted a review of various station monthly Plant Performance Indicator Reports (PPIR) from May 2010 into January 2011. This review revealed that the number of Operator Burdens had risen from a low of two (Green) in May to a high of 6 (Yellow) in September and then declined to 2 in January 2011. The station’s performance ratings for Operator Burdens are as follows: Green: 0 – 3, Yellow: 4 – 9, Red: ≥10

(The DCISC Fact-finding Team also conducted a review of weekly Operator Workarounds from mid-May 2010 through the remainder of that year. DCISC noted that 28 of the 34 weekly values of Operator Workarounds were zero. A high of one Operator Workaround appeared during two weeks in May, two weeks in June 2010, one week in October, and one week in November. The station’s rating system for Operator Workarounds is as follows: Green = 0, Yellow = 1, Red ≥2)

The DCISC team noted that a Daily Review Team meets to assign the priority of maintenance items. The team consists of a Senior Reactor Operator from Operations, an individual from Work Control, and an Operations Support Team member from Maintenance. DCPP was able to reduce the number of Operator Burdens by convening an additional weekly meeting of the Daily Work Control Manager, a station Maintenance Manager, and Operations Manager to review outstanding Operator Burdens and to convey priorities to the Daily Review team. This additional management involvement directly led to the reduction in Operator Burdens. Several years prior the station had experienced a similar issue with the number of plant Control Board deficiencies in the Main Control Room, and the same management oversight process was implemented, which led to a similar decrease in Control Board deficiencies.

The involvement of appropriate DCPP managers in resolving the increasing trend in Operator Burdens was an excellent example of how effective management oversight can resolve station problems.

Union Operator Concern (Volume II, Exhibit 3.10, Section 3.3)

The DCISC Fact-finding Team (FFT) reviewed a union operator concern brought to the attention of the DCISC from a union steward. In addition to discussing the concern with Operations management, the DCISC FFT reviewed this concern with the affected employee and the union steward during this fact-finding meeting. This was the first DCISC review of this item. The events leading up to this discussion were follows:

1. The employee, an experienced, good-performing, non-licensed 63-year old operator, twice violated personnel safety procedures by intentionally twice throwing a wrench to another employee inside Containment rather than using a ladder to hand the tool to him. The wrench was not caught and fell downward to the floor.

2. The employee admitted his actions and bad judgment and was disciplined by given a disciplinary leave (day off with pay) to consider whether he wanted to remain employed by following the safety procedures. He did so and returned to his position but under a year’s disciplinary status.

3. The employee had requested admittance to licensed operator class prior to the event; however, because he was in the discipline program, management considered him not eligible for the class and denied the request. Admittance to the class was considered a promotion by management, and promotions were not permitted under the union contract while being under discipline. Management believed this was in accordance with the union contract. These actions were reviewed and approved/agreed to by the Site Vice-President and the Nuclear Safety Oversight Committee (NSOC). The operator had been to licensed operator class several years prior, but dropped out before finishing.

4. The union submitted a grievance, and the disagreement was going through the grievance process at the time of this meeting.

5. A petition signed by about 30% of the operators disagreed with management actions, which the petitioners considered to be not in compliance with the contract.

The union steward forwarded the petition to the DCISC, along with the DCPP procedure “Dropped Object Prevention” and DCPP “Disciplinary Review Guidelines.” He asked the Committee to review as it saw appropriate. Because the Committee’s scope is limited to reviewing DCPP “operational safety,” the DCPP FFT reviewed it on that basis rather than a disciplinary or union issue. The Operations Manager believed this was not an operational safety issue.

The FFT met with the affected employee. He had not seen the February 9, 2011 petition signed by his fellow operators. He indicated a desire to attend licensed operator training and explained the management decision. When asked by the FFT, he had no operational safety concerns.

The FFT met with the Union Steward who was a licensed operator and work control leader with 23 years experience at DCPP. He expressed a need for Operations personnel and management to work together as a team but expressed concerns about a lack of trust in management based on the above-described situation. He believed operators couldn’t bring problems to management and expect decisions and actions. He stated specifically that management did not follow the process for disciplinary action because it didn’t give the employee the required 15-day period in which to have his say with management in order to argue for his participation in the licensed operator class. The union steward did not have any operational safety concerns, but was concerned about morale.

The DCPP Fact-finding Team (FFT) reviewed a concern brought to it by a union steward regarding disciplinary action taken against an employee who violated the personnel safety program. The disciplinary action included denial of participation in a licensed operator class. After separate discussions with management, the affected employee, and the union steward, the FFT concluded that the situation did not represent an operational safety concern.

4.1.3 Conclusions and Recommendations
Conclusions:

Operations had performed satisfactorily in the normal operation of the plant. Actions to address component mispositionings, steam generator iron and sulfate concentrations, and operator burdens appeared to be appropriate. The Operational Focus Action Plan was well conceived and appeared to be getting good results. Implementation of the Operations Revitalization Action Plan appeared to be obtaining good overall results with respect to improving the relationship between Operations managers and workers. One worker concern was being addressed by DCPP management and appeared to have no impact on nuclear safety.

Recommendations:

None
4.3.1 Overview and Previous Activities

The following are engineering-related items the DCISC reviewed in the previous reporting period:

- Gap to Excellence in Engineering
- Engineers’ Union – Member Perspective
- Engineers’ Union – Management Perspective
- Projects Delayed in 2009/2010 Due to Budget Cuts
- Margin Management Program
- Flow Accelerated Corrosion Program
- Overview of Engineering Program

DCPP appeared to have properly addressed the problem of inadequate technical evaluations related to its licensing and design bases; however, results were yet to be achieved. Support of Engineering personnel for the union was based on beliefs that management had too short-term a view, stressed performance over quality, intimidated some engineers, and did not provide for adequate knowledge transfer for departing engineers. Although there were no nuclear safety issues, the union believed that the plant was experiencing some loss of margin due to lack of knowledge by inexperienced or newly-assigned engineers. Management had taken a number of actions that addressed union concerns, some in direct response to and some independently of the union. The actions addressed work-hours, advancement, job descriptions, and, most importantly, a knowledge preservation process to assure that departing engineers impart their job knowledge to their successors. These actions appeared timely and appropriate. The upgraded DCPP Margin Management Program (MMP) appeared to be well designed with appropriate attributes, responsibilities and controls. DCPP’s Flow Accelerated Corrosion (FAC) Program appeared forward-looking, healthy, and effective. DCPP appeared to be taking appropriate actions to achieve transfer of knowledge from departing engineers to new personnel. DCPP’s focus on improving its technical and licensing basis evaluations was necessary and appropriate.

4.3.2 Current Period Activities

During the current period, the DCISC examined the following Engineering activities in seven Fact-finding Meetings and one Public Meeting:

- Thoroughness of Problem Evaluations
Air Operated Valve Program
Environmental Qualification Program
Licensing Basis Verification Program
Margin Management
System Engineering Program
Engineering Evaluation Rigor Improvement Action Plan

**Thoroughness of Problem Evaluations (Volume I Exhibit B.3 and Volume II Exhibit D.1, Section 3.1)**

A portion of this issue pertained to a number of “gaps to excellence” that had been identified in two DCPP self-assessments and pertained to the quality of analyses in both Apparent Cause Evaluations (ACE) and Root Cause Evaluations (RCE), as follows:

- The training for ACE analysts may not meet the needs of the analysts.
- ACE preparers and approving managers often did not attend ACE critique meetings, missing valuable opportunities to obtain feedback to improve the quality of their evaluations.
- The qualification requirements for RCE analysts did not assure that analysts are trained in techniques to address equipment, human, and organizational problems, nor did they contain provisions to assure that proficiency is maintained.
- RCE initiation did not meet industry standards for timeliness.
- RCE reports did not contain objective evidence of analysis tool usage. The outputs of the various tools were not available for review.
- DCPP had more flexibility than average in the ways in which RCEs, ACEs, and Work Group Evaluations (WGE) might be used for a given station significance level. Downgrades from RCE to ACE and from ACE to WGE were not well documented and occurred at a frequency that exceeds industry norms.
- DCPP lacked an understanding of “what good looks like” with respect to performance and approval processes of ACE’s and RCE’s.
- There was a lack of consistency and understanding on what is required to perform common cause and work group evaluations.
- Some Notifications had been misclassified by the Notification Review Team.

Other problems that had been identified by DCPP pertaining to its corrective action program included the following:

- Problem statements, causes, and corrective actions had been too narrowly focused and sometimes inaccurate.
- Authors sometimes inaccurately characterized a problem.
- ACE’s were sometimes used in place of RCEs.
- CAP items were sometimes improperly screened as Significance Level 5 (non-CAP).
There had been some loss of proficiency in performing evaluations.

The station had been slow to accept and respond to feedback on CAP.

In addition, during past years the Nuclear Regulatory Commission (NRC) had expressed concern regarding Diablo Canyon Power Plant's (DCPP) ability to evaluate and solve station technical problems, and the concern was carried into this current reporting period. This issue pertained to engineering evaluations that are addressed in a DCPP Engineering Evaluation Rigor Improvement Action Plan, which is discussed in more detail in the last topic of this Engineering Section of Volume II of this Report. In brief, the station intended to spend about a year to ensure that the procedure on conducting technical evaluations (OM7.ID13) could be fully implemented. The procedure had been revised in May 2010.

In order to be able to assess station performance in the broad, yet detailed, area of evaluating problems, a draft listing of various Station Programs Health performance indicators (PI) had been developed to be included as part of the Plant Performance Improvement Report (PPIR). The listing included the following:

<table>
<thead>
<tr>
<th>Operability Determinations</th>
<th>Reportability Determinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Safety Analysis Report Update</td>
<td>Seismically Induced System Interactions</td>
</tr>
<tr>
<td>Cause Analysis</td>
<td>Employee Concerns</td>
</tr>
<tr>
<td>On-line Risk Assessment</td>
<td>License Amendment Requests</td>
</tr>
<tr>
<td>Informal Evaluations</td>
<td>Operational Decision Making</td>
</tr>
<tr>
<td>Operating Experience Assessment</td>
<td>Trending</td>
</tr>
<tr>
<td>Program Governance</td>
<td>Troubleshooting</td>
</tr>
<tr>
<td>Licensing Basis Impact Evaluations</td>
<td></td>
</tr>
</tbody>
</table>

Related to this PI sheet, DCPP had developed an extensive matrix that listed various performance related items such as applicable industry standards, gaps between DCPP practice and industry standards, identification and development status of governing documents, station target groups for training, and the oversight that would be in place and functioning for each performance area. DCPP was in the process of benchmarking its standards for these activities against appropriate industry standards, and taking corrective action when needed. For example, with respect to Operability Determinations, the NRC inspection manual provides the standards, and DCPP had established an operability determination board that reviews all Shift Manager operability determinations daily.

Collectively, the topics, issues, and activities associated with addressing DCPP problem evaluation were extensive and detailed. The issues included not only DCPP's use of its Corrective Action Program to analyze and correct emergent station problems but also DCPP's examination of the impact that station activities have on its design and licensing bases. DCPP had developed an extensive action plan and had begun to utilize a wide array of performance indicators to track progress on this issue. Many actions were well underway. The DCISC will be following this area closely in the coming year.
Air Operated Valve (AOV) Program (Volume II, Exhibit D.5, Section 3.1)

DCPP's “Program for the Verification, Monitoring, and Trending of Air and Hydraulically Operated Valve Performance” is controlled by Procedure MA1.ID16, which was undergoing revision based on the 2006 DCPP AOV Program Assessment to reclassify 26 Category 1 valves [all but Pressurizer Power-Operated Relief Valves] to Category 2.) There are also several other procedures for the Valve Packing Program, AOV and Associated Device Calibration, and AOV Testing Using the Crane Viper Diagnostic System.

The purpose of the program is to test and maintain AOVs to assure their air operators will be able to operate the valves as desired under expected system conditions. The program was developed in the mid-1990s as part of an industry effort in response to NRC concerns about the operability of AOVs. An industry Joint Owners’ Group (JOG) was formed in the late 1990s. The DCPP AOV Program categorizes AOVs into the following four categories:

Category 1
- safety or non-safety-related valves with an active safety function and high safety significance (58 AOVs).

Category 2
- active safety-related AOVs, which do not have high safety significance (322 AOVs).

Category 3
- AOVs outside Categories 1 and 2, which affect plant, efficiency and megawatt capacity, or whose maintenance history indicates the need for increased surveillance.

Category 4
- any remaining AOVs not included in the above three categories.

Baseline, periodic, and post-maintenance testing are performed on each AOV depending on its category. Records and trends are maintained for each AOV. Any problems are documented and tracked on an Action Request in the Corrective Action Program. AOVs are tested in one or more of the following ways:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Test Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loop Test</td>
<td>External Leak Test</td>
</tr>
<tr>
<td>Actuator Leak Test</td>
<td>Stroke Time Test</td>
</tr>
<tr>
<td>Seat Leak Test</td>
<td>Diagnostic Tests (Viper)</td>
</tr>
</tbody>
</table>

Overall AOV Program health was White. Program health measures for the AOV Program were as follows for the four program cornerstones:

Personnel Cornerstone
- Green*

Infrastructure Cornerstone
White due to several outstanding Notifications, strategic plan needing updating, more qualified technicians needed, and an action item greater than one year old. Actions were underway for these items.

Implementation Cornerstone

Green

Equipment Cornerstone

Green

Green health was expected in the third quarter 2010.

* The Program Owner Backup availability had become limited due to personnel resource restrictions. This put a significant burden on the Program Owner.

Most AOVs are tested during outages. The DCISC Fact-finding Team reviewed the valve lists for testing in the Spring 2010 2R15 outage (72 valves needing testing, packing or diaphragm replacement, rebuild, and/or calibration) and the upcoming 1R16 outage (80 valves). All AOVs not meeting specifications are corrected and re-tested prior to the end of the outages. The DCISC reviewed a typical Viper Analysis and Loop Test data sheet and found it satisfactory.

DCPP performed a Quick Hit Self-Assessment in June 2010. This assessment was a follow-up to an industry Assist Visit on the AOV Program in 2006, which resulted in 21 findings/recommendations when comparing DCPP performance to indicators of excellence. Due to staffing/reorganizations, a Notification was written to reconcile the current state of the AOV Program with the 2006 findings/recommendations. The 2010 assessment resulted in 12 findings as follows:

- Two findings were strengths
  1. Use of a valve packing vendor
  2. Good feedback on AOV as-found condition enhances Preventive Maintenance (PM) frequency setting

- Nine findings were enhancements or gaps to excellence
  1. Differential temperature measurement is not used to select valve with possible internal leak-by
  2. Succession planning has not been developed for Valve/AOV Engineering
  3. Credit is not taken for PM work when CM work is performed.
  4. There are no assigned Maintenance AOV Owners in either I&C or Mechanical
  5. Just-in-Time (JIT) Training should be reinstated for Viper testing
  6. Provide I&C Technicians training for Fisher positioners
  7. Reinstate quarterly AOV Team meetings to facilitate communication
8. Establish AOV post-outage critique meetings
9. Add the definition of low margin to the AOV program procedure

One finding was an observation

1. The current back-up AOV Program Owner has limited time available

These findings were documented in the AOV Program Health Report as actions to be tracked.

The DCPP Air Operated Valve (AOV) Program appeared to be satisfactory. Valves were appropriately categorized for priority and testing and were tested on a schedule during outages. Testing had been successful. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations but did reveal some gaps to excellence and enhancements, which were documented in the Program Health Report for action and tracking.

Environmental Qualification Program (Volume II, Exhibit D.7, Section 3.6)

The DCPP EQP is controlled by Procedure CF3.ID3, “Environmental Qualification (EQ) Program,” which implements Title 10 of the U.S. Code of Federal Regulations, Part 50.49 (10CFR50.49). This requires the generation and maintenance of evidence to ensure that electric equipment important to safety will operate when required to meet system performance requirements. This mostly includes electric equipment located in harsh environments such as high temperature, high radiation, water spray, steam, etc. conditions, especially following postulated accidents. The procedure specifies the design bases for environmental conditions in various locations of the plant, the EQ Masterlist, applicable departmental procedures, deficiency identification and resolution, documentation requirements, and records retention. The procedure appeared satisfactory to the DCISC Fact-finding Team.

Personnel qualifications and personnel certification are specified in Program Guide ENGNTS12, “Engineering Personnel Training Program – Perform EQ Related Engineering Activities.” The guide includes all aspects of EQ, e.g., EQP scope, EQ Masterlist, requirements for various equipment, vendor qualification, EQ-related calculations, and EQ files. The guide also appeared satisfactory.

Though the program had no health report, DCPP considered the EQP to be in Green (excellent) health currently and long-term.

DCPP had performed a self-assessment of EQ for the period June 2006 through the end of 2009. The report was issued on July 1, 2010. The purpose was to assess the overall health of the EQP, report the results of EQ equipment condition monitoring, and identify any trends, issues, or industry concerns that could adversely impact the DCPP EQP. One additional assessment area was the move of EQ data and files from the original Plant Information Management System (PIMS) to the new SAP-based Nuclear Excellence Information System (NEXIS). The assessment was comprehensive and thorough. The report contained the following conclusions/issues:

- The EQP and documentation complied with 10CFR50.49
- There were no identified adverse trends in the qualification or maintenance of EQ equipment
The current SAP or NEXIS EQ data/files were correct and all installed EQ equipment was properly documented.

EQ-trained Engineering personnel had been reduced to three due to staff reduction and reassignments, and there were an additional five qualified in other areas. Training had been performed to qualify 3-4 additional personnel.

The DCPP plant life extension project had required a review of all EQ equipment to extend their qualified lives from 40 to 60 years. Most of this had been performed in conjunction with the Steam Generator Replacement Project, and the remainder had been identified in the report, along with scope, schedule and cost estimates.

The Containment Fan Cooler Unit (CFCU) motors have an EQ-qualified life of 169 years; however, the mechanical condition of the motors was poor, which means the motors were good for 2-3 more years. Replacement motors require 1-2 years to design, build, and qualify. This procurement needed approval and funding.

NRC performed a Life Extension Audit on EQ earlier in 2010, and there were no concerns or follow-up questions. As part of its proposed life extension, DCPP’s review of EQ files to determine the impact of the extended 60-year life revealed the following:

The required EQ maintenance for items with a 40-year life needing maintenance or replacement during the original 40 years was in place.

Additional work needed to be completed for items with a qualified life between 40 and 60 years to extend the qualification or replace the items.

The qualification for the 40-to-60 year items should be able to be extended if properly identified and the actual known environmental conditions are applied.

The 40-to-60 years items were put into six categories as follows:

1. Items already qualified for 60 years with specified normal maintenance
2. Items with a replacement schedule supporting 60-year qualification
3. Items qualified for 40 years which can be extended based on actual known operating temperatures
4. A specific case involving Grayboot connectors which, similar to Item 3 above, are temperature sensitive
5. Items which are radiation-only qualified which can be extended by assuring the integrated accident and normal radiation doses are acceptable
6. Items which need new maintenance or replacement schedules to meet the 60-year life

The DCPP Environmental Qualification Program (EQP) for safety-related electrical equipment appeared sound. The plant assessed the EQP to be in Green (excellent) health. A self-assessment found the EQP to be effective in meeting the regulatory requirements of 10CFR50.49. The EQP Coordinators were experienced and knowledgeable in the program requirements and features. The EQP appeared to be in a good position to assure that applicable DCPP equipment will be...
compliant if the proposed 20-year plant life extension is granted by the NRC.

**Licensing Basis Verification Program (Volume II, Exhibit D.7, Section 3.6)**

The purpose of the Licensing Basis Verification Project (LBVP) is to perform an objective review and evaluation of licensing, design, and analysis changes from DCPP’s original Final Safety Analysis Report (FSAR) to the present to determine if the DCPP licensing basis has been adequately maintained and to correct any identified deficiencies. The term “licensing basis” refers to any commitments made to NRC on which their approval of the license to operate is based. This was the first DCISC review of this project.

Since completion of the original Final Safety Analysis Report (FSAR), a number of changes to DCPP licensing and design bases had been made. DCPP had determined that some of these changes were inaccurate, inconsistent, inadequately evaluated (with the 10CFR50.59 process), or based on incorrect interpretations of NRC requirements. Based on this, DCPP management authorized the LBVP. The DCISC had reviewed many of these discrepancies and agreed that a broad study be undertaken to evaluate the problem and correct any deficiencies.

**Project Overview**

- Identify, consolidate, and reconcile any inconsistencies in the DCPP Current Licensing Basis (CLB)
- Perform a review modeled after the Component Design Basis Reviews (CDBRs) for eight risk-significant systems after the corresponding system licensing basis is verified
- Reconcile any inconsistencies in the CLB searchable document databases
- Enhance the full-text search capabilities for the CLB searchable databases
- Validate the implementation of the FSAR into plant documents (e.g., operating and surveillance procedures)

**Project Scope**

- Phase I (95% complete as of December 2010)
  - Reviewed and evaluated the Component Cooling water (CCW) and Auxiliary Feed water (AFW) Systems
  - Reviewed CLB databases and identified specific improvements, and defined the desired capabilities of an improved full-search text tool.
  - Performed the following:
    - Reviewed the balance of the SER, SSERs, License Amendment Safety Evaluations, and all incoming/outgoing NRC correspondence, etc. for the CCW and AFW Systems.
    - Identified and reviewed all 10CFR50.59 Evaluations and the 10CFR50.59 Screens for calculations, STPS, EOPS, DCMs, TS Bases, ECOs, and modifications for the CCW and AFW Systems.
Provided a preliminary report to PG&E management of the Phase I findings and recommendations on September 17, 2010.

The DCISC Fact-finding Team reviewed the Phase I Summary Report and determined that it was thorough and intrusive. The report concluded that “...facility, procedure, and analysis changes appear to have been accurately and correctly documented on a 10CFR50.59 Screen and Evaluation, when applicable.” Two issues pertained to the elimination of the gross failed fuel detector and certain changes in FSAR Update Appendix 3.1A. Other inconsistencies were found between Technical Specification Bases and the FSAR Update and Design Criteria Memoranda. These were to be reconciled in Phase II.

Phase II (In Progress)

- Implement Phase I recommendations and any outstanding actions from Phase I
- Review and evaluate remaining portions of the FSAR
- Licensing review for the 230 kV System was begun in August 2010
- Perform reviews modeled after Component Design Basis Reviews (using NRC Inspection Procedure 71111.21 as a guide) on eight Risk-Significant Systems, after the corresponding system licensing review is complete. The systems are Component Cooling Water (CCW), 230 kV, 500 kV, Emergency Diesel Generators (EDGs), Auxiliary Feedwater (AFW), Solid State Protection System (SSPS), Residual Heat Removal (RHR), and Auxiliary Salt Water (ASW).
- Correct identified inconsistencies in the CLB Document Databases

The LBVP milestones were as follows:

- September 17, 2010 – preliminary report provided to management of the Phase I Findings and Recommendations
- August 2010 – Initiate Phase II (began 230 kV licensing review)
- March 2011 – Complete CCW CDBR
- March 2011 – complete enhancements of the CLB Electronic Databases and Full-Text Search Tool goes into production
- December 2014 – complete LBVP

The LBVP was to be carried out on a project basis with a dedicated Project Manager and some DCPP personnel, but with most work being done by contractors experienced in LBVP. Also, the LBVP was to utilize a Review Board, consisting of several Senior Consultants with previous NRC licensing, inspection, or enforcement experience and/or mechanical/electrical engineers with previous nuclear plant licensing, design, or operations experience. This Review Board would also work with Project Management to develop Phase I lessons learned and recommendations for Phase II performance.
The DCISC Fact-finding Team concluded that the DCPP Licensing Basis Verification Project (LBVP) is warranted based on past license basis problems, which both DCPP and NRC had identified. The nearly completed initial Phase I work had provided a good foundation for moving forward with Phase II, the main project initiative. DCPP had established a strong project team and process for the LBVP.

**Margin Management (Volume II, Exhibit D.8, Section 3.3)**

Margin is defined as the conservatism included in the design and operating practice of any structure, system, or component (SSC). It is a basic principle of plant design and operation. The amount of margin is expressed by the conservatism (i.e., safety factor, design factor, buffer, or cushion) included in the design and analysis of every plant SSC in order to accommodate normal wear and aging of equipment and materials, instrument drift, variations in material properties, differences in maintenance practices, uncertainties in analytic methods, etc.

The purpose of DCPP’s Margin Management Program is to ensure that each SSC is managed with knowledge of margin concepts, such that design and operational margin is not unknowingly diminished over time. It provides a benefit of being able to examine the required performance of SSCs from a broader perspective than solely what has been written into design capabilities or Technical Specifications. It relies mainly on the following programs:

- Configuration Management
- Design Control
- Modification Control
- Materials Control
- Setpoint Control
- Nuclear Oversight Program
- Corrective Action Program
- Operations Management

The Margin Management Committee (MMC) met regularly (at least quarterly) and was responsible for reviewing the low margin Structures Systems and Components (SSCs), prioritizing based on significance, recommending a course of action to resolve low margin issues, and maintaining the Margin Concerns List. The MMC also reviewed Margin Management Program (MMP) metrics that were prepared and maintained by the MMP Owner. The MMC was composed of a broad representation of engineering and operations personnel in order to bring appropriate perspectives to the issues that are reviewed and discussed by the Committee. Also, each member of the DCPP engineering staff had received training in margin management; and system and component engineers had also received additional training.

Operators were expected to know the DCPP operating margin (operating point to operating point) for systems and equipment under their responsibility. Operators maintain operating margins so that
they do not exceed the operating limits specified in Technical Specifications, Equipment Control Guidelines, Operating Procedures, and Surveillance Tests. Operators had also received training in margin concepts and management.

The DCISC Fact-finding Team reviewed a listing of top margin issues including issue owners, a summary of actions needed, and specific completion horizons approved by the Margin Management Committee. One example was emergency lighting duration, where the current system capability from an engineering standpoint fully meets Technical Specifications requirements. However, operators had noted that the physical capability of the system in some circumstances did not provide adequate duration time for them to perform some of their required tasks when having to rely on emergency lighting, although it meets plant Technical Specifications. Therefore, from an operational perspective the system did not have adequate margin, and actions needed to be taken.

DCPP MMP metrics as provided in the January 4, 2011 Margin Management Program Report and in the agenda for the January 5, 2011 Margin Management Committee meeting were as follows:

Overall Program
   White (healthy, but not all aspects are green)
Program Personnel
   White (new program owner and back-up)
Program Infrastructure
   White (procedure revision pending)
Program Implementation
   Green (no noted implementation problems)
Plant SSC
   Green (no open or active margin Prompt Operability Assessments)

DCPP’s Margin Management Program appeared to be functional and healthy. Appropriate personnel had been trained. Margin issues had been identified and prioritized. Responsibilities, actions, and completion dates/horizons had been established for identified issues. The Margin Management Committee appeared to be serving as a vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts with the DCPP staff.

System Engineering Program (Volume II, Exhibit D.9, Section 3.5)

DCPP had determined in 2008 that its System Engineering Program (SEP) was ineffectively implemented with respect to correcting system health problems. Thus, the Program was revised to center its focus on system health and strengthen System Engineers’ ability to correct system health problems.

The four levels of system health are as follows:
Healthy

- Green indicates the system has minor or no performance issues.
- White indicates all actions to correct major performance/health issues complete, or interim corrective actions are in place, and performance is trending towards a goal or target.

Unhealthy

- Yellow indicates the system has major performance/health issues with interim and/or final corrective actions scheduled for implementation.
- Red indicates the system has major performance/health issues and actions are being developed, but not approved by the PHC.

The Fact-finding Team reviewed the current system health for the Red and Yellow Systems, as shown in the following table

### Unit 1

<table>
<thead>
<tr>
<th>System</th>
<th>Health Color</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy</th>
<th>Actions for Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Feedwater</td>
<td>Yellow</td>
<td>4</td>
<td>3/11</td>
<td>ACE for Failed Valve Actuator</td>
</tr>
<tr>
<td>Emergency Diesel Generator</td>
<td>Yellow</td>
<td>2</td>
<td>2/12</td>
<td>Increased Load Margin and Repair Banjo Bolts</td>
</tr>
<tr>
<td>HVAC</td>
<td>Yellow</td>
<td>2</td>
<td>3/11</td>
<td>Evaluate ABVs Flows: CFCU Reverse Rotation; CFCU Breaker Tripping; Replace ASW Pump Room Fan; and Remove Dumper Panel SPV</td>
</tr>
<tr>
<td>4kV</td>
<td>Yellow</td>
<td>11</td>
<td>1R17</td>
<td></td>
</tr>
<tr>
<td>480V</td>
<td>Red</td>
<td>1</td>
<td>TBD</td>
<td>Replace Relays Susceptible to EMI</td>
</tr>
<tr>
<td>125VDC</td>
<td>Yellow</td>
<td>5</td>
<td>3/11</td>
<td>ACE for Failed Battery Cell</td>
</tr>
<tr>
<td>230 kV</td>
<td>Yellow</td>
<td>35</td>
<td>2R16</td>
<td>Implement Reliability Project</td>
</tr>
</tbody>
</table>

### Unit 2

<table>
<thead>
<tr>
<th>System</th>
<th>Health Color</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Actions and dates were identified to return these systems to healthy as shown above. The DCISC also observed a Plant Health Committee (PHC) meeting in December 2010 when it concluded that the meeting was well run, that it focused on system and program health improvement, and that it garnered good participation from attendees. Also, the Committee’s emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It was apparent that the PHC had increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which had resulted in improvement in system health measures. The Fact-finding Team’s overall conclusion was that the DCPP system health program was improving.

This was substantiated with the following chart showing the trend of unhealthy systems.

The Fact-finding Team reviewed the current DCPP System Engineering Program (SEP) Procedure (Procedure TS5.ID1). Significant improvements had been made in 2009. The improvements centered on system engineers and their supervision focusing more time on system health, performing more robust system walk-downs, having more reviews of health with supervision, higher expectations for system health cards, and more emphasis on system health by the Plant Health Committee.
The Fact-finding Team reviewed the system health reports in their new format for the following systems:

- Condensate
- 480-Volt Vital & Non-vital Power
- Radiation Monitoring
- HVAC

Included in these reports were Action Plans for returning the systems to healthy status, when appropriate, and identifying the reason for any problem conditions, owner, CAP Notification number, tracking number, action type, status, due date, responsible individual, last updated date, whether required for healthy, and whether in Top 10 plant action items. The Fact-finding Team believed the new style system health reports to be effective in capturing the important aspects of system health and the actions and dates for a return to healthy.

**Improvements in the System Engineering Program combined with those in the Plant Health Committee process to achieve a better focus on system health appeared to have good potential for maintaining DCPP systems healthy. DCPP system health had improved since these changes were made.**

**Engineering Evaluation Rigor Improvement Action Plan Volume II, Exhibit D.9, Section 3.8**

The need to improve Engineering Evaluation Rigor has spanned a number of years at DCPP dating back to 2008. To address this issue most recently, DCPP developed a formal “Evaluation Thoroughness Action Plan” during the past year. The plan was designed for DCPP engineering personnel to “perform rigorous evaluations using industry leading programs to analyze and resolve problems.” These programs were to be periodically assessed and updated using industry best practices. The Plan contains the following strategies:

- Implement the Licensing Basis Verification Program (LBVP)
- Utilize the LVBP to broaden and retain licensing and design basis knowledge.
- Complete the 230 kV licensing basis review.
- Use training where appropriate to improve performance.
- Reinforce the behaviors required to implement evaluation programs effectively and efficiently such as regularly referencing the applicable standards when using evaluations.

Performance was to be measured with the following:

- No significant events, human performance clock resets, reportable events, or lost generation due to an incomplete or inappropriate evaluation.
- Corrective Action Program (CAP) trend data indicate improvements relative to evaluation thoroughness.
A self-assessment conducted in late 2010 concludes performance is improving.

≤3 NRC Non-cited Violations (NCVs) per year with a P.1.c* cross-cutting aspect for performance after July 1, 2010.

No NRC greater-than-Green NCVs/findings with a P.1.c* aspect.

Improving trends in indicators that monitor aspects of safety culture.

* The P.1.c aspect is defined as follows: The licensee thoroughly evaluates problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and Issue reportability conditions adverse to quality. This also includes, for significant problems, conducting effectiveness reviews of corrective actions to ensure that the problems are resolved.

The Fact-finding Team requested the above self-assessment for review; however, it had been improperly performed, was not complete at the time, and a definitive completion date was not provided. This is a concern to the DCISC because this was to have been the first significant measure of a significant problem at DCPP. The DCISC should recommend that this self-assessment be promptly completed.

The Action Plan consisted of the following Objectives:

- communicating the need for change and aligning the Leadership Team
- developing and communicating a clear vision and strategy
- engaging the workforce for broad-based action
- creating short-term actions to provide interim improvements
- monitoring performance and providing feedback to fully ingrain the new methods and standards of performance into the way the Station does business
- leveraging the LVBP [Licensing Basis Verification Project] to improve evaluation thoroughness and knowledge transfer
- utilizing the systematic approach to training to identify gaps and leverage training to improve evaluation thoroughness
- effectively identifying non-conformances and ensuring appropriate and thorough evaluations
- monitoring performance and providing feedback to fully ingrain the new methods and standards of performance into the way the Station does business. (All 13 actions are in progress.)

This Action Plan appeared comprehensive and complete, and appeared to contain appropriate measures of performance to gauge whether improvement was being achieved. Also, many of the steps prescribed to achieve the above objectives had been completed with the exception of the steps pertaining to the last object above that involved monitoring performance and obtaining
feedback Applicable assessments of performance were prescribed as follows:

- The self-assessment (reported above as late).
- NRC's 95-002 inspection (DCPP expected to complete its analysis of this inspection by the end of April 2011.)
- Independent safety culture assessment using NRC definition of safety culture aspects.
- Review INPO Evaluation & Assistance (E&A) results for elements of problem identification thoroughness and identify additional gaps.
- Implement actions from DCPP configuration management self-assessment.
- Develop necessary improvement actions, with emphasis on process to maintain fidelity between the plant, procedures, and UFSAR.

DCPP had responded aggressively to the significant performance gaps identified in its engineering evaluation thoroughness and rigor. DCPP had developed a detailed, comprehensive Evaluation Thoroughness Action Plan that appeared to address the identified performance gaps; however, DCPP had not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010. Therefore, the DCISC recommended that DCPP initiate and promptly complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010.

4.3.3 Conclusions and Recommendations

Conclusions:
Collectively, the topics, issues, and activities associated with addressing DCPP problem evaluation were extensive and detailed. DCPP had developed an extensive action plan and had begun to utilize a wide array of performance indicators to track progress on this issue. Many actions were well underway. The DCPP Air Operated Valve (AOV) Program appeared to be satisfactory. Valves were appropriately categorized for priority and testing and were tested on a schedule during outages. Testing had been successful. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations but did reveal some gaps to excellence and enhancements, which were documented in the Program Health Report for action and tracking.

The DCPP Environmental Qualification Program (EQP) for safety-related electrical equipment appeared sound. A self-assessment found the EQP to be effective in meeting the regulatory requirements of 10CFR50.49. The EQP appeared to be in a good position to assure applicable DCPP equipment is compliant with the 20-year plant life extension. The nearly completed initial Phase I work of the Environmental Qualification (EQ) Program had provided a good foundation for moving forward with Phase II, the main project initiative.

DCPP’s Margin Management Program appeared to be functional and healthy. Margin issues had been identified and prioritized. Responsibilities, actions, and completion dates/horizons had been established for identified issues. The Margin Management Committee appeared to be serving as a
vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts. Improvements in the System Engineering Program combined with those in the Plant Health Committee process appeared to have good potential for maintaining DCPP systems healthy. DCPP system health had improved since these changes were made. DCPP had responded aggressively to the significant performance gaps identified in the thoroughness and rigor of its engineering evaluations. DCPP had developed a detailed, comprehensive Evaluation Thoroughness Action Plan that appeared to address the identified performance gaps; however, DCPP had not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010.

**Recommendation R11-2:**

The DCISC recommended that DCPP initiate and promptly complete its first self-assessment of the significant gap in the thoroughness and rigor of its engineering evaluations, which was to have been completed by the end of 2010.

**Basis for Recommendation:**

The DCISC Fact-finding Team requested the Engineering Evaluation Rigor Improvement Action Plan self-assessment (a self-assessment to be conducted in late 2010 concluding performance is improving); however, it had not been properly performed in accordance with management directions, was not complete at the time, and a definitive completion date was not provided.
4.4.1 Overview and Previous Activities

Human Performance is usually used to refer to “human error” and the term is used herein in that manner. The issues around plant safety and plant efficiency having to do with human error reduction are also included in this section.

The goal of the human performance program is to reduce the number of human errors to improve plant safety and plant efficiency by improving human performance.

During the previous period (2009-2010) the DCISC reviewed the following human performance-related item:

- Human Performance

The DCISC concluded that at the plant level DCPP Human Performance (HP) has been steady at a good level within its goal. The goal has a built-in continuous improvement factor, which is positive. There has been effective HP performance during recent outages, resulting in no HP events significant enough to cause a clock reset (a resetting to zero of a clock measuring the elapsed time without significant HP events). There are challenges in Maintenance work control quality and rework, which the DCISC should follow.

4.4.2 Current Period Activities

During the current period (2010-2011) the DCISC reviewed the following human performance-related item:

DCPP Human Performance (Volume II, Exhibit D.7, Section 3.5)

The DCISC Fact-finding Team met with the Supervisor of Human Performance (HP) and Industrial Safety, who reports directly to the DCPP Station Director, a high reporting level, which indicates the importance DCPP places on both HP and industrial safety.

DCPP’s Human Performance Program (HPP) is controlled by Procedure OM15.ID1, “Human Performance Program.” The stated purpose of the program is to “…improve performance by reducing the frequency and severity of events…” using “…error prevention techniques as appropriate for the task.” The procedure outlines program definitions; management and personnel responsibilities; and processes and criteria for identifying and processing Department-Level Event-free Days events and Site Event-free events and the associated clock resets. In general, all
individuals performing work at DCPP are responsible for:

- Performing activities within established procedures, standards, and guidelines
- Demonstrating and promoting the use of error prevention tools
- Identifying via the Corrective Action Program (CAP) conditions, which may contribute or cause HP errors.

Error prevention tools (e.g., three-way communication, independent verification, phonetic alphabet, etc.) are taught in various “just-in-time” training tool kits, emphasized by management, and displayed prominently throughout the plant and on reminder cards required to be carried by all. The Fact-finding Team reviewed the Three-Way Communication Training Tool Kit and found it to be well designed. It included a student workbook, Maintenance Site-Level Event Awareness Bulletin, two-minute rule activity, student feedback form, and outline of an in-class activity of determining a battery voltage using three-way communication.

The error rate (numbers of Department Error events per 10,000 work-hours) increased slightly from August to October 2010; however, the overall trend is downward (good) and the current rate (0.192) is below the plant goal of 0.22. It is interesting and challenging that the plant goal is revised downward at a rate of 10% of the 12-month average rate. Overall plant performance is good based on no HP clock resets in 529 days. DCPP has a running “clock” which measures how long the plant has operated without a serious human error event. A “clock reset” is the result of a significant human error which causes a plant “clock” to stop and begin again at zero.

![Department-Level Event Comparison - 1R16 vs. 2R15](http://www.dcisc.org/21st-4-04-human-performance.php)

The primary reasons for higher error rates during the outage were reported to be time pressure,
more people working, and less frequent (i.e., less familiar) activities being performed. DCPP began
to look more closely at the severity level of HP events in Outage 1R16. This will mean revising event
trends and processes, which the department PICOs (Performance Improvement Coordinators) are
developing. The DCISC should review these new severity-based trends near the middle of 2011.

DCPP is planning to augment its pre-outage personnel safety and human performance training for
both plant personnel and supplemental personnel. There will be “new to nuclear,” “experienced
worker,” and “supervisor” modules. The DCISC has attended DCPP pre-outage training and found it
well done. The DCISC will consider attending the new training in March or April.

4.4.3 Conclusions and Recommendations

Conclusions:

DCPP human performance (HP) is good and improving overall with plant-wide performance
better than a progressively tightening goal and over 529 days without a clock reset, which is an
indicator of outstanding performance. Most departments are within their goals with one,
Operations, slightly better than their goals.

Recommendations:

None
4.5.1 Overview and Previous Activities

The foci of Health, Nuclear Safety Culture, and Safety Conscious Work Environment are twofold: 1) the health of the individual employee, and 2) nuclear and personnel safety as the context and requirement for all DCPP Employees. Included in this area are all health related issues and actions. This section also focuses on safety as a contextual cultural requirement.

In the previous period (2009-2010) the DCISC reviewed the following:

- Employee Concerns Program and Premier Survey

It appeared that the Nuclear Safety Culture Survey and the Safety Conscious Work Environment (SCWE) Survey were effective in terms of obtaining and evaluating employee comments regarding DCPP safety culture and work environment. DCPP believed the NRC received the large number of allegations in 2008 and 2009 because there was an unusually long Steam Generator replacement outage in each of those two years, which resulted in an unusually high work load and a very large number of contractors. A “DCPP Work Environment Action Plan” was developed based on a review and analysis of DCPP allegations and lessons learned from other plants.

4.5.2 Current Period Activities

During the current period (2010-2011) the DCISC reviewed the following two Health, Nuclear Safety Culture, and Safety Conscious Work Environment topics:

- Premier Survey Action Plan
- Employee Concerns Program Visibility Initiative

Premier Survey Action Plan (Volume II, Exhibit D.2, Section 3.6)

This survey is conducted periodically by PG&E company-wide, and therefore covers a far wider scope than just the Diablo Canyon Power Plant DCPP. The most recent Premier Survey was conducted in October 2009, and the analyzed responses were made available in January 2010. Seventy one percent of DCPP employees participated, which was considered excellent by PG&E personnel conducting the survey.

A principal goal of this survey is to enhance company-wide communication both from senior management to the employees and from the employees to management. An emphasis has been
placed on “CSI”, “Continuous Simplification and Innovation,” using the latest computer-based communications tools to reach everyone.

A number of lessons learned emerged from the survey which were being incorporated into an “action plan” that was still under development. The decision was made to utilize the first-line supervisors as the principal vehicle for direct communication with employees.

It was reported that the Premier Survey’s findings did not differ significantly from the other surveys that the plant had conducted, of which the most important are the Safety Culture Survey that uses the Nuclear Energy Institute’s document NEI 09-07, “Fostering a Strong Nuclear Safety Culture,” and the Safety Conscious Work Environment (SCWE) Survey. The DCISC had reviewed these two surveys during the Fact-finding visit in January 2010 and concluded that the Nuclear Safety Culture Survey and the SCWE Survey were effective in terms of receiving employee comments and answers regarding DCPP safety culture and work environment. The same conclusion applies here: that these surveys are important both because of how they affect employee morale vis-à-vis management involvement with the staff and because of what they find in detail.

The Premier Survey, like other employee surveys conducted on a regular basis, remained effective both as a communication tool between management and employees and as a measure of employee thinking. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. The results of the survey were reported to be similar to those of earlier DCPP surveys. The action plan resulting from the Premier Survey was under development.

Employee Concerns Program (ECP) Visibility Initiative (Volume II, Exhibit D.9, Section 3.2)

During 2008 and 2009 DCPP had received an unusually large number of employee concerns compared to prior years, and the NRC had similarly received a larger number of DCPP employee allegations than normal. DCPP attributed this to the unusually large plant outages that involved major plant modifications during those years, which resulted in an unusually high workload and a large number of contractors. An ensuing NRC Problem Identification and Resolution (PI&R) inspection report determined that improvements could be made to enhance the visibility and use of the DCPP Employee Concerns Program (ECP). This, in turn, led to DCPP’s development of an Action Plan to promote the ECP. The action plan had six components, as follows:

1. Move the Generic Employee Training (GET) ECP presentation into Current Issues (CI). The ECP Group was developing stand-alone safety culture and ECP training to include a requirement to take the training on a recurring frequency.

2. Place ECP posters with pictures of ECP Group personnel in various plant locations. These posters were placed throughout the plant. ECP and the DCPP Communications Department developed an ECP communications plan. The first action had been completed – publication in the plant newsletter, “News You Can Use” on February 14, 2011.

3. Promote ECP at various plant venues. The ECP Group continued to work with individual work groups to identify venues for ECP communications.
4. Develop and deliver ECP communications.
5. ECP promotional items.
6. Consider anonymous Notification capability. This was to be incorporated following Outage 1R16.

The action plan to increase visibility of the DCPP Employee Concerns Program appeared to be appropriate.

4.5.3 Conclusions and Recommendations

Conclusions:
The Premier Survey, like other employee surveys conducted on a regular basis, remained effective both as a communication tool between management and employees and as a measure of employee thinking. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. The results of the survey were reported to be similar to those of earlier DCPP surveys. The action plan resulting from the Premier Survey was under development. The action plan to increase visibility of the DCPP Employee Concerns Program appeared to be appropriate.

Recommendations:
None
4.6.1 Overview and Previous Activities

Termed “Corrective Action Program” in previous reports, this section is now expanded to “Performance Improvement Programs” to include programs included in DCPP’s Performance Improvement Initiatives, such as Corrective Action, Industry Operating Experience, Benchmarking, Self-Assessments, etc. Many consider these to be “learning” programs whereby the organization learns to improve from its and others’ experience.

As have all nuclear plants, DCPP has implemented a Corrective Action Program (CAP). The CAP is a formal, controlled process used to identify and correct problems which occur. A key part of the CAP is root cause analysis which is utilized to ascertain the real cause of a problem or event such that corrective action can be taken to prevent its recurrence. During the previous reporting periods, the DCISC has reviewed the DCPP CAP and numerous events which were identified and resolved using the CAP. NRC refers to this type program as Problem Identification and Resolution (PI&R).

The events, analyses and corrective actions reviewed during the previous several reporting periods included the following:

- Learning Services Use of the Corrective Action Plan
- Notification Review Team Meeting
- Self-Assessment of Corrective Action Program
- CAP Self-Assessments
- Effectiveness of DCPP’s Operating Experience Assessment Program
- Two Assessments of DCPP’s Corrective Action Program
- DCPP’s Plan for Performance Management

DCPP’s Corrective Action Program (CAP) has continued to undergo significant reviews, assessments and audits by both internal and external organizations. Actions are being taken to respond to the reviews. The NRC has identified a substantive crosscutting issue in the DCPP Problem Identification and Resolution area, indicating unsolved problems with the CAP. The DCISC will continue to monitor the CAP.

DCPP’s Operating Experience (OE) Program appears to be in jeopardy of becoming resource-limited if the function is reduced to just a single person performing OE duties. A similar situation had led to a high OE backlog in 2005. The DCISC will monitor this situation.

4.6.2 Current Period Activities
The DCISC reviewed the following in DCPP’s Performance Improvement Program during the current reporting period:

- Line Use of Operational Experience
- Performance Improvement Action Plan
- Corrective Action Program
- Responses to Recent Industry Operational Experience Reports
- Performance Improvement Review Board

**Line Use of Operating Experience (Volume II, Exhibit D.2, Section 3.5)**

The DCISC Fact Finding Team met with the OE Program Assessment (OEA) Manager, to discuss the Line Organization use of the OEA Program. DCPP has only one person assigned to the OE program implementation. When he is on vacation or out of the plant, there is no one to fill in for him and the backlog will just increase and he is not too sure they can continue to effectively perform the requirements of the OE program with just one person performing the duties.

A Daily Report is sent out to about 800 to 1,000 employees, which results in 70% to 80% feedback from Line Organization users. OEA performs a quick screening using priority list criteria to screen out the ones not applicable to DCPP. After screening, the OEs that need an evaluation are sent to the applicable system engineer to perform a formal evaluation. The system engineer has 14 days to either accept or reassign the OE. A total of 50 days or less is allowed for the Manager to agree with the evaluation. The total time allowed for the completed evaluation is 60 days except 90 days for a Yellow Significant Operating Experience Report (SOER) and 150 days for a Red SOER.

The schedule is checked by sending out a reminder that the OE evaluation is due in the next 30 days and another reminder is sent out that the evaluation is due in 7 days. A notice is sent out if the evaluation is not received in 57 days. The average age for completion of the evaluation is 38 days and no evaluations are currently due and over 60 days. About 90% of OEs come from INPO and the remaining 10% from other sources. The OEA Manager is the only one at DCPP who can close out the OEs after checking that the Manager has agreed with the evaluation. About 60% of OEs requiring formal evaluation require no action.

DCPP is trying to put together an OE review team of the Line Organizations to assist in the screening process and evaluations.

**DCPP’s screening of industry Operating Experience (OE) information appears to be continuing to function well. DCPP’s decision to reduce screening staff for its incoming OE to one person could hinder the entire OE function at the station. The DCISC will follow up on this issue to evaluate whether this cutback has an impact on DCPP’s use of the Operating Experience Program.**

**Status of Performance Improvement Action Plan (Volume II, Exhibit D.6, Section 3.6)**

The DCISC Fact Finding Team (FFT) met with the Manager of Problem Prevention and
Resolution. The Performance Improvement Action Plan was focused on the nature of and methods used by the station's performance improvement activities rather than focusing on specific improvements that are needed in aspects of plant operation and performance. The Plan’s Problem Statement reads as follows:

“DCPP's use of Performance Improvement (PI) programs lags the industry with the result that performance shortfalls continue to occur and performance relative to the industry is declining.”

The Plan focuses on improving methods, techniques and tools for identifying, measuring, and assessing gaps between actual DCPP performance and desired performance. Specific methods, techniques and tools discussed in the Plan include: benchmarking, self-assessing, performance indicators, gap analysis, Corrective Action Program (CAP) procedures, Apparent Cause Evaluations (ACE), Root Cause Analyses (RCA), reviews of plant and industry operating experience, and reviews by external groups. It does not discuss specific actions that were felt to be needed to actually improve specific areas of plant performance but rather addresses the performance improvement process in general.

The Performance Improvement Action Plan stemmed from the 2009 plant evaluation conducted jointly by the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Operators (WANO). Another performance improvement tool is a Health Report for self-assessments – a single sheet template that a department would fill out quarterly and would be submitted to the Self Assessment Review Board.

The station should have about 20 personnel who are trained in and are capable of performing causal analyses. Currently there are six such individuals, two of whom are in Problem Prevention and Resolution. Further, departments have Performance Improvement Coordinators, whose focus is supposed to be on self-assessments, benchmarking, RCAs, and ACEs. However, they are devoted largely to managing the corrective action backlogs and performing other departmental duties.

The monthly Plant Performance Indicator Report (PPIR) highlights those Performance Indicators that have improved during the past month and those that have declined. What is not shown are those indicators that have remained in Red and/or Yellow Status from month to month.

DCPP has had difficulties with evaluating and addressing station problems, including the area of engineering evaluations. The NRC has issued DCPP a significant cross-cutting aspect for deficiencies in its Corrective Action Program, a major program included in DCPP's Problem Prevention and Resolution area. The DCPP Performance Improvement Action Plan is an appropriate vehicle for helping to correct and improve DCPP's performance. DCISC concludes from this review that some causal factors related to this problem may be due to an inadequate number of trained and qualified personnel as well as to a lack of clarity in personnel responsibilities.

Corrective Action Program (CAP) (Volume II, Exhibit D.7, Section 3.7)

The DCISC met with the CAP Manager, for an update of the CAP. The CAP Index, an overall
measure of plant CAP health has declined from White (acceptable) to Yellow (not acceptable) in the last month as shown in the chart below. The main causes were due to a high average age of Root Cause Analyses (RCAs), failed RCA evaluations, high Apparent Cause Evaluation (ACE) evaluation times, and a high number of open Condition Reports. DCPP expected the CAP Index to be Green in the first quarter of 2011. The DCISC believes that the most significant CAP measure is the CAPR (Corrective Action to Prevent Recurrence), which is indicative of how well the problems were identified and resolved to prevent them from happening again. This is defined as the number of unsatisfactory effectiveness evaluations for three months running.

In 2008 DCPP received four NRC Green Findings with the cross-cutting theme involving the lack of thoroughness of problem evaluations. DCPP performed a Root Cause Evaluation (RCE) focused on inadequate thoroughness of engineering evaluations and established a controlled process for better documenting engineering evaluations as corrective action to prevent recurrence (CAPR). This evaluation thoroughness cross-cutting theme continued throughout 2009 with six additional Green Findings, and in March 2010 NRC determined that a DCPP a Substantive Cross-Cutting Issue (SCCI) existed in the area of Problem Identification and Resolution (PI&R) related to the thoroughness of problem evaluations.

DCPP initiated another RCA, “Adverse Trend in Thoroughness of Problem Evaluation.” The RCA was impressive in its depth, scope, extent, and straightforwardness. The DCISC concluded that the evaluation was extensive and thorough in that the Root Cause Team reviewed 14 evaluations that had been identified as lacking thoroughness, interviewed 23 personnel from director level through individual contributor level, assessed the existing training and indoctrination to perform evaluations, and identified the extent to which plant personnel understood what a good evaluation looked like. Review of the 14 deficient evaluations led the RCT to conclude the following key factors contributing to the deficiencies:

- Assumptions not validated
- Narrow focus of RCAs (misalignment between the cause and the problem statement)
- Narrow focus of corresponding corrective actions (e.g., reliance on training per se as a corrective action)
- Poor understanding of plant design and licensing bases
- CAP not entered when deficiencies were identified

Additionally, reviewing five of the 14 evaluations using the Kepner-Tregoe methodology, the RCT identified these underlying reasons for inadequacy of evaluations:

- Mind set/mental model (past bad behaviors were considered adequate)
- Incorrect interpretation of design and licensing bases requirements
- Inadequate independent technical review (time pressure)
- Focus on process rather than on the issue

Root Cause:
The root cause of evaluations lacking appropriate depth and extent was the Extended Leadership Team (supervisors and above) had neither provided adequate standards, nor effectively demonstrated or reinforced behaviors, nor established sustainable programs in the area of evaluations.

Contributory Causes

1. The licensing bases were not well documented nor easily retrievable
2. Weaknesses in causal evaluations prevented earlier resolution of the SCCI
3. Loss of proficiency in performing evaluations contributed to less than adequate evaluations.

Recommended Corrective Actions To Prevent Recurrence:

1. Establish generic governance for evaluation programs in order to establish the right standards
2. Train Program Sponsors (Director level) and Program Owners (Manager level) on the structure of an effective Program Governance
3. Execute a Program Implementation Matrix to ensure evaluation programs incorporate the essential elements for their sustainability

DCPP combined these recommendations and the WANO CAP Areas for Improvement from its most recent evaluation into a comprehensive “2010-2011 Operating Plan – Performance Improvement Focus Area Integrated Action Plan.” The Plan recognizes that “DCPP’s use of Performance Improvement (PI) Programs lags the industry with the result that performance shortfalls continue to occur and performance relative to the industry is not improving.” This is an extensive, far-reaching initiative involving not just evaluation thoroughness but the following PI areas:

- Leadership
- Corrective Action Plan
- Self-assessments and Benchmarking
- Operating Experience
- Trending
- Training

The Plan appears to “leave no stone unturned.” It is assessing and questioning DCPP’s programs and processes in the following specific PIP/CAP areas:

- Corrective Action Review Board (CARB)
- Management Review Committee (MRC)
What effective use of Causal Analysis (ACEs, RCAs, etc.) looks like
- Management involvement and critical review of their respective PIP products
- Performance Improvement Coordinator (PICO) oversight and involvement
- Augmented Self-assessments (SAs) including a Self-Assessment Review Board (SARB) and regular SA Program Health Reports from each functional organization.
- Effectiveness reviews of INPO Significant Operating Event Reports (SOERs)

DCPP completed a comprehensive performance improvement benchmarking visit to Byron Nuclear Station in August 2010. INPO performed a Performance Improvement Assist Visit at DCPP in August 2010. Results from these activities have been factored into the Plan.

Following determination and implementation of corrective action (CA) to prevent recurrence (CAPR) for ACEs and RCAs, the line organization performs an Effectiveness Evaluation of the cause evaluations. The DCISC reviewed CA Effectiveness Evaluations for five problems. The EEs appeared to be well thought out, well prepared and fact-based. In all cases the CAs were determined to have been effective. Some went beyond minimum requirements in that in two cases additional actions were recommended, and in another more time was needed to accumulate additional operational data. The evaluations followed the guideline described above and appeared to thoroughly assess the effectiveness of corrective action.

In October 2010 the Quality Verification (QV) Department performed an assessment of the CAP for the period January – October 2010. The assessment concluded that implementation of the CAP is effective, except that problems previously identified by QV in the evaluation area have not been resolved. The assessment noted that in response to a June 2010 QV Audit Finding for the plant’s inability to identify and implement sustainable corrective actions for conditions adverse to quality, DCPP had established a qualification and training program for CARB Members, ACE performers and approvers, root cause analysts and team leaders.

DCPP’s Corrective Action Program (CAP) appears to be generally effective overall; however, there is a major deficiency in the thoroughness of problem evaluations such as Apparent Cause Evaluations (ACEs), Root Cause Analyses (RCAs), Licensing Basis Impact Evaluations (LBIEs), etc. This has been a continuing problem since NRC identified its original Substantive Cross-cutting Issue in 2004, culminating with NRC again identifying a Substantive Cross-cutting Issue in 2010. In response, DCPP performed an extensive RCA, which concluded that, despite multiple warnings and corrective attempts over the years, management has not provided adequate standards, nor effectively demonstrated or reinforced behaviors, nor established sustainable programs in the area of evaluations. DCPP has crafted a comprehensive Performance Improvement Focus Area Integrated Action Plan to address these and other deficiencies and gaps and has begun its implementation. The DCISC will follow DCPP’s progress and success in implementing the Plan, specifically with respect to problem evaluation adequacy.

Responses to Industry Operating Experience (Volume II, Exhibit D.8, Section 3.7)
The DCISC Fact Finding Team met with the Operations Performance Manager. All plants in the nuclear industry have programs established to enable them to learn from the operating experience of other plants in the industry. Various mechanisms used by DCPP Operations to benefit from industry operating experience include:

- Examining plant procedures and for any areas needing possible adjustment
- Examining the formal methods by which procedures are used
- Examining activities and techniques such as pre-job briefings, supervisory oversight, and human performance enhancements
- Conducting management, supervisory, and work group discussions on issues, activities, and processes
- Conducting integrated management systems reviews
- Conducting causal analyses
- Examining station drawings and design information
- Examining training content and processes
- Benchmarking DCPP processes and activities against other plants
- Conducting self-assessments, including the use of peer reviewers from other plants
- Developing or enhancing assessment tools and processes
- Developing or enhancing job familiarization guides
- Observing station activities routinely, periodically, and as needed on a case basis
- Performing periodic internal audits

DCPP employs an extensive array of tools and methods for examining the applicability of industry events to DCPP. Further review of this topic by the DCISC should be conducted on a case basis whenever DCPP experiences a significant event similar to one experienced earlier by another plant.

Overview of the Performance Improvement Review Board.

A relatively new process in DCPP’s Performance Improvement Program includes the Performance Improvement Review Board (PIRB), which is based on industry benchmarking. The function of the PIRB is to review the different line organizations’ Performance Improvement Integration Matrix (PIIM) reports. PI monitoring includes performance monitoring; analyzing, identifying and planning solutions; and implementing those solutions. Mr. David reviewed the PI tools being used at DCPP including:

- Corrective Action Program
- Self-Assessment
- Benchmarking
Operating Experience
Trending
Management Observations
Internal Oversight (QV organization)
External Oversight (NRC, INPO, NSOC and DCISC)

The PIRB works to achieve and maintain performance excellence by ensuring effective use of PI tools to improve personnel and plant performance; fostering effective performance results from a strong partnership between the line and PI coordinators in the areas of trending and work group evaluations; using OE to enhance learning and work products; and providing effective use of feedback and observation to improve PIP quality and assure employees are familiar with DCPP standards and the expectations for meeting those standards.

The PIRB uses of Performance Improvement Information Matrix (PIIM), a tracking tool which provides a graphical representation of the PI tools in use. The line organizations are brought into the process to discuss their current level of performance and the PIIM is used to assess and determine if a DCPP organization is self-critical; seeks excellence in performance; is diverse in approach and not reliant on a single process or program to identify gaps in performance; prioritizes appropriately and effectively; develops effective corrective actions; and implements those actions well and with rigor; and represents broad organizational involvement. The matrix includes entries for: tracking numbers for the Notification and associated due dates; identification of the performance gap or issue; other stakeholders; whether the issue is part of the 2011 Station Initiatives; how the performance gap was identified; the method to be used to resolve the issue; and resolutions being monitored.

4.6.3 Conclusions and Recommendations

Conclusions:

DCPP’s Performance Improvement Program continues to be strengthened with the addition of the Performance Improvement Review Board, a management board which monthly meets to review the program and specific items, which are lagging, and the Performance Improvement Action Plan, a multi-faceted plan to integrate the results of several assessments and reviews of the program.

DCPP’s Corrective Action Program (CAP) has continued to undergo significant reviews, assessments and audits by both internal and external organizations. Actions are being taken to respond to the reviews. The NRC has identified a substantive crosscutting issue in the DCPP Problem Identification and Resolution area, indicating unsolved problems with the CAP. The DCISC will continue to monitor the CAP.

DCPP’s Operating Experience (OE) Program appears to be in jeopardy of becoming resource-limited if the function is reduced to just a single person performing OE duties. The DCISC will monitor this situation.

Recommendations:
None; however, see Recommendation R11-1 in Section 3.5 of this report, which states:

Due to the substantial increase in the numbers of NRC Non-cited Violations and Severity Level IV Violations over the last two reporting periods and because the NRC Substantive Crosscutting Issue in Problem Identification and Resolution still exists, the DCISC recommends that DCPP re-examine its earlier Root Cause Analysis for effectiveness and consider an independent review of its corrective actions by Quality Verification, the Nuclear Safety Oversight Committee, or the Institute of Nuclear Power Operations.
4.7.1 Overview and Previous Activities

Emergency Preparedness (EP) Program has been in-place since the beginning of the nuclear power industry; however, the accident at Three Mile Island brought substantial changes. Prior to Three Mile Island, Emergency Operating Procedures (EOPs) were primarily event-based, requiring the operator to know which event was taking place. Afterward, the EOPs became symptom-based, making it easier for the operator to decide what actions to take. The four major facilities used in an actual emergency situation (and used for practice in an emergency drill) include (1) the Control Room (simulator in practice) where operators respond to the accident, (2) the station Technical Support Center (TSC) where engineering, computer, radiological assessment, NRC, and operations, as well as documents and procedures, are located, (3) the offsite Emergency Operations Facility (EOF) where the Recovery Manager and administrative and technical staff are located, and (4) a station Operations Support Center (OSC) provides a location to stage and dispatch operations, maintenance, firefighting and radiation protection personnel.

The DCISC reviews Emergency Preparedness (EP) at DCPP on a regular basis. Past Committee activities have included observations and reviews of drills and full, graded emergency exercises each year and related issues from the observations.

During the previous reporting period, the DCISC reviewed the following specific items:

- Meteorological Information and Dose Assessment System (MIDAS) Upgrade Issue and MIDAS Updates
- September 2, 2009 Emergency Planning Drill

For the prior few years PG&E had been examining options for improving the hardware and software that provides MIDAS related information to the Emergency Offsite Facility (EOF) and Unified Dose Assessment Center (UDAC) for the purpose of determining the dispersion of radionuclides, the dose to the public, and the appropriate protective action recommendations. Actions that had been completed and those to which PG&E was committed at that time, such as an upgraded MIDAS system, appeared to represent substantial upgrades to PG&E's EP capabilities.

It appeared from the September 2, 2009 EP drill critique that PG&E successfully demonstrated implementation of the Diablo Canyon emergency plan including timely and accurate event classification and notification of offsite authorities, and in this sense the drill was successful. However, the DCISC observation at the Joint Information Center (JIC) was that improvements were needed in the following areas: insufficient detail in the information provided to the News...
4.7.2 Current Period Activities

The DCISC reviewed the following in DCPP’s Emergency Preparedness (EP) Program during the current reporting period:

- June 3, 2010 Alert Due to Unplanned Release of Carbon Dioxide
- July 7, 2010 Emergency Preparedness Drill
- August 11, 2010 NRC-Evaluated Emergency Exercise
- August 11, 2010 NRC-Evaluated Emergency Exercise Critique
- Emergency Planning Dose Assessment Program

July 7, 2010 Emergency Preparedness (EP) Drill (Volume II, Exhibit D.1, Section 3.9)

The EP Drill Scenario that was observed by the DCPP Fact-finding Team consisted of the following initial simulated conditions:

- The initial simulated plant conditions were that Unit 1 was operating with an open fuel defect on one or two rods that had resulted in a restriction in the rate of power change to a limit of 3% per hour. A meeting was being planned to determine whether the unit should continue to operate or shut down. To reduce the radioactivity in the reactor coolant system (RCS) water from the system was being drained, and non-radioactive water was being added to the (RCS).

The significant elements of the drill scenario consisted of the following:

- High radiation level on loop 4 Hot Leg – due to an increased fuel defect (This was correctly diagnosed by the control room personnel, who correctly decided that the Unit 1 should be shut down in a controlled manner. However, the event was initially misclassified at a lower level of significance but was corrected within a few minutes. At this point, the event had not progressed to the point of a significant loss of coolant accident – see the following aspects of the event)
- 200 gallon per minute (gpm) rupture of a steam generator (SG) tube resulting in radioactive reactor coolant entering the non-radioactive water in the SG – correctly diagnosed by control room personnel, who then took appropriate corrective actions
- Failure of a normally non-radioactive steam generator relief valve (but since the water in the steam generator was simulated to be radioactive, the simulated failed-open relief valve provided a release path for the radioactive coolant to enter the atmosphere) – correctly diagnosed and responded to by control room personal

A more detailed description of the simulation follows below:
Unit 1 was simulated. Initial plant conditions were that the plant was operating at 100% power with an open fuel defect on one or two rods that restricted the unit’s ramp rate to a limit of 3% per hour. Letdown was established at 120 gpm for performing primary system clean-up.

The Shift Foreman performed very effective briefings regarding how a ramp to 50% power would be performed, if needed. In each case, she moved from her normal position behind the operators to a position in front of them so the operators could continue to view their panels while looking at and interacting with her. Three way communications was used effectively.

Several high radiation alarms actuated due to fuel failure. This started a 15-minute time requirement for the conditions to be recognized as requiring the declaration of an Alert. However, an Unusual Event was instead declared due to a procedural place-keeping error by the Shift Manager and the Shift Foreman, which caused them to select the wrong declaration from those listed in the procedure. (During the entire Emergency Drill there were eight Significant Risk Opportunities consisting of Declarations and Notifications. This Alert declaration was the only one that was not satisfactorily performed. Also, the cause of this error was self identified by the responsible personnel.) After this error was corrected, an Alert condition was then correctly declared. During this same 15-minute period the Shift Manager announced an order to ramp down for the purpose of shutting down, due to fuel degradation.

The declaration of the Alert started another 15-minute time clock for the event to be notified to the NRC, the California Emergency Management, and San Luis Obispo County. These notifications were made within the required 15 minutes.

About 10 minutes later and 55 minutes into the drill scenario, the control room was informed that both the Technical and Operational Support Centers (TSC and OSC) had been activated. The Shift Manager then conferred with the TSC and about 10 minutes later announced over the public address system that the TSC had been activated and had assumed command and control for response to the event.

Within the Joint Information Center, conditions were somewhat hectic and crowded. The simulated accident had not yet occurred. The first press conference appeared to be conducted to meet the demands of the simulated media, who were role-playing assertively. Both the county and PG&E spokespersons were composed and cordial. Only limited information could be given out at that time, and responses by the spokespersons were brief, direct, and understandable. There had been no simulated release of radioactivity at this point. There was no simulated threat to public health and safety. However, some simulated precautionary measures were being taken. Montana de Oro State Park was being closed and evacuated, but only as a precautionary measure. Other smaller parks were being closed to additional guests, but not evacuated. No children were in the one school in the currently affected area. Los Osos did not require evacuation at that time. The PG&E spokesperson mentioned that the DCPP Site Vice President (VP) was on his way to the JIC.

Almost coincident with this first press conference, a simulated 200 gallons per minute (gpm) Steam Generator Tube Rupture (SGTR) occurred which created the conditions for declaring a Site Area Emergency due to the fact that two fission product barriers had been breached (i.e. fuel cladding and the Reactor Coolant System). However, this particular drill scenario added a complicating factor.
In which, almost concurrent with the SGTR, one of the Steam Generator Relief Valves stuck in a partially open position. This brought the site to an emergency action level of a General Emergency because all of the barriers between the fuel and the external atmosphere had been breached. Therefore, the plant had moved directly from an Alert condition to a General Emergency. These simulated accident conditions were properly identified, classified, and reported within their respective time requirements by the PG&E teams.

The second press conference, and the last one attended by the DCISC FFT, was held by the same two personnel who held the first one plus the DCPP Site Vice President (SVP), who concluded the briefing. All three presenters effectively handled almost all questions from the media, but the first two presenters naturally deferred to the SVP for the technical explanations. The SVP used slides to show diagrams of relevant systems, structures, and components that were affected in the event. His explanations were clear and should have been understandable to the general public and his demeanor was both professional and cordial. The DCISC noted at this time that communications with the media in the 2008 NRC-evaluated exercise and in the September 2, 2009 drill had revealed problems that appear to have been corrected in this current exercise.

The DCISC FFT then observed activities in the facility that housed the following:

- Emergency Operations Facility (EOF)
- Unified Dose Assessment Center (UDAC)
- Engineering and Operations
- State Emergency Services Director’s Group
- Recovery Manager
- Logistics
- Shelter and Welfare
- Government Relations

There appeared to be agreement between PG&E and the UDAC regarding the decision to limit evacuations to Zones 1, 2, and 3. However, the Scenario Synopsis provided to the DCISC FFT prior to the dress rehearsal stated that the expected responses were to be evacuations only of Zones 1 and 2, but sheltering of personnel in Zone 3. During the post exercise critique, DCPP’s Radiation Protection Manager was given credit for periodically walking over to UDAC and sharing information for the purpose of maintaining a consistent picture of how radioactivity was being dispersed.

One area of inconsistency between DCPP and the County was that they used different doses for when to administer Potassium Iodide (KI) tablets to their workers in the field and to the general public. PG&E followed EPA 400, which has KI being administered to workers who are expected to receive 25 Rem from iodine to the thyroid and to members of the general public who are expected to receive 5 Rem to the thyroid. The County’s action levels were more conservative: 10 Rem and 3 Rem respectively.

The DCISC FFT observed the EOF joint debrief that was conducted after the various individual
groups prepared their input. Highlights of the debrief were as follows:

- Behaviors were supportive throughout the exercise. UDAC was especially noteworthy.
- UDAC was asking for some information from the control room, in keeping with their procedures, but the EOF was maintaining that information.
- A less hectic pace should be maintained at the beginning.
- Briefings in the EOF could be more timely.
- The EOF did a good job examining changing plant conditions and recognizing that the emergency action level increased from Alert to General Emergency.
- Periodic joint briefings allowed UDAC and EOF to compare their determinations.
- It is important to remember that having problems can be acceptable, but what is very important is to be able to self-identify the problems rather than having an outside organization identify them.

After DCPP developed its Drill Critique Report the DCISC was provided a copy, which rated the overall performance of each of the station emergency groups as follows:

- Control Room/Simulator – Satisfactory
- Technical Support Center – Satisfactory
- Operational Support Center – Unsatisfactory
- Emergency Operations Facility – Satisfactory
- Joint Information Center – Satisfactory

The DCISC Fact Finding team did not have the opportunity to observe the Operational Support Center (OSC) during this drill. Therefore, the DCPP Drill Critique Report’s “Unsatisfactory” rating for the performance of the OSC, as noted above, was based on the station's self-identification of a number of performance issues, including those listed below.

- Significant delays occurred in the OSC when some important operator actions needed to be performed. The dispatch of operators to perform procedure driven operations tasks was not done in a timely manner nor were higher priority actions always communicated.
- Emergency exposure limits for personnel performing tasks in radiation areas (specifically the dispatch of the release mitigation team) were not considered prior to dispatching the team.
- Field Monitoring Teams were not effectively briefed and appropriate personnel protective measures (including turn back dose and dose rate) were not identified.
- Appropriate radiological controls, as well as ALARA (As Low As Reasonably Achievable) controls were not always maintained for emergency workers.
- Onsite radiological conditions were not observed to have been discussed nor were onsite teams dispatched to assess site conditions. Radiological contamination survey results were not properly documented.
On-site personnel were not effectively monitored for contamination, nor were effective contamination control measures taken for personnel and equipment returning from field assignments.

Also, the above listed issues resulted in DCPP assessing itself a “Failing” grade for the Objective of “Radiological Exposure Control” for its on-site activities.

Responses to the July 7, 2010 simulated event by Control Room personnel were generally methodical and effective. The entire emergency response organization was commended for both recognizing a simulated steam generator tube rupture followed quickly by a stuck open steam generator relief valve and then diagnosing that the plant had transitioned quickly from a simulated Emergency Action Level of Alert, with pre-existing failed fuel cladding, through the Site Area Emergency classification to a simulated General Emergency. However, improvements were needed in the performance of the Operational Support Facility with respect to on-site radiological controls. DCPP and the County appeared to be consistent in recommending evacuations of Zone 1, 2, and 3 whereas the exercise scenario stipulated evacuations only for Zones 1 and 2, but sheltering for Zone 3. Media briefings in the Joint Information Center (JIC) appeared to have improved substantially since the October 29, 2008 NRC-evaluated exercise and the September 2, 2009 Emergency Planning Evaluated Exercise Dress Rehearsal. Adequate time was devoted to news conferences. Personnel in the JIC were sensitive to the need to disseminate information on a timely basis. Information was presented at press conferences in a manner that should have been understandable to the general public. The Site Vice President provided a credible source of information at these conferences, effectively explaining technical issues and answering questions in layman’s terms.

August 11, 2010 NRC-Evaluated Emergency Exercise (Volume II, Exhibit D.3, Section 3.1)

The August 11 exercise proceeded through the following steps observed by the DCISC Fact-finding Team:

Simulator (Control Room)

1. 0800: Initial Plant Conditions: Units 1 & 2 were at 100% power. Containment Spray Pump (CSP) 1-1 was cleared for maintenance. Emergency Diesel Generator (EDG) 1-2 was 20 minutes into a post-maintenance return-to-service run.

2. 0815: Fire in the EDG 1-2 room resulted in Control Room (CR) Cardox Alarm. Fire doors did not close as designed, resulting in the fire continuing. Fire alarm in CR - Operations Shift Manager correctly declared an ALERT at 0826. Operators made a 911 call for off-site fire assistance.

3. 0845: Operations Support Center (OSC) activated.


5. 0855: Centrifugal Charging Pump (CCP) high stator temperature caused pump to trip. Operators entered appropriate procedure for CCP trip.
6. 0859: Technical Support Center (TSC) activated.
7. 0929: Command and Control of the emergency transferred from the Simulator to the TSC.
8. 0945: Offsite Emergency Operations Center (EOF) activated.
9. 10:00: Reactor Coolant Pump (RCP) 1-3 experienced a locked rotor failure that resulted in a reactor trip signal; however, the reactor did not trip. Manual actions at the reactor control console failed, power remained >5% for approximately two minutes, resulting in significant fuel damage (this started the clock for a Site Area Emergency).
10. 1002: Reactor tripped.
11. 1012: SITE AREA EMERGENCY correctly declared.
12. 1045: Reactor Coolant Pump (RCP) 1-3 weld failure resulted in a small break loss of coolant accident (SBLOCA). Containment High Range Radiation Monitors exceeded 80 R/hr (potential loss of containment, which starts the clock for a General Emergency). The DCISC Fact-finding Team went to the EOF.
13. 11:00: GENERAL EMERGENCY declared along with a plant-based Protective Action Recommendation (PAR) to evacuate Protective Area Zones (PAZs) 1 and 2.
14. 1115: A containment penetration fails due to the pressure change in containment, which created a radioactive release into the plant with the release being monitored through the Plant Vent Stack. The joint SLO County/DCPP Unified Dose Assessment Center (UDAC) was following and analyzing the radioactive release, and the Field Monitoring teams (FMTs) reported rising radiation levels in the field.
15. 1126: UDAC recommended precautionary evacuation of PAZs 4, 5, and 9.
16. 1150: San Luis Obispo (SLO) County issued a new PAR to evacuate PAZ 5. (See Attachment 1 for a map of the PAZs.)
17. 1155: UDAC recommended evacuation of PAZs 1, 2, 5, and 6. The DCISC Fact-finding Team went to the Joint Information Center (JIC).
18. 1214: SLO County (Ron Alsop, SLO Public Information Officer [PIO]) and DCPP officials (Jim Becker [Site Vice-President] and Corey Rafferty [DCPP Public Relations Manager]) conducted a news media briefing with mock news personnel. News releases were prepared and distributed by both SLO County and DCPP. (News releases were distributed as shown below, and emphasis is placed on DCPP and SLO County wording about the cause and severity of the event and any release of radioactive materials.)
19. 1345: exercise terminated.

SLO County Emergency Operations Center News Releases

For each news release listed below, the specific statements in the news release characterizing the risk posed by the alert are quoted.

#1 0934 - Alert at Diablo Canyon:
“An Alert presents no danger to public health and safety.”

#2 0954 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

“There is no threat to the public at this time. This is strictly a precautionary measure taken which may be of benefit if the emergency condition worsens.”

#3 0956 - Communication Information:

(There was no statement about the level of risk to the public or radioactive releases.)

#4 1025 - Site Area Emergency:

“A Site Area Emergency presents no danger to public health and safety. A Site Area Emergency is declared if problems at the plant caused or could lead to a release of radioactive material. If a release occurred, it would not be expected to require protective measures further than one-half mile from the plant.”

#5 1054 - Proclamation of Local Emergency:

(There was no statement about the level of risk to the public or radioactive releases.)

#6 1113 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

There is no threat to the public at this time. This is strictly a precautionary measure taken which may be of benefit if the emergency condition worsens.”

#7 1119 - General Emergency:

“A General Emergency is the most serious of the four emergency classification levels. A General Emergency is declared when abnormal plant conditions cause or might lead to a significant release of radiation to the environment. At this emergency level, protective actions are taken to protect the public health and safety. You are ordered to evacuate the following areas: PAZs 1 and 2. The ingesting of Potassium Iodide (KI) pills is not recommended at this time by the County Health Officer. If you are in close proximity to your personal supply of Potassium Iodide, we advise you to bring it with you upon evacuation.

#8 1210 - Reception and Congregate Care Centers:

(There was no statement about the level of risk to the public or radioactive releases.)

#9 1210 - Rumor Control:

“Rumors are circulating about the General Emergency declared at Diablo Canyon Power Plant (DCPP). The emergency is not related to a terrorist event, nor is the emergency the result of a bomb at the plant.

#10 1216 - Transportation Assistance:

(There was no statement about the level of risk to the public or radioactive releases.)

#11 1244 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

(There was no statement about the level of risk to the public or radioactive releases.)

#12 1320 - Rumor Control:
“Rumors are circulating about the General emergency declared at the Diablo Canyon Power Plant (DCPP). Radiation levels from the release at the plant at this time are not high enough to result in visible symptoms or long term health effects.”

#13 1337 - Rumor Control:
“Rumors are circulating about the General Emergency declared at the Diablo Canyon Power Plant (DCPP). No evacuations have been ordered and careless collection points are not activated for residents of the City of San Luis Obispo due to the emergency at the Diablo Canyon Power Plant.”

San Luis Obispo EAS Messages ((There were no statements about the level of risk to the public or radioactive releases.)

#1 0859 - Alert – Information Only
#2 1000 - Initial Protective Action Message
#3 1100 - Agricultural Information Center Opened
#4 1125 - Status of Public Schools
#5 1133 - Agricultural Protective Actions: Precautionary Hold Orders
#6 1141 - Agricultural Protective Actions: Precautionary Measures
#7 1217 - Evacuation and Information Regarding Potassium Iodide (KI)
#8 1226 - Agricultural Protective Actions: Precautionary Measures
#9 1227 - Agricultural Protective Actions: Precautionary Hold Orders
#10 1253 - Traffic Status

California Emergency Management Agency News Releases (There were no statements about the level of risk to the public or radioactive releases.)

#1 0957 – Emergency Level: Alert
#2 1030 – Emergency Level: SITE AREA EMERGENCY
#3 1110 – Emergency Level: GENERAL EMERGENCY
#4 1140 – Governor Schwarzenegger Proclaims State of Emergency in Response to General Emergency at Diablo Canyon Power Plant
#5 1330 - State Agencies Continue Response to Emergency at Diablo Canyon Nuclear Power Plant

DCPP News Releases

For each news release listed below, the specific statements in the news release characterizing the risk posed by the alert are quoted.
#1 0940 – Pacific Gas and Electric Company Declares Alert at Diablo Canyon Power Plant:

“There is no risk to the public health and safety and no release of radioactive material. The Alert was declared at 8:26 AM on August 11, 2010, because of a fire which caused damage to Diesel Generator 1-2. The fire has been extinguished.”

#2 1035 – Pacific Gas and Electric Declares Site Area Emergency at Diablo Canyon Power Plant:

“There is no release of radioactive material to the environment from this event, as indicated by sensitive plant radiation monitors. The Site Area Emergency was declared at 10:12 AM, August 11, 2010, when an automatic and secondary reactor shutdown control system failed and reactor operators were required to manually shutdown the reactor.”

#3 1115 – Pacific Gas and Electric Company Declares General Emergency at Diablo Canyon Power Plant:

“There is no release of radioactive material to the environment from this event, as indicated by sensitive plant radiation monitors. No injuries have been reported and site evacuation has been initiated. The General Emergency was declared at 10:54 AM on August 11, 2010, because loss of two of three fission product barriers with actual or potential loss of the third barrier. Containment is the third fission product barrier and it is specifically designed to hold energy and radioactive materials if the first and second fission product barriers are lost.”

#4 1204 – More Information About the General Emergency at Pacific Gas and Electric Company’s Diablo Canyon Power Plant:

“Pacific Gas and Electric Company (PG&E) advised county, state and federal authorities of a release of radioactive material to the environment, as indicated by plant radiation monitors. PG&E emergency responders are working to determine the source of the release in order to appropriately contain it while cooling and depressurizing the Unit 1 reactor core. Non-emergency personnel are in the process of evacuating the plant site toward Avila Beach with assistance from the California Highway Patrol. No injuries have been reported. The release is a result of the loss of the third fission product barrier, the containment structure, noted in the General Emergency, which was declared at 10:54 AM on August 11, 2010.”

The DCISC Fact-finding Team found that the news releases both from SLO County and DCPP were improved from earlier observed drills and exercises. Though brief, they provided essential, publicly understandable information about the risk and release of radiation to the environment without being too technical or defensive. The news releases did not provide information on actual levels of radiation in the environment or estimates of the physical threat, which was appropriate because of the changing conditions and potentially confusing overload of information to the lay public. The (mock) media attending the press conferences asked about the magnitude and potential effects of radiation released, and a DCPP Radiation Protection Specialist provided appropriate semi-technical answers, which appeared to put things in perspective. This was in contrast to prior observed press conferences in which these answers were not provided or were too technical and detailed.
Another of the DCISC's previous concerns/recommendations was that DCPP should be using an officer-level individual as its public spokesperson, because of this individual’s ability to explain the emergency and its effects in understandable, in-perspective terms to any public group, including the press, government officials, and individuals. DCPP utilized Jim Becker, DCPP Site Vice-President, in this role, and it worked well. The DCISC notes that Mr. Becker has been the spokesperson in the past several practice drills.

The DCISC observed DCPP’s critique of the JIC following the exercise with all JIC participants. The critique was carried out in an orderly fashion, focusing on actions at each of the three emergency levels and radiation releases. Overall, the exercise was determined to have been successful, meeting all but one of its objectives: JIC activation was accomplished in one hour, four minutes versus the one-hour requirement. Individuals were open and helpful with their comments. The DCISC concluded that the appearance and performance at the JIC was more professional and much improved from the 2009 exercise.

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective.

August 11, 2010 Evaluated Emergency Exercise Critique (Volume II, Exhibit D.5, Section 3.7)

The DCPP Exercise Critique concluded that

“The ERO [Emergency Response Organization] demonstrated the ability to protect the health and safety of plant personnel and the public with implementation of the DCPP Emergency Plan and coordinated response efforts with San Luis Obispo County and the State of California. Overall station performance was determined to be SATISFACTORY. Critiques by ERO members were thorough and self-critical with a focus on the Risk Significant Planning Standards (RSPS).”

The following table shows the NRC Drill and Exercise Performance (DEP) Indicators.

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<thead>
<tr>
<th>Category</th>
<th># Opportunities</th>
<th># Sat</th>
<th># Unsat</th>
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<tbody>
<tr>
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<tr>
<td>Notifications</td>
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<tr>
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</tr>
<tr>
<td>TOTAL</td>
<td>10</td>
<td>10</td>
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All risk significant opportunities were performed timely and accurately for a total of 10 out of 10 successful opportunities.

Other measures included:
- All Emergency Response Facilities were staffed and activated within the requirement of 60 minutes following VANS activation.
- Four of four Risk Significant Planning Standards were successfully demonstrated
- 11 of 11 Planning Standards were successfully demonstrated
- 53 of 54 overall performance objectives were successfully demonstrated
- 110 of 113 facility objectives were successfully demonstrated

The following High Level ERO Objectives were not met:

- Prompt sounding of the Site Emergency signal was not performed to initiate assembly and accountability in that Assembly and Accountability were completed 16 minutes past the required 30-minute criterion.
- Radiological release path was not fully assessed by Control Room (Simulator) personnel in that the crew incorrectly diagnosed radiation monitor readings. This resulted in delays in the event mitigation activities that were recommended by the Technical Support Center and Emergency Operations Center.
- Unified Dose Assessment Center (UDAC) personnel did not properly evaluate, document, and communicate Field Monitoring Team exposures reported from the field in that dosimetry readings were not converted to Total Effective Dose Equivalent and Committed Dose Equivalent for modifying FMT deployment strategy or for consideration of additional emergency exposure controls.

The August 11, 2010 NRC-Evaluated Emergency Exercise was determined to be successful by DCPP in its measurements of performance in meeting objectives. The critique appeared appropriately self-critical and comprehensive. DCISC concluded, from observations of the Control Room Simulator and Joint Information Center portions of the exercise, that the exercise was successful.

**Emergency Response Organization Activities (Volume II, Exhibit B.3)**

In further follow-up to August 11, 2010 Emergency graded exercise, DCPP provided an additional update on November 18, 2010 at the DCISC November 17/18, 2010 Public Meeting. The presentation was in general agreement with the information provided in other forums. Strengths that were cited included:

- Strong operations support and resources in the Operational Support Center, which helped improve team dispatch time
- Rapid identification of the release (within one minute)
- Excellent communication, teamwork, and process used for identifying the release path
- Good discussion on limits for emergency response teams
- Focus of the Joint Information Center (JIC) team on confirming approved information that
was released to the media

Other challenges to the Emergency Organization were noted as follows:

- Assembly and accountability could have been initiated in a more timely fashion
- Control room indications, annunciators, field reports, and plant parameter computer displays were not appropriately used to diagnose the radiological release.
- The Unified Dose Assessment Center’s (UDAC) tracking of emergency worker exposure resulted in incomplete documentation of onsite Field Monitoring Team (FMT) dosimetry reading conversion to Total Effective Dose Equivalent (TEDE) and Thyroid Committed Dose Equivalent (CDE) which resulted in non-conservative redeployment strategies, and additional emergency exposure controls were not modified.

The presentation also focused on the performance of DCPP’s operating crew and Emergency Organization during the June 7, 2010 dress rehearsal for the August 11 Emergency Drill. Identified strengths were as follows:

- The decision of the operating crew to initiate a down-power ramp of 3% per hour due to indications of accelerating fuel degradation
- The accurate assessment of a rapid transition from the Alert state to a General Emergency classification and supported by appropriate analysis
- The strength of intra-facility communications, e.g. “crisp” updates, effective coordination with the County prior to news briefs

Areas for improvement in the July 7 drill focused on Radiological Exposure Controls, as follows:

- Emergency exposures were not appropriately considered prior to dispatch of in-plant teams
- Tracking of emergency worker exposure was not effectively implemented to keep doses As Low As Reasonably Achievable (ALARA)
- Contamination monitoring of personnel was not properly implemented
- Onsite contamination control measures were not properly implemented for field workers
- The need for potassium iodide was not effectively evaluated for the in-plant release mitigation team
- Monitoring of the media was not performed in the Joint Information Center (JIC)
- The timeliness to develop and implement strategies to terminate the release could have been improved

The third and last issue that was presented was in follow-up to the Emergency Organization’s involvement in the June 3, 2010 unplanned release of carbon dioxide due to a problem with a manual test valve that did not close properly during a test of the system. In this event there was no release of radioactivity and no impact on the station’s nuclear operating systems. However, the
The station was required for the first time in its history to declare an Alert due to the impact that a temporarily uninhabitable area existed that could impede the functioning of personnel who might need to respond through that area in the event an unrelated nuclear problem might develop coincidentally.

Problems that arose in the station’s response were cited to be:

- Public address system audibility
- Problems with telecommunications equipment
- Problems with procedure clarity regarding responsibilities of the emergency organization in this type of non-nuclear event
- Lack of clarity in the initial notification to the County
- Timeline of getting offsite fire department access to the Protected Area

Identified Strengths were as follows:

- Response of DCPP's fire department
- Leadership oversight in the control room
- Communications and coordination with San Luis Obispo County
- Communications with the NRC
- Process of terminating the event
- Media communication, including the use of social tools

DCPP’s presentations of strengths and areas for improvement regarding the EP drill rehearsal in July 2010, the NRC’s graded emergency exercise in August 2010, and the unplanned release of carbon dioxide in June 2010 were focused, self-critical, and consistent with information accumulated by the DCISC.

Emergency Planning Dose Assessment Program (Volume II, Exhibit D.8, Section 3.4 and Volume II, Exhibit B.9)

The purpose of the upgrades to the Meteorological Information and Dose Assessment System (MIDAS) and the Sonic Detection and Ranging System (SODAR) is to enhance the capability of PG&E and the County for making appropriate Protective Action recommendations and decisions in support of EP’s Dose Assessment Program. Such decisions relate to the need to evacuate or recommend sheltering for the population in various geographic sectors in the vicinity of DCPP in the event of an unplanned radiological release from the site. In December 2009, DCPP had reached agreement with the County staff including the County Office of Emergency Services (OES) and the Air Pollution Control District (APCD) to proceed with the following actions:

1. Upgrade the dose assessment program to add the capability for meteorological inputs (wind
speed and direction) from multiple offsite meteorological towers, and agree upon the number of tower locations

2. Complete the Pressurized Ion Chamber (PIC) equipment upgrade (PICs measure radiation levels)

3. Review and install upper air meteorological SODAR equipment (These instruments measure the movement of upper air in order to better determine the movement or dispersion of a plume throughout the area.)

At the June 2010 Public Meeting, DCPP noted that PG&E was scheduled to meet with the County in the near term for technical review of the following items:

4. Dose assessment software validation plan and schedule for software and equipment installations

The forecast completion date for the above improvements was June 2011.

The January 2011 status for completing items still in progress is shown below (Items below are numbered in the same topical configuration as Items 1 – 4 listed above, and at the time of this review all four were still expected to be completed as scheduled by June 2011):

1. Seven offsite meteorological towers will be used, the original six plus an additional seventh tower. All towers were in place. The wind speed and direction data from all towers will serve as multiple inputs to the upgraded dose assessment system. The detectors have been replaced with new ones. Also, DCPP will continue to have a primary tower and a backup tower on site.

2. Thirteen PICs were in fixed locations in the local area (compared to the original twelve) to measure radiation dose and to feed the individual data from each location into the dose assessment system. PIC upgrades were completed in 2010.

3. The current system has three SODAR installations, the original one on site at DCPP, plus two more in the surrounding area. All three installations have been upgraded.

4. Dose assessment software was being upgraded, including the capability of receiving and processing multiple inputs. Testing was scheduled for completion in February 2011.

It was noted that the system exceeded regulatory requirements and, doing so, provides additional assurances for public health and safety. Also noted was that training was scheduled to be provided to appropriate personnel after the improvements were installed and tested.

During a DCPP presentation at its June 21/22, 2011 Public Meeting, the DCISC was informed that all of the upgrades described above had been completed.

**Significant enhancements and expansions have been completed on DCPP emergency dose assessment systems, which exceed regulatory requirements and increase the level of protection**
4.7.3 Conclusions and Recommendations

Conclusions:

Responses to the July 7, 2010 simulated event by Control Room personnel were generally methodical and effective. However, improvements were needed in the performance of the Operational Support Facility with respect to on-site radiological controls. Media briefings in the Joint Information Center (JIC) appeared to have improved substantially.

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective.

The August 11, 2010 NRC-Evaluated Emergency Exercise was determined to be successful by DCPP in its measurements of performance in meeting objectives. The critique appeared appropriately self-critical and comprehensive. DCISC concluded, from observations of the Control Room Simulator and Joint Information Center portions of the exercise, that the exercise was successful.

At DCISC’s June 2011 Public Meeting, DCPP’s presentations of strengths and areas for improvement regarding the EP drill rehearsal in July 2010, the NRC’s graded emergency exercise in August 2010, and the unplanned release of carbon dioxide in June 2010 were focused, self-critical, and consistent with information accumulated by the DCISC.

Significant enhancements and expansions have been completed on DCPP emergency dose assessment systems, which exceed regulatory requirements and increase the level of protection for the public in the event of an unplanned radiological release.

Recommendations:

None
4.8.1 Overview and Previous Activities

PG&E has developed in-house capability to perform risk assessments and periodically updates its Probabilistic Risk Assessment (PRA) to incorporate changes in plant configuration and, if appropriate, operations. PG&E controls its risk from on-line maintenance procedurally. For On-Line Maintenance the PRA Group prepares a Risk Profile on a weekly, monthly and fuel cycle basis. The PRA Group works very closely with personnel performing the On-Line Maintenance risk assessment, and the program has been working well. The On-Line Maintenance (OLM) model has been used by Operations and Maintenance as an on-line planning tool for various operations and maintenance activities.

The DCISC reviewed the following item during this previous reporting period:

- Update on PRA Activities
- Operations Groups Use of PRA
- Self-Assessment & Benchmarking of Risk Management/Protected Equipment

The DCISC concluded that Delays in transitioning from Operations Risk Management-Maintenance (ORAM) to “Safety Monitor” are interfering with DCPP’s ability to keep pace with industry leaders in the quantitative assessment of operational risk. Although a recent self-assessment concluded that DCPP’s process for managing on-line risk was well defined and consistent with the NRC Maintenance Rule, the self-assessment team concluded that “the program cannot be described as industry leading due primarily to not being a fully quantitative program, and due to a declining awareness of risk management status resulting from the program changes over the past two years.” While this situation does not directly affect the safety of the plant, it does affect DCPP’s ability to assess the plant’s operational risk status accurately in real time.

There has been a decline in the last two years in the ability to do its work of the group at DCPP that is responsible for maintaining the station's Probabilistic Risk Assessment (PRA) and using the PRA to carry out analyses to support various other plant functions. The decline came about due to loss of key personnel who have been difficult to replace. Recently, some progress at rebuilding the PRA Group’s staff has occurred, but the in-house staff is still neither as large nor as experienced as it needs to be, although the Group’s management seems competent and DCPP is able to rely on PRA contractors as an interim measure.

4.8.2 Current Period Activities

The DCISC reviewed the following Probabilistic Risk Assessment (PRA) items during the current
Probabilistic Risk Assessment (PRA) Overview (Volume II, Exhibit D.2, Section 3.11)

The DCISC met with the Supervisor, Probabilistic Risk Assessment (PRA) Group and Fire Protection Engineering, for a periodic review of the use of PRA to assist plant management in operations and safety improvement. The DCPP team has been working on developing a new fire PRA for some time, and the progress has reached the point where an industry peer review is planned for December 2010. The fire PRA will then be used as part of the basis for the DCPP plan to transfer how the fire-safety area is regulated from NRC’s longstanding deterministic approach to the new NRC approach that follows NFPA (National Fire Protection Association) Standard 805. NFPA 805 is a performance-based approach to regulating fire safety that NRC adopted recently and made available as an option to the regulated nuclear power plants. This is a technically challenging task for the DCPP PRA group, because the analysis is complicated and because part of the effort involves using the American Society of Mechanical Engineers (AMSE)/American Nuclear Society (ANS) Combined PRA Standard’s section on fire PRA methodology. Using that standard is technically complex, because it involves a number of very high expectations in terms of PRA scope and quality that are vital to achieve but difficult to execute.

The team is also starting to work on a modern internal-flooding-PRA, again following the methods in the ASME/ANS Combined PRA Standard. This work is expected to be complete about a year hence.

In the seismic-PRA area, the DCPP plant has an old PRA dating from two decades ago that, when it was completed, had the reputation of being perhaps the finest such seismic PRA ever completed. In fact, it broke new ground in several methodology areas at that time and was used worldwide as a model for how to perform a seismic PRA. In the intervening time, it has become out of date principally because it has not been kept up to date with configuration changes at the plant; there have also been a few methodology improvements in the seismic PRA area, and also there is new seismic-hazard information now, meaning that the seismic-ground-motion input aspect of the old seismic PRA is out of date. DCPP hopes to start an update to their seismic PRA sometime within the year, and that it might require a year to complete thereafter.

The PRA group’s staff, which had experienced a decline due to retirements and departures within the past two years, is gradually being rebuilt, with the recent bringing in of 4 new individuals, two of whom are already fully qualified -- the others are in the process of becoming qualified. In the meantime, the plant has used PRA experts from PRA contractor firms to supplement the staff.

One major area where the PRA team’s efforts are concentrated is in the NRC “Significance Determination Process” (SDP). When the DCPP experiences an operational event that exceeds a pre-defined threshold, the significance of the event is analyzed using an NRC-prescribed approach.
in which the PRA plays a major role in terms of determining how safety-significant the event is. Industry-wide, there is now considerable experience over the past few years with the SDP process, and the DCPP PRA team is benefiting from that experience. They have done about a half dozen SDP analyses in the last few months, and are now comfortable with being routinely relied on for that type of work.

The Operations Department is now using PRA tools and insights routinely to plan operations, analyze their safety significance, and review events as they occur. This is an important advance, and is a mark of the effectiveness of the PRA group’s work.

When DCPP performs major refueling and other outages, they have used a computerized PRA-based analysis tool called On-Line Risk Assessment – Maintenance (ORAM) for some years. This tool is extensively used industry-wide to study the safety significance of various outage configurations in which items are taken out of service for maintenance during operation. Recently, the plant began a transition to a more effective tool called “Safety Monitor”. It will be up and running by October, after which it will be used for a period in parallel with ORAM while the team gains confidence in its use. The upcoming head-replacement and refueling outage in October 2010 (1R16) will use ORAM, but subsequent outages thereafter will be analyzed using the new tool. This switchover is a major advance in the PRA group’s capability to support outage planning and outage operations.

The PRA group continues to make strides to recoup the capabilities that went into decline due to staff losses a couple of years ago. The management actions to rebuild this vital plant team are appropriate. It is clear that the progress is having an impact on plant operations and safety in a number of different areas. However, there is still more to do to rebuild the team, which remains understaffed to perform the PRA-based work it needs to do and that other sister plants do routinely. DCPP does employ PRA consultants to fill the personnel gap. This area remains a challenging one for DCPP, partly because there is a nation-wide (indeed, a world-wide) shortage of experienced PRA people at a time when the demand for such around the country is increasing everywhere. The advent of the ASME/ANS PRA methodology standards in recent years is an excellent advance, but it represents an additional challenge to DCPP in terms of meeting the highest-quality expectations that the plant aspires to. The DCISC will need to continue to monitor the plant’s progress in this area.

Status and Plans for the Probabilistic Risk Assessment Group (Volume II, Exhibit B.6)

PRA staffing at DCPP and a recent survey from 2010 of 15 domestic utilities with a total of 61 nuclear units which found an average PRA staff consists of 2.9 full time equivalent employees per unit, including the supervisor. DCPP’s average staffing was 2.0 full time equivalent employees including a supervisor for the PRA group. The PRA supervisor at most plants is also a PRA practitioner and this was a significant issue in a group of three total employees. The survey found the average industry PRA group to have 8.6 years of PRA experience while the average years of experience for the PRA group at DCPP was 4.5 years. In 2010 DCPP added an additional PRA analyst and currently the DCPP PRA group has three qualified PRA analysts and one new engineer on a rotational assignment but who is destined to become an analyst.
The PRA group’s accomplishments during 2010 were as follows:

- In December 2010, following a four-year effort, the Fire PRA model was reviewed by the Westinghouse Owners Group Peer Review Team. The Fire PRA was judged to be of excellent quality and is to be used as a benchmark for an industry standard. The Fire PRA model is now ready to apply to the National Fire Protection Association (NFPA) 805 Program. The DCPP PRA group is currently working to close Internal Events Model open items to support NFPA 805 and other submittals.

- The Safety Monitor on line and outage risk management model, which will replace the currently used ORAM Sentinel tool, has been developed for on line maintenance risk assessment.

- DCPP has funded and is preparing, with its partners in the Strategic Teaming and Resource Sharing (STARS) resource sharing group, for joint implementation of Risk Informed Technical Specifications (RITS) Initiative 5B to concentrate on more risk-significant surveillance as part of a risk-informed surveillance frequency program.

DCPP’s PRA Strategic Plan includes efforts for compliance with Regulatory Guide 1.200 by 2014. These efforts will include: the PRA Seismic Update to address seismic hazards as identified and peer-reviewed by the PG&E Geosciences Department; an equipment seismic fragility gap assessment and update with Civil Engineering which is now ongoing and will continue; and targeting a seismic PRA gap assessment and model update by the end of 2011. The PRA Strategic Plan also includes a PRA Internal Flooding update, which has received its funding allocation but for which work is being deferred until the Internal Events and Seismic PRAs are completed.

The PRA Strategic Plan is expected to be fully leveraged by 2015 include:


- 10 CFR 50.69 to provide risk-informed categorization and treatment of Systems, Structures, and Components (SS&C) to effectively reduce regulatory review due to the creation of better risk significance documentation.

4.8.3 Conclusions and Recommendations

Conclusions:

DCPP’s Probabalistic Risk Assessment (PRA) Group is being returned to a somewhat satisfactory staffing level, following several years of decline and use of contractors to accomplish its analyses. The decline came about due to loss of key personnel who have been difficult to replace. The Group is progressing well on several important PRA fronts, including a Fire PRA, updated Seismic PRA, and the performance-based PRA analysis to support the move to National Fire Protection Association (NFPA) Standard 805. DCPP has finally caught up with industry in its use of Safety Monitor, which is used to gauge the risk of removing components from service for on-line maintenance. The DCISC will continue to closely monitor PRA activities at DCPP.
Recommendations:

None
21st Annual Report, Volume 1, Section 4.9, Nuclear Safety Oversight and Review

4.9.1 Overview and Previous Activities

Note: because of the confidentiality agreement between the Institute of Nuclear Power Operations (INPO) and its member nuclear plants, and a similar policy about DCPP's internal Nuclear Safety Oversight Committee (NSOC), only limited information can be presented in this public document.

Nuclear Safety Oversight and Review is an important function in the safe operation of nuclear power plants. This oversight represents an independent, higher and/or broader level of review of operations, events, occurrences, etc. than can be obtained from the organizations performing the day-to-day plant, technical and quality functions. The Nuclear Regulatory Commission (NRC) is charged by law to regulate the nuclear industry. In carrying out this responsibility the NRC issues regulations and guides for nuclear safety and performs inspections at facilities to assure regulations are met. NRC's role at DCPP is discussed in Chapter 3.0 NRC Assessments and Issues. NRC regulations require, and DCPP Technical Specifications (TS) provide for, a high level of oversight in the form of the Nuclear Safety Oversight Committee (NSOC).

Additionally, the nuclear industry seeks operational safety and excellence with the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Power Operators (WANO) which perform periodic performance evaluations of each operating nuclear plant; coordinates the collection, review and dissemination of operating event information; issues good practice guidelines; provides specific event, technical and functional reviews; and issues and monitors performance goals for the industry. PG&E is a member of INPO and participates in their programs.

The Diablo Canyon Independent Safety Committee (DCISC) provides an additional level of nuclear safety review and oversight. As stated in Chapter 1.0, DCISC is charged to “...review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations”. In carrying out its responsibilities DCISC receives and reviews DCPP operating and technical and NRC documents; performs fact-findings at DCPP and holds several public meetings and public plant tours each year to hear PG&E reports on plant operational safety and receive public input.

The DCISC observed the following oversight meetings/items during the previous reporting period (2009-2010):

- WANO/INPO Evaluation Results Summary
- Status of DCPP Response to the 2009 WANO/INPO Evaluation
- DCPP Response to 2009 WANO/INPO Evaluation
NSOC Meetings

In the previous reporting period the DCISC concluded that DCPP received an overall positive evaluation from the combined Institute of Nuclear Power Operations (INPO)/World Association of Nuclear Operator (WANO) June 2009 evaluation. The several Areas for Improvement (AFIs) appeared to be satisfactorily addressed by DCPP in its response. The DCPP Nuclear Safety Oversight Committee (NSOC) appears to be satisfactorily staffed with external members and their review of issues appears to be appropriately intrusive, focusing on important safety issues.

4.9.2 Current Period Activities

The DCISC reviewed the following oversight items during the period:

- WANO/INPO-Type Mid-Cycle Assessment
- Observe January 19, 2011 NSOC Meeting
- INPO Update
- NSOC Updates

INPO/WANO Reviews

DCPP WANO-Type Mid-Term Assessment and INPO Update (Volume II, Exhibit D.5, Section 3.9 and Exhibit D.10, Section 3.9)

The Institute of Nuclear Power Operations (INPO) and/or its international counterpart, WANO, both industry organizations, perform two-year evaluations of each nuclear power plant. The purpose of evaluation is to help the plant to achieve excellence evaluating the plant’s programs and practices against the best in the industry. The evaluation results in beneficial practices and Areas for Improvement (AFIs).

Normally each plant also performs a mid-term assessment to assess its progress in meeting the INPO evaluation recommendations and AFIs.

The DCPP mid-term assessment was performed in June 2010. The assessment team included DCPP employees and industry peers in each evaluation area. The assessment was carried out as follows:

1. Six weeks ahead of the formal assessment DCPP employees (typically Plant Improvement Coordinators or PICOs) reviewed data, performance indicators, and trends looking for gaps to success and measuring progress in resolving AFIs.
2. The PG&E Team is sequestered for a week reviewing the above results and making plans for the formal assessment.
3. “Evaluation Week” – industry peers spend a week at the plant evaluating the above information. The second week the PG&E Team and Organizational Experience peer and INPO Senior Representative prepare the assessment report.
The DCISC reviewed the assessment report. It was comprehensive, yet focused, and appropriately intrusive. The report concluded the following:

*The Midcycle Assessment concluded that with certain exceptions, the station is resolving the areas for improvement identified in the 2009 WANO evaluation. Although progress has been made on these AFIs, there are additional actions required to resolve them.*

DCPP created new action plans to address the findings – action was already underway for one. The completion date for all plans was set as end-of-year 2010. The Chief of Staff will make monthly progress reports to the Site VP, Project Review Meetings will be held monthly, and a quick-hit assessment will be performed in early 2011 to measure progress of these plans.

The next INPO evaluation of DCPP is scheduled to take place in August 2011. INPO sent representatives to DCPP during the last refueling outage for an outage planning and implementation review, which will be input into the August evaluation. Teams observed the unit shutdown, maintenance, radiation protection practices, and startup chemistry. In July 2011 INPO will observe operating crew training on the DCPP simulator. Evaluation results are expected the first week of October. DCPP has been tracked actions on both the 2009 INPO evaluation Areas for Improvement (AFIs) and its own mid-cycle assessment AFIs to have them completed with some run time well in advance of the August evaluation.

*The DCPP Mid-Cycle WANO-Type Self-assessment was comprehensive, focused, and appropriately intrusive. DCPP has developed action plans for weaknesses identified with completion dates by the end of 2010. DCPP will perform a Quick Hit Assessment in early 2011 to measure action plan progress. The next INPO/WANO evaluation will be in August 2011. The DCISC will continue to closely follow these issues.*

**NSOC Meetings**

NSOC is comprised of external and internal members. The external (to PG&E) members include former executives with INPO, and the NRC, site vice presidents, and engineering vice presidents. The NSOC’s independent oversight role is chartered by PG&E’s Chief Nuclear Officer (CNO) and includes inspection activities, direct observations of activities, direct assessment of activities, review of presentations from various DCPP organizations, and providing feedback to DCPP and its CNO.

**September 16, 2010 NSOC Meeting Summary**

Items discussed:

- Plant performance and operational status
- Licensing Basis Verification Project
- Quality Verification (QV) organization’s top three performance issues
DCPP Alert HA3.1
Operations performance gaps and receive NSOC’s Operations Subcommittee report
Engineering performance gaps and receive NSOC’s Engineering Subcommittee report
Maintenance including radiation protection performance gaps, maintenance performance gaps and receive NSOC’s Maintenance Subcommittee report
Organizational effectiveness including security performance gaps and receive NSOC’s Organizational Subcommittee report
Station Performance Indicators
License Basis Verification Project
Station Trend Program
DCPP Alert HA3.1
Subcommittee Report-Outs by NSOC’s Operation, Engineering, Maintenance and Organization subcommittees

The current status of the NRC Performance Indicators was also reviewed by the NSOC members. DCPP has made an effort recently to get a larger part of the plant population involved in understanding the function of the NSOC and when report-outs on specific areas occur, personnel involved in those functional areas are invited to attend to see the NSOC process in action. DCPP management is trying to get a sense for whether the line organizations are aligned with the NSOC subcommittee report-outs and prior to each individual area report-out, representatives of the line organizations presented a one-slide presentation on what they felt were the biggest gaps to be addressed so when the subcommittees reported-out there would be a side-by-side comparison. There was a reasonable level of alignment and nothing contrary was discovered through this effort.

January 19, 2011 NSOC Meeting Summary

Items Discussed:

- Plant performance and operational status
- Quality Verification (QV) organization’s top three performance issues
- Independent Review Program
- NRC Inspection Readiness
- Operations Subcommittee Report
- Maintenance Subcommittee Report
- Engineering Subcommittee Report
- Organizational Effectiveness Subcommittee Report
- Station Performance Indicators
Station Safety Culture

- NRC Inspection Readiness
- Subcommittee Report Outs by NSOC’s Operation, Engineering, Maintenance and Organization subcommittees

The day prior to a NSOC meeting is devoted to meetings of the NSOC subcommittees, which include DCPP director and manager level personnel.

Dr. Budnitz attended the January 19, 2011 NSOC meeting, where he reported a good deal of discussion about security questions which are outside the purview of the DCISC. He was impressed by the thoroughness and quality of the NSOC team.

4.9.3 Conclusions and Recommendations

Conclusions:

DCPP performed a mid-cycle assessment of its progress in satisfying the Areas for Improvement (AFIs) from the 2009 Institute of Nuclear Power Operations (INPO) evaluation. Four additional AFIs were identified. DCPP was preparing for its August 2011 evaluation. The DCPP Nuclear Safety Oversight Committee (NSOC) is satisfactorily staffed with strong external members and their review of issues is appropriately intrusive, focusing on the most important safety issues.

Recommendations:

None
4.10.1 Overview and Previous Activities

DCPP Technical Specifications contain requirements on Radiation Protection (RP), and DCPP has corresponding programs, and procedures to specify the details of their radiation protection programs. Although numerical limits are specified, plant operators are also required to use the philosophy of As Low As Reasonably Achievable (ALARA) to minimize excess radiation exposures and releases. DCPP has a formal ALARA program; the program applies to personnel exposure in the plant as well as normal releases to the environment. PG&E files reports semi-annually regarding personnel exposures, releases outside DCPP and regular soil, vegetation, water and air samples taken around the plant.

The DCISC regularly monitors DCPP personnel exposure. Collective radiation exposure is one of DCPP’s and INPO’s performance indicators. DCPP also reviews any radiation protection events or incidents in the industry that are reported in LERs or NRC violations. DCPP performance in radiation protection has been satisfactory; however, PG&E collective doses have not been in the lowest quartile of the industry.

The majority of personnel exposure occurs during refueling outages when most of the work in the Radiation Control Area (RCA) is performed. DCPP sets outage and annual goals for exposure, and reports these at each DCISC Public Meeting. DCPP also submits a semi-annual report to NRC on any planned, normal radioactive releases from the plant; DCISC reviews this report. Any abnormal releases are reported in special reports, typically LERs, although there have been none since the DCISC began in 1990.

The DCISC reviewed the following specific RP item during the previous reporting period:

- 2008 Annual Radiological Releases
- Locked High Radiation Doors and Personnel Safety
- Containment Entry at Power
- DCPP Collective Radiation Doses

In previous periods DCPP releases have always been at very small fractions of Technical Specification and regulatory limits. Accumulated worker radiation doses have risen due to the long and dose-intensive Steam Generator Outages 2R14 and 1R15. The DCPP Radiation Access Computer-Based Training observed by the DCISC was appropriate for the intended purpose of training, testing and certifying visitors for escorted entry into the Radiation Control Area (RCA).
4.10.2 Current Period Activities

The DCISC reviewed the following DCPP radiation protection items during the current reporting period:

- 2009 Annual Radiological Releases
- Outage 1R16 Radiation Protection Performance

2009 Annual Radiological Releases (Volume II, Exhibit D.1, Section 3.2)

DCPP submitted its 2009 Annual Radioactive Effluent Release Report and its 2009 Annual Radiological Environmental Operating Report to the Nuclear Regulatory Commission (NRC) on April 28, 2010. The former report described the quantities of radioactive gaseous and liquid effluents released from the plant and the solid radioactive waste shipments during the year 2009. In all cases the releases were well below Technical Specifications limits for the year. The latter report provided the results of the radiological monitoring and sampling performed on and around the plant site in 2009.

Based on radioactive releases, the following whole body radiation doses to a theoretical “maximum exposed individual” at the site boundary and their corresponding percent of Technical Specifications limits for the year 2009 were calculated to be as follows:

<table>
<thead>
<tr>
<th>Effluent Type</th>
<th>Calculated Radiation Dose</th>
<th>Percent of Tech. Spec. Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>0.0003 milliRem</td>
<td>0.011%</td>
</tr>
<tr>
<td>Gaseous</td>
<td>0.0045 milliRad</td>
<td>0.039%</td>
</tr>
</tbody>
</table>

The Radiological Environmental Operating Report describes the results of the Radiological Environmental Monitoring Program (REMP) used to assess the levels of radiation or radioactivity in the environment. The 2009 REMP included more than 1100 samples (including Thermo-luminescent Dosimeters [TLD]) with approximately 2300 radionuclide or exposure rate analyses being performed. Samples included surface water, drinking water, marine samples, vegetation, food crops, milk, and meat. The report concluded the following:

*The results of the 2009 REMP showed no unusual findings from site operations. These results were also compared to preoperational data and showed no unusual trends. The operation of DCPP had no significant radiological impact on the environment.*

Direct radiation is continuously measured at 31 locations surrounding DCPP using thermo-luminescent dosimeters (TLD). These 31 locations are made up of 29 indicator stations and 2 control stations. The dosimeters are collected and read every calendar quarter. The results are trended with preoperational and historical operating values for adverse trends. No adverse trends were noted in 2009.

Beginning in February 2009, the DCPP Unit One (U-1) Steam Generators (SG) were replaced and the
old U-1 SGs (four total) were stored onsite within the Old Steam Generator Storage Facility (OSGSF). Beginning in October 2009, the DCPP Unit Two (U-2) Reactor Head was replaced and the old U-2 Reactor Head was also stored onsite within the OSGSF. As of December 31, 2009, the OSGSF contained eight old SGs and one old Reactor Head. The OSGSF did not cause any changes to the ambient direct radiation levels in the DCPP environment during 2009.

The OSGSF sumps were inspected quarterly as part of the REMP. Rainwater was found in the U-2 Old SG vault # 30 during the fourth quarter inspection due to rains in October. This rain water had tritium concentrations consistent with rain water washout concentrations. As a conservative measure, the rain water from the sump was removed and processed via an approved radwaste discharge pathway.

Beginning in June 2009, DCPP began loading of the Independent Spent Fuel Storage Installation (ISFSI). In addition to the 31 TLD locations mentioned above, direct radiation is also continuously measured at eight locations surrounding the ISFSI using TLDs that are all well within the site boundary. Specifically, two TLDs are located on each of the four sides of the ISFSI pad. No adverse trends were noted in 2009 at this ISFSI inner ring of 8 TLDs due to the installation of the ISFSI casks. In fact, the readings of these inner ring TLDs trended downward in correlation with a downward fluctuation in the environmental TLDs.

Tritium levels in three monitoring wells beneath the power block were all below the Environmental Protection Agency (EPA) drinking water standard of 0.02 microCuries per liter. All site ground water flows into the Pacific Ocean and is not a source of drinking water.

On October 11, 2009 DCPP experienced an unplanned and uncontrolled release of gaseous radioactivity from two Gas Decay Tanks. The release occurred while Operations was performing a valve lineup to clear and drain the Emergency Core Cooling System for the Unit 2 refueling outage core offload window. During the evolution, a series of valves were opened to drain water. Three of the four valves that were opened were outside of the Master Clearance boundary. As a result, gas was released to the Auxiliary Building atmosphere, and ultimately through the plant vent to the outside atmosphere. The plant vent radiation monitoring system monitored the release. The release rate was less than 0.02 percent of the allowable rate.

During 2009 a design change was made to modernize the Auxiliary Building Control Board Operator Station which controls the operation of various valves for the receiving, storage, treatment and discharge of liquid and gaseous radioactive waste products generated by both Units. The prior pneumatic fluid logic system was replaced by a digital control system. The new digital system consolidates needed information onto a display that provides a more effective picture of system operations. This new system was designed with redundant networking and independent power sources.

DCISC reviewed the methods and data presented in the two reports, agreeing with the conclusions.

DCPP’s 2009 total liquid and gaseous radiological releases were very small fractions of amounts
permitted by regulations and Technical Specifications. DCPP experienced an uncontrolled venting of two gas decay tanks in October 2009, which amounted to 0.02 percent of the allowable rate. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2009.

**Outage 1R16 Radiation Protection (RP) Performance**

DCPP Outage 1R16 was a successful outage based on the plant’s collective radiation dose as shown below. Also shown at the Radiation Protection Group’s performance results

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Radiation Dose (Person-Rem)</td>
<td>126</td>
<td>118.8</td>
</tr>
<tr>
<td>RP Disabling Injuries</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Recordable Injuries</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Human Performance Clock Reset</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP FME Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Security Loggable Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Personnel Contaminations</td>
<td>≤33</td>
<td>14</td>
</tr>
<tr>
<td>RP Radiation Boundary Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Loss of Control of Radioactive Materials</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

As of the third quarter 2010, the annualized dose performance for peer U.S. PWRs is shown below (the annualized dose is the ~18-month total cycle dose [breaker closed to breaker closed] for a unit divided by 1.5).

- First quartile = 38.5 Rem
- Second quartile = 51.5 Rem
- Third quartile = 64.5 Rem

DCPP Unit 1 Cycle 16 is 88 Rem (fourth quartile), and Unit 2 is 65 Rem (third quartile). DCPP projects the 2R16 cycle dose will be 92 Rem, which is 61.3 annualized, and the 1R17 cycle dose to be 96 Rem, which is 64.0 annualized. This means that both units will be in the third quartile until after Outages 2R16 and 1R17. DCPP RP is working to improve these standings.

RP’s scope of work in Outage 1R16 consisted of the following implementation items of the RP Program:

- Access Control
- Job Coverage
- Surveillance
- Dosimetry
Temporary Shielding
ALARA
Decontamination
Contamination Control
Radiography
RAM (radioactive materials)
Radwaste
Hazardous waste
Confined Space Sampling
Spent Fuel Pool FME
Respiratory Protection

The major RP lessons learned included:

- Improve on RP technician outage hiring/staffing processes
- Cask rigging/transport for changing Letdown Filters during Shutdown Mode Transition
- SFP source term reduction with portable demineralizer
- Cavity water level optimization to reduce dose rates from upper and lower internals
- RAM storage and disposal of legacy RAM
- Improve status control of scaffold requests

The next refueling outage is 2R16. The radiological risks/exposures identified are:

- Core Exit Thermocouple replacement – a new procedure for DCPP with significant radiological risk. It involves modifications on the new reactor head and two sets of cavity drains, head moves, and cavity decontaminations.
- Thimble Tube Replacement – significant radiological risk involving eight thimble tubes being partially withdrawn and trimmed
- Lower Internals Removal – significant radiological risk
- Containment Insulation Debris Mitigation – scope needs clarity

As reported in Section 4.17.2, accumulated radiation doses were as follows:

| Outage 2R16 | 29.7 person-Rem | (Goal ≤ 68) |

This is considered to be excellent radiation protection performance and, if continued, should put DCPP in a much improved industry position.
4.10.3 Conclusions and Recommendations

Conclusions:

DCPP radiation releases this period, as in previous periods, were very small fractions of Technical Specification and regulatory limits. The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem. The installation of a new Reactor Vessel Closure Head and Integrated Head Assembly contributed 36.2 Person-Rem to this total, compared to a planned exposure of 32.6 Person-Rem for the project. The total exposure in 2010, however, placed DCPP in the industry fourth quartile, a position RP is working to improve. Performance in Outage 2R16 was significantly improved with total radiation dose of 29.7 person-Rem due primarily to reduced in-containment major equipment work. RP is taking a forward-looking approach to the next sets of outages to keep lowering the exposures. The DCISC will continue to monitor DCPP's progress in radiation protection.

Recommendations:

None
4.11.1 Overview and Previous Activities

The DCISC has followed PG&E’s quality programs continuously since 1990. The DCISC looked at the following aspects of the quality programs in Fact-finding meetings and public meetings in the previous period (2009-2010):

- Missed Hold Points During 1R15
- Quality Verification’s Assessment of Station Performance
- Overview of the Quality Verification Organization

In the last reporting period DCISC concluded that QV continued to identify items that need correction, and two of these, Electrical Safety (Personnel Safety) and Preventive Maintenance (PM) Program Implementation Deficiencies need management attention. The Quality Control (QC) section of Quality Verification (QV) is taking corrective action to improve the problem they had in the past on missed QC hold points. The most recent Quality Performance Assessment Report (QPAR), covering the period from July through November 2009, appears to be an informative and helpful management report. The Key Gaps that are listed are clear and well supported. The process of highlighting continuing Key Gaps and escalating issues as deemed necessary appears sound and effective.

4.11.2 Current Period Activities

During the current period, the DCISC has reviewed the following quality-related matters at two Fact-finding meetings and two DCISC public meetings:

- Quality Verification (QV) DCPP Site Status Report & QV Activities
- QV Perspective on Plant Performance
- Software QA Program

Quality Verification (QV) DCPP Site Status Report & QV Activities (Volume II, Exhibit D.2, Section 3.10)

The DCPP Site Status Report, issued monthly basis, contains all of the issues that QV has identified and is currently following. The report listed the following:

QV Director Concerns (Concerns, insights, order of significance status)

1. CORRECTIVE ACTION PROGRAM (CAP) PERFORMANCE HAS FALTERED – A QV audit finding
revealed an adverse trend in ineffective correction actions both in station and QV identified problem areas.

2. SIGNIFICANT CROSS-CUTTING ISSUE (SCCI) – Site Leadership actions failed to avert SCCI. The RCE has determined that Leadership did not provide adequate standards in several programmatic areas, nor did they ensure sustainable programs in the areas of evaluations. Contributors include a poorly documented and maintained licensing basis, Corrective Action Program (CAP) weakness, and loss of proficiency in performing proper evaluations.

3. SECURITY PERFORMANCE – This area falls outside the DCISC scope.

QV ISSUES IN ELEVATION/ESCALATION

1. 04/07/10 – 1st Level Escalation – Open – Maintenance – Seismically Induced System Interaction (SISI) Program Timelines and Effectiveness – During the past 12 months, QV audits and assessments have indicated that SISI area owner inspections and area manager housekeeping walkdowns have not been consistently performed. Additionally, quality records of area owner inspections have not been adequately generated and maintained, and some SISI area owners and managers have not received adequate training. SISI Program weaknesses, including failure to implement plant procedures and failure to generate and maintain quality records for SISI inspections, were identified during the 2008 NRC PI&R inspection. Corrective actions to address this escalation are complete, but the extent of condition and extent of cause have not been completed. Inspections and documentation have been properly completed since escalation of this issue.

2. 03/30/10 – 1st Level Escalation – Open – Site Services – Quality Records Management – A failure to monitor and enforce records management requirements has resulted in a continuing lack of station compliance with quality records requirements. This presents a risk of a loss of quality records and a potential for regulatory action. ACE corrective actions include clarification of the timeliness clock for maintenance records, and establishment of suitable metrics to monitor performance in this area. The extent of condition and extent of cause were not completed as part of the ACE and are being tracked on separate SAPNs. Records management issues continue to occur, and are being evaluated in light of the recent ACE corrective actions.

QV ISSUES & TRENDS (Including indications of line sensitivity or defensiveness to issues, isolation, arrogance or complacency).

1. Engineering – Design and licensing basis deficiencies continue to be identified in areas such as: the new reactor vessel heads and control-rod drive mechanism designs, emergency diesel generator air system design classification, in core thimble eddy current evaluations, the in-service inspection of the Unit 1 containment structure, and 230 kV system interaction with the 4kV FLUR/SLUR (First Level Undervoltage Relay/Second Level Undervoltage Relay) set-points. Weaknesses exist where Engineering Programs cross-organizational boundaries, potentially as a result of an overly-narrow focus towards Engineering in procedures and guidance.

2. Fire Protection Programs – The Fire Protection programs audit revealed that the FSAR and
administrative procedures are not being properly maintained with respect to the Fire Brigade and Fire Protection Programs. An audit finding was identified with respect to fire door maintenance and/or modification leaving door gaps greater than tolerance.

3. Supplemental Personnel Oversight – Weaknesses in supplemental personnel oversight have led to a string of errors during the ISFSI campaign and pre-outage work, including missed QC hold points, an incorrectly installed adapter ring, an incorrectly installed MPC lid, untimely CAP documentation, and a Raychem splice installation by unqualified personnel. A contributing factor may be that this is the first time that a major portion of the cask loading team consists of Holtec personnel.

4. Electrical Safety – The adverse trend in electrical safety practices was escalated to the Station Director on 11/05/10. The resulting action plan was incorporated into the DCPP 2010 Operating Plan and continues to be effectively implemented. A few actions in the focus area action plan are overdue and need updating or re-forecasted due dates.

5. Maintenance – Supplemental workers performed Equipment Qualified (EQ) splices without having the required qualification. An ACE is in process to address this issue. A stop work was issued to Maintenance and Strategic Projects to ensure Raychem is installed in accordance with the site-specific qualification requirements until it is proven that the past practices are acceptable and fall within the established training and qualifications requirements. Maintenance has taken steps to ensure appropriately qualified site personnel for EQ splice installations.

6. Radiation Protection (RP) - RP has experienced a significant loss of personnel and may be vulnerable to human error and programmatic breakdowns depending upon how well it manages its knowledge transfer and turnover. QV has identified weak RAM (Radioactive Material Program) storage practices, including outdoor storage vulnerable to container corrosion and decay. The lack of appropriate RAM program oversight may be a contributor to this problem. RP needs a documented plan to ensure success in its plan to bring its procedures up to station standards, as weak procedures coupled with high personnel turnover may lead to serious operational errors. Radiological postings have been moved without the consent of RP, potentially representing a programmatic weakness in behaviors related to radiation posting.

7. Learning Services – A recent ACE failed to evaluate the impact on instruction provided by an unqualified instructor. Recent HU (Human Performance) errors and other challenges related to the newly installed Human-Machine Interface (HMI) screens at the Aux. Board may indicate that training was inadequate to properly prepare operators for design change implementation. A root cause team has been formed to address weaknesses in training aspects related to newly installed designs.

Regarding staffing in the QV Department, there are 25 approved positions in the QV Department with 2 positions vacant. QV continues to try to fill the positions with personnel from other departments to capitalize on their experience at DCPP. There are possibly 2 QV individuals who might retire in the next 5 years.
Quality Verification (QV) continues to do a good job of identifying problems and areas for improvement at DCPP. The DCPP Site Status Report identifies all QV problems at DCPP and provides DCPP Management with information about the various Departments. DCISC should continue reviewing this report at future Fact Finding Meetings.

Quality Verification Organization’s Perspective on Plant Performance; the Quality Performance Assessment Report; and Quality Verification’s Top Concerns (Volume II, Exhibit B.6)

Quality Verification (QV) identified two new station gaps to excellence regarding weaknesses in the Foreign Materials Exclusion (FME) Program; and inadequate Owner Acceptance Reviews of vendor design work identified during the recent cycle 16 refueling outages. DCPP has addressed the identified gaps in its FME Program through the use of human error prevention tools, training and monitoring. QV did not find the FME Program to be ineffective but rather QV identified weaknesses in the Program sufficient to justify monitoring station performance and worker practices in the field. QV reviewed the results of the self-assessment by the FME Program and identified key corrective actions associated with communication of standards and expectations and the monitoring of performance. There appeared to be inadequate follow up concerning those issues entering into the cycle 16 refueling outages and the resulting monitoring of the FME team’s performance during the cycle 16 outages did not show the desired improvement over that from prior outages.

A gap to inadequate Owner Acceptance Review of vendor design work was addressed through reanalysis, further review of operability issues, and hardware modification. PG&E retains the responsibility to validate that its vendors’ designs are correct, and QV’s statistical sampling of owner acceptance reviews was based upon risk significance, complexity, and impact of the specific design. The inadequately reviewed designs were installed in the field – an example was a design which resulted in a temperature error in connection with a control rod drive mechanism which, while having no impact on safety, was found to have resulted from an inadequate review by the vendor.

New department gaps included those associated with: deficient Maintenance department work practices caused by inconsistent tailboards, incomplete work packages, inadequate use of operating experience in work packages, and insufficient oversight of supplemental workers; as well as problems being screened out of the Corrective Action Program (CAP) thereby resulting in untimely and ineffective corrective actions. QV now includes personnel with licensed reactor operator and security supervisory experience necessary to review the safety-security interface, a principal focus of the DCISC’s review of security-related issues.

The CAP implementation shortfalls at DCPP included the NRC’s area of Problem Evaluation during the period of the Quality Performance Assessment Report (QPAR) for the third period of 2010, during which the highest volume and most significant CAP-related problems identified by QV were those related to the area of Problem Evaluation including: a failure to evaluate a nonconforming condition; problems screened out of the CAP; and repeated occurrences of untimely NRC Maintenance Rule determinations. A weakness in CAP trending was identified as a mid-cycle review Area For Improvement, and the CAP is increasingly reliant on the robustness of its trending process.
The areas of key component weakness identified in the CAP should be addressed and resolved by the second quarter of 2011. The processes employed by the Corrective Action Review Board (CARB) are improving and that CARB reviews drive improved performance and quality of apparent cause evaluations (ACE) and identify and correct inadequately closed SAP Notifications. Trending program weakness represents an ongoing area of vulnerability, and QV has recommended a line performance analysis to try to identify staff knowledge gaps and associated training needs.

DCPP site leadership’s actions related to the significant Cross-Cutting Issue of Evaluation of Thoroughness by the NRC were inclusion of Thoroughness Evaluation as a focus area of the 2011-2015 Operating Plan; development of an action plan; and completion of the pilot review of the License Basis Verification Project (LBVP). DCPP is following up on the NRC’s inspection and the proposed violation resulting from the 2008 CAP audit when and where these problems should have been reported. An ACE has identified key corrective actions including: the use of the Quality Assurance (QA) training program to ensure proficiency in key functions; revision and improvement of audit checklists to include review of operating experience and NRC trends; establishment of recurring QA training for specific high level, risk significant ‘evaluative’ areas; and ensuring all QV work functions are appropriately represented within the QV Curriculum Review Committee (CRC). The NRC’s resident inspector has also suggested revising RCEs to provide for and include a role for QA. RCE measures will be made more clear and quantifiable and the RCE process will be institutionalized to review missed opportunities for QV’s insight. Contributing factors and insights include governance and metrics needing more run time and he stated that appropriate actions are being taken regarding this gap in station performance.

4.11.3 Conclusions and Recommendations

Conclusions:

QV continues to identify items that need correction, in particular gaps in the DCPP Corrective Action Program evaluation thoroughness, which was also identified by the NRC as a substantive cross-cutting issue. The Key Gaps that are listed are clear and well supported. The process of highlighting continuing Key Gaps and escalating issues as deemed necessary appears sound and effective. Because of the number and significance of QV-escalated items and Top Concerns, the DCISC will increase its monitoring and review in the QV area.

Recommendations:

None
4.12.1 Overview and Previous Activities

The DCISC has been following performance of nuclear fuel and fuel-related matters at DCPP since its beginning in 1990. The Committee receives regular reports on nuclear fuel performance and any problems from PG&E both in fact-finding and public meetings and as input to the annual report. DCISC follows-up on problems and activities in its Fact-finding meetings at DCPP and PG&E Headquarters.

DCPP fuel reliability is the most important fuel attribute monitored during operation. It is important to assure that the fuel integrity is preserved to avoid fission product leakage into the reactor coolant system (RCS) and ultimately into RCS cleanup and support systems resulting in increased personnel dose, radioactive waste and potential off-site releases.

Since the DCISC was formed in 1990, fuel reliability had been excellent until November 1994 when Unit 2 fuel began to show signs of leakage and experienced localized fuel damage. Unit 2 has had several additional fuel leaks since then. Leakage is measured by the amount of radioactivity in RCS samples, with a current goal of less than $5.0 \times 10^{-4}$ microCuries (Ci) of Iodine-131 per gram of coolant. The following depicts the RCS radioactivity trend for a five-year period:

<table>
<thead>
<tr>
<th>Period</th>
<th>Goal</th>
<th>Unit 1 Actual (Ci/gm)</th>
<th>Unit 2 Actual (Ci/gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-07</td>
<td>$5.0 \times 10^{-4}$</td>
<td>$1.0 \times 10^{-6}$</td>
<td>$1.0 \times 10^{-6}$</td>
</tr>
<tr>
<td>07-08</td>
<td>$5.0 \times 10^{-4}$</td>
<td>$1.0 \times 10^{-6}$</td>
<td>$4.2 \times 10^{-4}$</td>
</tr>
<tr>
<td>08-09</td>
<td>$5.0 \times 10^{-4}$</td>
<td>$1.0 \times 10^{-6}$</td>
<td>$4.2 \times 10^{-4}$</td>
</tr>
<tr>
<td>09-10</td>
<td>$5.0 \times 10^{-4}$</td>
<td>$1.0 \times 10^{-6}$</td>
<td>$4.2 \times 10^{-4}$</td>
</tr>
<tr>
<td>10-11*</td>
<td>$5.0 \times 10^{-4}$</td>
<td>$1.0 \times 10^{-6}$</td>
<td>$4.2 \times 10^{-4}$</td>
</tr>
</tbody>
</table>

* Through June 2011

In addition to regular fuel performance updates, DCISC investigated no fuel-related topics during the previous reporting period (2009-2010):

The DCISC did not review any specific nuclear fuel topics during the previous reporting period; however, it monitored fuel performance indicators, which showed both Units 1 and 2 to be defect-free with acceptably low reactor coolant radioactivity levels.

4.12.2 Current Period Activities
The DCISC reviewed the following fuel performance area, which showed both Units 1 and 2 to be problem-free with relatively clean reactor coolant.

- Nuclear Fuel Performance

Nuclear Fuel Performance

DCPP Unit 1 has run without any fuel defects since Cycle 4 and is currently in Cycle 16. Unit 2 has run without fuel defects since Cycle 14, when it had a debris-caused single rod failure. Prior to that, it had run defect-free since Cycle 11. DCPP's fuel appears to be performing well.

There have been two recent problems regarding DCPP nuclear fuel:

1. On September 3, 2010 during new fuel receipt activities, a new fuel assembly was placed in the incorrect Spent Fuel Pool location. This was due to the Senior Reactor Operator becoming distracted during the process and choosing the wrong location on the fuel move sheet. The format of the move sheet did not lend itself to the normal place keeping method of “circle slashing,” so signatures were used for place keeping. Following discovery of the error, corrective actions were initiated to prevent reoccurrence.

2. During Unit 2 Cycle 14, severe flux thimble wear resulted in a thimble tube leak – these are the tubes, which the In-Core Instrument System uses to measure core neutron flux spectra with movable detectors. The flux thimble damage was caused by flow induced vibrational wear. An inspection revealed damage to the instrument tube and protective grid. Four other locations were similarly affected, and these assemblies were not used in newer cores. Extended chrome-plated thimble tubes were installed in new fuel to be located in susceptible locations. Unit 1 fuel was inspected for this phenomenon, and of 112 assemblies: 88 had minor wear, 21 had moderate wear, and 3 had through-wall wear. Westinghouse (the fuel vendor) has analyzed the wear patterns and has provided guidance for inspecting, shuffling, and removing/re-using assemblies. DCPP has begun an inspection and fuel-shuffling program for this situation, collecting data to help Westinghouse resolve the problem. Other users of Westinghouse fuel have been advised and are participating in the effort.

DCPP is looking at moving from its current 19-to-21-month fuel cycles to 24-month cycles. This would permit more precision in scheduling refueling outages to target the spring and fall low demand periods more precisely. It would also allow PG&E to avoid having more than one refueling outage per year, which will allow improved outage planning. The increased cycle periods would mean higher burnups and larger diameter fuel rods containing more U-235 at the same current 5% maximum enrichment. Currently DCPP burnup is approximately 60,000 MWD/MTU (megawatt days per metric ton of uranium). The increased cycle length would mean 72,000 MWD/MTU burnup. DCPP and Westinghouse are performing analyses to determine whether it is advantageous to move to the 24-month cycle. The 24-month cycle could begin as early as 2016. The DCISC should follow this issue.

4.12.3 Conclusions and Recommendations
Conclusions:

DCPP nuclear fuel has performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely monitored by DCPP and its fuel vendor, Westinghouse. DCPP is also evaluating a transition to a 24-month refueling outage interval, which would avoid the need to have more than one refueling outage per year and would simplify outage planning. The DCISC will follow these issues.

Recommendations:

None
21st Annual Report, Volume 1, Section 4.13, Equipment Reliability

4.13.1 Overview and Previous Activities

Aging-related degradation is the gradual degradation in the physical characteristics of a system, structure, or component (SSC) which occurs over time and use, and which could impair the ability to perform its design functions. The purpose of the Equipment Reliability (ER) Program is to ensure that the plant continues to operate safely and within its design and licensing bases throughout its life through the process of involving engineering, operation, and maintenance in activities to control age-related degradations or failures of SSCs to within acceptable limits. The scope of the SSCs to be covered by the program continues to evolve and expand. As a part of Equipment Reliability (ER), the plant has developed System Long Term Plans (SLTP) which specify needs and actions for systems for the next five years. DCPP has established an Equipment Reliability Program with a dedicated Program Manager.

The DCISC reviewed the following ER items during the previous reporting period:

- Aging Management (Equipment Reliability)

DCPP’s Equipment Reliability (ER) Program (including aging management) was well designed and implemented. A major Single Point Vulnerability (SPV) evaluation had been completed and the results were being implemented which should help reduce threats to plant performance.

4.13.2 Current Period Activities

During the current reporting period, the following equipment reliability related items were reviewed:

- Equipment Reliability Process

Equipment reliability (ER) at DCPP had improved as a result of the Preventive Maintenance (PM) Program and PM Optimization. The ER system health report had improved from Yellow to White in the 2nd quarter of 2010 and was expected to return to Green in the 1st quarter of 2011.

The next area for inclusion in the ER program was critical spares and critical spare parts/equipment management. This will include determining the following:

- Which items should the necessary spares
- Whether the spares are in the system and/or available for acquisition
- Whether the spares need to be included in a PM program
This process had recently begun implementation, and it was expected to take 2 to 3 years to complete. A governing procedure was issued in July 2010. DCPP was not aware of any other plant being engaged in this type of focus on spare parts/equipment. This is a large effort that requires a considerable amount of information to determine which spares should be included in the program for both safety equipment and balance of plant equipment.

DCPP appeared to be managing the Equipment Reliability (ER) Program well. ER at DCPP had improved as a result of the Preventive Maintenance (PM) Program and PM Optimization. The ER system health report had improved from Yellow to White in the 2nd quarter of 2010 and was expected to return to Green in the 1st quarter of 2011. The next area to be included in the ER program involved critical spares and critical spare parts/equipment management, which was just beginning and was expected to be complete in 2 to 3 years.

4.13.3 Conclusions and Recommendations

Conclusions:
DCPP appeared to be managing the Equipment Reliability (ER) Program well. ER at DCPP had improved as a result of the Preventive Maintenance (PM) Program and PM Optimization.

Recommendations:
None
4.14.1 Overview and Previous Activities

The focus of Organizational Effectiveness and Development is centered upon the prior process transformation and process structure and organizational effectiveness initiatives. DCPP's cultural change efforts, leadership initiatives and activities, strategic change efforts, etc, are intended to function as interrelated efforts. This focus also supports an INPO initiative to review cultural change, leadership issues, and even human performance, under the area of “organizational effectiveness.”

PG&E developed a DCPP Five Year Business Plan to be sure all departments’ goals and plant goals have total alignment. Prior to the business plan, the plant and department goals and objectives did not have total alignment.

PG&E began discussions in July 1999 with four other similar, well-run nuclear stations (Callaway, Wolf Creek, South Texas and Comanche Peak) to explore shared cost savings and increased industry influence through alliances and to ultimately decide whether to form a joint nuclear operating organization called the Strategic Teaming and Resource Sharing (STARS) initiative. A STARS management structure was established and implementation teams created to begin on approved initiatives.

In previous reporting periods the DCISC reviewed the following Organizational Effectiveness topics:

- DCPP Conversion to SAP and Implementation Critique
- Leadership Alignment Meeting
- Status of STARS Program and Recent Activities
- Jim Becker Brown (Site Vice-President) Bag Lunch Meeting
- DCPP Operating (Business) Plan
- Management Observation Program and Its Effectiveness

In the past period the DCISC concluded that DCPP Organizational Effectiveness had been enhanced by initiatives such as the Management Observation Program, Strategic Teaming and Resource Sharing (STARS) (a consortium of 7 nuclear plants sharing information, resources, and practices), DCPP’s new plant information system based on SAP software, and meetings such as the Leadership Alignment Meeting and Brown Bag Employee Lunch Meeting.
4.14.2 Current Period Activities

During the current period, the DCISC reviewed the following Organizational Effectiveness and Development items:

- Status of STARS Program and Recent Activities

Status of STARS Program and Recent Activities in 2010 (Volume II, Exhibit D.8, Section 3.9)

STARS is an association of the following seven nuclear plants from seven different companies:

1. Callaway
2. Comanche Peak
3. Diablo Canyon
4. Palo Verde
5. South Texas
6. Wolf Creek
7. San Onofre

The association was formed “to capitalize on the collective abilities of the seven companies to support each other’s efforts in achieving and maintaining operational excellence...”

The primary focus of the alliance for 2010 was to identify and pursue initiatives and projects that would “assist station efforts in achieving operational excellence.” This was to be accomplished by making heavy use of the leadership and experience of the Engineering and Site Vice Presidents and focus on the following areas:

- Training excellence
- Corrective Action Program improvement
- Collaborative improvement opportunities identified by performance measures analysis
- Operational excellence
- Improvement in equipment reliability
- Leveraging the experience and insights of INPO loanees
- Expanded strategic industry leadership

The STARS Governance Structure is important to its functioning and effectiveness. The Steering Committee is composed of the Chief Nuclear Officers of the seven member nuclear utilities or operating companies. Functioning under the oversight of the Steering Committee are a team of Site Vice Presidents, one from each STARS member, a similar team of Engineering Vice Presidents/Senior Managers, and a Management Council headed by an Executive Director who is a full-time STARS employee. The Council works to establish priorities and to define areas for collaboration among the
member utilities. STARS also has two other full-time employees focusing on Plant Aging Management and Regulatory Affairs. Group support is enhanced by sharing information at the various group meetings that are held throughout the year.

One important area in which STARS has supported DCPP, as well as other STARS members, has been with respect to NRC cross-cutting issues, i.e. broad issues such as problem identification and resolution, safety conscious work environment, human performance, and decision making that can be related to problems in a number of different technical or operational areas. To address this issue, peer reviewers from a number of STARS members assisted DCPP in evaluating actions taken to address some of these cross-cutting issues during the third quarter of 2010. The same peer review group provided assistance regarding the DCPP Corrective Action Program, the Licensing Basis Verification Project, and self-assessments.

Another area in which the STARS plants collaborate with each other and with other nuclear industry corporations and consortiums is through the sharing of performance data on a wide variety of performance indicators. With respect to overall performance during the first three quarters of 2010, as reflected by composite indicators, the STARS plants were slightly above both the industry average and the median. Based on these same overall composite indicators for 2010, DCPP was in the top 3 STARS plants, well above the industry average and median, and slightly below the overall performance indicator averages of the top two nuclear operating companies in the country.

4.14.3 Conclusions and Recommendations

Conclusions:

During 2010 DCPP received important support from the STARS association of nuclear plants in a number of important areas such as cross-cutting issues, corrective action, self-assessment, and licensing basis verification. DCPP’s overall composite performance indicator for the first three quarters of 2010 compared favorably within the STARS group and within the nuclear industry as a whole. DCISC’s next review of DCPP’s participation in STARS need not be until about two years hence.

Recommendations:

None
4.15.1 Overview and Previous Activities

During past periods, the DCISC had reviewed the performance and problems of DCPP equipment and systems as well as the actions taken by PG&E to resolve them.

During the previous period (July 1, 2009 – June 30, 2010), the DCISC reviewed the following items:

- Results of Outage 1R15 Inspection of the Unit1 Concrete Intake Structure
- Follow-up to Unit 2 Transformer Bushing Explosion in August 2008
- Adverse Trend with Transformer Leaks
- Boric Acid Corrosion Control Program
- Reactor vessel Head Replacement Status
- DCPP Offsite AC Power Sources
- Red & Yellow Mechanical System Health Reports and Actions to Correct
- Red & Yellow Electrical System Health Reports and Actions to Correct
- Containment Fan Cooler Modifications
- Failure of Unit 2 Containment RHR System Valve Interlocks
- Status of Transformers and Associated Equipment & Components

The DCISC performed the following system reviews and walkdowns with DCPP System Engineers in the previous period:

- Residual Heat Removal System
- Spent Fuel Cooling System

In the previous period (2009 – 2010) the DCISC concluded that DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP’s System Engineer Program has benefited from improvements based on good system health.

4.15.2 Current Period Activities

The DCISC reviewed the following system and equipment areas during the current reporting period:
ECCS Recirculation Valve Interlocks
Boric Acid Corrosion Control Program
230 kV System Capability
Plant Cranes Maintenance and Operation
Plant Health Committee
Potential Containment Debris Blockage
Reactor Head Replacement
RHR Check Valve Testing
Auxiliary Building Control Board Replacement
Unexpected Control Rod Movement

The DCISC performed the following system/component reviews and walk downs with DCPP System Engineers:

- Containment System
- Reactor Coolant Pumps
- Digital Control Systems
- DC Power System
- Spent Fuel Cooling System

DCISC Reviews of System and Equipment Performance and Problems

Follow-up on Functional Failure of Emergency Core Cooling System Recirculation Suction Valve Interlocks (Volume II, Exhibit D.1, Section 3.7)

The origin of this functional failure came from analysis that indicated that pressure drop across this valve could be too high for it to be capable of opening. The installation of a larger motor, with greater torque, was ruled out because the larger mass of the motor would reduce seismic margins and the replacement would be expensive. Instead, a new gear set was installed with a lower gear ratio, to provide higher torque, but with slower opening speed. While calculations indicated that the new gear would open in under 25 seconds, after the gear was tested it was determined that the actual opening time was slightly over, with the precise value being 25.3 seconds.

The first area of follow-up pertains to the safety analysis that includes the requirement for the containment sump suction isolation valves to stroke open in no more than 25 seconds. The DCISC was provided Design Calculation STA-061 Revision 4, dated October 30, 2008, whose purpose is to “establish the time required and time available to perform the changeover from the injection phase to the sump cold leg recirculation phase and to demonstrate the Refueling Water Storage Tank inventory margin of 32,500 gallons for the success of switchover is maintained when both Emergency Core Cooling System (ECCS) trains have been aligned from the sump.” The calculation
clearly specifies a 25 second time requirement for the opening of the ECCS containment recirculation suction valves. Nevertheless, other actions in the changeover sequence, that dominantly involve operator response time, have individual time requirements that are rounded to the nearest 5 seconds. Since, the actual opening time of the ECCS suction valves had been physically timed to be 25.3 seconds, this raises the question of why this actual 25.3-second measurement couldn’t have simply been rounded to the nearest second, with no impact on safety. The answer was that the 25.0 seconds was treated as being a firm licensing requirement. From a risk perspective, the complete failure to open the valve, due to inadequate torque from the actuator, would be worse than a fraction of a second increase in the mandated 25-second total opening time. But from a compliance perspective, the 25-second opening requirement had been established and DCPP chose to comply with the time requirement rather than pursue a modification.

The second area of follow-up pertains to the technical and operational bases for DCPP’s decision in 2006 to reduce the scope of which motor operated valves (MOV) require interlock testing at the end of an outage. The answer is that there is no technical requirement to test all the operational characteristics of those affected MOVs at the end of every outage. However, it had been an administrative practice based on collective judgment, and this practice has been reinstated. The requirement was that if work had been performed on a valve that affected a valve’s operational characteristic, that characteristic would then be tested. In the subject outage, the open limit switches of the affected valves were adjusted; therefore, the opening times of those valves were measured. Since it was not realized that the adjustment of the open limit switches could also have affected the interlocks, no test of the interlock was performed. The relaxation of the pre-2006 end of outage test requirement was based on efficiency. However, as stated above, the original testing requirement has since been reinstated.

The third and final area of follow-up pertains to the difference between the work performed in refueling outage 2R14 (which resulted in the interlock functional failures discussed above in Unit 2) and the work performed on the corresponding ECCS valves in the subsequent Unit 1 refueling outage, 1R15. The interlocks in the affected ECCS valves that were modified in 1R15 remained functional after being modified, even though DCPP was unaware at that time that the corresponding interlocks on the Unit 2 valves were not functional. The problems encountered during outage 2R14 caused DCPP to look more closely at how to perform the work during 1R15. This led to a process in 1R15 that treated the adjustment of the limit switches as a modification, not a maintenance activity, as had been incorrectly performed during 2R14. Therefore, it was recognized during that process that the adjustment of the open limit switch could also affect the interlock function, and the appropriate adjustments were made to keep the Unit 2 ECCS suction valve interlocks functional.

The follow-up questions pertaining to the 25-second timing requirement for the opening of the ECCS containment recirculation suction valves, the bases for DCPP’s decision to reduce the scope of end-of-outage testing of motor operated valves in 2006, and the differences between the work on the ECCS containment recirculation suction valves during outages 2R14 and 1R15 have been resolved. The increase in opening time occurred due to changing the actuator gear ratio to increase opening torque to prevent pressure differential from keeping the valve closed. An
alternative approach to adjusting limit switches to comply with the opening time requirement would have been to apply risk-based analysis to increase the 25-second requirement, since the actual valve opening time is well within the uncertainty for the operator action time. This could be considered poor engineering judgment and the DCISC will follow up with DCPP Engineering. While the alternative approach could have been preferable, the final approach taken by DCPP is acceptable.

**Boric Acid Corrosion Control Program (Volume II, Exhibit D.2, Section 3.3)**

Leaks from nuclear systems containing boric acid can cause unwanted corrosion of carbon steel components. The industry experienced enough boric acid leakage issues prior to 1988 to cause NRC to issue Generic Letter 88-05. This prompted the first formal BACC Program at DCPP as well as at all other plants. This was followed by additional NRC bulletins, including those issued in 2003 following the Davis-Besse reactor vessel upper head corrosion event and the discovery at South Texas Project of boric acid leakage in its reactor vessel bottom head in-core instrument lines.

DCPP’s BACC Program procedure ER1.ID2, “Boric Acid Corrosion Control Program,” provides a comprehensive BACC Program to address boric acid corrosion concerns associated with the reactor coolant pressure boundary and other primary systems containing boric acid. The procedure addresses the following:

- Potential leak locations
- Leak identification
- Reporting of leakage
- Inspection of boric acid leaks potentially affecting Design Class 1 Components
- Boric acid evaluation of potentially degraded Design Class 1 Components
- Personnel training

Each leak is identified and tracked with a Notification and is added to the Boric Acid Leaker List Database. The list includes the leaking component, applicable Notification, system, location, leak rate, a contact, and, in most cases, a link to a photograph. Many leaks are tracked by periodic walk downs. DCPP has recently provided more guidance to plant personnel for identifying, recording and screening BA leaks, relying less on the “skill of the identifier.”

DCPP performs walk-downs every 6 months for leaks and inside containment during refueling outages as early as possible in the outage. Another walk-down is performed coming out of the outage. They have not found many new leaks at the start of outages because Operations inspects for leaks during normal operations except in high radiation areas. They have established a database of current leaks after they have been fixed to be able to check for reoccurring leaks. There are too many low-level leaks for maintenance to fix soon, and it will therefore take a period of time for maintenance to fix all of them. The June 2010 walk downs resulted in the creation and closure of a number of leak notifications with no significant changes. The number of additional items planned
and scheduled is 32 for Outage 1R16 and 28 for Outage 2R16.

The BACC Program health report currently is rated White (acceptable). The system program report states “The DCPP BACC is performing well. Early detection of boric acid (BA) leaks, thorough inspection of areas and evaluation of leakage, is occurring promptly and is documented. Program procedures are up-to-date and adequate for program implementation. Planned maintenance is being performed as scheduled, although a high number of low-level leaks persist. Although these are in general not corrosion concerns, they do not support the BACC policy of prompt action to perform repairs. No significant corrosion challenges exist at this time. Areas for program improvement include having the Backup Program Owner fully qualified with the ENGISI7 qualification and a reduction in the backlog of low-level leaks. It is anticipated that the program can change from White to Green by the end of 2010.” However, the program remained White through June 2011.

DCPP continues to make improvements to its generally satisfactory Boric Acid Corrosion Control (BACC) Program as no significant corrosion challenges exist at this time. Program health is White (acceptable) with improvements being made to achieve Green by the end of 2010; however, the program remained White through June 2011. Early detection of boric acid leaks, thorough inspection of areas and evaluation of leakage, is occurring promptly and is documented.

230 kV System Capability (Volume II, Exhibit D.2, Section 3.7)

The 230 kV System is the immediate access power supply and is designated for regulatory purposes to be DCPP’s preferred power supply. Under normal alignment, DCPP can separately supply power to each unit. Capability also exists to physically cross-tie the units such that supply from one unit can also supply the second unit. The recent issue with the NRC concerning the 230 kV System at DCPP revolved around the definition of “concurrent safe shutdown” (an accident on one unit coincident with a reactor trip on the other unit, or a reactor trip on both units).

On November 3, 2008, consistent with past practice, Unit 2 (U-2) startup transformer was removed from service for maintenance. Power was aligned to U-2 startup bus from Unit 1 (U-1) startup bus. Based on analyses demonstrating the ability to transfer loads without loading emergency diesel generators, no declaration regarding operability was made for either unit. In the late 1990's a ‘clarifying’ change had been made to the FSAR without prior NRC approval for orderly shutdown of the second unit. This change was to control timing of bus shutdown and the license amendment request discussed this but the NRC found it not to be relevant. The NRC review concluded, based on the cross-time configuration, the evaluation for sharing a startup transformer did not model either the loading for an accident on one unit coincident with a reactor trip on the other unit, or a reactor trip on both units. Subsequently documented, DCPP received a Green status NCV. This issue represented a licensing issue only. No actual equipment deficiencies were identified and DCPP maintained it had sufficient capability.

A request for a Technical Specification (TS) interpretation was submitted to the NRC based on 230 kV operability when analyses demonstrated there is sufficient capacity to operate engineered
safety functions (ESF) for a design basis accident or unit trip on one unit and orderly shutdown of the second unit, which was DCPP’s previous interpretation of its licensing position. NRC Inspection Report 2009-003 identified as an unresolved item the determination whether the preferred offsite system is sufficient to supply the engineered safety features (ESF) buses for required accidents and transients.

On December 14, 2009, the NRC rejected the position provided by PG&E and established the following conditions of system operability:

- 230 kV needs the capacity to handle: (1) a design basis accident on one unit and concurrent safe shutdown (undefined) such as a spurious ESF actuation on the remaining unit; and (2) concurrent trip of both units.
- Each unit must have offsite power supplied to the unit-specific Class 1E buses from the 230 kV System as described in the TS basis, thereby ruling out a cross tie configuration as an operable condition.

DCPP will change procedures in October 2010 so as not to tie the station startup transformers together unless they declare the 230 kV system inoperable.

To respond to the NRC position on the loading of the 230 kV system for an accident on one unit coincident with a reactor trip on the other unit, or a concurrent reactor trip on both units, DCPP will change procedures so as not to tie together the station startup transformers unless they declare the 230 kV inoperable.

Plant Cranes Maintenance and Operation (Volume II, Exhibit D.2, Section 3.12)

Many of the cranes at DCPP are original equipment that was installed three or more decades ago when the plant was new. Many of the cranes are scheduled to be upgraded in Outages 1R17 and 2R17. The next project is to get approval for upgrading the intake structure cranes over the Intake Structure traveling screens.

There is regular training for both the crane operators and the riggers – the latter includes the group of staff who work with the crane operators to align, secure, and move the loads on the various cranes as part of regular crane operations. Some of the cranes have special functions that require the operators and riggers to have special qualifications. These were generally described. The regular training and qualification protocols followed industry practice and are adequate for the need.

A major aspect of crane maintenance is keeping the electrical and control aspects of the cranes up to date and in good working order. The DCISC’s impression is that this part of the crane program follows industry practice and is adequate.

The plant crane group is doing a satisfactory job. They seemed very knowledgeable and have stayed in communication with others in the industry in similar positions, and have maintained full
and adequate oversight for the many cranes now in service at DCPP. The DCISC will review this program periodically, though not as a high priority.

**Plant Health Committee (Volume II, Exhibit D.6, Section 3.1 and Exhibit D.7, Section 3.2)**

A DCISC Fact-finding Team attended the December 15, 2010 DCPP Plant Health Committee (PHC) meeting. Governed by DCPP Procedure OM4.ID16, “Plant Health Committee,” the PHC is a management team responsible for the following:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list
- Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor
- Review and monitor plant health issue plans that are presented to the PHC

Membership and expected attendance is as follows:

- Plant Health Committee Chairman and Facilitator (currently the Operations Services Director)
- Project Engineering Manager
- Operations Director
- Engineering Director or Senior Director
- Maintenance Director
- Outage Management Director
- Reliability Engineering Supervisor
- Administrative Support Person

Others are invited to the meetings as necessary.

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (review at least every 6 months)
- Programs that are rated red or yellow health color (review at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) PM deferral requests and appeals

The PHC functions with improved effectiveness compared to two years ago. It meets with greater frequency than before, i.e., typically once per week (except during outages) whereas previously even monthly meetings were difficult to arrange. The main improvement is that the PHC now focuses almost exclusively on plant, system, program, and equipment health, whereas before it was distracted with costs of system improvements and plant budgets. Now, the DCPP Project Review Committee addresses those financial items.

The agenda for the December 15 meeting was as follows:

1. Safety Message – be aware of potential holiday distractions on work being performed.
2. Work Control Status Update – a “tactical list” of work control item issues was discussed. These included:
   a. Replacement of Fire Protection computer
   b. Failure analysis of failed Auxiliary Feedwater valve actuator
   c. Restore in-core thermocouples
   d. Saltwater System – intake readiness and spare parts
   e. Auxiliary Saltwater System pump vibration
   f. Various HVAC fan problems
   g. Plant Process Computer – address emerging issues
   h. 125 VDC System – battery failure analysis and resolution
   i. 230 kV System – implement 230 kV Reliability Project
   j. Improve Intake Structure Material Condition
3. Performance Monitoring Equipment (PME) Health Report – Health: Red due to discovery by QA audit of program neglect because of prior downgrading of the program to a “process” which did not have the same rigor as a program. PME was re-established to “program” status, a new Program Owner was assigned, and the following actions proposed to achieve Green health by the end of 2012:
   a. Engineering review of the PME Master List
   b. Performance of ~150 uncertainty calculations
   c. Updating the PME Master List
   d. Revising end use calibration procedures as needed

All calibrations and tests performed while the program was “Red” were verified to be valid or re-tests performed. The QA audit looked at extent of condition and found no problems.
4. Main Feedwater System Health Review – Health: Green for Unit 1 and White for Unit 2 (the System Engineer voluntarily “forced” the health rating to White due to non-conservative flow readings in the Control Room). There was a 4-6 MW loss on Unit 1 due to flow measurement problems, but that has now been corrected.

5. Plant System Health Performance Indicators: Unit 1 has two red systems (AFW and 125VDC) and two Yellow ones (4kV and 230 kV). Unit 2 has four Yellow systems (ASW, HVAC, 4kV, and 230 kV).

These systems should be returned to healthy status in the next refueling outages for each unit. This is an improvement over the numbers of Red or Yellow systems in the past, a sign that the PHC is effective.

The December 15, 2010 DCPP Plant Health Committee (PHC) meeting was well run, focused on system and program health improvement, and garnered good participation from attendees. The Committee’s emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It is apparent that the PHC has increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which has resulted in improvement in system health measures.

Update on Potential Debris Blockage of Containment Sump (Volume II, Exhibit D.6, Section 3.2)

The issue of potential debris blockage of the containment sump during a potential loss of coolant accident (LOCA) has been the subject of extensive research by the industry and the NRC. The issue pertains to the accumulation of debris in the containment sump which could potentially block the screens to the suction lines to pumps that draw water from the sump and recirculate the coolant back to the Reactor Coolant System (RCS) and ultimately to the Reactor Vessel to keep the fuel cooled during a LOCA. This debris could be generated in sufficient quantity by the jet impingement of coolant, escaping from the RCS at high temperature and pressure, on insulated and/or painted or coated piping, structures, and equipment in the Containment Building.

In 2004, the NRC issued Generic Letter 2004-02: Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized Water Reactors. This Generic Letter established new requirements for PWR containment recirculation sump strainers. PWRs were requested to make a conservative evaluation of their current designs and to complete by the end of 2007 any necessary analyses and modifications, including upgrading the screens and increasing their size and testing. DCPP determined that its sump strainer capability should be improved using two possible strategies: 1) reducing the amount of material that could be damaged in an accident (and thus could contribute to clogging the strainer); and 2) providing a larger strainer. In July 2008 DCPP submitted a response to NRC Generic Letter 2004-02, stating that DCPP had met the requirements of the Letter.

Two issues of potential risk to the nuclear fuel are continuing to be analyzed within the industry in
general and by DCPP in particular. For example, in December 2009, the jet testing that DCPP had performed through a contractor and had used as a basis of its earlier submittal to the NRC was found to have some uncertainty. Revised testing methods were being developed and test results are expected to be available by mid-year 2011.

To more effectively evaluate the potential effects of debris on nuclear fuel following a LOCA, DCPP is participating in a Pressurized Water Reactor Owners Group (PWROG) Project on “Debris Testing and Zone of Influence Definition.” This testing will continue through 2011. A topical report should be provided to the NRC by October 2011, and it is expected that the NRC would have a Safety Evaluation completed in December 2011. DCPP is also using a separate contractor to evaluate PWROG results and to evaluate debris originating from branch lines compared to RCS loops. Potential plant modifications resulting from these tests and analyses are expected to be installed in 2R17 and 1R18.

DCPP has the unique capability in the industry, both the technical capability and a specific emergency procedure, that enable either of its units to clear a blocked sump by forcing a backflow of water in the opposite direction, so that debris would be pushed out of the flow path of any of the blocked screens; however, the NRC has refused to allow the DCPP units to take any credit for this unique capability in its safety analyses on this issue.

Extensive enlargements and modifications have been made to the containment sump screens in order to substantially reduce the risk of blocking recirculation to the Reactor Vessel during a Loss of Coolant Accident. Detailed examinations have been made of the Containment Building to identify and evaluate potential sources of debris that could be created by Loss of Coolant Accidents originating in various areas of the Containment Building. However, this problem has not been completely resolved either by DCPP or by the industry. DCISC should continue to follow this topic, and the next review should take place after the results of the Pressurized Water Reactor Owners Group Topical Report is issued in 2011.

Unit 1 Reactor Vessel Head Replacement Update (Volume II, Exhibit D.6, Section 3.3)

In recent years a number of nuclear plants have elected to replace the reactor vessel heads due to their susceptibility to primary water stress corrosion cracking in welds connecting components to the head. Although some plants have chosen to replace only the heads, DCPP decided to include in this project the addition of an integrated head assembly (IHA) as part of the new replacement head. Together with the new forging of the head itself, the enhancements are expected to lead to greater plant and personnel safety, more efficient performance of maintenance and refueling, lower radiation dose, reduced frequency of required inspections of CRDM penetration tube-welds and tube base metal (from every outage to every 10 calendar years), and decreased likelihood of reactor coolant leakage. At the same time, the combination of the new Reactor Vessel Head and its Integrated Head Assembly creates a heavier load than the prior Reactor Vessel Head. Therefore, the increased static and dynamic loads that will be imposed on both the Polar Crane and the Reactor Vessel required analysis, which was done and which found that the cranes are acceptable.
DCPP's first reactor head was replaced in Outage 2R15, and this one in 1R15 was the second of two. Though the first replacement went relatively well, many lessons-learned from 2R15 permitted this second one to go much smoother and faster. Better coordination of human resources has been achieved compared to 2R15 while at the same time increasing the number of project workers. During the current outage, the project is using a “hot turnover,” (i.e. a two hour overlap between shifts) to achieve better coordination of activities during shift transition. Improved teaming has also been achieved between the various project work groups. A teaming event for this purpose was held prior to the outage, which allowed project groups and individual team members to better understand each other’s roles. Other improvements have been achieved simply from having encountered unanticipated situations during the work on Unit 2, which have now been planned for – such as difficulties in removing some components from attachments to the old head and some interferences that were previously encountered. The cumulative effect thus far has been a savings 3 days in outage time compared to 2R15 last year. To help reduce radiation doses, DCPP also hired an ALARA (As Low As Reasonably Achievable) engineer after outage 2R15.

The NRC has been primarily interested in fabrication and welds, and that they have been performing surveillances on site. Their focus during this project has been on Non Destructive Examinations (NDE), welding, configuration of the head, the conduct of heavy rigging, and the licensing basis for the replacement head and integrated head assembly.

The Integrated Head Assembly had been installed with all fit-ups completed. Key remaining work to be performed involves connections of electrical equipment and piping.

The Unit 1 Reactor Vessel Head Replacement Project appeared to be progressing smoothly during outage 1R16. Lessons learned from the Unit 2 head replacement during 2R15 have been applied and have resulted in better teamwork, improved efficiencies, and reduction in project duration thus far, while maintaining project quality.

Residual Heat Removal System Check Valve Maintenance and Testing (Volume II, Exhibit D.10, Section 3.4)

The DCISC met with the Residual Heat Removal (RHR) System Engineer, to discuss maintenance and testing of RHR check valves associated with the RHR Pumps. The reason for this item was the potential for debris from the Containment sump to cause the valves to not function properly. There are six check valves of interest to the DCISC as follows:

1. Two RHR Pump Check Valves (one per train): Valves 8730 A & B
2. Two RHR to Hot Leg Check Valves (one per train): Valves 8740 A & B
3. Two RHR Heat Exchanger Discharge Check Valves (one per train): Valves 8742A & B

The DCISC reviewed the following DCPP procedures related to check valve maintenance and testing, which specified the following RHR valves inspection/test frequencies:
<table>
<thead>
<tr>
<th>Valve</th>
<th>Test or Inspection</th>
<th>When Tested/Inspected</th>
</tr>
</thead>
<tbody>
<tr>
<td>8730A &amp; B</td>
<td>Functional Test</td>
<td>Each Refueling Outage</td>
</tr>
<tr>
<td>8730A &amp; B</td>
<td>Stroke Test</td>
<td>“ “ “</td>
</tr>
<tr>
<td>8730A &amp; B</td>
<td>Inspection</td>
<td>Varies*</td>
</tr>
<tr>
<td>8742A &amp; B</td>
<td>Functional Test</td>
<td>Each Refueling Outage</td>
</tr>
<tr>
<td>8742A &amp; B</td>
<td>Stroke Test</td>
<td>“ “ “</td>
</tr>
<tr>
<td>8742A &amp; B</td>
<td>Inspection</td>
<td>Varies*</td>
</tr>
<tr>
<td>8740A &amp; B</td>
<td>Functional Test</td>
<td>Each Refueling Outage if disassembled due to unacceptable non-intrusive test results</td>
</tr>
<tr>
<td>8740A &amp; B</td>
<td>Stroke Test</td>
<td>Same as above</td>
</tr>
<tr>
<td>8740A &amp; B</td>
<td>Inspection</td>
<td>Varies*</td>
</tr>
</tbody>
</table>

* Inspection schedules depend on a number of factors, such as Operating Experience reports, routinely scheduled disassembly, valve open for routine or corrective maintenance, determinations by the program owner or component engineer, etc.

Test criteria are specified measured flows indicating the check valves are opening fully. Stroke tests measurement criteria are an acceptable differential pressure across the valve under back-flow conditions.

Inspection of check valves is normally accomplished by removing the valve bonnet and visually inspecting the internals as well as moving the disk or flapper. Both the “as found” and “as left” condition of the valve are documented.

At ten-year intervals, these valves are disassembled and inspected, adjusted, and/or repaired as necessary under the ASME In-Service Inspection Program. There have been no substantive problems with these check valves.

It appears that the DCPP Residual Heat Removal Check Valve Inspection and Testing Program is appropriate to assure the check valves remain functional and meet their design and operating requirements.

**Auxiliary Building Control Board Replacement Project (Volume II, Exhibit D.11, Section 3.2)**

The Auxiliary Building Control Board (ABCB) Replacement Project pertains to the following systems that are monitored and controlled at the ABCB:

- Chemical and Volume Control (including Boric Acid)
- Liquid Radwaste
- Gaseous Radwaste

Obsolescence of the components in prior control and monitoring systems is a driving force in this replacement project. Many of the panel instruments and controllers are air operated and no longer available. Also, since the existing system is pneumatic, tubing and control elements are susceptible to leaks, and therefore decrease reliability. In addition, from a human factors standpoint the existing panel configurations and indications have been poorly located, and board modifications over the years have been installed without focusing on human factors. An Operator Interface allows for control of Auxiliary Board Systems and provides Screen Displays for indications, alarms, and system status. The data acquired is made available to the Plant Data Network (PDN).

This replacement/upgrade project is being integrated completely in-house, which provides a mechanism for frequent communications from Operations, and for scheduling and implementing changes to systems that are used very frequently. The project is being performed in distinct phases, as listed below, and the first three these have been completed:

- **Phase 1** – Infrastructure to support the project. This included Operator Interface Stations, an Engineering Work Station, Printer, PDN connection, two redundant 480/120 VAC transformers, and other support components, servers, wiring, and miscellaneous item.
- **Phase 2** – Replacement of all components associated with the Gaseous Radwaste Panel, installation of a Redundant Controller Chassis and Remote Input/Output Chassis in the 73 foot level Data Acquisition Panel and established the infrastructure within that panel.
- **Phase 3** – Replacement of components associated with the Liquid Radwaste Panel and instrumentation and controls associated with the Demineralizer Regenerative Receiver.
- **Phase 4** – Replacement of components associated with the Chemical and Volume Control Panels and the Boric Acid Recovery Panels. DCPP is currently engaged in this phase.

Enhancements that will be derived from these modifications include:

- Status and Warning Indications for Operators.
- Enhanced visual aids for operators through a mimic bus of the selected system, where appropriate. Menu Bars/Buttons allow switching between various screens.
- The ability to remove individual components from service and provide the operator with a screen indication of the status.
- Trends of real and historical data to be available locally. Printouts to be available at a local printer.
- Screen display of all alarms along with the ability to acknowledge alarms. Print capability of the Alarm window at a local printer.
- Status reports available on components, alarms, modes of operation, and requested
functions.

The purpose, structure, and organization of the Auxiliary Control Board Replacement Project appeared to be sound, and the project appeared to be progressing well. Since this project is one of a number of station projects involving the installation of digital controls, the DCISC should consider combining future status reviews of this project with the periodic reviews of the other projects having the same general objective.

Unexpected Control Rod Movement (Volume II, Exhibit D.11, Section 3.3)

Control rods are used to (1) start up and (2) shut down the reactor and also (3) to control the water temperature of the reactor coolant during power operation. This third purpose can be fulfilled with the rods in manual control or automatic control. When in automatic, the Rod Control System positions the control rods in response to input signals it receives regarding actual average coolant temperature and a Reference Temperature, which is the desired temperature for the current power level. The Reference Temperature is derived from Turbine First Stage Impulse Pressure, which is representative of turbine power.

This DCISC review was prompted by Corrective Action Program (CAP) Notification 50352578, dated October 19, 2010, followed by CAP Order 60029789. The event which these documents discuss and a summary of DCPP’s subsequent efforts are as follows:

On October 19-20, 2010 Unit 2 Control Rods slowly stepped in 3 ½ steps for no apparent reason. There was no work going on that could have affected rod control, and no one was working in the cable spreading room of either unit. The rods were placed in, and kept in, manual and returned to their desired locations. Initial troubleshooting and analysis led to the proposition that the problem was not caused by plant conditions or input problems, but rather appeared to be due to equipment problems. Further evaluation was needed.

From measurements and based on the amount of rod movement, it was determined that the most likely cause of the rod motion was a degrading module or modules. A search was made of industry operating experience as well as DCPP’s own operating experience. These searches revealed that there have been rod movements due to failed modules. However, the degraded module (if there was one) could not be determined by the static voltages.

Following more testing and temporary circuitry, replaced three more modules (Rod Insert Control and Rod Insert Speed Control). The circuit was then allowed to run in manual (while still being monitored by the TMOD recorder) from January 13 until January 18. During this time there were no triggered events, indicating that the circuit was operating as expected. Another set of recorder traces was taken and compared to the data of January 13 as further assurance that the circuit was performing as expected. In response to recommendations from Instrument and Control/Electrical (ICE) Management and Instrument and Control (I&C) Maintenance, the circuit was returned to Automatic by Operations.
DCPP personnel involved in the unexpected control rod movement event carefully constructed and implemented a detailed and deliberate troubleshooting process, including the use of DCPP and industry operating experience, which led to the elimination of the problem module while Operations maintained deliberate control of the Unit 2 control rods.

DCISC Reviews of DCPP Systems/Components

DCPP Containment System Review (Volume II, Exhibit D.4, Section 3.4)

The DCPP Containment System consists of the Containment Structure Exterior (CSE) (Concrete) and the Containment Structure – Steel Liner (CSL). The functions of the CSE and CSL are to protect the public and plant personnel from the uncontrolled release of radioactivity to the environment under normal and postulated accident conditions and to protect the Reactor Coolant System (RCS) from external missiles.

The CSE consists of

- A 14 ft-6 in thick, 153 ft diameter reinforced base mat
- A 3 ft-8 in thick, 140 ft inside diameter and 142 ft high reinforced concrete cylindrical wall
- A 2 ft-6 in thick, 140 ft inside diameter reinforced concrete hemispherical dome roof

The CSL consists of

- A ¼ in thick mild carbon steel plate placed on top of the CSE base mat
- A 3/8 in thick mild carbon steel plate covering the inside surface of the Containment shell
- Penetration sleeves and local reinforcement of the liner around penetration openings
- Anchorage system of the liner to concrete

The Containment System has a design pressure of 47 psig at 271 degrees F. It is designed for the 7.5 magnitude Hosgri Earthquake acceleration spectrum peak of 0.75g. Other design loads are wind, pipe rupture, jet impingement, and missile impacts.

The Containment System is subject to the following tests/inspections:

- Visual inspection of Containment concrete surfaces as per 10CFR50, Appendix J and American Society of Mechanical Engineers (ASME) Section XI Code. This 100% inspection is performed every five years.
- Visual inspection of the steel liner plate inside the Containment as per 10CFR50, Appendix J and ASME Section XI Code. These inspections are performed every 3 1/3 years on a 10-year cycle.
- Containment Integrated Leak Rate Tests (ILRTs) as per 10CFR50, Appendix J. This test is performed every 10 years.
To date, there have been no indications or problems found in these inspections/tests. The most recent ILRTs were conducted in April 2008 during Outage 2R14 and Outage 1R15.

The DCPP Outage 2R14 Unit 2 Containment integrated Leak Rate Test (ILRT) was performed successfully. All test acceptance criteria were met. The measured leak rate was approximately one-sixth of the acceptance criterion.

There are currently no significant issues with the Containments. Both Containments are in Maintenance Rule (A)(2) (satisfactory) status. DCPP is monitoring some small bulges in the internal steel liner; however, these are not a problem regarding the Containment operability.

**DCPP Containment Systems are robust concrete structures with internal steel liners designed to maintain their leak tightness up to a design pressure of 47 psig and a temperature of 267 degrees F. Their function is to prevent release of radiation during normal and accident conditions and protect against external missiles. The Containments have successfully passed all periodic visual inspections and pressure tests.**

**Reactor Coolant Pumps (Volume II, Exhibit D.9, Section 3.1)**

There are four Westinghouse-provided electric-motor-driven RCPs for each nuclear unit, one for each Reactor Coolant System (RCS) primary flow loop. All eight RCPs are identical with their electric motors being unit-specific. The RCP pressure boundary is considered safety-related and is designed for seismic forces. Pump function is not safety-related, though it is important for assurance of reliable plant operation. If RCP operation is interrupted, the Reactor Protection System will shut down the reactor because of cessation of cooling water flow. Cooling flow is provided by natural circulation of reactor coolant around the RCS with heat rejection to the Steam Generators, which are in turn cooled by Auxiliary Feedwater. The only significant accident scenarios for RCPs are a locked rotor event or a failure of one of the pump seals, both of which are analyzed in the Final Safety Analysis Report (FSAR).

Each pump has three shaft seals. Seal water is injected at a nominal nine gpm into the No. 3 Seal with six gpm injected into the RCS and leak off of three gpm from the Number 1 and 2 seals. Seal water is important for cooling and leakage control to assure proper pump operation. Pump seals are given a general, non-intrusive inspection each year (8,760 operational hours) and a boroscope inspection of the pump rotor from inside every 10 years (87,600 operational hours). Pump seals are inspected with a boroscope typically every six years (52,560 operating hours), unless there are problems. Seals are being replaced on a three-cycle frequency. Because of the presence of Foreign Material, i.e., contamination, following the Steam Generator replacements, three Unit 1 RCP seals were replaced. This is considered typical practice.

In March 2010 a trouble-shooting team determined that RCP 1-4 Seal No. 2 leak-off was causing excessive RCS leakage. The seal leakage had increased several times due to several “thermal shock” events. Entering Refueling Outage 1R16 and with RCP 1-1 exhibiting excessive seal leakage, DCPP decided to inspect all RCP 1-1 and 1-4 seals. The RCP 1-4 inspections showed excessive or uneven
wear on all three seals along with metallic debris. RCP 1-1 seals showed excessive wear and metallic debris. RCP 1-3 was also inspected and showed debris and abnormal wear. RCP 1-2 was left alone because its seals were operating normally and it has exhibited stable leak-off. The metallic debris was identified as coming from prior work performed on the seal injection line.

There were 14 corrective actions, which fell into the following categories:

1. Increase component inspections when work is performed upstream of the seal injection lines
2. Expand Foreign Material Exclusion (FME) high-risk zones to areas encompassing seal injection lines
3. Augment flush procedures following physical work on seal injection lines
4. Increase preventive maintenance (PM) on seal line components
5. Perform a Seal Improvement Performance Plan to evaluate overall system, chemistry, and operating practices.
6. Develop controls to assure only correct materials are used in replacement parts

These corrective actions have been completed. DCPP believes the FME problems will be found on all RCP seals and is applying the corrective to all RCPs for both units. The DCISC FF Team believed these corrective actions were appropriate.

RCP motors have generally been trouble-free. They are inspected regularly and re-built on-site over a ten-year schedule. Beginning December 2009, there have been multiple instances of TCP motor bearing temperatures spiking high and immediately returning to normal. These instances are being tracked in the Corrective Action Program to determine the cause of the spikes and to ascertain the need for any corrective actions.

RCS system health was Yellow (unacceptable) for Third Quarter 2010, improved to White (acceptable) at the end of 2010. These ratings were due to other than RCP problems.

**DCPP Reactor Coolant Pumps (RCPs)** have performed well without significant problems. The RCP seals, which are sensitive to debris and thermal transients, are receiving proper attention in the form of periodic inspections, flushing of upstream seal water injection lines, and regular replacements.

**Digital Control Systems (Volume II, Exhibit D.9, Section 3.3)**

This report is in two parts: (1) DCPP I&C Obsolescence Management Program and (2) the Process Protection Systems (PPS) Replacement Project.

**DCPP I&C Obsolesce Management Program**

In the 1999 – 2000 timeframe DCPP began studying I&C obsolescence issues based on lessons-learned from replacements of components originally installed in the 1980s when the plant was
built. Many components were no longer being manufactured or supported by the original vendors. The study resulted in an I&C Long-Term Strategic Plan with the following attributes:

- Treat I&C projects as a program to provide a proactive method for addressing obsolescence and aging issues with I&C equipment
- Prioritize system replacement based on an objective evaluation
- Use multiple projects which are individually funded
- The program is reviewed each year

The Long-Term I&C Strategy specified the use of a common upgradeable vendor platform for upgrades. The platform is based on a Triple-Modular Redundant Fault-Tolerant system with vendors having a wide customer base and proven customer support. Two platforms were specified: (1) triple-redundant Triconex system for safety-related and critical systems and (2) non-redundant but highly reliable Allen-Bradley components for the remaining systems. The formal I&C Obsolescence Management Program (OMP) was established in 2006.

Projects completed using the program include the following:

- Main Turbine Control System
- Feedwater Control System
- Transient Monitoring System
- Moisture Separator Reheater Controller
- Reactor Make-up System
- Main Turbine Vibration
- Feedwater Pump Vibration Monitoring
- Plant Process Computer
- Auxiliary and Fuel Building Ventilation Control
- Containment Hydrogen Monitors

Upcoming Projects starting in 2011 include:

- Main Generator Voltage Regulator
- Diesel Generator Control System
- Main Feed Regulating Valve Digital Positioners
- Control Rod Logic Cabinet
- Plant Vent Radiation Monitors

Though there have been challenges, overall the changes from analog to digital controls have been
successful. DCPP has determined it best to perform programming of digital equipment itself, utilizing its Software Quality Assurance Program (SQAP), which the DCISC reviewed and found satisfactory.

**Process Protection System Replacement Project (PPSRP)**

The original Westinghouse 7100 analog protection sets were replaced in outages 1R6 and 2R6 with the existing Eagle 21 Process Protection System (PPS). The DCPP digital Eagle 21 PPS monitors plant parameters, compares them against setpoints, which if exceeded, provides signals to the Solid State Protection System (SSPS). The SSPS, in turn, evaluates the signals through coincident logic and performs Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) command functions to mitigate an event that may be in progress.

The PPSRP will replace the existing digital Eagle 21 Process Protection System with a software-based Triconex TRICON platform for the primary PPS functions and incorporate a logic-based Westinghouse/CS Innovations Advanced Logic System for functions, which require built-in diversity. The PPRP is scheduled to be implemented during outages 1R18 and 2R18 in February 2014 and September 2014, respectively.

The proposed PPS addresses current NRC regulations and guidance regarding Diversity and Defense-in-Depth. It will implement automatic protective functions in a logic-based system with built-in diversity that addresses software Common Cause Failure (CCF). DCPP plans to submit its PPSRP License Amendment Request (LAR) to the NRC in July 2011 and receive approval in 18 months, permitting installation in 2014. DCPP has already submitted its Defense-in-Depth and Diversity Evaluation to NRC.

PPSRP suppliers must develop their hardware and software with an approved 10CFR50, Appendix B Quality Assurance Program, including an acceptable Validation and Verification Program. All systems developed or modified must be adequately tested before delivery. Pre-installation testing is performed by personnel familiar with the system but independent of the developers.

Digital reactor protection systems are relatively new for nuclear plants and the NRC. One plant, Oconee Nuclear Station (a Babcock & Wilcox PWR design), has NRC approval and will install its RPPS in Spring 2011.

**The DCPP I&C (Instrumentation and Control) Obsolescence Management Program**, which replaces obsolescent analog process control and/or monitoring systems with digital systems is impressive in its design, implementation, and accomplishments to date. One significant part of this program is the replacement of the Eagle 21 Reactor Process Protection System, the primary system used to monitor process variables and take actions to trip the Reactor and actuate Engineered Safety Features, as needed. This project is undergoing NRC review, and DCPP expects to complete installation in 2014. The DCISC should continue to monitor this project.

**DC Power System (Volume II, Exhibit D.10, Section 3.6)**
The battery-powered DCPP DC Power System (DCPS) is a 125 and 150 Volt Direct Current (VDC) system designed to provide power for operation and control of equipment during all modes of plant operation. The batteries are kept charged with dedicated battery chargers. The DCPS consists of two subsystems, which are isolated from each other:

1. Vital 125 VDC
2. Non-vital 125/150 VDC

The Vital DCPS schematic is shown below.

The Vital DCPS is redundant with three separate trains, i.e., a single active or passive failure will not prevent the system from performing its safety functions. Though physically separate, the trains can be manually cross-connected. The redundancy permits a single train to be out of service for a predetermined length of time to perform periodic inspection, maintenance, and testing of major components. The system is capable of providing emergency DC power from the vital batteries for a minimum of two hours during a design basis accident coincident with a loss of battery chargers. It can perform its function during the following events:

- Loss of main generator
- Loss of off-site power
- Degraded off-site power
- Loss of battery chargers
- Loss or start failure of Emergency Diesel Generators

The Vital DCPS is designed to operate before, during, and after a Design Earthquake, Double Design Earthquake, or a Hosgri Earthquake. It can be operated from either the Main Control Room or the Hot Shutdown Panel.
Each unit has 180 DCPS batteries, which are designed for a 20-year life. Since beginning operation, DCPP has had only three battery cell failures (low voltage situations). Analyses showed these were isolated failures. New batteries are qualification tested prior to installation for thermal aging, discharge capability, shaking for seismic loads.

Unit 2 was in White (Acceptable) health status due to the unreliability of the molded case circuit breakers similar to Unit 1. The system will return to Green health when the breakers are all replaced in Outage 2R19 in March 2016.

The 125-Volt DCPP Direct Current Power Systems (DCPS) appeared to be appropriately designed and installed for their normal and emergency functions. System Health was Yellow (unacceptable but operable) for Unit 1 and White (acceptable) for Unit 2 with plans to return to Green health. The System Engineer appeared to be knowledgeable of and pro-active for his system.

Auxiliary Salt Water System Review (Volume II, Exhibit D.11, Section 3.1)

The ASW system plays an important role as the primary safety-related heat sink for the plant. The review of this ASW system in this Fact Finding is timely, because several nuclear plants in Japan experienced a protracted, multi-day loss of their ASW systems due to damage and debris clogging from the tsunami that occurred on March 11. Given the high elevation of most of the plant at DCPP (85 feet or more above sea level), the ASW system is the only one at DCPP that could credibly be damaged by a beyond-design-basis tsunami. DCPP is currently reviewing its “beyond design basis” procedures to use portable pumps and hoses to provide salt-water injection into the ASW System.

The ASW System is a safety-related, Design Class 1 System. It provides the necessary heat sink and is required for the safe shutdown of the reactor. Specifically, the system in each unit provides cooling water from the Pacific Ocean (the ultimate heat sink) to the Component Cooling Water (CCW) heat exchangers, through which CCW is pumped and, in turn, serves to remove heat from various plant systems. In the event of an accident involving a significant loss of reactor coolant, the ASW System is relied upon to function so that the CCW System can cool the water, which, in turn, cools the nuclear fuel in the reactor. There are two ASW pumps for each Unit, and each pump can supply cooling water through each of two redundant trains to either of the two CCW heat exchangers for each unit. For each unit, one ASW pump is running and the other is in standby. In addition, an ASW cross tie exists between Units 1 and 2 so that the ASW standby pump from one unit can supply ocean water to either CCW heat exchanger of the other unit. This cross tie is modeled in the Probabilistic Risk Assessment (PRA) for DCPP.

The ASW pumps in each unit are electric motor driven 100 percent capacity pumps and are powered from separate electrical buses. In the case of a loss of offsite power, the pump motors are powered by electricity supplied by emergency diesel generators. The pumps are physically located in the intake structure. Each pump is located in a separate watertight compartment with drainage to prevent motor damage as a result of flooding. Backflow check valves were placed in each compartment drain to prevent flooding in the compartment from external sources. The water level in the compartments is monitored, and an alarm is provided in the control room to alert the
operators of increasing level.

The ASW system takes suction from the intake structure, which opens to a small cove in the Pacific Ocean formed by two breakwaters. These breakwaters are constructed of concrete tri-bars with additional reinforcing concrete. The breakwaters are designed to protect the intake structure from the turbulence of the ocean. The intake structure is configured to provide one inlet to each unit for the ASW System.

The System Health of each Unit’s ASW System is Green (Healthy). ASW Pump 2-1 had experienced some vibration during operation prior to Refueling Outage 2R16, for which the Unit 2 ASW System was rated Yellow (Needs Improvement). Both the pump and motor for each ASW pump are replaced every 5 years. This was done for ASW Pump 2-1 during outage 2R15. About six months after that outage, increased vibration was noted on that pump, which was monitored throughout the remainder of that fuel cycle. Although pump maintenance and alignment were performed during a Maintenance Outage Window in the week of April 12, 2010, the vibration was reduced, but the problem was not completely fixed. Therefore, ASW Pump 2-1 was then replaced during the current outage 2R16, and it is now operating well. A new motor for ASW Pump 2-1 will be installed during outage 2R17. The motor for ASW Pump 2-2 was replaced during outage 2R16, and it is also operating well.

The NRC has begun an examination of all U.S. nuclear plants with respect to lessons learned from the events that have been unfolding at Japan’s Fukushima Nuclear Station stemming from a disastrous tsunami and a series of major earthquakes that occurred in March 2011. As a part of the DCPP response to the NRC order on extreme external events, Section B.5.b, methods to connect portable pumps to supply salt water from the intake cove, and inject it into the ASW supply lines, had been developed. These procedures are being reviewed, and may be updated further.

The Auxiliary Saltwater (ASW) System, a safety-related system, appears healthy. DCPP is currently reviewing its “beyond design basis” procedures to use portable pumps and hoses to provide salt-water injection into the ASW system. This capability to use portable injection pumps provides an important element of defense-in-depth for beyond design basis events that might disable the ASW system, including tsunamis.

Spent Fuel Pool System Review (Volume II, Exhibit D.11, section 3.5)

The SFP Cooling System also provides a highly reliable system to transfer decay heat from the SFP to the Component Cooling Water (CCW) System via the SFP heater exchanger. In addition, it maintains a water inventory in the SFP to provide radiation shielding for long-term storage of fuel assemblies in the SFP. It also purifies and demineralizes SFP water to maintain SFP water quality.

Each pool has two 100 percent capacity pumps provided with Class 1E electric power and one 100 percent capacity heat exchanger that is cooled by the Component Cooling Water (CCW). The SFP is designed with proper depth to provide a minimum of 23 feet elevation over the tops of the spent fuel assemblies. Each SPF has instruments that use floats to provide a high-level and low-level alarm
locally and in the Control Room. Although the actual level in each SFP can be checked locally by observing level as marked on the wall of the pool, during normal operation there is no remote wide-range level indication that could be used to determine the pool water inventory from outside the fuel handling building. During outages a mounted camera is focused on the level-marking strip in the pool so that it can be read from the Control Room. Annunciators in the Control Room provide the alarms for low water level.

The lack of a wide-range level measurement for the pool proved to be a major problem in the management of the Fukushima nuclear accident. While access to the SFP at DCPP is much easier than for the high-elevation pools in the boiling water reactors at Fukushima, the potential benefits of adding a permanently installed wide-level measurement instrument to the DCPP pools merits investigation.

Leakage from the SFP can also be determined locally. It is a manual function by which leak chase isolation valves are opened and sampled for water if present. The leak chases are located between the steel liner of the pools and the concrete pool structure, and collect any water that leaks through the liner. The locations of these isolation valves are such that gravity causes any leakage to be collected in each chase in which the water flows to the isolation valves. No remote detection capability exists; therefore, in the event of a loss of coolant or the development of a large or moderate leak path while the SFP is unattended, the decreasing SFP level would not be noticed until the Low Level Annunciator activates in the Control Room. During the earthquake in Japan, large waves of water were observed to be sloshing out of at least one of the SFPs, to a level over the handrail surrounding the pool. If an earthquake were to affect DCPP, a similar loss of coolant might occur in the SFP.

DCPP’s Post Earthquake Response Procedure does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. But since it is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm, the DCISC recommends (see below) that DCPP’s Post Earthquake Response Procedure be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.

The SPF Cooling System health is Green (excellent) overall for each Unit. The heat exchanger for each unit was Eddy Current Tested and visually inspected during refueling outages 1R16 and 2R16. No leaks were noted in either heat exchanger and both were determined to be in very good condition. The most recent measured leak rate out of one of the SPFs was ¼ to ½ liter per week, and the leakage out of the other pool was zero.

Because each Spent Fuel Pool has only one heat exchanger, the need for a second “back-up heat” exchanger for each pool has been examined. Rather than purchasing and installing two additional
heat exchangers, DCPP has purchased and maintains one portable system consisting of hoses and three pumps. In situations where the cooling system for one of the SFPs becomes disabled, the portable system is set up to transfer the cooler water from the SFP with the operational cooling system into the second SFP, whose cooling system is inoperable, and then to recirculate water from the second SFP back to the SFP with the operational cooling system. In effect, each SFP cooling system can now serve as a backup for the other. It has been demonstrated that this portable system can be made operational within the minimum time to boil time frame for a Spent Fuel Pool, which would occur when the pool contains a fully and recently offloaded reactor core.

Both Spent Fuel Pools and support systems appear to be in good condition. The system engineer continues to be knowledgeable and proactive. The two open issues noted during DCISC’s previous Fact-finding Visit, i.e. backup cooling for each pool and the need to inspect the heat exchangers, have been adequately addressed by DCPP. Based on several problems during the past year involving the incorrect placement of fuel assemblies in the SPFs, the DCISC should consider reviewing this process and DCPP’s evaluations and corrective actions resulting from the two problems identified in this report.

Recommendation:

DCPP’s Post Earthquake Response Procedure should be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should provide permanently installed, remote wide-range SPF level monitoring capability.

Basis for Recommendation:

DCPP’s Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. It is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.

4.15.3 Conclusions and Recommendations

Conclusions:

DCPP has dealt effectively with most equipment and system problems and is focused on improving system health. DCPP’s Plant Health Committee has been improved to focus more on system/component health and meet more frequently, and overall system health has improved. The System Engineer/Component Program continues to be effective.

Recommendation R11-2:

DCPP’s Post Earthquake Response Procedure should be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should provide permanently installed, remote wide-range SPF level monitoring capability.
Basis for Recommendation:

DCPP's Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. It is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.
21st Annual Report, Volume 1, Section 4.16, Steam Generator Performance

4.16.1 Overview and Previous Activities

Steam Generator (SG) tube reliability is important to operational safety because the SG tubes are part of the Reactor Coolant System (RCS) boundary. The nuclear industry has experienced substantial problems with a variety of mechanisms that can cause the SG tubes to deteriorate. The most notable of these is stress corrosion cracking. To address these issues DCPP engaged in a major capital project of replacing all eight DCPP steam generators: four in Unit 2 were replaced during refueling outage 2R14 (February - April 2008), and four in Unit 1 were replaced during refueling outage 1R15, (January – April 2009).

During the previous reporting period the DCISC did not review any Steam Generator items because the eight steam generators had been recently replaced and appeared to be operating well.

4.16.2 Current Period Activities

During the current period (2010 – 2011) the DCISC reviewed the following Steam Generator (SG) Performance item:

- Results of SG Tube Testing during the Fifteenth Refueling Outage for Unit 2 in October – November, 2009, (2R15) and the Sixteenth Refueling Outage for Unit 1 in October 2010 (1R16)

As background information, the SGs were designed by Westinghouse. The tubing was fabricated in Sweden, major forgings were performed in Japan, and the SGs were assembled in Spain, where tubing pre-service inspections were also performed. There were more than 25 enhancements from the original SGs, some of which were to help minimize corrosion and wearing of components and also to improve overall SG performance. Some of those pertaining to the tubing are as follows:

- Corrosion resistant Alloy 690 thermally treated tubing
- Triangular pitched tubing arrangement allows for more tubes (and therefore more heat transfer surface)
- Anti-vibration bars are incorporated
- Tubes are hydraulically expanded in the tubesheet

DCPP Plant Technical Specifications govern SG tube inspection requirements are as follows:

- Eddy current testing (ECT) of 100% of the SG’s tubing was required after one cycle of operation.
After the above initial Inservice Inspection (ISI) of the SGs, all tubes in each SG are to be inspected every third refueling cycle, although these inspection periods may be revised based on the results of any inspection.

The results of the above ECT inspections were excellent. Neither unit was required to plug any tubes. Unit 2 detected one tube with minor wear indication from a tube support plate (5% through-wall), and one tube was detected with minor wear in Unit 1 due to an anti-vibration bar (also 5% through-wall). The results of these inspections supported the ability of DCPP to operate for three more refueling cycles on each unit without having to conduct further ECT inspections.

Maintenance that was performed on the Secondary side (i.e. steam and feedwater side) of both SGs during the above refueling outages was as follows:

- Sludge lancing removed minor amounts of sludge (2 to 3 pounds from each SG).
- Lancing removed all foreign material from the top of the tube sheet of each SG. This was able to be visually verified. The foreign material that was collected in the sludge lance strainers was not significant and was judged not to have been a threat to SG tube integrity.
- The top of the tube sheet was visually examined and determined to be in very good condition.

All eight DCPP new, replacement steam generators (SG) were determined to be in very good condition after their first inspections, which were required by Plant Technical Specifications to be performed during their first refueling outage after the SG replacements. No SG tubes needed to be plugged. The excellent condition of the tubes allowed the SGs to meet the Technical Specification provision of being able to operate for three more refueling cycles before being required to reinspect the SGs.

### 4.16.3 Conclusions and Recommendations

**Conclusions:**

All eight DCPP new, replacement steam generators (SG) were determined to be in very good condition after their first inspections, which were required by Plant Technical Specifications to be performed during their first refueling outage after the SG replacements.

**Recommendations:**

None
21st Annual Report, Volume 1, Section 4.17, Outage Management, Diablo Canyon Independent Safety Committee, DCISC

4.17.1 Overview and Previous Activities

The DCISC monitors PG&E’s outage plans, actions, and results in the following ways:

- Review of outage safety evaluations and plans
- Regular Fact-finding meetings to discuss planned major modifications, inspections, maintenance and activities
- Regular reports from PG&E at DCISC public meetings on outage plans and outage performance, noting any special situations or problems affecting safety
- Visits to DCPP during outages to monitor the Outage Coordination Center, Control Room and activities of interest
- Reviews of documentation and reports of outage activities such as steam generator tube inspections, major equipment problems, and events affecting safety

PG&E completed its Unit 2 fifteenth refueling outage (2R15) during the 2009-2010 reporting period. Since the DCISC began review of this subject in 1990, outage management performance has steadily improved as shown in the table below. PG&E expects its outages can routinely run in the high-twenty to low-thirty day range.

Other outage indicators also are showing continuous improvement. With the exception of anomalous 1R9 radiation levels and the long Steam Generator replacement outages (2R14 and 1R15), radiation exposure and personnel injuries have been generally declining in the last three outages as follows:

<table>
<thead>
<tr>
<th>Outage</th>
<th>Unit 1 Duration (days)</th>
<th>Unit 2</th>
<th>Unit 1 Collective Radiation Exposure (person-Rem)</th>
<th>Unit 2 Collective Radiation Exposure (person-Rem)</th>
<th>Unit 1 Personnel Safety (recordable injuries)</th>
<th>Unit 2 Personnel Safety (recordable injuries)</th>
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<tr>
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<td>41.0</td>
<td>38.8</td>
<td>116</td>
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<td>-</td>
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<td>123</td>
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<td>1</td>
<td>0</td>
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</tbody>
</table>

* Steam Generator Replacement Outage
The DCISC did not review any outage-related topics per se during this reporting period, though it did monitor 2R15 outage performance measures. Outage 2R15 was successfully conducted in Fall 2009.

The DCISC concluded in the previous period that DCPP successfully completed its 2R15 refueling outage, DCPP’s first Reactor Vessel Head replacement outage, in Fall 2009.

4.17.2 Current Period Activities

The DCISC reviewed the following outage-related topics in this reporting period:

- Outage 1R16 Plans and Results
- Outage 2R16 Outage Safety Plan
- Outage Tour of Containment
- Outage 2R16 Performance

1R16 Outage Overview

The major items for 1R16 were:

- Reactor Vessel Head Replacement
- POV (Panel Zero Ventilation) Panel Replacement
- SI (Safety Injection) Test Header
- Transformer Cooler Replacement
- 230 kV Reliability
- CCP 1-1 Casing Replacement
- Pz (Pressurizer) Steam Seated Safeties

The POV Panel Replacement is the critical path, not the reactor head replacement. This project will replace the existing obsolete Aux. and Fuel Handling Building HVAC control (POV Panel) systems that are installed in POV1 and POV2 in both the Unit 1 and Unit 2 control rooms with a new redundant control system. The transformer projects include removal and replacement of the transformer coolers on Main Bank Transformer B phase with super coolers, Auxiliary Transformer 12 coolers, and Start Up Transformer 11 coolers. It also includes repair of the leaking coolers on Aux. 11 Transformer.

The 1R16 Goals are:

<table>
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<th></th>
<th>Stretch Goal</th>
<th>Goal</th>
</tr>
</thead>
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<td>0</td>
</tr>
<tr>
<td>Recordable Injuries</td>
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</tbody>
</table>
Aside from the replacement of the reactor head, this outage is considered normal compared to past outages. They have about 15 to 20 modifications each outage. They will do a 100% Steam Generator Tube Eddy Current testing. They will now have to do this test every third cycle, rather than each outage, because of the new Steam Generators. They have completed the outage safety review and have scheduled the pre-outage meeting for August 9 and the readiness review meeting for August 12. DCPP should not have any manpower availability problems this outage, except for a concern about available pipe welders. They will assemble a separate team to handle any new problems that might develop during the outage. Everyone has been asked to improve outage dose by a reduction of 12% from the goal.

It appears that DCPP has planned 1R16 very well. This outage is considered normal compared to past outages. They stated that should not have any manpower availability problems this outage, except for a concern about available pipe welders. DCPP has completed the outage safety review and has scheduled the pre-outage meeting and their readiness review meeting.

Results of the Sixteenth Refueling Outage for Unit-1 (1R16).

The major items included in the scope of work for 1R16:

- Replace Reactor Vessel Closure Head.
- Reactor Vessel Hot/Cold Leg Exams - for pre-existing conditions.
- Emergency Core Cooling System Voids Modification - in response to industry issues.
- Charging Pump 1-1 Casing replacement - to address a source of iron transport in the RCS.
- Convert Pressurizer Safeties to Steam Seats - to address pressurizer safety valve leakage.
- Eddy Current Testing of Steam Generator U-Tubes - first operational cycle information.
- Sludge Lance & FOSAR Steam Generators.
- Main Bank & Start-Up Bank Major Maintenance - including 230 kV switch replacement and radiator replacement for main bank coolers.
- Digital Rod Position Indication Cable Replacement - due to age.

The goals set for 1R16 and the actual performance during the outage as follows:

<table>
<thead>
<tr>
<th>Nuclear Safety Events</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Event</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Outage Duration</td>
<td>&lt;29.5 days</td>
<td>&lt;34 days</td>
</tr>
<tr>
<td>Outage Dose Goal</td>
<td>113R</td>
<td>26R</td>
</tr>
<tr>
<td>FME Significant Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Outage Cost</td>
<td>&lt;$42.2M</td>
<td>&lt;$43.2M</td>
</tr>
<tr>
<td>Power Ascension</td>
<td>&lt;4 days</td>
<td>&lt;5 days</td>
</tr>
<tr>
<td>Remain at 100% Power</td>
<td>&gt;90 days</td>
<td>&gt;90 days</td>
</tr>
</tbody>
</table>

http://www.dcisc.org/21st-4-17-outage-management.php[5/21/12 9:45:42 PM]
The single recordable injury occurred when a worker's hand got between a box and a lifting device and required stitches. The outage duration goal was exceeded due to emergent scope items including: bus bar insulation removal due to the insulation being found to be hard and brittle; work related to the Manipulator Crane and up-enders; leakage from a cofferdam which caused problems which required equipment to be replaced; and issues with the Polar Crane, due to its older components which are scheduled for replacement during the R17 refueling outages for each unit.

Human performance events during 1R16 met the goal of no resets of the Human Event Site Clock. There were a total of 23 departmental level events during 1R16. There were 14 actual personnel contamination events during 1R16, which bettered the objective goal of 33 for the outage. The removal and replacement of insulation on the Reactor Coolant System (RCS) loop was a significant factor in outage exposure during 1R16.

There were a total of six safety schedule changes during 1R16, with none of those changes resulting in a reduction below the defense-in-depth checklist minimums. Two changes involved performing work on EDGs 1-1 and 1-3 Starting Air Compressors/Turbo Air Compressors at the commencement of the outage. Four of the emergent work schedule changes involved equipment issues, including with the Auxiliary Feedwater System, with the resulting changes in equipment availability necessitating changes to the safety schedule.

The challenges experienced during 1R16, included the following:

- **Rework - Impacted Outage implementation/assured safe, reliable operation**
  - Flow Control Valve (FCV) -146 incorrect assembly - due to a gasket on the high pressure turbine main steam stop valve being incorrectly installed and subsequently dislodged which caused a 24-hour impact to the critical path.
  - Pressurizer Control Valve (PCV) -455A incorrect assembly - due to incorrect installation of a ball valve.
- **Pressurizer Steam Seated Safeties Weeping** - due to an industry issue of uneven heating along
the stem which, when pressurized at the rate of 50 pounds per square inch (psi) per hour cause the disc to not be evenly seated at 1950 psi pressurization level, when the safeties are subject to ‘burping’ which requires depressurization of the RCS until the leaking stops.

- Polar Crane Relays - scheduled to be replaced during the R17 outages for both units.
- Refueling Equipment - replacement for which is currently under review by the Plant Review Committee.
- Resources - several areas with inadequate resources resulted in schedule delays including carpenters availability to construct scaffolding and the availability of qualified personnel to replace relays.
- Foreign Material Exclusion (FME) with a number of low level events - there were a total of 33 events of which 9 were Level II events which if not caught would have challenged the RCS including 8 legacy events identified in the Spent Fuel Pool. There were 25 Level II events, which was greater than during past outages and an ACE is being performed.

**Outage Safety Plan for Outage 2R16**

The purpose of the Outage Safety Plan is to provide information on outage safety requirements and highlight risk areas to plant staff. In order to assess outage safety impact, referral to the Outage Safety Plan and Outage Safety Schedule is to be made prior to making major schedule changes. The intent of the Outage Safety Plan is to provide a concise document to use in evaluating plant conditions during Modes 5 & 6 and Defueled to ensure the key safety functions are satisfied, while maintaining consistency with the Technical Specifications and Equipment Control Guidelines. DCPP’s outage safety program is designed around three major concepts:

1. Prevention of any accident-initiating event.
2. Mitigation of an accident before it potentially progresses to core damage.
3. Control of radioactive material if a core damage accident should occur.

The outage safety plan provides background information for the logic contained in the outage safety checklists. The checklists provide the logic used to develop the outage safety schedule. The schedule and checklists ensure that the equipment and plant conditions assumed in the shutdown abnormal procedures are met. These procedures contain guidance for providing passive core cooling and key system restoration. Outage safety planning is based upon the assumption of a worst-case event, which is a loss of all AC power.

ORAM-Sentinel, a probabilistic risk analysis tool, was used to analyze the risk of boiling and core damage risk while fuel is in the reactor vessel based upon the outage schedule information. The boiling and core damage risk profiles are shown below.
The Outage Safety Plan identifies all “infrequently performed tests or evolutions.” Additionally, there are several modifications for which contingencies are planned because of the potential for loss of some phases of electric power. These are:

- Vital Battery 21 & SD21 Breaker Replacement
- Core Exit Thermocouple Replacement
- Backup Spent Fuel Pool Cooling is available if needed

The Outage Safety Plan also includes descriptions of recent DCPP and industry outage events in the Operating Experience Section. These are presented as lessons-learned to inform and prepare personnel for potential problem, which may arise.

The DCPP Outage 2R16 Outage Safety Plan is a comprehensive and detailed document describing the schedule and steps in the outage, which are identified as high risks of core boiling or damage
as a result of losing electric power and/or cooling to the reactor core and Spent Fuel Pool and what backup systems are available. The emphasis is on prevention of incidents, mitigation of accidents and control of radioactive material. The 2R16 Outage Safety Plan appears well designed to achieve outage safety.

Tour of Unit 2 Containment Building and Other Selected Areas

The DCISC Fact-finding Team entered Unit 2 Containment at the 140 foot (upper level). The Reactor Vessel was completely refueled for the next operating cycle; the new Reactor Vessel Closure Head (RVCH) with its Integrated Head Assembly (IHA) was on its storage pad, which was very conveniently located for transporting the Head to the Reactor Vessel; the Refueling Cavity was full of water; and the Equipment Hatch was open. The 140 foot level, and all other levels and areas of the Containment Building were neat and orderly (except near the Equipment Hatch where work was clearly going on). Radiation levels in all areas toured by the Fact-finding Team were extremely low; the highest observed during the tour were 3 to 5 mRem/hour. Radiation levels have been lowered by reducing the radioactivity of the reactor coolant.

On the 115 foot and 90 foot levels of Containment, there were numerous Posted Areas where radiation levels were higher than average. These areas had very low radiation levels themselves (many had levels of 1 to 3 mRem per hour).

On the 90 foot level were the series of screens that had been installed to prevent debris intrusion into the Containment Sump in the event of a Loss of Coolant Accident that could require the initiation of cold leg recirculation. The system of screens was very extensive and appeared to be very robust. The DCISC Fact-finding Team also noted what appeared to be a lack of fibrous insulation in the Containment Building.

After touring the Unit 2 Containment Building for about an hour, the Fact-finding Team was processed out of the Radiation Controlled Area through Access Control. Readings on the dosimeters of each team member were 0.2 mRem.

Throughout the tour the Fact-finding Team observed numerous posted signs, each identifying the DCPP Area Owner for the Seismically Induced Systems Interaction Program.

Shutdown radiation levels in the Unit 2 Containment Building were very low and areas with higher radiation levels were clearly posted. The DCPP escort was highly oriented toward minimizing radiation exposure to levels to be As Low as Reasonably Achievable. The DCPP escort, as well as other DCPP personnel in Access Control, provided clear, helpful instructions and support to the Fact-finding Team while processing in and out of the Controlled Area. Conditions in the plant throughout the tour were clean and orderly, especially for during a refueling outage.

Outage 2R16 Performance

The major scope of work for the primary side of the plant during 2R16 was as follows:
- Reactor Dis/Re-assembly.
- Full Core Offload / Reload.
- Reactor Vessel Hot Leg / Cold Leg Exams and Lower Internals Removed & Replaced
- Charging Pump 2-2 Casing Replacement - to reduce iron transport to primary.
- Reactor Vessel Level Indication System Cap Fill.
- Steam Generator Platforms.
- Window 5 Optimization - outage schedule Window 5 related to the duration of maintenance improved significantly due to elimination of the need to drain water from the SGs because since their replacement the new SGs only require inspection activities to take place every third outage.
- Thimble Tube Replacement.

The major scope of work on the secondary side of the plant during 2R16 was as follows:

**EDG 2-2 Major Maintenance Outage Window (MOW).**

- High Pressure Turbine Inspection.
- 3 Main Stop Valve Disc/Nut Inspections
- SG Sludge Lance and FOSAR - to check for manufacturing debris or errors and concerning which no objects were found and approximately one pound of sludge was removed which resulted from better secondary chemistry.
- Condenser Expansion Joint (Dog Bone) Replacement.
- Feed Water Pump 2-1 Inspection.
- ASW 2-1 Pump Swap.
- ASW 2-2 Motor Swaps.
- Outfall Tunnel Inspections & Repairs - to assess cleaning and inspection methods for the future.

**Items of major scope during 2R16 with regard to electrical components included:**

- Vital Battery 2-1 Replacement - performed on a normal schedule.
- Main Bank and Start-Up (SU) Bank Maintenance - to remove the last porcelain components and to replace radiators.
- 480v Bucket Replacements Bus 2H & 25D.
- Bus H Maintenance.
- TRY 26 Replacement.
- 230 kV Reliability 2 - 230 kV SU Power Outages - to install a common unit panel which will now
have current separation and a new control scheme to provide independent isolation.

The goals and performance during 2R16 were as follows:

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordable Injuries &amp; Disabling Injuries</td>
<td>≤2/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Nuclear Safety Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human Performance Events</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Outage Duration (days)</td>
<td>≤33</td>
<td>35.8</td>
</tr>
<tr>
<td>Dose Goal (Rem)</td>
<td>≤68</td>
<td>29.7</td>
</tr>
<tr>
<td>Significant Foreign Material Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cost</td>
<td>$43.6M</td>
<td>TBD</td>
</tr>
<tr>
<td>Power Ascension (days)</td>
<td>≤5</td>
<td>3.4</td>
</tr>
<tr>
<td>Reliable Run at 100% (days)</td>
<td>≥90</td>
<td>TBD</td>
</tr>
</tbody>
</table>

There were no challenges on loss of decay heat removal and this had a significant impact on achieving the goal of no such events. There was a single Site Human Performance Clock reset which resulted from a worker receiving a 120V shock during hinge wire replacement work on non-vital busses due to an inadequate power supply circuit check. The worker was not injured but it was observed that had this event involved higher voltage there could have been a serious injury or death as a result. Approximately 600 persons were involved in the population for determination of the excellent dose goal results achieved during 1R16.

During 1R16 there were 14 actual personnel contaminations versus the goal set of 25 or fewer due to good worker practices. Radiation dose during 1R16 was 29.7 person Rem actual versus the 68 person Rem goal. Chemistry control was improved with zinc injection into primary to inhibit nickel coming out of the metal as well as by forced oxygenation, which reduced the source term. Worker practices were also improved as a result of planning activities prior to performing work. The previous actions to change out the reactor vessel heads and to replace the SGs also contributed significantly to an excellent performance concerning dose during 1R16.

### 4.17.3 Conclusions and Recommendations

**Conclusions:**

DCPP successfully completed its 1R16 and 2R16 refueling outages in which most goals were met, except that outage durations were longer than predicted due to emergent work and some rework. Nuclear safety was upheld.

**Recommendations:**

None
21st Annual Report, Volume 1, Section 4.18, Plant Security

Note: because of the sensitive nature of nuclear plant security, only limited information can be presented in this public report.

4.18.1 Overview and Previous Activities

The DCISC has previously reviewed plant security in fact-finding meetings by reviewing security performance measures and by reviewing plant audits and NRC inspections of the Security Program. Additionally, there have been overviews of the Security Program in DCISC public meetings.

The DCISC reviews and NRC inspects these measures. The DCISC monitors and assesses current security measures and expected modifications to determine whether there may be negative effects on plant safety during normal operation and maintenance and emergency response during off-normal conditions.

The DCISC did not review DCPP Security-related items during the previous reporting period because the NRC has tightened its rules on plants granting access to Security-related information. The DCISC’s interest and scope of review was limited to the effects of Security-related barriers and procedures on nuclear and operational safety rather than Security itself.

4.18.2 Current Period Activities

The DCISC reviewed the following security-related items during the current reporting period:

- Safety/Security Interface
- Cyber Security

DCPP Safety/Security Interface Program

In March 2010 the NRC published its regulation 10CFR73.58, “Safety/Security Interface Requirements for Nuclear Power Reactors,” which stated:

a. Each operating nuclear power reactor licensee with a license issued under part 50 or 52 of this chapter shall comply with the requirements of this section.

b. The licensee shall assess and manage the potential for adverse effects on safety and security, including the site emergency plan, before implementing changes to plant configurations, facility conditions, or security.

c. The scope of changes to be assessed and managed must include planned and emergent
activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation).

d. Where potential conflicts are identified, the licensee shall communicate them to appropriate licensee personnel and take compensatory and/or mitigative actions to maintain safety and security under applicable Commission regulations, requirements, and license conditions.

To provide guidance on implementation NRC issued Regulatory Guide (RG) 5.74, “Managing the Safety/Security Interface,” dated June 2009, stating, “This guide describes a method that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for licensees to assess and manage changes to safety and security activities so as to prevent or mitigate potential adverse effects that could negatively impact either plant safety or security.” DCPP performed a plant-wide review of procedures and processes to identify any gaps that existed to meet the RG requirements. There were 33 procedures changed to either remove the gaps or enhance the procedure in meeting the RG.

DCPP Procedure OM11.ID7, “Safety/Security Interface Program,” dated November 1, 2010 identifies management controls and processes used to establish and maintain an effective interface between nuclear safety and site security. The procedure instructs Design Engineering, Projects, and Security to involve all others in any modifications or changes to the plant physical configuration and procedures. The procedure includes a detailed and comprehensive checklist for each proposed modification or procedure that has potential security or safety impacts.

The procedure addresses the following:

- Plant Modifications
- Procedure Changes and Emergency Plan Changes
- Emergent Operational Conditions and Maintenance Activities
- Changes to Security Plans
- Safety/Security Programmatic Reviews

The procedure appeared satisfactory to control the safety/security interface at DCPP.

There was an apparent negative interaction between security and safety that occurred during the recent plant alert on June 23, 2010 that resulted from a CARDOX release. During this alert, off-site fire personnel and their equipment were delayed in passing through security screening. The reason for the delay was that the Alert had been ended at the time that the off-site fire personnel arrived, and thus the plant could not use expedited vehicle screening methods that they would have if the Alert had still been in effect. While the safety significance of the security delay was very small because the Alert had ended, the off-site personnel were concerned because the delay affected their ability to return promptly to their stations if they had been called to respond to a fire. This Alert served as a learning experience, and the plant has addressed these issues in their procedures.
DCPP has developed a satisfactory procedure and process for controlling the safety/security interface in accordance with recent NRC regulations. The DCISC will follow up in mid-2011 to review the plant's implementation. The recent plant Alert provided an opportunity to test the capability of the security system to screen incoming off-site fire personnel and equipment. Lessons were learned that have resulted in changes to screening procedures.

Cyber Security

Note: Because of the sensitivity of this subject, i.e., security-related, the following is only a general description of DCPP Cyber Security.

Because of the potential for a cyber attack on a U.S. nuclear power plant, the NRC issued 10CFR73.54, “Protection of Digital Computer and Communication Systems and Networks,” in March 2009 to establish cybersecurity requirements for the following plant functions:

- Safety and important to safety functions
- Security Systems
- Emergency Preparedness Functions
- Support systems

This typically includes all systems that use plant data, including Protection Systems, Safety Systems, Non-safety Systems, Physical Access Control System, and systems unrelated to plant data, such as personnel work scheduling and timekeeping, inventory control. The regulation addresses interconnections among digital systems, including pathways for errors and malfeasance, interactions between digital systems and the plant, including new kinds of failures and spurious actuations not addressed in traditional safety analyses.


DCPP submitted its Cyber Security Plan and implementation schedule to NRC in a License Amendment Request (LAR) on April 4, 2011. Two projects have been initiated to implement the plan: 1. Cyber Security Program Implementation, and 2. Plan Data Network Isolation. Cyber Security implementation is to have performed the following by end-of-year 2012:

- Assemble Cyber Security Assessment Team and perform walkdowns and tabletop discussions
- Identify critical systems and critical digital assets
- Isolate the plant data network
Control portable media devices

Include Cyber Security tampering in security records

Implement Cyber Security controls on selected critical digital assets

DCPP expects to have fully implemented its Cyber Security Program, including plan modifications, maintenance and operations procedure changes and plant training by December 31, 2015.

DCPP appears to have an effective program plan and project team to design and implement its Cyber Security Program as required in NRC regulations. The DCISC will follow this effort periodically.

4.18.3 Conclusions and Recommendations

Conclusions:

DCPP appears to have an effective program for maintaining its safety/security interface and satisfactory plans and resources to implement its cyber-security program. The DCISC will follow up on both of these during the next reporting period.

Recommendations:

None
4.19.1 Overview and Previous Activities

This section of the report describes DCISC reviews of the DCPP Independent Spent Fuel Storage Installation (ISFSI). “Spent Fuel” is also referred to as “Used Fuel.”

The DCISC has been following the DCPP ISFSI since it was in the planning stages at PG&E in 1997. The following ISFSI-related topics were reviewed in the previous reporting period:

ISFSI Status at the following fact-finding and public meetings:

- ISFSI Status
- Video of ISFSI Operations
- Holtec ISFSI Cask

In the previous reporting period the DCISC concluded that DCPP has successfully designed, installed, tested, and operated its dry spent fuel storage system, the Independent Spent Fuel Storage Installation (ISFSI) utilizing Holtec-designed and manufactured casks and equipment. It began its spent fuel loading campaigns in July 2009 and has successfully filled and transported four casks to the site.

4.19.2 Current Period Activities

The DCISC reviewed the following items related to the ISFSI during the current reporting period:

- Used Fuel Storage Program
- Spent Fuel Inventory

Used Fuel Storage Program (UFSP)

The ISFSI was operational in Spring 2009, and the first eight-cask Unit 1 (256 fuel assemblies) fuel loading and storage campaign was completed in August 2009 and the second eight-cask Unit 2 (256 fuel assemblies) campaign in July 2010. The campaigns took about six days per cask on a six-day, 24-hour schedule. Radiation doses were as expected, and there were no reportable or disabling injuries, three human performance events (Unit 2 only), and no personnel contaminations. Cask radiation doses ranged from 399 mRem initially to a low of 122 mRem. DCPP performs ISFSI cask external visual inspections on daily, monthly, quarterly, and annual bases.
The DCPP ISFSI is licensed through 2024, and the NRC is looking at a 20-year extension to match that proposed for the plant itself. A license extension project will likely begin in 2012. Surry Nuclear Power Station has received NRC’s approval for a 20-year dry cask storage license extension.

There are currently 12 DCPP casks in fabrication for receipt in 2011.

**DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations.**

**Spent Fuel Pool Inventory**

Though the next ISFSI fuel transfer/loading campaign has been delayed to January/February 2012, DCPP is moving ahead with its transference of spent fuel from the pool to the ISFSI in the following ways:

- Submitting a License Amendment Request (LAR) to NRC to be able to put spent fuel greater than five years old and early Westinghouse fuel in the ISFSI
- Ordering 22 additional casks (compared to the 16 casks now in place)
- Constructing three more ISFSI pads (for 60 casks) by 2013

DCPP experience has been to move one cask per week to the ISFSI with a practical limit of 10 per campaign. At the end of 60 years operation, both the Spent Fuel Pool (with current racking) and ISFSI will be full.

The California Energy Commission had a 2008 recommendation that DCPP move spent fuel from the Spent Fuel Pool to the ISFSI on an expedited basis, and return the spent fuel pools to open racking arrangements. DCPP provided a reply to the California Energy Commission by describing the practical limits about what DCPP could accomplish. It has been moving spent fuel at what it believes within the practical limits considering the spent fuel minimum age requirement, the requirement to mix old and newer fuel in the cask, and how fast it can acquire and install the spent fuel casks.

**DCPP is proceeding with the continued movement of spent fuel from its Spent Fuel Pool to the Independent Spent Fuel Storage Installation (ISFSI). It is ordering additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full.**

**4.19.3 Conclusions and Recommendations**

**Conclusions:**

DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations. DCPP is ordering
additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full.

**Recommendations:**

None
4.20.1 Overview and Previous Activities

This section of the report provides updates on recent seismic events, tsunamis or related matters that could affect DCPP.

In previous reports the DCISC has reviewed with PG&E earthquakes occurring in California in the vicinity of DCPP as well as seismic designs, analyses, and activities related to DCPP. This has included updates to PG&E's Long Term Seismic Program which is an NRC license condition requiring PG&E to monitor and evaluate seismic events worldwide which could potentially affect DCPP design.

In the previous period the DCISC reviewed the following activities:

- Review of Seismic Information Related to the New Shoreline Fault
- Seismic Bracing of Tall Furniture

In the previous reporting period the DCISC observed that the recently discovered Shoreline Seismic Fault near DCPP is being investigated by PG&E’s Geosciences Group, NRC and USGS. The Geosciences Group’s expert opinion at this time is that DCPP can continue to operate safely because the new fault appears to be bounded by the existing plant seismic criteria. The NRC has also concurred with this opinion. The DCISC will continue to follow this issue.

4.20.2 Current Period Activities

The DCISC reviewed the following item during the current reporting period:

- Seismic Bracing of Tall Furniture
- SISI Housekeeping Activities
- NRC Seismic Workshop
- Shoreline Fault Status

Seismic Bracing of Tall Furniture (Volume II, Exhibit D.1, Section 3.3 and Exhibit D.11, Section 3.4)

DCPP reported that they are taking more aggressive action to address the seismic hazard that pertains to unsecured tall furniture at DCPP. Not only is there the potential for personal injuries that can result from personnel being struck by tall furniture and/or their contents in the event of an earthquake, but also the impact on nuclear safety that can result from injured personnel not being able to respond to an event as needed or from other personnel having to choose between
responding to an event or tending to the injured.

PG&E has a procedure, “Bracing Cabinets and Storage Racks.” The procedure defines the criteria by which file cabinets, bookcases, and storage racks are selected to be braced as follows:

- All storage cabinets and book cases over 5 feet high
- All storage cabinets and book cases that can be easily tipped (i.e. width of the base or legs is less than two thirds the height)
- All free standing storage racks
- All storage cabinets over 4 feet high with un-restrained roll-out drawers
- All storage cabinets with high center of gravity (i.e. majority of the weight is in the upper half of the storage cabinet)

Also, storage cabinets or racks that are mounted on wheels and are greater than 5 feet high will be restrained.

DCPP had begun to more aggressively address the need for seismic bracing of tall furniture back in mid-2010. The Construction/Facilities Maintenance Manager has been assigned overall responsibility for this program. A draft procedure has been prepared that defines the criteria for bracing and restraining tall furniture.

The first floor of the DCPP Administration Building has been remodeled and the furniture is in conformance with seismic requirements. The building’s sixth floor was scheduled to be completed in 2011, and the second, third, and fifth floors are yet to be scheduled. The DCISC commented that not much progress appears to have been made during 2011, which DCPP acknowledged. Also noted was that some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards.

The file cabinets in the Shift Manager’s office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

Little progress appears to have made during the period late 2010 – early 2011 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. In addition, the acceptance of existing conditions can create an underlying belief by employees that earthquakes will not occur in this geographic area that is prone to earthquakes. The accident at Fukushima reinforces the importance of taking seismic safety for personnel seriously, because it is critical that plant personnel be available to respond after an earthquake occurs and not be injured or diverted to perform first aid. The DCISC will review the status of this issue no later than in the first quarter of 2012.
Recommendation R11-3:

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety.

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during 2011. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager’s office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

Seismically Induced System Interactions (SISI) Housekeeping Activities (Volume II, Exhibit D.1, Section 3.5 and Exhibit D.11, Section 3.6)

This issue pertains to the damage that uncontrolled tools, equipment, components, and other items can inflict on plant systems in the event of an earthquake. DCPP QV had added a new Key Station Gap to its QV’s Quality Performance Assessment Report (QPAR), covering the period November 14, 2009 to April 16, 2010. The issue was stated as: “SISI housekeeping inspections are not consistently performed and documented.”

In November 2008, during a walk-through of SISI areas, the NRC found two instances of potential SISI interactions. Follow-up on this issue revealed that neither Maintenance nor the Quality Department was aware of the monthly inspection requirement. Interviews with several newly appointed area owners also revealed that they were unaware of the need to identify potential SISI related interactions as part of their responsibility for housekeeping walk-downs.

A DCPP Preliminary High Tier Apparent Cause Evaluation, HT ACE, (Order 60023821) dated March 22, 2010 noted that since November 2008 there have been repeat SISI incidents at DCPP, and that the incidents have occurred “proportionally” during outage and non-outage periods. The HT ACE also states that this 2005 ACE was the result of a deficiency previously noted by an industry review group.

DCPP’s seismic risk puts the station in a unique position in the industry and dictates a level of rigor in the station’s seismic housekeeping program that exceeds what would be expected of other nuclear plants. For a number of years the station’s seismic housekeeping program has not met that higher standard. Since mid-2010, DCPP has been more rigorous in structuring and implementing the seismic housekeeping program, and performance appears to be improving.
During late 2010 and early 2011, DCPP had been increasing its focus and efforts, but the performance of the overall program had been rated as Yellow (needs improvement) or White (some aspects can be improved). “Owners” had been assigned for performing periodic inspections of specific areas of the plant, but had sometimes not met those expectations. The station’s Quality Verification Department had identified this performance issue as a “Key Station Gap” during early 2010. DCPP reported that efforts to place more emphasis on this program had been yielding positive results. Various DCPP performance reports since the last review of this topic, and noted the following results:

As early as the third quarter of 2010, the Quality Verification Department’s “Quality Performance Assessment Report” for the period: April 17, 2010 through August 5, 2010 concluded the following regarding DCPP's improved performance in this Program:

“Seismically Induced System Interactions (SISI) Housekeeping inspections were not consistently being performed and documented. Corrective actions are complete. QV observations continue to indicate SISI Housekeeping performance is satisfactory and sustainable. This is validated through performance indicators for SISI Program Health.”

- The Plant Performance Indicator Reports from late 2010 to early 2011 show that performance in this area improved from White to Green.
- Performance for each of the three months prior to this fact-finding trip is rated as Green in the station’s Plant Performance Indicator Reports, and the six-month rolling average was also rated as Green in the most recent report.
- During the DCISC Fact-finding Team’s tour of various areas of the plant, they noted the many areas that had signs posted identifying the Area Managers who are responsible for the Seismic Housekeeping Inspections. Conditions in the plant appeared clean and orderly, especially for being in a refueling outage,

DCPP reported that an area of increased emphasis is the training of new Area Managers with regard to Seismically Induced System Interactions, the inspection process, and their responsibilities. Tailboard training is performed on this subject and that it is also covered in Computer Based Training.

Performance appears to have improved considerably in the area of DCPP’s Seismically Induced Systems Interaction Housekeeping Program since mid-2010. Recognizing that increased effort and attention to detail on this issue will be needed as a result of the accidents at Fukushima, the DCISC will review this topic on a periodic basis through fact-finding trips and/or through DCPP presentations at Public Meetings.

NRC Seismic Information Workshop (Volume II, Exhibit D.4, Section 3.1)

The September 8-9, 2010 NRC Workshop Objective held in San Luis Obispo, CA was to “provide a forum for members of the public to gain a basic knowledge of seismic hazard and its applications
for the safety and operation of commercial nuclear plants, including specific discussions of the Diablo Canyon facility.” Further information, including attendance lists can be found on the NRC’s website (http://www.nrc.gov/public-involve/conference-symposia/seismic-info-workshop.html).

There were 122 participants registered from the public, academia, industry, government, and PG&E. There was active participation from all areas of interest during the question and answer sessions. The following DCISC representatives attended:

Dr. Per F. Peterson, Member
Dr. Peter Lam, Member
Mr. R. Ferman Wardell, Consultant

The agenda was as follows:

1. Plate Tectonics: Emphasis on California – Ralph J. Archuleta, University of California, Santa Barbara
2. Realtime Earthquake Reporting – Doug Dreger, Berkeley
3. Impact of Earthquakes on Soils and Structures – Robb Moss, Cal Poly
6. How Fault Analysis Is Incorporated into Seismic Hazard Assessment, Including the Uniform California Earthquake Rupture Forecast – Tim Dawson, California Geological Survey
7. The Basics of Seismic Hazard Assessment – Annie Kammerer, NRC Office of Research
8. Seismic Design of Nuclear Plants – Torrey Yee, Southern California Edison
9. Nuclear Power Plant Licensing Basis for Seismic Hazards – Annie Kammerer, NRC Office of Research & Cliff Munsen, NRC Office of New Reactors
10. PG&E Central Coast Seismic Network and Seismic Instrumentation at Diablo Canyon Power Plant – Marcia McLaren, PG&E Geosciences
11. Diablo Canyon Seismic Review – Goutam Bagchi, NRC
12. California’s Policies and Recommendations for Advanced Seismic Research at Diablo Canyon – Barbara Byron (California Energy Commission)
13. Ground Motions at DCPP – Norm Abrahamson, PG&E Geosciences
15. Overview of PG&E Tsunami Hazard Studies – Stuart Nishenke, PG&E Geosciences

The primary areas of interest to the DCISC were Items 13, “Ground Motions at DCPP” and 14, “Status of Shoreline Fault Evaluation,” because of the Shoreline Fault’s potential to exceed the
current earthquake design basis (Hosgri Earthquake) for DCPP and because of its potential effect on DCPP Reactor Vessel Pressurized Thermal Shock (PTS) event frequency. The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its magnitude and effect on DCPP.

PG&E has applied to the NRC for a 20-year extension of its operating license for a total of 60 years and is performing analyses intended to demonstrate that all safety-related plant materials, components, and structures can safely operate for that period. It is analyzing the potential effect of the Shoreline Fault on the current seismic design basis and on PTS event frequency for the 20-year license extension. The DCISC has been reviewing these analyses as well as other similar industry analyses. The California Energy Commission (CEC) has requested that the DCISC look into the nexus between the potential effect of the Shoreline Fault and PTS for the 20-year extended operating period. The DCISC approved and provided its “Evaluation of Pressurized Thermal Shock and Seismic Interactions for a 20-Year License Extension at the Diablo Canyon Nuclear Power Plant” to the CEC on February 15, 2011.

Norm Abrahamson, Senior Engineering Seismologist with PG&E’s Geosciences Department has been the lead investigator in analyzing the Shoreline Fault. His presentation in this Seismic Workshop described the work being done to characterize the Shoreline Fault by PG&E, the USGS, the NRC, and others. Dr. Abrahamson provided his preliminary results in the form of the following chart:
The PG&E analysis compares the existing DCPP seismic design (top curve), i.e., the Hosgri Earthquake Design Spectrum, and the three segments of the Shoreline Fault rupturing together with the Hosgri Fault (second-to-top curve), using an improved ground motion model. The lower curves show the acceleration of various combinations of the three Shoreline Fault segments rupturing with the Hosgri Fault. Though preliminary, this analysis shows that DCPP can withstand, while retaining its structural design margins, the three Shoreline Fault segments rupturing in any combination and rupturing with and without the Hosgri Fault. This is valuable input into the DCISC investigation of the CEC's request.

The NRC Seismic Information Workshop on September 8-9, 2010 appeared to have been beneficial for both public attendees and those with technical backgrounds in that it provided basic and advanced descriptions and diagrams of earthquake science, nuclear plant seismic design, faulting near DCPP, and an update on the DCPP Shoreline Fault analysis. Of particular interest to the DCISC, the preliminary results of the PG&E analysis of the Shoreline Fault rupture together with a Hosgri rupture showed that the DCPP seismic design basis remains valid.

Update on DCPP Shoreline Fault (Volume II, Exhibit D.5, Section 3.3)

The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its
The PG&E analysis (see chart above in previous subsection) compares the existing DCPP seismic design (top curve), i.e., the Hosgri Earthquake Design Spectrum, and the Three segments of the Shoreline Fault rupturing together with the Hosgri Fault (second to top curve), using an improved ground motion model. The lower curves show the acceleration of various combinations of the three Shoreline Fault segments rupturing with the Hosgri Fault. Though preliminary, this analysis shows that DCPP can withstand, while retaining its structural design margins, the three Shoreline Fault segments rupturing in any combination and rupturing with and without the Hosgri Fault.

The preliminary results of the PG&E analysis of the Shoreline Fault rupture showed that the DCPP seismic design basis remained valid for any of three possible scenarios: either (1) as a single segment, or (2) as all three segments together, or (3) as all three segments together combined with a Hosgri rupture.

4.20.3 Conclusions and Recommendations

Conclusions:

DCPP is in a unique seismic area with the potential for large earthquakes, and its design basis takes this into account. The DCISC notes that little progress appears to have made during the period late 2010 – early 2011 regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. Performance appears to have improved considerably in the area of DCPP’s Seismically Induced Systems Interaction Housekeeping Program since mid-2010. The preliminary results of the PG&E analysis of the Shoreline Fault rupture showed that the DCPP seismic design basis remained valid for any of three possible scenarios: either (1) as a single segment, or (2) as all three segments together, or (3) as all three segments together combined with a Hosgri rupture.

Recommendation R11-3:

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety.

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during 2011. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager’s office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be
tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.
4.21.1 Overview and Previous Activities

Fire protection requirements are contained in NRC’s regulations in 10CFR50 Appendix R. Appendix R specifies the minimum requirements for safe shutdown systems and equipment, fire hazards analysis, prevention, detection and mitigation, fire brigades and training, emergency lighting, fire barrier and penetration qualifications, and fire doors. PG&E has committed to implementing these requirements, utilizing interpretations and deviations approved by NRC. The NRC periodically performs inspections of the DCPP fire protection program implementation.

The DCISC has looked into the following aspects of DCPP fire protection in the previous reporting period:

- Fire Protection System Health
- Status of Correcting Fire Protection System deficiencies

The DCISC had a concern in the last period that though operable, the DCPP Fire Protection System has been in an “unhealthy, i.e. Red or Yellow” state for many years primarily due to piping corrosion. The DCISC has been monitoring this issue for the past five years and saw little concrete evidence of progress until early 2009 and into 2010 when a strong System Engineering and an enhanced Plant Health Committee process became more focused on system health. DCPP plans to achieve “healthy, i.e., White,” status in mid-2010; however, the plant is reducing its budget which could represent a risk to further progress. The DCISC will continue to closely monitor Fire Protection System health.

Fire Protection is now in White (acceptable) health status, so there is no longer the concern; however, the DCISC will closely monitor the health of Fire Protection.

4.21.2 Current Period Activities

The DCISC reviewed the following fire protection items during the reporting period:

- Unplanned Release of CO₂ from CARDOX
- Fire Protection Update & Walkdown
- NFPA 805 Conversion

Unplanned Release of Carbon Dioxide (CO₂) from Unit 1 CARDOX System (Volume II, Exhibit D.1, Section 3.8 and Exhibit D.2, Section 3.9)
On June 23, 2010, 10:56 a.m., an Alert was declared by PG&E due to an inadvertent discharge and unplanned release of CO₂ from a gaseous fire suppression system in the Unit 1 Main Turbine Building Lube Oil Reservoir Room. This occurred during a planned maintenance activity on the fire suppression system. The activity involved “puff” testing of the system, which involved briefly and individually opening and then shutting each of the 18 CO₂ release valves for the system. Each of those valves is controlled by its own pilot valve. Typically the test releases about 1% of the contents of the tank. However, the unplanned release amounted to about 28% of the tank’s contents. The CO₂ contains no radioactivity beyond what would be present in the earth’s atmosphere. However, high concentrations of CO₂ can cause asphyxiation which could incapacitate or impede workers in the area to the point where they would need to don breathing apparatuses in order to be able to respond to any other potential, simultaneous events related to nuclear safety that might occur in the affected area. No such simultaneous nuclear safety related problems occurred; but nevertheless the event met the Nuclear Regulatory Commission’s (NRC) criteria for declaring an Alert, which led to the activation and manning of DCPP’s Technical Support Center (TSC), Emergency Operations Facility (EOF), and Joint Information Center (JIC). It also required that PG&E notify the appropriate authorities at the County, State, and Federal levels and that these governmental bodies activate their respective response centers.

The problem appeared to be due to the pilot valve for one of the CO₂ tank release valves (flow control valves) that were being tested (FCV -101). Both FCV-101 and its pilot valve had been replaced on June 22, 2010, the day before the “puff” testing. The pilot valve is normally shut, but when it is opened, either manually or by an electrical solenoid, the pilot valve passes CO₂ from the tank to its associated release valve, and the release valve opens to vent the CO₂ storage tank. Despite operator actions to close the valve, the venting continued to the point where CO₂ was noted to be escaping through the bottom of the lube oil room doors. At the same time, personnel who had been assigned to monitor conditions notified the Test Director, who in turn, directed the shutting of a separate, primary isolation valve for the tank (FP-o-95), which terminated the discharge.

The root cause of the event was determined to be knowledge based human error. A human error investigation tool (HEIT) was performed. The HEIT determined this knowledge based human error to be an “organizationally induced error.” A knowledge based human error is defined as a “response to a totally unfamiliar situation” (no recognizable rule to the individual.) The person must rely on his/her understanding and knowledge of the system, the system’s present state, and the principles and fundamental theory related to the system. People enter a knowledge-based situation when they are uncertain. If uncertainty is high the need for information about what is being done becomes paramount. Knowledge of plant systems must be used to effectively tackle the problem-solving situation. In many cases, information sources contain conflicting data or not enough data amplifying the difficulty of problem solving. Because uncertainty is high, knowledge based tasks are usually stressful situations.

The corrective action to prevent recurrence (CAPR) was to revise the surveillance test procedures (STP) to describe the PV operation, potential failure mechanisms, and appropriate response to these failures.”
Based upon an earlier DCISC recommendation to practice more realistic scenarios in its emergency response exercises, DCPP had recently practiced an Alert that was very similar to this current event, i.e. a CARDOX release from an Emergency Diesel Generator Room. This practice proved to be very relevant and helpful in PG&E’s responding appropriately to this actual event.

The DCISC Fact-finding Team reviewed and compared the written public announcements that were issued during this event by PG&E, the San Luis Obispo County, and the NRC. Both the PG&E and the County releases contained wording that could potentially cause members of the public to be unnecessarily concerned about the risk posed by the event. The NRC release provided a more accurate reflection of the potential impact of this event beyond the site boundary. The above issues pertaining to PG&E’s press release appear to have been influenced by the utility’s use of standard “boiler plate” wording for various releases.

The County’s announcement to evacuate the Montana de Oro State Park was required by the State of California. DCPP reports that County officials decided to recommend against any evacuations. The decision to recommend against evacuations resulted, in part, from experience gained in the earlier emergency response exercise involving a simulated CARDOX release in a diesel generator room. Although the state park evacuation was initially ordered, the decision was rescinded, and the only action taken was to close access to the park. However, if this event had occurred a number weeks earlier when schools were in session, the potential evacuation of schools could have created communication problems within the county between parents, children, the school system, and the county office, with potential self-initiated, ad hoc evacuation efforts and consequent risk to the public. Thus the County can be commended for its decision to recommend against any evacuations during this Alert.

The Root Cause Analysis Report for the unplanned release of carbon dioxide (CO2) from the Unit 1 CARDOX System was well written and described the event appropriately. The corrective action to prevent recurrence (CAPR) was to revise the surveillance test procedures (STP) to describe the pilot valve operation, potential failure mechanisms, and appropriate response to these failures also appears appropriate. PG&E’s and the County’s public notifications of the Alert that stemmed from this event both contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event, whereas the NRC public notification provided more accurate risk communication.

DCPP Conversion to National Fire Protection Association Standard NFPA 805 (Volume II, Exhibit D.8, Section 3.2)

The National Fire Protection Standard (NFPA) 805 standard was approved as an American National Standard in February 2001, and in 2004 the NRC incorporated the standard in its regulations. In doing so the NRC has allowed licensees to voluntarily adopt this standard for their fire protection programs or remain committed to current regulation. Most plants have volunteered to adopt the new standard. This involves performing engineering analyses that may include engineering evaluations, probabilistic safety assessments, and fire modeling calculations. Licensees must also evaluate changes to determine whether defense-in-depth and safety margins are maintained. For
the resulting fire protection program, licensees must document the results of analyses, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation.

Two plants became pilot plants for the submittal of their NFPA 805 analyses and documentation, and their Licensing Amendment Requests (LAR) were approved by the NRC in June 2010 and January 2011 respectively. DCPP had committed to submitting its LAR to the NRC in June 2011, but this may be a challenge.

DCPP has been developing a new Fire Probabilistic Risk Assessment (PRA) that would be used as a part of the basis of DCPP’s plan to change how the fire-safety function is regulated from the NRC’s longstanding deterministic approach to a new risk-informed and performance-based approach that is based on the NFPA Standard 805. This conversion is a technically challenging activity due to its complexity and because part of the effort involves using the ASME/ANS Combined PRA. In DCPP’s January 2011 Plant Performance Indicator Report the Infrastructure Cornerstone of the Appendix R Fire Protection Program was rated Red (Deficient). This pertains to the shutdown analysis that is being revised to meet NFPA 805 standards which, through risk and performance based analyses, will examine how changes to the various configurations of plant structures, systems, and components will affect the ability to place and maintain the plant in a safe shutdown condition. This entails an examination of plant vulnerabilities on a room-by-room, area by area basis. Moreover, NFPA requirements apply during all plant operation modes.

**Conversion to National Fire Protection Association Standard (NFPA) 805 is an immense, complex, analytical effort requiring specialized skills and knowledge in Probabilistic Risk Assessment, fire protection systems, and the operation of plant safety systems. DCPP appears to be adequately implementing this program.**

### 4.21.3 Conclusions and Recommendations

**Conclusions:**

Corrective actions to prevent recurrence of the unplanned release of carbon dioxide from the Unit 1 CARDOX System appear to be appropriate. PG&E’s and the County’s public notifications of the Alert that stemmed from this problem contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event. DCPP continues to develop its analysis to support conversion from NRC’s current deterministic fire protection regulations to the performance-based, risk-informed National Fire Protection Association (NFPA) 805 standard, which has been accepted by NRC. DCPP’s Fire Protection System is currently in White (acceptable) health; however, it had been Red and Yellow (both unacceptable, but operable) for a long time, and the DCISC will continue to monitor it closely.

**Recommendations:**

None
4.22.1 Overview and Previous Activities

This section of the Annual Report has been renamed by DCISC as “Training and Development Programs” from “Learning and Development Programs.” The focus is on formal environments created to transfer specific knowledge and skills to individuals within the organization for their individual development. Organizational Development is included in Section 4.14 “Organizational Effectiveness and Development.”

The DCISC reviewed the following training topics during the previous reporting period:

- Operator Simulator Training

The Simulator training of DCPP Operator “E” Crew was well planned and executed. The instructors were prepared and knowledgeable of the events, procedures, and plant response. The operators responded properly to the events, used the correct procedures, used appropriate human error prevention tools, and participated effectively in the discussions.

4.22.2 Current Period Activities

During the current period, the DCISC reviewed the following training activity:

- July 2010 DCPP Self-Assessment of Maintenance and Technical Training
- DCPP Presentation on the Results of DCPP’s Self-Assessment of Training at DCISC’s February 2011 Public Meeting

July 2010 DCPP Self-Assessment of Maintenance and Technical Training (Volume II, Exhibit D.8, Section 3.5)

During the period July 5 through July 16, 2010, DCPP conducted a self-assessment of its Engineering, Maintenance, Radiation Protection, and Chemistry Training Programs. The team consisted of DCPP personnel from all of the above departments, including Mechanical, Electrical, and Instrumentation Maintenance, plus several personnel from Training, and was augmented by nine industry personnel from other nuclear plants. This review compared DCPP performance to industry best practices rather than to minimum standards. No formal “deficiencies” were identified, but rather six “gaps” were classified as “negative comments.” An Apparent Cause Evaluation (ACE) or Root Cause Evaluation (RCE) was then developed for each of the six negative comments. The following discussion contains a summary of those negative comments, applicable ACEs/RCEs, and DCPP’s actions to address each issue.
1. Regarding the qualification of supplemental workers, some procedural guidance was not clear and some supplemental workers and station supervisors were not aware of qualification requirements for tasks that were being performed. It was determined that the supplemental worker qualification program was not in alignment with DCPP’s site qualification problem. This was a station-identified weakness rather than one identified by a peer reviewer from another plant. A Root Cause Evaluation (RCE) was performed. Corrective actions involved procedurally bringing the programs into alignment. This is complete. Actions also focused on the fact that the DCPP line organization needs to “own” the qualifications for performing all site work. This involves ensuring that contracts and procedural guidance are clear, and ensuring that such ownership also translates down to the worker level where workers know enough, as an additional level of assurance, to ask if they need to be qualified for particular work they will be performing. This was to be completed by June 2011.

2. Regarding the development of training to address performance issues, there were instances where the specific performance weaknesses were not clearly identified prior to the development of training and other instances where the effectiveness of training was not evaluated by clearly evaluating worker performance after the training. It was determined that the Training Decision Process in this area was disjointed and appeared in multiple procedures and guidance documents. The corrective actions were to streamline the process into one procedure and update instructor training to support the new Training Decision Process. This was scheduled to be completed in February 2011.

3. This issue is related to the qualification of supplemental workers discussed in item 1 above and focused on the fact that personnel have performed work without the proper qualifications. The self-assessment team’s review of documentation for activities occurring between August 2007 and August 2010 revealed 68 such instances. None were consequential. The vast majority did not pertain to work that was performed on a plant system. One activity did involve work on an Environmentally Qualified Raychem splice on the Steam Generator Replacement Project. Some of the issues pertained to instructors not having sufficient qualifications for topics they were teaching and to task performance evaluators not possessing qualifications for the activities they were evaluating. Actions were developed to address these various situations, and only one was outstanding: In January 2011: to train supplemental supervisors regarding requirements and responsibilities pertaining to this issue. This was to be completed by June 2011.

4. The self-assessment team noted that some Engineering Support Personnel (ESP) Work Group Specific Training (WGST) was bypassing established training processes. The bypassing allowed training to be performed and documented without following a process of analyzing, designing, developing, and implementing the training and without evaluating the training’s effectiveness. This WGST process is unique in DCPP to ESP; and apparently, it is unique within the nuclear utility industry. Corrective actions included having periodic and documented reviews and discussions of the functioning of the engineering WGST by the DCPP Curriculum Review Committee. Training procedures also needed to be revised to reflect the expected approach to using WGST. These were expected to be reviewed for completion during February 2011.
5. On-the-Job Training (OJT) and Task Performance Evaluations (TPE) were not being conducted in accordance with station standards, and implementation was not consistent with industry best practices. This comment was based on evidence that TPE evaluators sometimes overlooked or missed mistakes being made by workers who should have failed at least portions or aspects of the work for which they were being evaluated. In some cases the TPE evaluators were the same individuals who prepared them to do the work. One of the reasons for these evaluator weaknesses was that they and their trainers failed to use guidelines as procedurally directed. Corrective actions included developing a communications plan by the end of February 2011 and revising appropriate procedures and other relevant documents by the end of the first quarter of 2011.

6. The station oversight organization that is responsible for auditing and reviewing station processes and performance had not provided a high level of intrusiveness and critical analysis of station training performance. This included a limited number of documented observations of training. It also included the tendency to assess training results based on examining data rather than directly observing activities. An underlying and contributing cause of this issue was a personnel vacancy in the Quality Verification Department, which was planned to be filled during the first quarter of 2011. Another corrective action was to provide appropriate training to auditors, which has been completed.

The DCISC acknowledges that the July 2010 DCPP self-assessment of Technical and Engineering Training Programs and the accompanying Negative Comments were based upon comparisons to industry best practices rather than to minimum acceptable performance. Nevertheless, the DCISC concludes that the Negative Comments individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs.

Results of July 2010 Self-Assessment of Training (Volume II, Exhibit B.6)

This DCPP presentation essentially reiterated the information presented directly above in this same Section 4.22.2 of Volume I of the DCISC 2010/2011 Annual Report. This presentation further reported that all actions stemming from this DCPP self-assessment would be complete by the end of June 2011.

4.22.3 Conclusions and Recommendations

Conclusions:

Although the July 2010 DCPP self-assessment of Technical and Engineering Training Programs was based upon comparisons to industry best practices rather than to minimum acceptable performance. The Negative Comments in the assessment report both individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs. The DCISC will continue to follow this issue in the next reporting period.

Recommendations:

None
4.23.1 Overview and Previous Activities

This section of the Annual Report was new beginning with the 2009-2010 reporting period. The purpose of the section is to describe the DCISC’s review of DCPP License Renewal.

The DCISC reviewed the following license renewal items during the previous reporting period 2010 – 2011:

- DCPP License Application for License Renewal
- Potential for Seismic Effects on Pressurized Thermal Shock & Implications for License Renewal

The DCISC observed that DCPP filed its application with the NRC in November 2009 for License Renewal to extend its operating license for another 20 years. The NRC review is in process and is expected to take approximately two years. The California Energy Commission (CEC) has requested the DCISC to review the nexus between the newly discovered Shoreline Seismic Fault and Reactor Vessel Pressurized Thermal Shock as it affects License Renewal. The DCISC completed its review with a response to the CEC by the end of 2010.

4.23.2 Current Period Activities

During the current period, the DCISC reviewed the following license renewal items:

- DCPP License Renewal Update
- Potential for Seismic Effects on Pressurized Thermal Shock & Implications for License Renewal

License Renewal Update

The Atomic Energy Act and NRC regulations limit commercial power reactor licenses to an initial period of 40 years primarily based on antitrust and economic considerations and not on technology. The current operating licenses from the NRC for DCPP Units 1 and 2 expire on November 2, 2024 and August 26, 2025, respectively. A license renewal application must be submitted at least 5 and no more than 20 years prior to the expiration of a current license. Both DCPP units have more than 20 years of operating experience and the NRC has determined this is sufficient with regard to assessing aging effects and operating experience and to evaluate the effectiveness of the Aging Management Program.
The DCPP License Renewal Application was submitted to the NRC on November 23, 2009, and on January 8, 2010, NRC staff determined that the application contained sufficient information for the NRC to formally file the application and begin technical review. The review process is a two-track process, one track consisting of the review of safety impacts in accordance with 10 CFR Part 54 and a second track consisting of review of the environmental impacts in accordance with 10 CFR Part 51. Public input is provided and hearings are scheduled concerning both tracks of this process. Significant milestones completed include the public meeting concerning environmental scoping, the Scoping and Screening Methodology Audit, and the Aging Management Program Audit.

The license renewal application process involves an Integrated Plant Assessment (IPA) safety review, which includes elements of scoping, screening, aging management review, aging management programs, and time-limited aging analyses activities, and the preparation of an environmental report addressing consistency issues with reference to the Coastal Zone Management Act. IPA scoping involves analysis of those safety-related plant systems, structures and components that are within the scope of license renewal; all non safety-related systems, structures and components whose failure could prevent satisfactory accomplishment of any of the safety-related features; and all systems, structures and components that demonstrate compliance with the NRC’s regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. This analysis is also correlated with the NRC Maintenance Rule. Only passive components, which are not replaced periodically and for which no aging management is required by the NRC, are included, as active components and the adequacy of existing aging management programs are reviewed using other processes.

NRC issued its draft Safety Evaluation Report on January 10, 2010, and the NRC Advisory Committee on Reactor Safeguards (ACRS) Subcommittee review meeting for the DCPP license-renewal application was on February 9, 2010. DCPP presented and answered ACRS questions on many various items.

The following [paraphrased] contentions by the San Luis Obispo Mothers for Peace (SLOMFP) have been accepted by the NRC for the upcoming hearing:

Contention TC-1

PG&E has failed to demonstrate a reasonable assurance that it can and will manage the effects of aging in accordance with the current licensing basis.

Contention EC-1

PG&E’s Severe Accident Mitigation Alternatives analysis fails to consider information regarding the Shoreline fault for an understanding of seismic risks to the Diablo Canyon nuclear power plant.

Contention EC-2

PG&E’s Environmental Report is inadequate because it does not address the airborne environmental impacts of a spent fuel pool accident caused by an earthquake.

Contention EC-4
The Environmental Report does not discuss the cost-effectiveness of measures to mitigate the environmental impacts of an attack on the reactor during the license renewal term.

On April 10, 2011, following the Fact-finding meeting, PG&E submitted a request to the NRC to defer its issuance of the DCPP renewal license until certain Shoreline Fault seismic reviews are completed in 2015.

The DCPP License Renewal proceeding continues to move through the NRC’s review process with their draft Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There are several open technical issues with the NRC, but these are being resolved, meaning that the technical portion of the application is being completed. The NRC has admitted four contentions by intervener San Luis Obispo Mothers for Peace. It appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on-schedule and the contentions were to be satisfactorily settled in the hearings; however, on April 10, 2011, PG&E submitted a request to the NRC to defer its issuance of the DCPP license renewal until certain seismic reviews are completed in 2015.

Potential for Seismic Effects on Pressurized Thermal Shock & Implications for License Renewal

A primary area of interest to the DCISC is the combined Shoreline Fault/Hosgri Fault potential to exceed the current earthquake design basis (Hosgri Earthquake) for DCPP and its potential effect on DCPP Reactor Vessel Pressurized Thermal Shock (PTS). The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its magnitude and effect on DCPP (See Section 4.20.2 for an update on the Shoreline/Hosgri Fault analysis).

PTS is a concern for all nuclear plants due to its potential to rupture the Reactor Vessel. As a nuclear plant ages, neutron impingement hardens or embrittles the Reactor Vessel. If the vessel, which normally operates at approximately 600 degrees F and 2200 psi, were to experience a relatively cold-water shock from an inadvertent injection pump start at operating pressure, existing small cracks in the vessel could rapidly enlarge, resulting in a vessel rupture. Such a rupture could make it difficult to safely cool the reactor. Nuclear plants are designed and analyzed to be able to withstand such a shock without damage for their operating lives of 40 years.

The NRC requirements for pressurized thermal shock (PTS) are as follows:

- 10 CFR 50.61 - Fracture Toughness Requirements for Protection Against PTS Events
- 10 CFR 50.61a - Alternate Fracture Toughness Requirements for Protection Against PTS Events
- 10 CFR 54 - Reevaluation of PTS Analysis for License Renewal to Consider Period of Extended Operation in Accordance with 10 CFR 50.61 or 10 CFR 50.61a
- NUREG-1806 and NUREG 1874 - Technical Bases for Alternate PTS Evaluation Regulations
PG&E reported that DCPP’s license renewal application, U-1 will either implement 10 CFR 50.61a or alternate options, such as flux reduction as provided in 10 CFR 50.61 will be required. For U-2, the license application PTS evaluation indicates that the 10 CFR 50.61 screening criteria will be met. PG&E recently received a Westinghouse analysis for PTS on U-1 and U-2 and internal review of that assessment is now ongoing, following completion of the 1R16 outage and any update of PTS information for U-1 or U-2 will be complete in 2010 and submitted as part of the annual update of the DCPP license renewal application.

Every operating reactor uses a set of small metallic specimens (so-called coupons) placed inside the vessel that can be removed periodically for examination, to study how radiation damage affects the metal in the vessel itself. These metallic coupons are made from the exact same material as the vessel itself. DCPP reported that the irradiation experience from the coupons they already have in-hand at DCPP goes out in some cases to the equivalent fluence of 55 or so EFPY (effective full power years), close to what they need for a 60-year operating lifetime. The coupons with the highest neutron fluence exposures get to 55 EFPY by having been placed in a higher neutron flux field inside the reactor core than the fluence that the vessel walls have experienced. If these coupons have valid exposures, the DCPP plant already has close to enough irradiation experience with the coupons in-hand to support their need out to 60 years with 20 more years of irradiation available, as necessary, if the license extension is granted.

The NRC previously concluded that seismic events were not risk significant with regard to PTS events. The NRC conclusion utilized DCPP’s 1988 Long Term Seismic Program (LTSP) seismic hazard evaluation. PG&E recently updated the 1988 LTSP hazard analysis using current information on ground motion models and seismic sources, including the Shoreline Fault. PG&E stated that the updated seismic hazard concluded that the seismic hazard of the Shoreline Fault has only a small effect on the total hazard. The updated seismic hazard, based on current ground motion models and updated seismic sources, is lower than the 1988 LTSP hazard.

PG&E has applied to the NRC for a 20-year extension of its operating license for a total of 60 years and is performing analyses to assure that all safety-related plant materials, components, and structures can safely operate for that period. It is analyzing the potential effect of the Shoreline Fault on the current seismic design basis and on PTS for the 20-year license extension. The DCISC has been reviewing these analyses as well as other similar industry analyses. The California Energy Commission (CEC) has requested that the DCISC look into the nexus between the potential effect of the Shoreline Fault and PTS for the 20-year extended operating period. At the November 17-18, 2010 DCISC Public Meeting the Committee reviewed the draft of a report, providing the Committee’s tentative evaluation and conclusions to the CEC.

The neutron fluence over an additional twenty years of operation would lead to an increased susceptibility. This issue is addressed, as it must be, in PG&E’s application for a license extension for DCPP. DCPP will do all the surveillance recommended and required to assess this issue, and the DCISC has reviewed PG&E’s application and the technical analysis done by the plant and by Westinghouse and is in agreement with the conclusion that PTS will not threaten the safety of DCPP during an extra twenty years of licensed operation.
The seismic design of DCPP is based on the Hosgri earthquake fault located a few miles offshore in the Pacific Ocean, which if it ruptured would produce a significant ground motion, for which DCPP has been designed. Recently PG&E in conjunction with the U.S. Geological Survey (USGS) discovered the existence of a fault located just offshore from DCPP, which is now referred to as the Shoreline Fault. This newly identified fault required the collection of data to assess its potential impact on DCPP and whether its presence threatens DCPP’s existing design basis. The general conclusion, which is not final because more work is to be done, is that the Shoreline Fault feature does not threaten to produce ground motion greater than the design basis on which DCPP is already designed. There is also a question whether or not, in some circumstances, the Hosgri or Shoreline Faults could produce a motion, a so-called splay fault, whereby they would intersect each other and thereby produce a ground motion in excess of DCPP’s current design basis. To date, there is no conclusion as to this splay faulting effect; however, the general interim conclusion from work performed by PG&E is that the likelihood of such an interaction is very low. The NRC has reviewed PG&E's interim conclusion and concurs that the design basis is not threatened. The NRC, the U.S. Geological Survey (USGS) and the DCISC will continue to review new information as it becomes available.

Earthquake motion even out to twenty additional years of licensed operation and from a very large earthquake, will not threaten a reactor vessel, and a large earthquake even with ground motion produced from the Shoreline Fault and with a potentially more brittle DCPP reactor vessel in an atypical cold condition, is not a threat. The Committee’s report concludes that the scenarios in which that might occur would not be triggered by earthquakes in any way that’s any different from the sort of scenarios that would be triggered by other events.

PG&E’s current position is that, while PG&E cannot completely eliminate a scenario in which the Hosgri and Shoreline Faults together could produce larger ground motion, PG&E believes that probability is very low and he stated the Committee’s preliminary general conclusion is that there is no reason why this would be a threat that is not within the design basis. The DCISC has done a thorough investigation of the PTS issue and has concluded the two DCPP units can operate out to the full sixty years, if the license extension is granted, without PTS posing a threat beyond NRC regulation. The DCISC’s conclusion concurs with the NRC’s general conclusion that it is crucial that PG&E continue its program of seismic research and investigation in connection with its operation of DCPP, which is reviewed by the NRC and the USGS.

The DCISC will continue to follow the seismic information being developed, any further analysis done on PTS, and the NRC license extension application proceedings. There is no direct relationship between having earthquakes, even very large earthquakes, and issues associated with neutron embrittlement of the reactor vessel. It is possible an earthquake could initiate a safety injection but the fact that there is some risk of earthquakes does not significantly change the potential frequency for PTS transients meaning, essentially, that the earthquake issue is really separate from the PTS and the neutron embrittlement issues.

At the DCISC February 15-16, 2011 Public Meeting the Committee reviewed the process used to prepare its report on Evaluation of Pressurized Thermal Shock (PTS) and Seismic Interactions at DCPP (PTS/Seismic Report) which was prepared in response to a request by the California Energy
Commission (CEC) made in the CEC’s 2009 Integrated Energy Policy Report. The Nuclear Regulatory Commission (NRC) has completed its initial evaluation of PG&E’s license renewal application for DCPP and has issued a draft Safety Evaluation Report that contains no comments on this topic. PG&E presented its further conclusions at a public meeting held in San Luis Obispo on January 19, 2011. The PTS/Seismic Report was revised to include new information, which reinforce the conclusions contained in the November 2010 draft.

Dr. Lam stated he has no disagreement with the current conclusions of the PTS/Seismic Report but would prefer to see additional assurance provided through inclusion of analysis describing the impact of a joint seismic rupture of the Hosgri and the Shoreline Faults. The PTS/Seismic Report centers on dismissal of this joint seismic activity based upon a probability analysis by PG&E and PG&E’s analysis of geographical considerations. This basis is scientifically defensible, however, an additional level of assurance would be provided if PG&E continues its efforts to analyze how a joint seismic rupture of both the Hosgri and Shoreline Faults would not produce a ground motion greater than set forth in the original analysis of the Hosgri Fault. PG&E has not completed work on this topic, and when final conclusions are available the DCISC reserves the right to amend the PTS/Seismic Report. On February 15, 2011, the DCISC unanimously adopted the PTS/Seismic Report and authorized its transmittal to the CEC.

DCPP has a sufficient number of reactor vessel surveillance coupons to support the station’s monitoring of the effects of neutron radiation on the reactor vessels of Units 1 and 2 throughout the full 60-year proposed lifetime of the plant. The DCISC recognizes that analyses of seismic effects of the Shoreline Fault are not fully complete at this time, although DCPP’s initial conclusion indicates that its effects are within the current seismic capability of the plant.

4.23.3 Conclusions and Recommendations

Conclusions:

The DCPP License Renewal proceeding continues to progress with NRC’s draft favorable Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There are several open technical issues with the NRC, but these are being resolved, meaning that the technical portion of the application is being completed. The NRC has admitted four contentions by intervener San Luis Obispo Mothers for Peace. It appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on-schedule and the contentions were to be satisfactorily settled in the hearings; however, on April 10, 2011, PG&E submitted a request to the NRC to defer its issuance of the DCPP license renewal until certain seismic reviews are completed in 2015.

The DCISC has responded to the California Energy Commission’s request that it evaluate whether there is a nexus between the Hosgri and Shoreline Faults and reactor vessel pressurized thermal shock (PTS). The DCISC concluded that there is no direct relationship between having earthquakes, even very large earthquakes, and PTS issues associated with neutron embrittlement of the reactor vessel. This is in agreement with both PG&E’s and NRC’s initial conclusions.

Recommendations:
4.24.1 Overview and Previous Activities

This section of the Annual Report is new beginning with this 2010-2011 reporting period. The purpose of the section is to describe the DCISC’s review of the Environmental Protection Agency’s proposed new rules on requiring closed loop cooling, i.e., cooling towers, on power plants with once-through cooling.

4.24.2 Current Period Activities

During the current period, the DCISC reviewed the following closed loop cooling items:

- Impacts of Closed Loop Cooling on DCPP

**Impacts of Closed Loop Cooling on DCPP (Volume II, Exhibit D.7, Section 3.1 and Exhibit B.6)**

The Federal Clean Water Act Section 316(b) is implemented through National Pollutant Discharge Elimination System (NPDES) permits, issued pursuant to Clean Water Act Section 402, which authorizes the point source discharge of pollutants to navigable waters. The California State Water Resources Control Board (SWRCB) is designated as the state water pollution control agency for all purposes stated in the Clean Water Act. The State Water Board and Regional Water Quality Control Boards are authorized to issue NPDES permits to point source dischargers in California.

Ongoing development of Federal Clean Water Act Section 316(b) Regulations regarding aquatic organism impingement and entrainment and a California Specific Policy for 316(b) rule implementation may require all coastal power plants, including existing plants like DCPP, to reduce marine impingement and entrainment levels utilizing the “best technology available” (BTA), meaning closed-cycle cooling systems (i.e., cooling towers). DCPP employed a consultant, Enercon, to study the scope, site feasibility, potential plant effects, projected costs, and a conceptual implementation schedule with retrofitting a closed-cycle cooling system at DCPP. The report was published in March 2009 and was submitted to the applicable California jurisdictions.

The SWRCB is requesting that Southern California Edison (SCE) and PG&E conduct special studies to investigate alternatives for their nuclear power plants to meet the BTA requirements. A report detailing the scope of the studies to be conducted by an independent third party is to be prepared by the SWRCB – Nuclear Review Committee and is to be ready by October 1, 2011, the scope of the studies will undergo a stakeholder and public review, and another report detailing the results of the studies is to be completed by October 1, 2013. The SWRCB will then decide what requirements apply to California’s two nuclear plants.

The DCISC was interested in the effects of cooling towers on plant safety. The March 2009 DCPP
feasibility report addressed several potential safety impacts.

Enercon determined that mechanical draft cooling towers using seawater makeup are the only potential option for closed cooling. They concluded that the only viable mechanical cooling towers would be nonplume-abated rectangular bank units because of tower size and the site topographical constraints. The towers would have to be located just south of the Training and Maintenance Training Buildings along the shore on what is now parking, equipment laydown, and warehouse space. The net loss in electrical output was calculated to be approximately 28 MW (e) per unit, including lost generation due to loss of efficiency and to additional electrical loads for the cooling tower systems. New Condenser Cooling Water piping would use the existing Intake Structure. The safety-related Auxiliary Saltwater System would remain directly cooled by ocean water. The existing condensers would have to be replaced with stronger ones due to higher operating pressures with a closed cooling system.

Nuclear safety concerns identified included:

- Increased flood risk to safety-related systems from cooling tower water – the proposed cooling tower design would increase that risk due to higher water pressure and the height of water in the towers above key turbine building equipment.
- Increase in plant trips due to salt deposition – the use of salt-water cooling towers would result in very large increases in salt aerosol deposition outside and inside the plant. There would be a significant salt deposition on the 500- and 230-kV power lines (and associated switching equipment) leaving the plant, thus increasing the potential for loss of offsite power, resulting in plant trips.
- Salt deposition with accelerated aging of plant equipment – large increases in salt deposition would have the effect of increasing corrosion, required maintenance, and frequency of failure of exposed plant equipment (e.g., Emergency Diesel Generators) with their open ventilation intakes.
- Interruption of the safety-related Auxiliary Saltwater (ASW) System during construction would increase the probability of its interruption of cooling water to safety-related equipment during operation (safety-related Component Cooling Water heat loads), shutdown (Spent Fuel Pool Cooling heat loads), and accident conditions (Ultimate Heat Sink).
- Rerouting of existing NRC-approved Independent Spent Fuel Storage Installation (ISFSI) haul road – the route for moving spent fuel casks from the plant up to the ISFSI has been approved by the NRC is limited to an 8.5% maximum slope, supports the heavy loads from the dry cask transporter, avoids landslide-prone areas, and withstands the effects of a Hosgri Fault earthquake (without a loaded dry cask transporter tipping over). Finding an acceptable new route and obtaining NRC approval would be difficult.
- Landslide potential – Relocation of the ISFSI haul road and the location of the cooling towers and their auxiliaries would need to be located to avoid active landslide areas.
- Increased risk of interruption to the Fire Protection System during construction, such as accidental damage to the yard fire loop which would be vulnerable during the extensive
Security concerns related to the opening of the Protected Area boundaries during construction – the massive excavations and disruptions of normal site boundaries, large numbers of construction personnel, and numerous equipment crossings of Protected Area boundaries are potential threats to plant security.

Though these threats to plant nuclear safety from cooling towers are not certain and not problems perhaps until 2024, the DCISC is concerned about the potential reduction in plant operational safety. Additionally, the DCISC is concerned that (1) the large increases in salt aerosol deposition from cooling towers could cause reliability problems for equipment inside the plant, including the plant ventilation equipment, (2) the rearrangement and greatly increased congestion on the plant site due to the large space requirements of cooling towers could negatively impact plant emergency response, and (3) there will be a substantial learning curve associated with the transition to closed cooling that will result in increased risk of plant trips during the learning period and reduced plant safety.

Though not required until 2024, and with the requirement to change still awaiting additional CA State Water Board applicability studies due in late 2013, the use of closed-cycle mechanical draft cooling towers with saltwater make-up at DCPP could have significant impacts on plant operation, reliability, efficiency, and safety. A range of potential nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. The DCISC will continue to follow the developments at DCPP on cooling towers.

At the February 15-16, 2011 DCISC Public Meeting PG&E reported that California State Once Through Cooling (OTC) Regulatory Policy does not mandate change but rather favors OTC plant retirement, re powering or closed-cycle retrofit, which is a significant expenditure. Plant specific compliance schedules have been established with DCPP’s being December 31, 2024 at the ends of its current license period. A Statewide Advisory Committee on Cooling Water Intake Structures is now being assembled. Compliance alternatives have been identified for OTC facilities with Track 1 being reduction of each unit intake flow rate by 93% which is only commensurate with closed-cycle cooling; and Track 2 being reduction of impingement and entrainment losses to comparable level achieved by Track 1. None of the technologies under consideration work well in saltwater ocean facilities.

PG&E has stated that there is a separate requirement established for a special study of nuclear-fueled power plants which is to be conducted by an independent third party under the oversight of a review committee to examine scientific, technical and environmental issues related to a closed-cycle retrofit of DCPP established by the SWRCB executive director which will report to the SWRCB. Nuclear safety would be part of the review and license review is being considered by the review committee. The SWRCB will consider the results of the special studies and evaluate the need to modify policy including the cost of compliance, the ability to achieve compliance with Track 1, and potential environmental impacts and tradeoffs of compliance with Track 1. Alternative requirements for nuclear plants may be established if compliance costs are determined to be wholly out of proportion compared to costs the State considers in establishing Track 1 compliance costs.
The Tetra Tech firm has estimated the cost to refit DCPP at $1.62 billion. If alternative requirements are established, the difference in impacts required to be mitigated will be assessed. Conflict with nuclear safety requirements would exempt plants from requirements.

The DCISC sent a letter to acquaint the California Water Board Nuclear-Fueled Power Plant Review Committee with the role, responsibilities and expertise of the DCISC.

PG&E described alternative technologies to OTC available to DCPP relative to entrainment include fine mesh and cylindrical wedgewire screening, dry cooling and natural draft towers, all of which were found to be infeasible. Mechanical draft towers were determined to be likely realistic but infeasible due to engineering and permitting issues, adverse impacts and the cost. Enercon Services, Inc. performed a retrofit feasibility study for DCPP in 2009, which provided a detailed conceptual evaluation of mechanical draft cooling tower installation using saltwater make-up.

DCPP described the nuclear safety challenges are as follows:

- Auxiliary Saltwater System - must remain on OTC.
- Turbine Building - flooding possible due to elevated system configuration.
- Transmission Systems - salt deposition impact on electrical arcing and plant trip risks, elevated salt and moisture entrainment in air intakes and accelerated aging of equipment site-wide.
- ISFSI Cask Haul Road - required rerouting.
- Security Risks - due to opening established protected area during construction.

DCPP described the key issues from PG&E’s perspective which include: nuclear plants are non greenhouse gas emitting baseload generation facilities with significant remaining useful life essential to meeting the emissions goals of California Assembly Bill 32; the enormous costs to retrofit which are not viewed favorably by the CPUC; the negative environmental and safety impacts during and following retrofit including the need for replacement power generation due to plant derate; and the required study of OTC alternatives for nuclear plants which must be performed by a qualified, experienced third party vendor.

4.24.3 Conclusions and Recommendations

Conclusions:

A possible mandate for plant retrofit to use closed, salt-water cooling towers in the future could have major impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. The DCISC will continue to take seriously the charge to review the safety impacts of the elimination of Once Through Cooling (OTC) at DCPP and provide analysis and input to the process.

Recommendations:

None
4.25.1 Overview and Previous Activities

This section of the Annual Report is new beginning with this 2010-2011 reporting period. The purpose of the section is to describe the DCISC’s review of “Beyond design basis events,” such as occurred at the Japanese Fukushima Daiichi nuclear plant in March 2011.

4.25.2 Current Period Activities

During the current period, the DCISC reviewed the following:

- DCPP Response to Fukushima Daiichi Event
- Fukushima Daiichi Lessons-Learned/Actions
- DCPP vs. Fukushima Daiichi Designs
- DCPP Severe Accident Management Guidelines and Extreme Damage Management Guidelines

DCPP Initial Response to Japanese Fukushima Daiichi Event (Volume II, Exhibit D.10, Section 3.7)

Years ago DCPP (along with rest of the U.S. nuclear industry) developed and provided to NRC descriptions of procedures and equipment to be used for severe accidents and security events, which were beyond the original plant design basis. The request was intended to ascertain the plant’s readiness to respond to severe events such as happened at the Fukushima Daiichi nuclear plant following an earthquake and tsunami on March 11, 2011, which were larger than expected. Following the events at Fukushima Daiichi DCPP reviewed its procedures and equipment status and reported back a general state of readiness with some exceptions, which needed correction. The plant issued Corrective Action Program Notifications to initiate and track corrective actions.

The NRC report was expected to be released at the end of April 2011.

In addition to the above, DCPP expected additional requests on Spent Fuel Pool Loss of Cooling, Station Blackout, and Emergency Planning, all as related to the Fukushima Daiichi event.

DCPP’s preliminary review of severe accidents and beyond-design-basis events, as related to insights derived from the Japanese Fukushima Daiichi event, appeared satisfactory, although there were some corrections to be made. NRC's initial review is expected at the end of April 2011. DCPP expects additional reviews and responses to be conducted.

Fukushima Daiichi - Lessons-Learned/Actions, DCPP vs. Fukushima Daiichi Designs and DCPP
DCPP reported that preliminary lessons from the events at the Fukushima Daiichi plant include:

- The susceptibility of stations to multiple unit events from beyond design basis natural phenomena. Single unit events formed the focus of previous thinking and the nuclear industry will need to revisit mitigating strategies for multi-unit events.
- The importance of robust capability to prevent/recover from station blackout conditions. Currently 10CFR50.63 regulations provide for a duration of four hours during which plants must cope without electrical power.
- The importance of managing spent fuel pool conditions under upset conditions. This concern has somewhat subsided as no significant damage has been discovered to the spent fuel pool for Fukushima Daiichi Reactor 4.
- The importance of timely decision-making. This was a particular issue in making the decision to vent containment in Reactor 1, which pressurized to 122 pounds-per-square inch (psi), preventing injection and lifting the reactor dome and causing release of hydrogen.

Comparisons of DCPP to Fukushima Daiichi for similar vulnerabilities:

<table>
<thead>
<tr>
<th>Fukushima Daiichi License/Design Basis</th>
<th>Fukushima Daiichi Reported Conditions</th>
<th>DCPP License/Design Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original design ground Acceleration: 0.36 g</td>
<td>Foundation Acceleration: g 0.3 - 0.5 g</td>
<td>Ground Acceleration: 0.75 g</td>
</tr>
<tr>
<td>Upgrade Design Ground Acceleration: 0.6</td>
<td>Estimated Free Field Ground Acceleration: 0.4 - 0.7 g</td>
<td></td>
</tr>
<tr>
<td>Tsunami Wave Height: 6.0 m (~21 ft.)</td>
<td>Tsunami Wave Height: 10-14 m (~33-46 ft.)</td>
<td>Combined Tsunami, Storm Waves and Tides Wave Height: ~35 ft</td>
</tr>
</tbody>
</table>

The elevations of DCPP and Fukushima Daiichi above sea level which are 85 feet and 20 feet respectively and the elevations of various features at the DCPP site in relation to sea level at the site:

<table>
<thead>
<tr>
<th>DCPP Installation</th>
<th>Approx. Height Above Sea Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Saltwater System Snorkels</td>
<td>~45 ft.</td>
</tr>
<tr>
<td>Power Block - Emergency Diesel Generators</td>
<td>~85 ft.</td>
</tr>
<tr>
<td>Electrical Distribution System</td>
<td>From ~85 ft. to ~100 ft.</td>
</tr>
<tr>
<td>Surface of Spent Fuel Pools</td>
<td>~140 ft.</td>
</tr>
<tr>
<td>Dry Cask Storage and Fresh Water Reservoirs</td>
<td>~310 ft</td>
</tr>
</tbody>
</table>

Robustness of DCPP emergency power:
Six air-cooled diesel generators; three per unit with cross-ties to allow a generator from one unit to supply both units – alternate AC licensing basis.

Two underground diesel fuel storage tanks with a seven day supply of fuel for each diesel generator.

Protected from tsunami by 85 ft bluff.

Spent Fuel Pool (SFP) management capabilities:

- SFP locations for PWRs more accessible that those of BWRs.
- Have a temporary backup cooling system with cross-connect capacity.
- Makeup available from multiple sources under normal and abnormal conditions:
  - RWST via gravity or pump with AC power.
  - Makeup Water System with electrical power required.
  - Condensate Storage Tank with electrical power required.
  - Demineralized Water System gravity fed if piping system is intact.
- Procedures in place for maintaining SFP inventory under upset conditions:
  - EDG-1, Internal Spent Fuel Pool Makeup.
  - EDG-2, External Spent Fuel Pool Makeup.
  - EDG-3, Spent Fuel Pool Cooling via Spray.
  - EDG-4, Spent Fuel Pool Leakage Control Strategies.

Preparedness for significant events:

Severe Accident Management Guidelines (SAMG) – an industry initiative to provide for:

- Controlling RCS pressure and temperature by focusing on resources.
- Injecting into Steam Generators.
- Controlling containment pressure and hydrogen concentration.
- Flooding Containment.

Extreme Damage Mitigation Guidelines (EDMG) – which were mandated by the NRC after the events of 9-11-2001, to provide for actions to be taken to address extensive plant damage from a large fire or an explosion.

- SFP water replacement and spray via fire water and portable pump (fire truck).
- Depressurization of steam generators using atmospheric dump valves.
Ability to reduce containment pressure even with no power or air available.
Start emergency diesel generators with no power available

It appears that the U.S. nuclear industry has different capabilities than Japan regarding consideration of extreme conditions and procedures to address these are available. Industry event report analysis issued in response to the accident at Fukushima Daiichi required review of the following items:

- Verification through walkdowns that mitigating equipment for beyond design basis events bounded by security events is available and functional.
- Verification through walkdowns that procedures to implement the strategies for the events described above are in place and executable.
- Verified that qualifications of staff needed to implement the procedures are current.
- Verified that applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of assumed events. In DCPP’s case it was found that an agreement was required to address road blockage issues in the event diesel fuel deliveries were required.
- Verification that the capability to mitigate station blackout (SBO) conditions required by station design is functional and valid.
- Verification that required materials and equipment for design basis internal and external flooding are adequate and properly staged.
- Verification through walk downs and inspections of important equipment needed to mitigate fire and flood events that the equipment’s function would not be lost during seismic events appropriate for the site.

Some shortcomings were identified at DCPP and entered into the plant’s Corrective Action Program (example: a long term cooling water pump which failed a test.)

Additional organizational capacities at DCPP as including:

- Long Term Seismic Program
- Dedicated geosciences department
- Onsite Fire Department
  - Minimum of five personnel on site 24/7
  - Two fire engines
- Recurring Operator Training
  - Nominal once per six weeks with simulator training/evaluations and periodic job performance measures including for performance regarding off-normal and upset
Recurring Emergency Preparedness Training
  • Differs from that provided by Japanese plants.

Four Emergency Response Organization (ERO) teams.

Dedicated on-site and off-site emergency response facilities.

Periodic table-top and full-scope drills with offsite agencies (minimum of four annually which is more than in Japan).

Timely decision-making
  • Decision-making authority for emergency actions is vested with DCPP.

10 CFR 50.54(x) authorizes licensees, PG&E in the case of DCPP, to take reasonable action in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent. At DCPP a senior reactor operator, of which there is always one on duty, would make decisions in concert with personnel at the Emergency Operations Facility.

Emergency operating, severe accident management, and extreme damage mitigating strategies are in place with personnel training and have been NRC inspected.

Extensive resources immediately available to facilitate decision-making in the ERO.

Looking Forward - a Beyond Design Basis Response Team has been chartered at DCPP to:

• Reduce the potential for DCPP, including the ISFSI and spent fuel storage pools, to experience a fuel damaging event as a result of beyond design basis (BDB) events through modifications, procedures, and training.

• Strengthen the capability of PG&E to respond in the event that a fuel damaging event occurs at DCPP with a radioactive release.

• Critically examine emergency preparedness for postulated BDB events including those situations where significant infrastructure damage to areas around the plant may have occurred.

• Coordinate DCPP response to industry and NRC initiatives.

• Authorize acquisition and onsite storage of a backup cooling water system for the Auxiliary Saltwater System consisting of four diesel pumps and 8,000 feet of hose.

• Authorize a project to replace reactor coolant pump seals with low leakage design.

• Enhance the capability to conduct diesel generator restart and SFP monitoring following a beyond design basis blackout.
An event report was issued by the industry on the events at Fukushima Daiichi and it contains four recommendations to provide near-term assurance that stations are in a high state of readiness to respond to both design basis and beyond design basis events. A subsequent event report on events at Fukushima contains five recommendations regarding management of spent fuel pool conditions under abnormal conditions. An industry workshop on events at Fukushima was conducted in May 2011, including results of these event reports. Additional event reports are expected on station blackout (SBO) and flooding, at a minimum as events at Fukushima Daiichi are more fully understood.

The Electric Power Research Institute (EPRI), INPO, and Nuclear Energy Institute (NEI), in conjunction with senior utility executives, have continued the industry response by creating a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at Fukushima Daiichi, termed the “Way Forward,” which is publicly available. This will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. Continuing response by the nuclear industry also includes:

Strategic Goals:

- Nuclear workforce focused on safety and operational excellence.
- Timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling following SBO are synchronized to preclude fuel damage following station blackout.
- U.S. nuclear industry is capable of responding to any significant event in the U.S. with the response being scalable for international event. DCPP provided boric acid to Japan during the crisis at Fukushima Daiichi.
- SAMGs, security response strategies (B.5.b), and external event response plans are effectively integrated to ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site.
- Margins for protection from external events, along with a need to stay current regarding external events, are sufficient based on the latest hazards analyses and historical data.
- Spent fuel pool cooling and makeup functions are fully protective during periods of high heat load in the spent fuel pool and during extended station blackout conditions.
- Primary containment protective strategies can effectively manage and mitigate post-accident conditions, including elevated and enhanced pressure and hydrogen concentrations.

The NRC’s response to the events at Fukushima Daiichi include forming an internal task force focusing on:

- Protection from design basis natural phenomena.
- Consideration of beyond design basis natural phenomena.
- Mitigation for long-term Station Black Out, including multiple unit events.
The NRC is expected to respond with new regulations and has issued two generic communications:

1. Information Notice 2011-05 providing preliminary information on the events at Fukushima Daiichi.

2. Bulletin 2011-01, "Mitigating Strategies", requesting information on mitigating strategies to determine if additional assessment of program implementation is needed, if the current inspection program should be enhanced or, if further regulatory action is warranted. Responses from the industry are required in 30 and 60 days following issuance.

The NRC has also conducted two inspections of DCPP using Temporary Instructions:

**TI 2515-183**
- Assess capability to mitigate beyond design basis events.
- Assess station blackout mitigation capability.
- Assess capability to mitigate internal and external flooding.
- Assess thoroughness walkdowns and inspections of equipment to mitigate fire/flood events to identify potential for function to be lost during seismic events.

**TI 2515-184**
- Determine that severe accident management guidelines (SAMGs) are available and maintained.
- Determine the nature and extent of licensee implementation of SAMG training and exercises.

There were recently published five lessons learned from the Japanese experience at Fukushima Daiichi which include:

**Lesson 1: Sufficiency of preventive measures against a severe accident.**

- Strengthen measures against earthquakes and tsunamis.
- Ensure availability of power supplies.
- Ensure robust cooling functions for reactors and containments.
- Ensure robust cooling functions of spent fuel pools.
- Thorough severe accident management measures.
- Capability to handle multiple unit events.
Design vulnerabilities complicating response.

- Ensuring water tightness of essential equipment.

Lesson 2: Enhancement of response measures against a severe accident.

- Control of hydrogen.
- Adequacy of containment venting – functionality and control of release of radioactive materials.
- Control room habitability.
- Adequacy of radiation exposure management.
- Adequacy of training for responders.
- Thorough severe accident management measures.
- Adequacy/availability of instrumentation post accident.
- Ability to mobilize rescue teams and emergency supplies.

Lesson 3: Enhancement of emergency response.

- Response to coincident large scale natural disaster and prolonged evacuation of local population.
- Adequacy of environmental monitoring.
- Adequacy of coordination.
- Communication capability following a natural disaster.
- Infrastructure for accepting outside assistance.
- Ability to project radiological consequences following a natural disaster and accident.
- Evacuation/sheltering strategy for a prolonged exposure period.

Lesson 4: Reinforcement of safety infrastructure.

- Clear roles and responsibilities/coordination of governmental agencies.
- Availability of expertise on severe accident management.
- Ensuring independent and diversity of safety systems.
- Use of PSA to identify and address vulnerabilities.

Lesson 5: Thoroughly instill a safety culture.

- Importance of defense in depth.
- Maintaining a learning environment.
Constant search for improvement.

DCPP design features, procedures, and training lessen the vulnerability of DCPP to some aspects of the events similar to those at Fukushima Daiichi but there are still multiple lessons to be learned which will require analysis. Actions have been taken or initiated in response to the initial lessons learned but there are more actions to take and many lessons yet to be learned, and DCPP is prepared to act on those lessons regardless of the source.

4.25.3 Conclusions and Recommendations

Conclusions:
As a result of the Japanese Fukushima Nuclear Plant earthquake and tsunami damage, the U.S. Nuclear Regulatory Commission, nuclear industry groups, and individual plants are reviewing plants’ capabilities to handle “beyond design basis” events, i.e., events beyond which the plants were originally designed. Because of substantial design margins and differences between U.S. and Japanese designs and operating and emergency response procedures, U.S. plants, especially Pressurized Water Reactors similar to DCPP, have different capabilities than Japan to handle beyond design basis events. PG&E has established a formal team to determine the plant’s capabilities and recommend improvements. Based on fact-finding meetings and public meetings on this subject, the DCISC believes that PG&E is taking the appropriate actions. The DCISC will continue to follow the lessons learned and to be learned from the events at the Fukushima Daiichi plant as they relate to DCPP’s ability to address “beyond design basis” events.

Recommendations:
None
The first “Interim Report on Safety of Diablo Canyon Operations,” covering the period of January 1 through June 30, 1990, was adopted by the DCISC on June 6, 1991, and there have been twenty annual reports since then. This twenty-first annual report covers the period July 1, 2010 – June 30, 2011, and was adopted by the DCISC at a Public Meeting on October 5, 2011.
A request for applications is publicly noticed by the CPUC. After receipt of the applications, a list of candidates is selected by the CPUC and provided to the appointing agencies. In accordance with the Restated Charter:

“The President of the CPCU shall review each application to assess the applicant’s qualifications, experience and background, including any conflict of interest and comment received from the public, and shall propose as candidates only persons with knowledge, background and experience in the field of nuclear power facilities and nuclear safety issues who demonstrate they have no conflict of interest.”

In July 1989, when CPUC President G. Mitchell Wilk announced the initial list of nine candidates nominated for appointment to the DCISC, he noted that

“... an independent safety committee clearly requires members who could demonstrate objectivity and independence. For this reason, none of the nominees has testified for PG&E or any other party before the CPUC or the Nuclear Regulatory Commission in any proceeding regarding Diablo Canyon.”

The Restated Charter provides:

“No person shall serve as a member of the Committee if he or she has a prior history of supporting or opposing PG&E as a witness or intervener in nuclear licensing or CPUC proceedings associated with Diablo Canyon.”

1.2.1 Robert J. Budnitz
1.2.2 Peter Lam
1.2.3 Per F. Peterson
Wednesday and Thursday, November 17-18, 2010, Avila Beach, California

Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee’s service list. A copy of the meeting agenda was also posted on the Committee’s website at www.dcisc.org.

Public Tour of Diablo Canyon Nuclear Power Plant

The members of the DCISC, accompanied by 47 members of the public, PG&E tour guides and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper. The group met at the PG&E Energy Education Center for an introduction to the Committee Members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactor. The group was issued security badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and attendees received a briefing from PG&E representatives on the various external features and buildings. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mock-up of the Unit-1 (U–1) Control Room, and observed the plant’s Intake and Discharge structures where DCPP pulls in and expels cooling water from and into the Pacific Ocean and then visited the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

Questions and Comments From the Public

During the ride back to the Energy Education Center the group received information on radiation protection and members of the public took the opportunity to ask questions of Committee members and consultants.
Conclude Public Tour

Agenda

I Call to Order – Roll Call

The November 17, 2010, public meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair, Dr. Robert J. Budnitz, at 1:30 p.m. at the Avila Lighthouse Suites Point San Luis Conference Center in Avila Beach, California. Dr. Budnitz introduced and briefly reviewed the professional backgrounds, appointment and term of each member of the Committee and welcomed the members of the public watching the meeting on live-streaming video via the internet at http://www.slo-span.org.

Roll call was taken.

Present:

Committee Member Robert J. Budnitz
Committee Member Peter Lam
Committee Member Per F. Peterson

Absent:

None

II Introductions

Dr. Budnitz introduced the Committee's technical consultants Mr. David C. Linnen, Mr. R. Ferman Wardell, Mr. Jim E. Booker and Mr. William F. Conway and DCISC Legal Counsel Robert R. Wellington.

III. Public Comments and Communications

The Chair reviewed the procedures and advice from the agenda for the meeting concerning receipt of comments from members of the public wishing to address remarks to the Committee. Dr. Budnitz reported there were devices for use by persons with hearing impairment available. The Chair advised time would be set aside for members of the public to comment on those matters listed on the agenda at the time the matter was considered by the Committee and inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting. There were no comments from members of the public.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee's June 2-3, 2010, public meeting held in Avila Beach
Items were reviewed for follow up action, clarification was provided to Legal Counsel concerning the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting, and editorial and substantive changes were made to the draft of the June 2010 Minutes.

Minutes of the Committee’s public meetings become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Peterson, seconded by Dr. Lam the Minutes of the Committee’s June 2010 public meeting were approved as amended, subject to inclusion of the changes provided to its Legal Counsel.

V. Action Items

A. DCISC 20th Annual Report on Safety of Diablo Canyon Operations;
   July 1, 2009 - June 30, 2010. The Chair requested Consultant Wardell lead the review of the Committee’s 20th Annual Report. Mr. Wardell stated that, two drafts of the Annual Report having been provided to the Members and the other consultants and comments received, the Executive Summary of the report represented the culmination of all comments and he suggested it be used as the basis for Committee approval of its 20th Annual Report. Dr. Lam stated he was satisfied that the Executive Summary had a very balanced tone and substance which recognized deserved successes and also justified criticisms and if the Committee’s Recommendation were to be carried out by PG&E a contribution to safety would result. On a motion by Dr. Peterson, seconded by Dr. Lam, the DCISC 20th Annual Report on Safety of Diablo Canyon Operations was unanimously approved. Dr. Budnitz observed PG&E will have 45 days to respond to the Committee’s report and that response will become a part of the final report. The report will be provided to the Governor, the Energy Commission, the California Attorney General, California Public Utilities Commission, other agencies and official and to local libraries in the San Luis Obsipo area, as well available in its entirety on the Committee’s website.

Members and consultants discussed the incomplete response received from PG&E to the Recommendation made in the Committee’s 19th Annual Report. Dr. Peterson reported the PG&E response did not deal with the second portion of the DCISC’s Recommendation concerning the need to provide training for events which involve a low level of risk. He stated that since the 19th Annual Report was issued, PG&E has done three full scope drills which were kept at the Alert level, allowing drill planners to match those events that DCPP was most likely to experience. He observed there is a tendency in emergency response to focus attention on very large but highly unlikely accident scenarios. He commented the value and substantive impact of the DCISC’s Recommendation was borne out when DCPP experienced an actual Alert event in 2010 and, as a result of drills earlier in the year, managed the Alert and the immediate communications about the Alert successfully. The Members agreed and directed that PG&E’s revised response to their Recommendation in the 19th Annual Report be included in the 20th Annual Report when the final report is published.

B. Update on Financial Matters and Committee Activities. Mr. Wellington reported financial statements from the Committee’s accountant were provided. The current balance of the
Committee’s grant funding, which is provided to fund the activities of the Committee by PG&E’s ratepayers, is $159,155.39.

C. Discussion of Issues on Open Items List: Dr. Budnitz requested Consultant Wardell lead a review of items on the Open Items List, used by the Committee to track and follow up on issues, concerns and information identified for subsequent action during fact-finding or public meetings. Items discussed or concerning which action was taken at the meeting included the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Re:</th>
<th>Action Taken</th>
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<tr>
<td>TBD</td>
<td>Closed Loop Cooling</td>
<td>Add new category</td>
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<tr>
<td>CO-7</td>
<td>Storm Response Experience</td>
<td>Change review to every two years or as necessary</td>
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<tr>
<td>EN-20</td>
<td>Observe Plant Health Committee Meetings</td>
<td>Schedule for March 2011 FF</td>
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<td>EN-28</td>
<td>Update re Licensing Basis Verification Project</td>
<td>Schedule for Dec. 2010 FF</td>
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<td>HS-1</td>
<td>Employee Concerns &amp; Differing Professional Opinion Programs</td>
<td>Schedule for Feb. PM</td>
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<td>NS-5</td>
<td>Monitor NSOC Meetings</td>
<td>Confirm Jan. 19, 2011 FF</td>
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<tr>
<td>OE-1</td>
<td>Review DCPP “Business Plan”</td>
<td>Change reference to “Operating Plan” and schedule for March 2011 FF</td>
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<tr>
<td>SE-26</td>
<td>Reactor Pressure Vessel Compliance Status</td>
<td>Schedule following 1R17</td>
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<tr>
<td>SE-38</td>
<td>Containment Fan Cooler Unit Modifications</td>
<td>Schedule following 2R16</td>
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<tr>
<td>SE-38</td>
<td>Review &amp; Tour Intake Structure After Refueling</td>
<td>Renumber item</td>
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<tr>
<td>SF-1</td>
<td>Monitor ISFSI Operations</td>
<td>Schedule Following Next ISFSI Loading Campaign</td>
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<td>SC-3</td>
<td>Review Long Term Seismic Program</td>
<td>Change Reference to Last PM Review to “6/09 PM”</td>
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<td>SC-6</td>
<td>Consideration of System Interaction</td>
<td>Schedule Review for 1Q12</td>
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<td>10/07 PM-8</td>
<td>Review of Line Organization Use of OE Reports</td>
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<td>2/09 PM-8</td>
<td>UDAC Gap-to-Excellence</td>
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<td>2/09 PM-16</td>
<td>Common Aspects to Missed Drill</td>
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<td>Objectives</td>
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<tr>
<td>6/09 PM-8</td>
<td>Responses to Question from Public</td>
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<td>6/09 PM-10</td>
<td>Results of “Quick Hit” Assessment of Dept. Level Error Rate Increase 1R15 over 2R14 Follow up with DCPP</td>
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<tr>
<td>6/09 PM-11</td>
<td>Equipment Rework Issues Root Cause Analysis Follow up with DCPP</td>
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<tr>
<td>12/09 PM-3</td>
<td>QPAR Created Apparent Cause Evaluation</td>
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<td>12/09 PM-5</td>
<td>Review of Boric Acid Control Program</td>
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<td>12/09 PM-6</td>
<td>Follow Transition from ORAM to Safety Monitor</td>
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<td>12/09 PM-8</td>
<td>Effectiveness of Rework Program</td>
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<td>12/09 PM-16</td>
<td>Monitoring Transformer Bushing Delete assignment to “Mr. Nimick”</td>
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<tr>
<td>2/10 PM-1</td>
<td>Clarification to DCISC R08-1</td>
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<td>2/10 PM-2</td>
<td>Dr. Lam’s Discussion with Mr. Peters Re CEC Recommendation on PTS/Seismic</td>
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<td>2/10 PM-4</td>
<td>DCPP Employees Leaving Employment in 2009</td>
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<td>2/10 PM-7</td>
<td>Re Conversion to NFPA Regulation 805 Schedule for FF and Add As Item RA-7 “Review the Fire PRA Progress and Support of NFPA 805”</td>
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<tr>
<td>2/10 PM-7</td>
<td>Self-Assessment of QV</td>
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<tr>
<td>2/10 PM-11</td>
<td>Rate of Return for Survey Responses Schedule for Dec. 2010 FF</td>
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<tr>
<td>2/10 PM-13</td>
<td>Question from Member of the Public</td>
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D. Resolution of Appreciation and Commendation: Mr. Jim E. Booker. Dr. Budnitz recognized Committee technical Consultant Jim E. Booker for Mr. Booker’s many valuable contributions to the DCISC since 1994 and he read for the record and presented to Mr. Booker a “Resolution of Appreciation and Commendation from the Diablo Canyon Independent Safety Committee to Jim E. Booker.” On a motion by Dr. Peterson, seconded by Dr. Lam, that Resolution was unanimously approved by the Committee.

Mr. Booker replied and expressed his thanks to the Chair and to the Committee for the opportunity to work with the members and consultants over the years. He particularly thanked Mr. Wellington and Mr. Wardell for their assistance in his endeavors. He stated he found all the DCISC members and consultants to have been very experienced and very knowledgeable in matters concerning nuclear power and in performing their duties to oversee the safe operation of DCPP. Mr. Booker expressed his appreciation for the relationships formed with the employees of DCPP throughout his service on the Committee.
and stated he found PG&E’s personnel to be cooperative and helpful, as well as knowledgeable and dedicated to the operation of DCPP as a safe plant. Mr. Booker stated the public should understand that the DCISC provides them with an excellent opportunity to learn and acquire knowledge about Diablo Canyon and its operation. He stated the opportunity provided by the Committee for members of the public to tour accessible areas of DCPP is extremely rare within the nuclear industry. Mr. Booker stated his belief that all would continue to do a good job and wished all the Members and Consultants well. Dr. Budnitz, speaking for the Committee, expressed his appreciation for Mr. Booker’s professionalism, kindness and friendship.

Dr. Budnitz asked that former DCISC Committee Member Dr. E. Gail de Planque, who recently passed away, be remembered for her wonderful contributions to nuclear safety.

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities: Dr. Lam reported on his visit to the California Energy Commission (CEC) on November 10, 2010, with Assistant Legal Counsel Robert Rathie, to meet with CEC Vice Chair and Commissioner James D. Boyd and CEC Senior Nuclear Policy Advisor Barbara Byron. Topics discussed during their meeting included briefing the CEC representatives regarding the Committee’s activities during 2009 and 2010; and providing a draft of the Committee’s response to the CEC’s recommendation made in its 2009 Integrated Energy Policy Report that the DCISC evaluate DCPP reactor pressure vessel integrity including consideration of reactor vessel surveillance reports in context of any changes to the predicted seismic hazard at the site. Dr. Lam reported the CEC has requested an opportunity to review the DCISC’s draft response prior to its approval by the full Committee. Dr. Lam stated special recognition should be given Dr. Budnitz for his special expertise and experience in preparing the Committee’s response. Dr. Lam also reported there was concern expressed by Commissioner Boyd regarding the safety of spent fuel storage at DCPP, particularly with reference to beyond design basis considerations.

B. Documents Provided to the Committee: Dr. Budnitz directed the Committee's attention to the list of documents received since its last public meeting in June 2010. A copy of the list was included with the public agenda packet for this meeting.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E

The Chair requested Consultant Wardell to report on the August 11 and September 21-22, 2010 fact-finding visits to DCPP and DCISC attendance at the NRC Seismic Information Workshop on September 8-9, 2010. Mr. Wardell reviewed the topics discussed with PG&E during the August 11, 2010, visit with Dr. Peterson including:

- August 11, 2010 NRC Evaluated Emergency Exercise - the DCISC Fact-finding Team first visited the Control Room Simulator to observe the declaration of a simulated Alert due to a fire, followed by a reactor trip and a declaration of a Site Area Emergency due to a reactor coolant pump break, loss of fuel clad integrity accident and loss of Containment which then required
declaration of a General Emergency. The DCISC team then visited the Joint Information Center (JIC) where information is given to the public and the media. Mr. Wardell stated during the last several emergency exercises the PG&E spokespersons making comments in the JIC have performed very well. Mr. Wardell stated the PG&E news releases have improved, however, those by San Luis Obispo County were not quite as good. Mr. Wardell observed the DCISC representatives found this exercise to be one of DCPP’s better evaluated exercises. Dr. Peterson commented communication at the JIC was exemplary and observed that substantial effort had been devoted to training in this area and DCPP has made very good advances in terms of communicating effectively concerning risk to the public in this type of event.

Following Mr. Wardell’s report, on a motion made by Dr. Lam seconded by Dr. Peterson, the August 11, 2010 Fact Finding Report was approved and its transmittal to PG&E was authorized.

The Chair requested Consultant Wardell continue his report on his attendance with Drs. Peterson and Lam at the NRC Seismic Workshop on September 8-9, 2010:

- Attend NRC Seismic Information Workshop - conducted by the NRC to provide members of the public with a basic knowledge of seismic hazards and their application to safety and operation of commercial nuclear plants and specifically DCPP. Discussion included review of the ground motion analyses at DCPP including the current status of the evaluation of the Shoreline Fault. Mr. Wardell reported conditional, preliminary analysis showed DCPP can withstand, with its current seismic design basis, Shoreline Fault segment ruptures in any combination of one, two and/or three, along with the Hosgri Fault. In response to Dr. Budnitz’ question, Mr. Wardell replied there did not appear to be any additional or new information to what the NRC has presented in the past. Dr. Lam stated the NRC’s position was clear, that the Shoreline Fault by itself would not present a threat larger than the design basis analysis based on the Hosgri Fault. He stated PG&E’s Dr. Norman Abrahamson has done additional analysis coupling the Hosgri and Shoreline Faults and Mr. Wardell stated PG&E has provided new information concerning its position with reference to that analysis. In response to Mr. Conway’s inquiry, Mr. Wardell stated 122 persons attended the NRC Seismic Information Workshop.

Following Mr. Wardell’s report, on a motion by Dr. Peterson seconded by Dr. Lam, the September 8-9, 2010 Report on Attendance at the NRC Seismic Information Workshop was approved and its transmittal to PG&E authorized.

The Chair requested Consultant Wardell continue his report concerning the fact-finding visit to DCPP on the September 21-22, 2010, with Dr. Lam. Topics reviewed with PG&E on that occasion included:

- Air Operated Valve (AOV) Program Review - the purpose of which is to test and maintain AOVs. Mr. Wardell stated the AOVs are grouped in four separate categories dependent upon their importance to safety, plant reliability and other factors. The overall program health is rated as in White status due to some outstanding Corrective Action Program (CAP) items and
the need for a strategic plan and more qualified technicians. An action plan is in place to return the program's status to Green by the third quarter of 2010. During refueling outage 2R15 there were 72 valves requiring testing, packing, diaphragm replacement, rebuilding or calibration and all required further associated testing. In 1R16 there were 80 valves involved in testing. Mr. Wardell stated the AOV testing program appeared satisfactory to the DCISC Fact-finding Team. In response to Mr. Conway's question, Mr. Wardell confirmed the valves were divided into four categories: (1) high safety significance, (2) low safety significance, (3) others which affect efficiency and capacity factor, and (4) other, non-category 1, 2 and 3 valves.

- Trends in Inadequate Procedures
- Shoreline Fault Status
- Containment System Review
- License Renewal Status
- Fatigue Management Rule Implementation - in response to Mr. Conway's inquiry concerning a September 22, 2010, Apparent Cause Evaluation (ACE) that found plant personnel were not accurately recording all time worked with regard to the NRC's Fatigue Rule turnover time, Mr. Wardell stated this topic was not discussed with the DCISC team.
- August 11, 2010 Evaluated Emergency Exercise Critique
- Nuclear Fuel Performance
- DCPP WANO/INPO Mid-Cycle Assessment
- Pressurized Thermal Shock and Shoreline Fault Analysis
- Dr. Lam's meeting with DCPP Site Vice President and Station Director James Becker - Dr. Lam stated he discussed with Vice President Becker whether or not the DCISC needs to be more focused, to be more effective and to eliminate unnecessary reviews.

Following Mr. Wardell's report, on a motion by Dr. Lam seconded by Dr. Peterson, the September 21-22, 2010 Fact Finding Report was approved and its transmittal to PG&E authorized.

The Chair requested Consultant Linnen to report on the July 6-7 and October 20-21, 2010, fact-finding visits to DCPP. Mr. Linnen reviewed the topics discussed with PG&E during the July 6-7, 2010, visit with Dr. Peterson including:

- Thoroughness of Problem Evaluations - Mr. Linnen stated that the station had developed an extensive action plan and had identified 16 indicators which would be used to measure their performance in this area. Fifteen of the indicators were yet to be developed. The DCISC team's conclusion was that future reviews should be focused on specific indicators or small groups of indicators.
- 2009 Annual Radiological Releases - The DCISC team reviewed the Annual Radiological Release Report and the Radiological Environmental Monitoring Program Report. The Environmental Monitoring Program Report showed no unusual findings from site operations when compared to pre operational data, therefore concluding that the operation of the plant has had no significant radiological impact on the environment. The 2009 Release Report
showed that the exposure to a person at the site boundary would have been much less than 1% of the dose allowed by regulations. Mr. Linnen stated that there are now 8 monitors in place around the periphery of the Independent Spent Fuel Storage Installation (ISFSI) in addition to the 31 monitors that surround the entire site boundary. There was a single unplanned and uncontrolled gaseous release from Unit-2 (U-2) from the gaseous decay tanks in October 2009 due to an improper valve line-up. The release rate was only 0.02% of the allowable rate for the station.

- Seismic Bracing of Tall Furniture – Mr. Linnen noted that DCPP has begun to address this problem more aggressively. Appropriate furniture was being braced, and a new procedure was being developed to define necessary aspects of the program.

- Operational Focus - Due to completion of capital projects performed over the past few years, such as the Independent Spent Fuel Storage Installation, and the steam generator and reactor vessel head replacements, DCPP is returning to a period of more routine operation and is more actively focusing on Operational Focus and Work Management performance indicators that reflect how well the plant is operating. Mr. Linnen stated that the Action Plan appears to be well conceived and implemented. There has been a noticeable improvement in these indicators from mid-2009 to mid-2010.

- Seismically Induced System Interactions (SISI) Housekeeping Activities - Mr. Linnen said that DCPP has recently been more rigorous in implementing this SISI Housekeeping Program. Overall responsibility lies with Outage Management. Area Managers are conducting monthly inspections for loose items that could damage systems/equipment in the event of an earthquake. “Safe areas” have been identified for temporary storage. Performance metrics have been developed and are being reported.

- Follow-up on Functional Failure of Emergency Core Cooling System (ECCS) Recirculation Suction Valve Interlocks – The DCISC team focused on the required opening time of the recirculation sump suction valve and the time constraints for each operation that had to take place in order to shift ECCS suction from the Refueling Water Storage Tank to the Containment Sump. The Fact Finding Team learned that these time requirements were clearly defined in the Safety Analysis. Dr. Peterson stated that an important analysis could show that even if the valve were to stop opening at 25 seconds without adjusting the limit switch, it would still be sufficiently open to be safe. Therefore, changing the limit switch position was unnecessary and ended up causing additional problems. The DCISC team also reviewed the reason DCPP made the decision to reduce the scope of the end of outage testing on these motor operated valves, which was found to be an administrative requirement. DCPP has now returned to full scope testing at the end of an outage for these valves. The DCISC team also reviewed the similar work done on U-1 after the outage on U-2 to address the same task of modifying the valves’ operation.

- Unplanned Release of Carbon Dioxide (CO2) from U-1 CARDOX System – Mr. Linnen stated that, although the Root Cause Analysis was not finalized, it appeared to the DCISC team that the event was caused by a problem with the testing valve (pilot valve) used by the operator. The gaseous release was not radioactive but resulted in the declaration of an Alert (the second lowest Emergency Action Level) and notification of various government agencies. Dr.
Peterson commented that the DCISC had previously recommended that DCPP conduct some practice drills on these types of lower level scenarios because such events are more likely to occur than the major accident scenarios. The station, in fact, had followed DCISC’s recommendation, which helped prepare them for responding to this actual event.

- **July 7, 2010 Emergency Preparedness Drill** - Mr. Linnen stated the results observed were similar to those reported earlier by Mr. Wardell concerning the NRC evaluated emergency exercise in that DCPP’s responses were methodical and effective. He added that personnel in the Joint Information Center appeared to be more controlled and deliberate than in past exercises in the assembly and dissemination of information while remaining sensitive to the needs of the media and the requirement to make the information understandable to the general public.

Upon a motion by Dr. Lam, seconded by Dr. Peterson, the July 6-7, 2010 Fact Finding Report was approved and its transmittal to PG&E authorized.

The Chair requested Consultant Linnen continue his report concerning the fact-finding visit to DCPP on the October 20-21, 2010, with Dr. Budnitz. Topics reviewed with PG&E on that occasion included:

- **Plant Health Committee (PHC)** - Mr. Linnen reported the PHC is meeting more frequently, no longer focusing on budget, and is able to focus completely on system health issues. Also, the committee had been using what appeared to be a logical set of performance indicators to rate the systems. The number and significance of Red and Yellow systems had declined between February 2010 and September 2010.

- **Update on Potential Debris Blockage of Containment Sump** – The DCISC team reviewed this long-standing issue, which has also been examined by the NRC, concerning postulated accidents in which high temperature and pressure reactor coolant discharges into the containment building, flashes to steam, and impinges on miscellaneous insulation and equipment. This can result in debris entering the Containment Sump and clogging its screens. Mr. Linnen stated another issue has been raised concerning the potential for small fibers to make it through the sump screens and plate-out or blanket part of the nuclear fuel, reducing the capability of keeping the fuel from overheating. **A report on this issue is not expected to be released until 2011 and Mr. Linnen recommended the Committee review this issue during the middle part of 2011.**

- **Reactor Vessel Closure Head Replacement Update** - Mr. Linnen noted that a replacement closure head had been installed for U-2 during Outage 2R15. Lessons were learned from that prior outage and applied in 1R16, when the U-1 head was replaced. Some of these lessons involved improving coordination between shift changes and placing more emphasis on the timing and overlap of oncoming personnel with the personnel in the off-going shift. At the time of this DCISC Fact Finding trip, this project was about 3 days ahead of where it was in Outage 2R15.

- **Operations Revitalization Action Plan** – Mr. Linnen said this Action Plan addressed a strain in the relationship between union operators and management stemming initially from differing views on how the union contract should provide for the selection of operators to be trained
as senior licensed operators. Another issue was the need for greater engagement between shift managers and operators. Both issues were being addressed. The DCISC team also reviewed the Plant Performance Improvement Report for any performance indicators whose values might be reflections of negative operator attitudes. No impact was found from the standpoint of the operators’ performance.

- **Status of Reducing Component Mispositionings** - Mr. Linnen reported the Fact-finding Team found that good progress in reducing mispositionings was achieved in 2009 until setbacks were encountered during the Unit 2 refueling outage in October 2009. Just prior to the current outage, 1R16, all management personnel in Operations were assigned to observe activities during a one week period and provide feedback on human performance. Early results were that only one mispositioning event occurred during the first 17 days of the outage, and improvement was expected when the final end-of-outage data became available.

- **Status of Performance Improvement Action Plan** – Mr. Linnen stated that this relatively new Action Plan focused on general methods and tools for performance improvement. He said the Fact Finding Team concluded that the DCISC should conduct future reviews on specific performance issues rather than on general methods for improving performance. The team also reviewed the most recent Plant Performance Improvement Report. **Mr. Linnen stated the DCISC Fact Finding Team concluded that the Plant Performance Improvement Report could provide relevant performance information to management if, at the beginning of the Report, it included summary information concerning which indicators have remained in a Red or Yellow status for two or three months, similar to the information which is provided in the Plant Health Committee reports.**

- **Potential for Pressurized Thermal Shock and Implications for License Renewal** – Mr. Linnen stated that this is a separate Agenda Topic later in this meeting, and this subject would be covered in detail at that time.

Mr. Linnen stated he was awaiting the receipt of additional information before the October 20-21, 2010 Fact Finding Report would be ready for approval.

The Chair requested Consultant Booker to report on the August 4-5, 2010, fact-finding visit to DCPP. Mr. Booker reviewed the topics discussed with PG&E during the August 4-5, 2010, visit with Dr. Budnitz including:

- 1R16 Outage Overview
- Equipment Reliability Process
- Boric Acid Corrosion Control Program
- Post-Maintenance Testing Self-Assessment
- Line Use of Operating Experience - Mr. Booker reported that DCPP now has a single individual, instead of the two individuals assigned in the past, to review operating experience data from other nuclear plants. Mr. Booker recommended and Dr. Budnitz agreed that the DCISC should continue to follow this issue.
Premier Survey Action Plan

- **230 kV System Capability** - the DCISC team reviewed this issue which has been ongoing since November 2008. U-2's start-up transformer when removed from service for maintenance required power to be aligned for a U-2 start-up with a U-1 bus. DCPP also considered the need for 230 kV electrical capability to address an accident on one unit and respond to a controlled shutdown of the second unit. PG&E has had discussions concerning this alignment with the NRC and is revising plant procedures so as not to tie these two start-up transformers or busses together without declaring the transformers inoperable.

- **DCISC Member Budnitz’ meeting with DCPP Management**

- **Carbon Dioxide Discharge Event and Walk-Down of Main Lube Oil Room and CARDOX System** - the DCISC team reviewed the Root Cause Analysis which determined the event was caused by human error.

- **Quality Verification (QV) DCPP Site Status Report and QV Activities** - the DCISC representatives met with the QV director to review the site status report issued on a monthly basis. Mr. Booker stated the report is informative and contains a great deal of detail, but also identified two or three issues of particular concern to QV. One of these issues is a continuation of personnel electrical safety issues which have been a concern for some time. Mr. Booker stated this is going to be a very good report for plant managers to read and follow what is going on at the plant.

- **Probabilistic Risk Assessment (PRA) Overview** - Dr. Budnitz reported the PRA group is struggling to make progress to build up a team. The PRA group has been reduced in size and is struggling to find qualified, experienced personnel or to find less experienced personnel to train. The PRA group is just starting to rebuild its capabilities and this is an area the Committee will need to review for some time. Dr. Budnitz commented that the PRA group does not have near the capability of industry leading plants and a number of activities which are normally supported by the PRA group are not supported at DCPP, leaving the plant vulnerable to not being able to support certain regulatory initiatives, as the group is now struggling just to do the absolute minimum.

- **Plant Cranes Maintenance and Operations**

  Upon a motion by Dr. Peterson seconded by Dr. Lam, the August 4-5, 2010 Fact Finding Report was approved and its transmittal to PG&E authorized.

Once the Committee’s fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are made available in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee's technical consultants involved with preparation of its fact finding reports.

**VIII. Correspondence**

The Chair directed the members and consultants to the copies of correspondence sent and received at the office of the Committee’s Legal Counsel which were included with the public agenda packet for this meeting.
IX. Adjourn Afternoon Meeting

Following review of documents provided to the Committee, the members discussed and established the following schedule for their future activities: the February 2011 public meeting was changed from February 9-10 to February 15-16, 2011; the March 2011 fact-finding with Dr. Budnitz and Mr. Wardell was changed to the week of February 28-March 4, 2011; public meetings of the Committee were confirmed for June 21-22 and established for October 11-12, 2011; a fact-finding with Dr. Peterson and Mr. Linnen was scheduled for July 12-13, 2011; a fact finding with Dr. Budnitz and Mr. Wardell was scheduled for the week of August 22-26, 2011; a fact-finding with Dr. Lam and Mr. Linnen was scheduled for September 14-15, 2011, a fact-finding was scheduled for November 2011 with Dr. Budnitz and Mr. Linnen; a fact-finding was scheduled for December 6-7, 2011 with Dr. Peterson and Mr. Wardell; and a fact-finding was scheduled for January 2012 with Dr. Lam and Mr. Wardell.

The Chair adjourned the afternoon meeting of the DCISC at 5:00 p.m.

X. Reconvene for Evening Meeting

Dr. Budnitz convened the evening meeting of the DCISC at 5:15 p.m.

XI. Committee Member Comments

There were no comments from the Committee Members.

XII. Public Comments and Communications

Dr. Budnitz invited any member of the public to address comments to the Committee. There were none.

XIII. Information Items Before the Committee

A. Evaluation of Pressurized Thermal Shock (PTS) and Seismic Interactions at DCPP.

Dr. Budnitz led a review of the draft of a report, providing the Committee’s tentative evaluation and conclusions, prepared in response to a recommendation to the DCISC from the CEC that the Committee evaluate reactor pressure vessel integrity at DCPP over a twenty-year license extension in context of any changes to the predicted seismic hazard at the site. Dr. Budnitz commented the analysis involved essentially two issues and a nexus between them.

Dr. Budnitz described the operation of pressurized water reactors (PWR) such as DCPP which operate at very high pressure and temperature, such that the metallic reactor vessel and its welds are ductile. Pressurized thermal shock (PTS) is a phenomenon which may occur due to an accident condition of some kind wherein cold water is injected into the reactor vessel, thereby causing an area of the vessel to go through a transition from ductile to brittle and whereby preexisting small flaws in the metal vessel could propagate and cause a failure of the reactor vessel which would be a
disastrous accident event. All reactor vessels are designed, operated and inspected to make sure that this condition is not reached. Dr. Budnitz stated that in no circumstances should a vessel which is subjected to cold water injection produce a transition to that brittle state. The NRC has regulations in place to make sure reactor vessels don’t have such flaws and the NRC continues to inspect reactor vessels to make sure such flaws do not develop.

Dr. Budnitz remarked that operation of a nuclear reactor vessel exposes the vessel to neutron fluence which causes the vessel to become gradually more susceptible to brittle failure due to neutrons hitting the vessel which results in a change in the temperature at which brittle failure transition may occur. The NRC has long had regulations in place to assure this condition is never met by measuring neutron fluence and by measuring samples of the vessel to make sure that the metallurgy has not changed in a way not understood. Dr. Budnitz stated the NRC regulations ensure that no PWR during its initial 40-year licensed life will ever reach such an embrittled condition and he reported the NRC regulations have recently been reviewed and revised to make them more realistic. However, there is a question whether the neutron fluence over an additional twenty years of operation would lead to an increased susceptibility. This issue is addressed, as it must be, in PG&E's application for a license extension for DCPP. DCPP will do all the surveillance recommended and required to assess this issue and the DCISC has reviewed PG&E’s application and the technical analysis done by the plant and by Westinghouse and is in agreement with the conclusion that PTS will not threaten the safety of DCPP during an extra twenty years of licensed operation.

Dr. Budnitz reported the seismic design of DCPP is based on the Hosgri earthquake fault located a few miles offshore in the Pacific Ocean which if it ruptured would produce a significant ground motion, for which DCPP has been designed. Recently PG&E in conjunction with the U.S. Geological Survey (USGS) discovered the existence of a fault located just offshore from DCPP which is now referred to as the Shoreline Fault. This newly identified fault required the collection of data to assess its potential impact on DCPP and whether its presence threatens DCPP’s existing design basis. Dr. Budnitz stated the general conclusion, which is not final concerning which more work is to be done, if the Shoreline Fault feature does not threaten to produce ground motion greater than the design basis on which DCPP is already designed. He stated there is also a question whether or not, in some circumstances, the Hosgri or Shoreline Faults could produce a motion, a so-called splay fault, whereby they would intersect each other and thereby produce a ground motion in excess of DCPP’s current design basis. He stated, to date, there is no conclusion as to this splay faulting effect, however, the general, interim, conclusion from work performed by PG&E is that the likelihood of such an interaction is very low. The NRC has reviewed PG&E’s interim conclusion and concurs that the design basis is not threatened. The NRC, the U.S. Geological Survey (USGS) and the DCISC will continue to review new information as it becomes available.

Dr. Budnitz stated the CEC questions whether, because an earthquake might be larger than previously believed possible, such an earthquake might produce a PTS scenario which would threaten the plant’s safety in a way different or worse than anticipated. He stated this involves two issues: one is the seismicity might be higher; and the second is the vessel is going to be more brittle over an additional twenty years of operation. Dr. Lam concurred and observed this is a situation with an increasingly brittle reactor vessel facing a more challenging seismic environment.
Dr. Budnitz stated the general conclusion that earthquake motion even out to twenty additional years of licensed operation and from a very large earthquake, will not threaten a reactor vessel. He further stated, a large earthquake even with ground motion produced from the Shoreline Fault and with a potentially more brittle DCPP reactor vessel in an atypical cold condition, is not a threat. Dr. Budnitz stated the Committee’s draft report concludes that the scenarios in which that might occur would not be triggered by earthquakes in any way that’s any different from the sort of scenarios that would be triggered by other events. Dr. Peterson observed the vessel responds to stress elastically and, besides cooling the vessel down to temperatures where it might become brittle, vessel cooling also can induce very large stresses in the vessel because the chilled material tries to shrink and the hot material around it does not.

Dr. Lam observed that it had been his understanding that the joint seismic activity from the Hosgri and Shoreline faults, based on improved ground motion models, would be ultimately bounded by the Hosgri fault based on the original ground motion model. But Dr. Lam stated that understanding stands corrected today by a communication from PG&E that PG&E’s position is not that the former Hosgri Fault analysis alone would bound the Shoreline together with the Hosgri, rather PG&E’s position on this issue is that the joint seismic activity can be dismissed based on probability consideration and Dr. Lam observed this is a different approach. Dr. Budnitz confirmed PG&E’s current position is that, while PG&E cannot completely eliminate a scenario in which the Hosgri and Shoreline Faults together could produce larger ground motion, PG&E believes that probability is very low and Dr. Budnitz stated the Committee’s preliminary general conclusion is that there is no reason why this would be a threat that is not within the design basis. He further stated the DCISC has done a thorough investigation of the PTS issue and has concluded the two DCPP units can operate out to the full sixty years, if the license extension is granted, without PTS posing a threat beyond NRC regulation. He further stated the DCISC draft conclusion concurs with the NRC’s general conclusion that it is crucial that PG&E continue its program of seismic research and investigation in connection with its operation of DCPP, which is reviewed by the NRC and the USGS. Dr. Lam stated he would prefer to see PG&E continue its earlier efforts to analyze whether or not a joint seismic activity from the Hosgri and the Shoreline Faults would be bounded by the existing Hosgri Fault analysis, as probability estimates can be in error.

**Dr. Budnitz stated the DCISC will continue to follow the seismic information being developed, any further analysis done on PTS, and the NRC license extension application proceedings.** Dr. Peterson stated in connection with the concern about neutron embrittlement of reactor vessels, and the increased potential that a reactor vessel might break during an earthquake, it is important to remember that if a large earthquake occurs, an operating reactor vessel would be above the transition temperature and therefore would be ductile and furthermore the stress that would be produced by shaking the reactor vessel would be sufficiently low that it would remain within its elastic limits. Therefore, Dr. Peterson stated there is no direct relationship between having earthquakes, even very large earthquakes, and issues associated with neutron embrittlement of the reactor vessel. Dr. Peterson observed it is possible an earthquake could initiate a safety injection but the fact that there is some risk of earthquakes does not significantly change the potential frequency for PTS transients meaning, essentially, that the earthquake issue is really separate from the PTS and the neutron embrittlement issues.
Dr. Budnitz stated the draft report now on the Committee’s website will be revised and then reposted for review and comments are welcome from anyone. The Committee is now expected to take action to approve and adopt the final report at its February 2011 public meeting. Dr. Lam commented this schedule is responsive to the request from the CEC that it be allowed additional time to review the draft report. Dr. Budnitz stated that PG&E will be presenting during tomorrow’s session of this DCISC public meeting a report on this topic. Dr. Lam requested, and Dr. Peterson agreed, lack of significant coupling of earthquakes with the effects of neutron embrittlement are included in the revised draft, as Dr. Lam stated he did not recall there was an emphasis in the draft report on the likelihood of occurrences of seismic activity introducing a PTS to the degree that it overwhelms PTS caused by internal events. Dr. Budnitz commented he recently learned that perhaps he did not completely understand the origins of the seismic design basis for the plant and he committed to research this issue further to make sure nothing about the design basis is inadvertently misstated in the Committee’s report. Dr. Lam stated that he is relatively comfortable with the adequacy of federal regulations and that PG&E has done a good job in designing the plant against design basis accidents but he stated a 2007 earthquake in Kashiwasaki in Japan produced a ground motion with a magnitude two-and-one-half times greater than the design basis. He stated the good news from this event was the Japanese nuclear plant survived, the bad news was that plant’s design basis was two-and-one-half times below what nature was capable of. Dr. Lam stated Commissioner Boyd of the CEC testified recently before the California Senate on Commissioner Boyd’s concerns about the DCPP ISFSI based on this rationale. Dr. Budnitz stated he also accepts the NRC regulations as adequate for safety and there is merit that the plant is going to be operated within the regulatory envelope provided by NRC PTS regulations 10 CFR 50.61, or 10 CFR 50.61a, if that alternate regulation is invoked.

XIV. Information Items Before the Committee

The Chair introduced DCPP Site Vice President James Becker and asked Mr. Becker to commence the informational presentations requested by the Committee for this public meeting. Mr. Becker requested and introduced DCPP Director of Site Services Steve David, to make that presentation.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. David stated the principal events affecting generation history for the past twelve months were the refueling outages for each unit during that period. In January high swell warnings were issued for Pacific Ocean storm activity and both units were ramped to 25% power for the duration of the storm. A mid cycle tunnel cleaning was also performed on U-1 in late February which was the last down-power period prior to the start of the refueling outage on October 2, 2010. U-2 was reduced to 50% power for condenser cleaning and, in early November, as U-1 was preparing to come out of its refueling outage, there was another high swell warning which resulted in a ramp down to 25% power for U-2. Over the last four months of operation there was no loss of generation leading up to the refueling outage for U-1 on October 2. Mr. David stated U-2 entered its refueling outage six hours early due to a steam leak in the secondary plant. Following U-2 entering refueling outage 2R16, and as stated, U-1 was curtailed to 52% power on October 25 to clean Main Condenser
waterboxes of marine growth.

Mr. David reported on the Plant Improvement Report and reviewed areas of improving performance and areas of declining performance. He stated during a refueling outage, DCPP is not able to devote what would otherwise be its normal resources to work on issues such as with the Corrective Action Program (CAP) backlog. Mr. David reviewed and discussed Quality Verification’s (QV) top quality performance issues list and stated several of those items are currently in a monitoring phase, with corrective actions having been completed. A number of areas, however still need work and identification of corrective actions, based on the result of root cause analysis. He identified security procedures as one such item. There was a non conforming condition with calculational flow dynamic analysis for the U-1 Control Rod Drive Mechanism cooling which is being evaluated for corrective action. In response to Mr. Booker’s observation that station electrical safety has been on the QV list for some time, Mr. David replied there have been a number of near-miss events evaluated and analyzed and an apparent cause evaluation (ACE) was performed and new procedural requirements have now been put in place.

Mr. David stated the system health indicator also shows improving performance with one system, the 230 kV System, remaining to be addressed for each unit which is being reviewed to improve overall reliability of that system with regard to backup power supply for the plant. In response to Dr. Lam’s question about plant systems deemed more safety-important than others, Mr. David stated systems with a higher risk significance are appropriately factored in how those systems are evaluated.

Mr. David stated the CAP Index is a combined metric to review root cause analyses, ACEs, station significance level one, two and three work evaluations, and cycle time to complete evaluations and backlogs. During 2010, there were five root cause evaluations which, due to the significance of the issues involved, received an additional level of review and scrutiny and leadership oversight. He commented the red and yellow status indications were associated with longer cycle times than would normally be expected for root cause evaluations, where the goal is 30 days but, because of the importance of the issues, some took as many as 70 days.

Mr. David reported the human performance error rate tends to increase during outage periods and has trended upward at DCPP during October 2010 for this reason. The goal of having no station performance clock resets was met, although at the departmental level these events continue and are being analyzed.

Mr. David stated the Operational Focus Index is a combined metric which analyzes operator burdens and workarounds in the plant; the number of annunciator alarms in the control room; the number of clearances hanging in the plant for longer than 90 days; and the number of prompt operability assessments (POAs). He stated the number of POAs requested by Operations is currently driving this metric. In response to Consultant Booker’s comment, Mr. David stated the POAs have identified corrective actions that need to be completed in order to close out the items and some may not be able to be accomplished until the next refueling outages. In response to Consultant Linnen’s inquiry about commonalities creating a need for POAs, Mr. David stated issues with maintenance of the licensing basis has been such an issue and is one of the main reasons DCPP
is undertaking its Licensing Basis Verification Project. In response to Dr. Budnitz’ observation that the metric displayed for the Committee did not indicate a varying safety significance, and that some issues were more important and risk significant than others, Mr. David stated he would review the Operations Focus Index metric to determine if there was a different way of ranking or prioritizing the items differently based on their risk significance.

Mr. David stated the Reactivity Management Program indicator reflects both the number of events and the program’s health and is currently in white status due to three events in the past month for both units. In October there were three low level (Level 5) events associated with U-1 including: rod insertion limit; tube wear identified in 1R16 on a fuel assembly; and surveillance tests associated with boron concentration. For U-2 there were two low level events (Level 5) and one Level 4 event involving rods in auto and the subsequent receipt of an unexpected signal which caused the rods to step-in three and one half steps. Operators placed the rods in manual and DCPP continues to instrument and troubleshoot regarding that issue.

Mr. David stated DCPP continues to improve with regard to Critical Clock Resets regarding the reliability of critical equipment, with that metric continuing to be in green status. Engineering Program Health includes several metrics in other than green status which are being addressed through an Engineering Action Plan by the respective engineers. These include issues associated with operator actions that DCPP is taking credit for which are not viewed favorably by the regulator (the NRC). He stated the station is doing quite well in the area of recordable injuries with only one recordable injury during a 40-day outage period during which a large number of personnel were on site. The annual goal was set at eight injuries and there have been four to date in 2010.

In response to Dr. Lam’s observation, Mr. David concurred that, in totality, DCPP is going beyond what is required by NRC regulation, which Mr. David described as the minimum performance acceptable at DCPP which is striving to be a leading U.S. nuclear plant and therefore must exceed minimum standards. Mr. David confirmed that if DCPP were only meeting NRC regulations, the metrics he presented would look different and less robust and he stated DCPP continues to self-evaluate its performance, as well as having the NRC review its programs and performance. Dr. Budnitz commented, and Mr. David concurred, regarding Appendix R, that concerning the impact of fire on circuit failures DCPP is taking credit for intervention by its operators which the NRC does not consider to be part of the current regulatory approach. Dr. Budnitz observed that, were the plant to transition to the new regulatory approach, National Fire Protection Association (NFPA) qualification 805, this issue would be resolved but DCPP’s current position is the plant remains adequately safe even though the performance indicator is in red status. Mr. David replied that if the plant cannot take credit specifically for operator actions there are other measures which could be taken through procedures to make sure the plant operates safely. Dr. Lam commented, and Mr. David agreed, that the red status does not indicate the NRC would demand a plant shutdown. Mr. David replied metric thresholds are typically set above whatever the NRC’s minimum requirements might be so that action is taken before the plant is out of compliance with the NRC’s regulations.

Vice President Becker requested DCPP Regulatory Services Manager Tom Baldwin make the next informational presentation to the Committee.
Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin reported during the period June 2010 through November 2010, there were five Licensee Event Reports (LER) submitted by DCPP as follows:

- LER 1-2010-001-01 was revised and issued on August 27, 2010, to update the cause and corrective actions of failure of three control room ventilation system radiation monitors in October 2009. Cause was due to a manufacturing defect and the failure was not safety-significant in that the monitors failed to the safe mode. There was no actual radiation release.

- LER 1-2010-002-01 and 2 were issued July 2, 2010 and September 24, 2010, to update the reporting criteria, apparent cause, assessment of safety consequences, and planned corrective actions for the potential loss of safety-related pumps due to degraded voltage during postulated accidents. Determined not to be safety-significant due to the high improbability for the event.

- LER 2-2010-002-00 was issued on August 5, 2010, to report an unanalyzed condition with the 2R15 optimization modification of the U-2 safety injection system test line. U-2 was not at power operation.

- LER 1-2010-003-00 was issued August 6, 2010, to report a historical evaluation for the 230 kV System operability for both units and conditions prohibited by Technical Specifications (T/S). Mr. Baldwin stated DCPP now has a greater understanding of the operability of the 230 kV System and past performance and maintenance windows were reviewed. It was found that there were a few times when maintenance was being performed and the system was configured such that both units were aligned to be receiving off-site power through a single transformer for in excess of the allowed time. This could have potentially overloaded the transformer, although when the capacity of the transformers was reviewed it was found they would have been within their Institute of Electrical and Electronic Engineers (IEEE) code rating.

- LER 1-2010-004-00 was issued August 25, 2010, to report a condition that allowed the plant pressurizer level to be controlled outside the Final Safety Analysis Report (FSAR) design basis. This was discovered through review of past outage experience where an operating procedure during shutdown provided the pressurizer level control to be operating in manual and would be outside of the normal control band. Mr. Baldwin stated that in almost all circumstances the power-operated relief valves would mitigate this event as they have sufficient air to cycle the valves and actually relieve the pressure should a design basis accident occur that was associated with miscontrol of the pressurizer level. The condition has been corrected. Mr. Baldwin confirmed Dr. Budnitz’ observation that there was one condition where the number of cycles was 106 cycles that back-up could provide while the actual total was 109 cycles for that evolution and this could, potentially, have resulted in the system going solid and putting water out through the pressurizer safeties.

Mr. Baldwin reported on 24 non cited violations (NCVs) and Level IV traditional enforcement actions and one licensee-identified violation during the period June through November 2010, during which the plant had a number of large inspections. All NCVs or Level IV enforcement actions were
determined to be of very low or minor safety significance (i.e., green) and have ACEs assigned and corrective actions identified, as follows:

- A NCV was received when operators in training could not perform required accident analysis actions within the time estimates of the analysis (Cross-Cutting (CC) Aspect H.1(b) Conservative Assumptions). In response to Mr. Conway’s inquiry, Mr. Baldwin stated he did not know whether Learning Services reviewed the contents of the accredited training program for any impact due to this NCV and Mr. Baldwin stated he would take action to follow up on Mr. Conway’s inquiry.

- A NCV was received for PG&E failing to maintain adequate design control associated with the emergency diesel generator (EDG) (starting air/turbo air) air tanks (C-C Aspect H.1(b) Conservative Assumptions).

- A NCV was received for a design documentation error for failure to identify and correct non conforming conditions for EDG design basis (instrument inaccuracy and worst case loading) (C-C Aspect H.1(b) Conservative Assumptions).

- A Level IV violation was received for PG&E failing to provide complete and accurate information with regard to a proposed license amendment request 10-01 (revision of non conservative TS 3.8.1) information that was not complete and accurate in all respects. The license amendment request was withdrawn (C-C Aspect P.1(c) Evaluation).

- A NCV was received for failure to appropriately evaluate and correct a condition adverse to quality as instructed by surveillance test procedure P-RHR-A22 (C-C Aspect P.1(c) Evaluation).

- A NCV was received for PG&E failing to correct a non conservative TS regarding EDG load testing in a timely manner (C-C Aspect P.1(c) Evaluation).

- A NCV was received for PG&E failing to perform Containment concrete inspections in accordance with American Society of Mechanical Engineers (ASME) Section XI (No C-C Aspect).

- A level IV violation was received for PG&E failing to properly report a design deficiency of the 230 kV degraded voltage protection system (C-C Aspect P.1(c) Evaluation).

- A NCV was received for five discharged fuel assemblies which were located in the Spent Fuel Pool at locations not permitted per procedure TS6.1D2 (PG&E identified, no C-C Aspect). In response to Dr. Peterson’s question Mr. Baldwin stated he did not know how old these fuel assemblies were and Dr. Peterson stated there have been directives to offload fresh fuel so it is not adjacent to other fresh fuel for reasons of heat generation. Mr. Baldwin stated, in response to Dr. Lam’s question, it was a matter of elimination of how many assemblies could be placed next to another assembly and he confirmed the procedure was correct, however, it wasn’t followed due to inadequate administrative controls.

- A Level IV violation was received for PG&E failing to perform 10 CFR 50.59 evaluation for modifications to the offsite power protection scheme for the low voltage protection scheme on the 230 kV System (C-C Aspect H.1(b) Conservative Assumptions).

- A Level IV violation was received for PG&E failing to perform an adequate 10 CFR 50.59
evaluation, during the 1990's and in early 2000's, but recently discovered, for two EDG related changes (C-C Aspect P.1(c) Evaluation).

- A NCV was received for PG&E having operated U-2 without an operable vital component cooling water loop for greater than 14 hours, associated with concern over sustained degraded voltage for an extended period of time (C-C Aspect H.1(b) Conservative Assumptions).

- A Level IV violation was received for PG&E failing to include current plant design basis for 230 kV degraded voltage protection scheme in the FSAR. The actual design criteria that was intended was not identified (C-C Aspect P.1(c) Evaluation).

- A NCV was received for PG&E failing to complete an adequate operability assessment of the offsite power undervoltage protection scheme. This was associated with the 230 kV degraded voltage assessment being based upon plausible degradation as opposed to the full range of what the protection scheme would have to respond to (C-C Aspect P.1(c) Evaluation).

- A NCV was received for PG&E failing to verify TS 3.3.5, second level undervoltage relay time delay (no Cross-cutting (C-C) Aspect).

- A NCV was received for multiple mechanical and electrical documentation errors associated with motor operates valves (no C-C Aspect).

- A NCV was received for PG&E failing to proceduralize the use of Diablo Canyon Creek as an auxiliary feedwater water source. Although a remote possibility, DCPP did not have an acceptable procedure that would allow operators to do this (C-C Aspect P.1(c) Evaluation).

- A Level IV violation was received for PG&E failing to update the FSAR to remove reference to an analysis that no longer applies to DCPP (no C-C Aspect).

- A Level IV violation was received for PG&E failing to update the FSAR to correctly identify the design class I makeup water sources (no C-C Aspect).

- A NCV was received for PG&E failing to appropriately incorporate Regulatory Guide 1.9 testing into plant test procedures (no C-C Aspect).

- A NCV was received for PG&E failing to maintain the integrity of a frequently used fire door (C-C Aspect P.1(a) Threshold).

- A NCV was received for PG&E failing to adequately manage risk by allowing removal of some equipment from service which put the system into yellow status during a planned maintenance activity (C-C Aspect P.1(d) Timeliness).

- A NCV was received for PG&E failing to perform a risk assessment for changing plant conditions due to removing some equipment from service without performing a risk assessment when that equipment was declared inoperable (C-C Aspect H.4(b) Procedure Compliance).

- A NCV was received for PG&E failing to promptly evaluate two non conforming conditions for operability associated with the quality classification of an auxiliary saltwater line vent and also with diesel performance and, in particular, Regulatory Guide compliance (C-C Aspect P.1(c) Evaluation).
A NCV was received for PG&E failing to maintain adequate design control measures associated with the Auxiliary Saltwater System associated with the quality classification of the auxiliary saltwater vent line (no C-C Aspect).

Mr. Baldwin confirmed, in response to Consultant Booker’s observation, DCPP is reviewing those violations demonstrating a common cross-cutting aspect.

Summarizing NRC enforcement, Mr. Baldwin stated inspection reports were issued for:

- NRC Component Design Basis Inspection (IR 2010-007, 07/23/10)
- Resident Integrated Inspection (IR 2010-003, 08/10/10)
- NRC Problem Identification & Resolution Inspection (IR 2010-006, 09/09/10)
- Resident Integrated Inspection (IR 2010-004, 11.01/10)

A total of 24 NCVs and one licensee-identified violation were reported since the last meeting of the DCISC. All were determined to be of very low safety significance. Currently, 16 NCVs in the last four quarters all have a C-C Aspect of P.1(c) Evaluation.

Mr. Baldwin reported concerning the NRC performance indicators that all are either stable or showing an improving trend. He commented on an event during 2009 where U-1 was ramped to 50% power due to bio fouling. He stated changes have been made with respect to Intake Structure management regarding fouling and those changes have been successful in managing the issue since that time. Mr. Baldwin stated safety system functional failures are an area of challenge for the NRC performance indicators for U-1 at the present time, including degraded voltage instrumentation which could have resulted in equipment tripping which was determined to be a safety system functional failure. The other event impacting NRC performance indicators involves the 230 kV System and the crosstie feature employed in the past. For U-2 issues also include the degraded voltage and the TS limit for the crosstie of the 230 kV transformer. U-2 also had issues with the Emergency Core Cooling System interlock and the Auxiliary Building ventilation system when both trains of the building’s ventilation system were made inoperable for a short period of time. Drill and exercise performance on the NRC performance indicators is continuing to improve.

Mr. Baldwin reviewed the cross-cutting issues being tracked and stated DCPP is seeing an adverse trend with respect to conservative assumptions and decision making and a common cause analysis was recently performed. He stated the driver from the common cause analysis was found to be similar to that for the problem evaluation common cause and the corrective actions for the problem evaluation cause analysis were also applicable to the conservative assumption analysis. Mr. Baldwin stated there were also four events with a thresholds common cause. He reported a number of actions have been taken with respect to identifying and ensuring every problem is uniquely identified. Mr. Conway cited a letter received from the NRC with DCPP’s mid cycle performance review which cited a problem with DCPP’s analysis of issues identified with the problem identification and resolution (PI&R) cross-cutting aspects and Mr. Conway inquired whether DCPP has changed any of the corrective actions employed as a result of the root cause evaluation of the PI&R issues as a result of its evaluation of the conservative assumptions cause analysis. Mr. Baldwin...
confirmed there were a number of common issues, particularly in terms of 10 CFR 50.59 documentation problems and an additional root cause analysis has been performed for 10 CR 50.59 documentation issues and substantial 10 CFR 50.59 training has taken place along with retraining with respect to FSAR expectations. Mr. Conway inquired whether the root cause evaluation performed earlier was focused strictly on PI&R, as it now appears DCPP is analyzing a different cross-cutting regime. Mr. Baldwin stated there was some vulnerability and part of the challenge is the decision-making process to ensure all of the inputs are present and there is appropriate oversight. Mr. Conway questioned whether the results of the root cause analysis performed in June would continue to serve DCPP well and Mr. Baldwin replied in the affirmative.

Vice President Becker requested Mr. David to make the next informational presentation.

**Activities of PG&E's Nuclear Safety Oversight Committee.**

Mr. David reported a meeting of the DCPP Nuclear Safety Oversight Committee (NSOC) was convened on September 16, 2010 to discuss:

- Plant performance and operational status
- Licensing Basis Verification Project
- Quality Verification (QV) organization’s top three performance issues
- DCPP Alert HA3.1
- Operations performance gaps and receive NSOC’s Operations Subcommittee report
- Engineering performance gaps and receive NSOC’s Engineering Subcommittee report
- Maintenance including radiation protection performance gaps, maintenance performance gaps and receive NSOC’s Maintenance Subcommittee report
- Organizational effectiveness including security performance gaps and receive NSOC’s Organizational Subcommittee report

Mr. David stated PG&E has not received the Executive Summary for the September 16, 2010, meeting of NSOC. While the evaluative conclusions are not yet available, NSOC did discuss the following topical areas on that occasion:

- Station Performance Indicators
- License Basis Verification Project
- Station Trend Program
- DCPP Alert HA3.1
- Subcommittee Report-Outs by NSOC’s Operation, Engineering, Maintenance and Organization subcommittees

The current status of the NRC Performance Indicators was also reviewed by the NSOC members.

Mr. David stated DCPP has made an effort recently to get a larger part of the plant population
involved in understanding the function of the NSOC and when report-outs on specific areas occur, personnel involved in those functional areas are invited to attend to see the NSOC process in action. He commented DCPP management is trying to get a sense for whether the line organizations are aligned with the NSOC subcommittee report-outs and prior to each individual area report-out, representatives of the line organizations presented a one-slide presentation on what they felt were the biggest gaps to be addressed so when the subcommittees reported-out there would be a side-by-side comparison. Vice President Becker, the one permanent PG&E member of the NSOC, stated there was a reasonable level of alignment and nothing contrary was discovered through this effort. In response to Consultant Booker’s inquiry, Mr. Becker stated Mr. Darrell Eisenhut, Mr. Karl Perry, Mr. Ed Hux, and Mr. Jay Doering currently serve as the external NSOC members. In response to a question from Mr. Conway, Mr. Becker stated there is about an equal level of criticality between the DCPP NSOC and the NSOC for the Byron Nuclear Generating Station in Illinois on which Mr. Becker serves as an external member. In response to Dr. Budnitz’ inquiry concerning the NSOC’s comments on the Licensing Basis Verification Project (LBVP) Mr. David stated there were no nuclear safety issues identified by any of the four NSOC subcommittees but he could not offer specific comments as the report from the NSOC has not yet been received. Vice President Becker added that he did not recall the NSOC expressing any concern with what had been done so far concerning the early stages of the LBVP and the NSOC is committed to monitor the progress and findings of the LBVP.

XV. Adjourn Evening Meeting

Dr. Budnitz invited any persons watching the proceedings to attend the next day’s meeting of the Committee commencing at 8:30 A.M. at the Avila Lighthouse Suites in Avila Beach or to follow the proceedings online. The Chair then adjourned the evening meeting of the Committee at 7:10 p.m.

XVI. Reconvene for Morning Meeting

The morning public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Budnitz, at 8:00 A.M. Dr. Budnitz welcomed those persons watching on the internet and invited their attendance in person at this public meeting. He reviewed the Committee’s policies and procedures for addressing remarks to the Committee.

XVII. Committee Member Comments

There were no comments from Committee members at this time.

XVIII. Public Comments and Communication

There were no comments from members of the public at this time.

XIX. Information Items Before the Committee

Dr. Budnitz requested Senior Director of Engineering Services Loren Sharp to continue with the next informational presentations requested by the Committee for this public meeting.

In context of license renewal for DCPP, Mr. Sharp reviewed the NRC requirements for pressurized thermal shock (PTS) as follows:

- 10 CFR 50.61 - Fracture Toughness Requirements for Protection Against PTS Events
- 10 CFR 50.61a - Alternate Fracture Requirements for Protection Against PTS Events
- 10 CFR 54 - Reevaluation of PTS Analysis for License Renewal to Consider Period of Extended Operation in Accordance with 10 CFR 50.61 or 10 CFR 50.61a
- NUREG-1806 and NUREG 1874 - Technical Bases for Alternate PTS Evaluation Regulations

Mr. Sharp reported that, per DCPP’s license renewal application, U-1 will either implement 10 CFR 50.61a or alternate options, such as flux reduction as provided in 10 CFR 50.61 will be required. For U-2, the license application PTS evaluation indicates that the 10 CFR 50.61 screening criteria will be met. He stated PG&E recently received a Westinghouse analysis for PTS on U-1 and U-2 and internal review of that assessment is now ongoing, following completion of the 1R16 outage and any update of PTS information for U-1 or U-2 will be complete in 2010 and submitted as part of the annual update of the DCPP license renewal application.

Concerning the impact of the site’s seismic hazard, Mr. Sharp stated the NRC previously concluded that seismic events were not risk significant with regard to PTS events. The NRC conclusion utilized DCPP’s 1988 Long Term Seismic Program (LTSP) seismic hazard evaluation. PG&E recently updated the 1988 LTSP hazard analysis using current information on ground motion models and seismic sources, including the Shoreline Fault. The update has not yet been submitted. Mr. Sharp stated the updated seismic hazard concluded that the seismic hazard of the Shoreline Fault has only a small effect on the total hazard. The updated seismic hazard, based on current ground motion models and updated seismic sources, is lower than the 1988 LTSP hazard. Mr. Sharp stated there was dialogue with the public concerning the new seismic model at the NRC’s September 2010 Seismic Workshop held in San Luis Obispo concerning PG&E’s license renewal application for DCPP.

Concluding his presentation Senior Director Sharp stated that the PTS evaluation for both DCPP units for the period of extended operation in accordance with the requirements of 10 CFR 50.61 and 10 CFR 50.61a is being reviewed and any changes will be included in PG&E’s annual license renewal update for 2010. The NRC had determined that seismic events were not risk-significant with regard to a PTS event. The PTS seismic conclusions by the NRC considered the seismic hazards at DCPP. Updated seismic hazard analysis using current information on ground motion models and seismic sources showed a lower risk than previously considered by the NRC in its PTS evaluation.

Dr. Budnitz commented that the additional analysis by Westinghouse was supplemental to what was provided previously to the DCISC and he requested, and Mr. Sharp agreed, to provide the Westinghouse analysis to the DCISC for its review. Dr. Budnitz stated that the Committee’s draft conclusions from the October fact-finding with PG&E on this topic remain valid but it was his understanding the analysis by Westinghouse appeared to provide additional information. Mr. Sharp replied that the Westinghouse analysis validates and provides additional data but does not
contradict earlier findings. Mr. Sharp stated PG&E is reviewing the Westinghouse analysis to determine if PG&E concurs with Westinghouse’s conclusions. Mr. Sharp confirmed the license renewal application PG&E submitted last year must be updated annually during the time it is pending before the NRC. Dr. Budnitz inquired whether the status of the surveillance coupons placed within the reactor vessels which have received exposure greater than that experienced by the reactor vessel walls will be analyzed and be part of the updated set of data but Mr. Sharp was unable to confirm this would be the case.

Dr. Lam observed that the reports indicate only a small effect on the total seismic hazard from the presence of the Shoreline Fault and he inquired whether an event involving a joint rupture of the Hosgri and Shoreline Faults had been analyzed. Mr. Sharp replied that there is data that a splay from the Hosgri Fault to the Shoreline Fault is unlikely and not credible based upon the region's geology. In response to Dr. Lam’s inquiry about additional analyses, Mr. Sharp stated a tectonic plate moving from the direction of the ocean toward the land has less likelihood for splaying and Mr. Sharp stated this conclusion was based upon probabilistic factors as well as physical observations. Dr. Budnitz stated that using no probabilistic analysis, but only the rules in force for a 40-year license term, i.e., a traditional analysis based on physical evidence, the Shoreline Fault would not be a factor. Mr. Sharp confirmed the Hosgri Fault is still the bounding fault for DCPP and a conjunctive analysis of the Hosgri and Shoreline faults is not credible for a splaying analysis. Dr. Budnitz reported he has met with Drs. Cluff and Abrahamson of PG&E’s Geosciences Department and has reviewed information on splaying. He stated his understanding was that a splay fault would not go beneath the plant but rather in the opposite direction. Dr. Lam stated that work done on the likelihood of splaying was an issue raised by members of the public during the NRC’s Seismic Workshop in context of the state of seismic science which is presently unable to predict when, where or how any earthquake will occur and he questioned how to reconcile staff’s analysis with the current state of seismic science’s ability to predict earthquake behavior with only about 50 years of data. Mr. Sharp replied that question would be best answered by PG&E’s seismic experts but added there is no evidence worldwide of the type of splaying being discussed with reference to the Hosgri and Shoreline Faults. Dr. Budnitz commented that paleoseismology can reveal how seismic events have behaved over thousands of years. Mr. Sharp stated that while the amount of data has increased over 50 years it has not invalidated the seismic siting criteria for nuclear plants. Dr. Lam replied that this analysis may require a two-step approach, with the first step involving the likelihood and the second an extended analysis to assume a joint effect on the ground motion model to provide an additional level of assurance. Mr. Sharp replied this would also need to be reviewed with PG&E’s seismic experts and he noted that PG&E has been using bathymetry and has embarked on a 3-D imaging analysis.

Dr. Peterson commented there may be some confusion regarding seismic motion and PTS in conjunction. He stated that reactor vessel damage as a result of a seismic event is not likely because the vessel is hot and sufficiently ductile and within its elastic limits of stress from seismic events. PTS is related to the introduction of thermal shock transients and these represent two different topics. Mr. Sharp stated he concurred with Dr. Peterson. Dr. Budnitz commented that if the Shoreline Fault did not exist, the DCPP design basis would remain within NRC regulations. He stated it is not just the motion in the source model of the fault but also the ground motion travel and
attenuation which must be understood. Dr. Budnitz observed that since the 1980's ground motion from seismic events has been reevaluated and found to be somewhat lower than previously believed and DCPP has more margin than originally thought. The Shoreline Fault adds some to the ground motion but it is still less than the 1980's evaluation of the Hosgri Fault. Mr. Sharp agreed DCPP's seismic design basis remains bounded by the Hosgri Fault but the LTSP is an accumulation of many events, including the Shoreline Fault in its own right. Dr. Budnitz stated that if all that's true, PG&E does not need to do anything to the plant in order to comply with the NRC and remain within the regulatory regime. Mr. Sharp replied that statement appears to be true but PG&E is still reviewing the data. Dr. Lam commented and Mr. Sharp agreed that this assumed there could be no joint rupture. Dr. Lam stated his preference would be to not assume the Shoreline Fault will only act independently and to verify that the new ground motion produced by a joint rupture of both the Hosgri and Shoreline faults is still bounded. Mr. Sharp replied the experts should provide more information.

Consultant Linnen observed, and Mr. Sharp agreed, the NRC has determined that seismic is not a significant factor regarding a PTS event frequency and he questioned whether this was the case even if an earthquake could cause a PTS event. Mr. Sharp replied that it was neutron embrittlement that is the prime factor regarding pressure vessel rupture and seismic was not a dominant factor in that analysis. Dr. Peterson agreed and stated a seismic event could induce a safety injection but it is a small likelihood compared to internal events and not a dominant factor. Dr. Peterson commented with PTS thermal stresses can be enormous and a seismic event might increase the likelihood of safety injection and PTS, but for a seismic event alone the risk of PTS is small. Dr. Budnitz stated that a PTS event from water injected into the reactor for cooling is precluded, as the water never cools the vessel sufficiently to reduce the ductile nature of the reactor vessel. Dr. Budnitz stated while an earthquake could cause cooling water to be injected, it doesn’t matter because PTS is precluded as the vessel’s transition temperature is lower than the temperature safety injection can cool the vessel. Dr. Lam stated that this preclusion depends upon there being no failure of system components and he stated he was not sure that the likelihood of occurrence is zero. Dr. Peterson commented that another piece of the analysis involves the localized cooling and the mixing of cold and hot water in the vessel which is a major element of PTS analysis. Dr. Budnitz observed that all vessels and metals have some flaws and major efforts are made to assure that these flaws will not be a source of propagation to threaten a vessel. Dr. Budnitz stated 10 CFR 50.61 does this by requiring inspections. Mr. Sharp concurred and stated DCPP looks at neutron fluence and inspection results. Dr. Budnitz observed, and Dr. Lam concurred, that while the plant has run 25 years coupons within the vessels have 50 years of effective exposure, hence providing greater confidence as to the future behavior of the metal.

Dr. Budnitz stated that the DCISC draft report on PTS and seismic issues is available on the Committee’s website (www.dcisc.org) and he reported the draft report will be revised and again posted on the website and the Committee welcomes review and comments by anyone on the draft report. The final report is expected to be considered and approved at the next public meeting of the DCISC on February 15, 2011. In response to Consultant Wardell’s inquiry about any revision required to Committee fact finding reports based on additional information received or to be received from PG&E, it was agreed that no revision of the fact finding reports was required.
Mr. Sharp made the next informational presentation to the DCISC.

**Status of DCPP’s Focus Area on Problem Evaluation Thoroughness.**

Mr. Sharp began his presentation with a review of the root cause results of evaluation thoroughness which identified a need for enhanced program sharing standards and reinforcement necessary to create effective change. Contributing causes concerning lack of licensing bases documentation and the ability to retrieve data were also identified. In response DCPP has taken actions including: refresher training in the 10 CFR 50.59 process; program procedure changes on site governance procedures; monthly program reviews of metrics; review boards to assess the effectiveness of metrics and measures; and the Licensing Basis Verification Project (LBVP) to understand the basis for change.

Senior Director Sharp stated the LBVP should improve DCPP’s performance by identifying, consolidating and reconciling any inconsistencies in DCPP’s Current Licensing Basis (CLB) and by providing enhanced licensing basis and full-text search tools to support future evaluation thoroughness. The LBVP will review and evaluate licensing, design, and analysis changes from the original Final Safety Analysis Report (FSAR-Amendment 85) to the present. In response to Dr. Peterson’s request, Mr. Sharp described the licensing basis and the FSAR as essentially a bookshelf of binders which are also in electronic format. The FSAR and the licensing basis are also supplemented by NRC materials and communications referencing DCPP’s commitments to the NRC. Mr. Sharp commented there is a need to review licensing basis data before doing any work or plant modifications and the format of the licensing basis documents now make this a challenging task. The efforts of the LBVP will provide greater ability to search licensing basis documentation. Mr. Sharp confirmed that DCPP is reviewing what products may be available from vendors in this effort. In response to Mr. Booker’s comment, Mr. Sharp confirmed the LBVP is a huge undertaking and, while the pilot project was done in-house, DCPP will use mostly contractor personnel from Shaw, a firm which has done this type of work lately in the nuclear industry, working with Westinghouse, in the effort and he agreed there would be a challenge in ensuring the knowledge gained in the effort is retained by DCPP. DCPP is using system engineers and plant personnel to work with the contractors in this effort. In response to Dr. Peterson’s question, Mr. Sharp replied that SAP will be used in the process but questions will be put into a database and, if resolved without issues, they will not go into SAP. Mr. Sharp confirmed that the efforts may generate additional NCVs. In response to Mr. Conway’s inquiry, Mr. Sharp replied that none of DCPP’s peers, including its partners in the Strategic Teaming and Resource Sharing (STARS) group, are currently engaged in a licensing basis evaluation effort, although Palo Verde Nuclear Generating Station has had some design basis challenges recently. He stated there were more licensing basis challenges for nuclear plants during the 1990’s.

Mr. Sharp summarized the key aspects of the LBVP including:

- Identification, consolidation and reconciliation of any inconsistencies in the DCPP CLB documents.
- Performance of a review modeled after the Component Design Basis Reviews (CDBRs) for eight risk-significant systems after the corresponding system licensing basis is verified.
Reconciling any identified inconsistencies in the CLB searchable document databases which will include providing a hyper-linkage from the licensing basis to the design criteria memoranda (DCMs) and from the DCMs to the licensing basis.

- Enhancing the full-text searching capabilities for the CLB searchable document databases.
- Validation of the implementation of the FSAR into plant documents (e.g., opening and surveillance test procedures).

Dr. Peterson observed there are a great number of documents which cite to the FSAR and in amending the FSAR it is important that licensing basis documents track those changes. Mr. Sharp replied that it is DCPP’s intent to move licensing basis documentation into the FSAR and Dr. Peterson stated it was encouraging to see that this can be done, to which Mr. Sharp replied that DCPP’s long licensing history makes this a challenging effort. Mr. Booker stated that after a refueling outage the plant typically has 12-18 months to inform the NRC of changes and queried how DCPP would do so? Mr. Sharp replied that a regular dialogue is ongoing with the NRC project manager.

Dr. Budnitz gave an example of a vital pump which was purchased during the 1970’s and for which a specific lubricant was designated per the manufacturer’s instructions and the data entered into the FSAR which makes the commitment to use that specific lubricant not only a part of the manufacturer’s warranty but also a commitment by the plant to the NRC. Over time, a better lubricant may have been developed but could not be used unless its use is reviewed with and approved by the manufacturer and the NRC and that revision might not be made to the FSAR to reflect that change, thereby making the FSAR out-of-date and Dr. Budnitz observed that pulling all this type of data together is the scope of the LBVP. Mr. Sharp commented that areas where DCPP has been silent represent the biggest issues, as past licensing basis documentation was not as detailed as it is today. DCPP’s intent is to go back to the original licensing documents, as well as to evaluate the detail and data in later commitments, and to judge the appropriateness of adding detail section by section rather than seeking to change commitments to the NRC. Mr. Sharp gave as an example a section of the FSAR addressing the suction head requirements for a pump for which the change-out of the pump might require a change to those requirements and the need to go back and document that change. Dr. Budnitz observed that, as the plant will run for 15 more years under its current license and is seeking an additional 20 years of licensed operation there undoubtedly will be a great number of change-outs during that time. Mr. Sharp commented that having all information readily accessible will make for better evaluations at those times.

Mr. Sharp described the expected benefits to DCPP from the LBVP as including enhancements to: the clarity of the CLB including the FSAR; the content of the CLB electronic document database and associated full-text search capabilities; and the ability to maintain and use the CLB. The LBVP will include evaluation of information to compare the FSAR with Regulatory Guide 1.70 Requirements, design changes packages, analysis changes and change evaluations (10 CFR 50.59 evaluations and screens) and all 10 CFR 50.59 evaluations done on site will be reviewed. Information will also be compared with source documents and the FSAR will be compared and hyperlinked with design change memoranda (DCM). A Project Review Board will evaluate potential licensing inconsistencies, system-by-system or chapter-by-chapter, and DCPP management will review the
Review Board’s recommendations. The DCPP Corrective Action Program will be utilized.

FSAR enhancements are expected to include: greater clarity in General Design Criteria by system; greater clarity in regulatory guide compliance by system; the establishment of a hyperlink to system descriptions in DCM and licensing basis source documentation; and allowing review of changes to the FSAR, the basis for those changes and the prompt and correct identification of any inconsistencies. DCM enhancements are expected to include clarity in licensing basis discussion and a hyperlink to licensing basis source documents.

Mr. Sharp concluded his presentation by stating DCPP has begun identifying systems and building strategies for the LBVP. In response to Dr. Lam’s question, Mr. Sharp replied the completion date for the project is currently projected as the end of 2014 and Mr. Eric Nelson is serving as the project manager. Dr. Peterson suggested amending the DCISC’s Open Items List item EN-28 and to update that item to reflect DCPP’s ongoing efforts for the Licensing Basis Verification Project which will be reviewed by the DCISC at the December 2010 fact-finding visit after which the DCISC Fact-finding Team should report to the full Committee concerning the future frequency of Committee follow-up of DCPP’s efforts.

Consultant Booker commented the plant would not have to do the LBVP had a better licensing basis been established in the past and he questioned what DCPP is doing to make sure the process improvements are retained in the future. Mr. Sharp replied that plant personnel have been retrained on the 10 CFR 50.59 process and tools and knowledge has been gained regarding accountability. He stated the current large volume of licensing basis data will be reduced to more manageable levels. In response to Dr. Budnitz statement that he was somewhat surprised others in the industry have not engaged in similar efforts, Mr. Sharp relied that culture changes within the nuclear industry have resulted in knowledge being lost by both utility personnel and NRC staff. In response to Mr. Wardell’s observation, Mr. Sharp stated there are times when interpreting the licensing basis impacts CDBR design basis validation and that linking the two will enhance the design change basis and he commented that design change margins allow accommodating ‘tweks’ but there remains the need to document for design basis purposes. Mr. Sharp stated that the design basis is a detailed calculation concerning system performance and only a small portion of safety-related design basis data is within the licensing basis. A design basis represents features to make the plant safe while the licensing basis represents the plant’s commitment to the NRC.

In response to Mr. Wardell, Mr. Sharp confirmed training for on-site personnel in use of 10 CFR 50.59 and the licensing basis impact evaluation (LBIE) processes have been completed and will be continued for contractor personnel. In response to Mr. Wardell’s inquiry concerning the issues with the 230 kV power system precipitating the LBVP, Mr. Sharp replied that the LBVP was not initiated due to any single issue and he stated that there may be some issue with the 230 kV System which remains to be resolved through the LBVP. Mr. Sharp replied to Mr. Wardell’s question about use of program metrics by stating the program governance, the 10 CFR 50.59 and DCM processes all go through both quality and licensing review boards charged with determining how the governing processes are functioning and confirmed that process has begun. In response to Mr. Conway’s question concerning the utilization of the Corrective Action Program (CAP) in connection with the LBVP, Mr. Sharp stated when issues are found with a document at any point that is entered into the...
CAP, questions are entered into a separate database and if a problem is found, subsequently entered into the CAP. However, if it is found that the issue involves a superseded document that is not entered into the CAP. In response to Mr. Conway’s inquiry concerning CAP priorities, Mr. Sharp replied that there will be a tiered response through the CAP as issues are identified based on established categories. Mr. Conway commented that the DCPP CAP has been changed and modified over a two to three year period and a recent NRC report discussed a further need for CAP improvement at DCPP and he questioned whether thought had been given to the modifications under consideration to the CAP and the potential effect on the opportunities to use the CAP in connection with the LBVP. Mr. Sharp stated he couldn't fully respond until more is known about the changes to the CAP and he acknowledged this was a valid question. Mr. Conway stated the CAP is a key component of the project and he questioned whether DCPP has considered use of the CAP as a key to evaluation of information and whether there would be an opportunity to look at changes to the CAP in terms of the positive or negative impact to the LBVP, as changes to the CAP could cause confusion or cause the plant to lose track of the issues. Mr. Sharp stated DCPP does not want to enter every issue into the CAP and he stated this was a valid comment and stated that sufficient plant staff will be involved in the process including a person designated to monitor CAP modifications. Mr. Wardell observed that design features are contained in the FSAR and he questioned whether non design procedures were also involved. Mr. Sharp replied that procedures will also be validated. Mr. Wardell inquired whether the technical specifications (TS) will be moving into the FSAR and Mr. Sharp replied that risk-informed TS would be and, as a TS might be within other documents, as conflicts are identified they will be addressed. Mr. Sharp confirmed, in response to Mr. Booker’s inquiry, that the Fire Protection System will be reviewed within the context of the LBVP.

A break followed this presentation.

**Overview of the Site Services Organization.**

This item was postponed to the next public meeting.

Mr. Sharp introduced DCPP Director of Outage Management Tim King to make the next informational presentation to the Committee.

**Results of the Sixteenth Refueling Outage for Unit-1 (1R16).**

Mr. King reviewed the major items included in the scope of work for 1R16:

- Replace Reactor Vessel Closure Head.
- Reactor Vessel Hot/Cold Leg Exams - for pre-existing conditions.
- Emergency Core Cooling System Voids Modification - in response to industry issues.
- Charging Pump 1-1 Casing replacement - to address a source of iron transport in the RCS.
- Convert Pressurizer Safeties to Steam Seats - to address pressurizer safety valve leakage.
- Eddy Current Testing of Steam Generator U-Tubes - first operational cycle information.
- Sludge Lance & FOSAR Steam Generators.
Main Bank & Start-Up Bank Major Maintenance - including 230 kV switch replacement and radiator replacement for main bank coolers.

Digital Rod Position Indication Cable Replacement - due to age.

In response to Drs. Peterson's and Budnitz' inquiries, Mr. King identified the high pressure turbine and generator rewinding as major scope items for future DCPP refueling outages.

Mr. King reviewed and discussed with the DCISC the goals set for 1R16 and the actual performance during the outage as follows:

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<th>Goal</th>
<th>Actual</th>
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<td>1/0</td>
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<tr>
<td>Nuclear Safety Events</td>
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The single recordable injury occurred when a worker’s hand got between a box and a lifting device and required stitches. The outage duration goal was exceeded due to emergent scope items including: bus bar insulation removal due to the insulation being found to be hard and brittle; work related to the Manipulator Crane and up-enders; leakage from a cofferdam which caused problems which required equipment to be replaced; and issues with the Polar Crane, due to its older components which are scheduled for replacement during the R17 refueling outages for each unit.

Mr. King confirmed with regard to the dose goal, as U-1 is always greater than U-2 with regard to dose, 1R16 represented very good performance for a U-1 outage. He stated PG&E now expects the 1R16 cost goal will be exceeded, exclusive of the cost of the replacement reactor vessel head. In response to Dr. Peterson’s inquiry concerning whether there was pre outage contingency planning for the emergent scope items encountered, Mr. King replied that concerning the Polar Crane there had been such planning and technicians and replacement parts were available. In response to Dr. Lam’s observation, Mr. King stated a 42-day refueling outage including replacement of a reactor pressure vessel closure head is above-average in duration for a two-unit PWR plant and he stated transformers were the critical path for 1R16. In response to Consultant Wardell’s inquiry, Mr. King confirmed there were no nuclear safety events as a result of changes to the outage safety plan.

Mr. King reviewed the human performance events during 1R16, which met the goal of no resets of the Human Event Site Clock. He reported there were a total of 23 departmental level events during 1R16 and he reviewed a number of these with the Committee including an improperly installed valve gasket and security events. There were 14 actual personnel contamination events during 1R16, which bettered the objective goal of 33 for the outage but Mr. King observed some stations have
done better during outages. The outage dose total was 123.2 Rem which after review of all data may be reduced to 118 Rem, which bettered the goal set of 126 Rem but did not meet the stretch dose goal of 113 Rem. He displayed a graph showing the periods of dose exposure during the outage and commented the removal and replacement of insulation on the Reactor Coolant System (RCS) loop was a significant factor in outage exposure during 1R16.

Mr. King stated there were a total of six safety schedule changes during 1R16, with none of those changes resulting in a reduction below the defense-in-depth checklist minimums and he briefly reviewed the structure of the outage safety plan. Two changes involved performing work on EDGs 1-1 and 1-3 Starting Air Compressors/Turbo Air Compressors at the commencement of the outage. Four of the emergent work schedule changes involved equipment issues, including with the Auxiliary Feedwater System, with the resulting changes in equipment availability necessitating changes to the safety schedule. A post-outage critique will be held on December 6, 2010, and will include participation by a representative from another plant, which is now standard procedure for pre and post outage reviews and critiques.

- **Rework**
  - Impacted Outage implementation/assured safe, reliable operation
  - Flow Control Valve (FCV) -146 incorrect assembly - due to a gasket on the high pressure turbine main steam stop valve being incorrectly installed and subsequently dislodged which caused a 24-hour impact to the critical path.
  - Pressurizer Control Valve (PCV) -455A incorrect assembly - due to incorrect installation of a ball valve.

Mr. Conway inquired whether the work was performed by DCPP or contractor personnel and Mr. King replied the FCV-146 work was performed by contractors while the PCV-455A work was done by DCPP personnel. In response to Mr. Conway's further inquiry, Mr. King stated the turbine program manager and two support personnel each on the day and night shifts oversaw the work on the valves and Mr. King stated that contractor personnel are required to demonstrate the same qualifications as DCPP personnel before performing work on these valves. Mr. King stated an ACE is being performed and there is a certain amount of CAP work around reviewing these rework issues for a common cause. In response to Mr. Linnen's inquiry, Mr. King stated that the work did not provide for Quality Control hold-points but in the future there may be hold-points established for this work.

- **Pressurizer Steam Seated Safeties Weeping** - due to an industry issue of uneven heating along the stem which, when pressurized at the rate of 50 pounds per square inch (psi) per hour cause the disc to not be evenly seated at 1950 psi pressurization level, when the safeties are subject to ‘burping’ which requires depressurization of the RCS until the leaking stops. In response to an inquiry from Mr. Conway, Mr. King replied that it was not possible to address the issue by moving through the 1850-2000 psi regime at a faster pace, as the vendor's advice is to go slow and allow the components to align and he agreed with Mr. Conway’s observation that this is counter to a strategy which might be effective in dealing with a turbine-related issue.
- Polar Crane Relays - scheduled to be replaced during the R17 outages for both units.
- Refueling Equipment - replacement for which is currently under review by the Plant Review Committee.
- Resources - several areas with inadequate resources resulted in schedule delays including carpenters availability to construct scaffolding and the availability of qualified personnel to replace relays. In response to Dr. Peterson’s inquiry about what the nuclear industry is doing to address the issue of the availability of a sufficient number of qualified technicians, Mr. King confirmed this is an industry-wide issue and he stated DCPP had an overall 70% return rate for contractor technical personnel but this was not true in all areas. Mr. King stated DCPP has worked locally with Cuesta Community College to develop courses and has hired some Cuesta College graduates as apprentice helpers but, as they do not meet American National Standards Institute (ANSI) standards, they cannot be employed as journeymen. In response to Mr. Conway’s question concerning whether the ANSI standards are being reviewed for modification, Mr. King stated to his knowledge this was not the case. He agreed with Dr. Peterson’s observation that personnel represent a most critical resource and he reported PG&E has a program entitled “Power Pathways” to address this issue companywide and he confirmed U.S. military veterans are being directed toward these opportunities.
- Foreign Material Exclusion (FME) with a number of low level events - there were a total of 33 events of which 9 were Level II events which if not caught would have challenged the RCS including 8 legacy events identified in the Spent Fuel Pool. There were 25 Level II events and Mr. King confirmed, in response to Dr. Budnitz’ inquiry, that these numbers were greater than during past outages and an ACE is being performed. Dr. Budnitz commented that when he and Mr. Linnen visited during 1R16 there was only a single misposition event up to that time and he wondered why, if mispositionings were being reduced, FME events increasing. Mr. King confirmed during 1R16 there were two mispositioning events. He stated the workers involved with FME events were not identified and an ACE is being done, but it appears that the FME events involved both DCPP and contractor personnel. Dr. Budnitz stated he was encouraged by the improvement in mispositioning events and Mr. King stated DCPP would be reviewing the FME events for commonality.

Mr. King described the successes during 1R16 as including:

- Safety
  - Nuclear Safety - no events.
  - Industrial Safety - 1 recordable injury.
  - Radiological Safety - dose goal met, PCE’s world class.
- Planned System Health Work Completed with system health improvements to 26 systems
  - Feedwater Heater 1-6A inspection - tube analysis
  - HVAC - Power Operated Valve (POV) panel replacement, CFCU anti reverse rotation, ABVS/FBVS damper repairs
12kV hinge wire replacement
500 kV Main Bank transformer cooler replacement

In response to Consultant Booker’s inquiry, Mr. King stated the Polar Crane upgrades during the R17 outages are not expected to extend the duration of those outages as there is a considerable amount of work connected the instrument and control replacement and conversion from analog to digital systems which will require outages of approximately 40 days each. Mr. King confirmed Dr. Budnitz observation that the CFCU anti reverse rotation work was completed for U-1 and will be completed for U-2 during the next U-2 refueling outage. In response to Mr. Conway’s question, Mr. King stated certain transformer bushings were cleaned, some were replaced and some were coated during 1R16 but he deferred until a later presentation an answer to Mr. Conway’s inquiry concerning the basis for the establishment of the frequency of transformer bushing cleaning.

Dr. Budnitz thanked Mr. King for an excellent presentation.

XX Action Item

A. Evaluation of PTS and Seismic Interactions at DCPP. Dr. Budnitz stated that the Committee’s PTS and Seismic Interactions Report would not be approved at this public meeting. The draft Report now on the Committee’s website will be reviewed, revised and reposted on the website. The final Report is expected to be approved, after receipt of any comments from PG&E, the CEC and members of the public, at the DCISC’s February 2011 public meeting. Dr. Budnitz commented he was unsure whether he has a disagreement with his colleague Dr. Lam but Dr. Budnitz stated he did not think it possible to exclude activation of the Hosgri and Shoreline Faults through a splaying action, however, he stated that this probability is very low and observed that this was an acceptable basis for the NRC in analyzing the issue. Dr. Lam replied he agreed with Dr. Budnitz on the correct approach regarding the resolution of this issue.

XXI Adjourn Morning Meeting

The Chair invited any members of the public to attend the afternoon session of this DCISC public meeting and the morning session was then adjourned by Dr. Budnitz at 11:30 A.M.

XXII Reconvene for Afternoon Meeting

The afternoon meeting of the DCISC was called to order by Committee Chair, Dr. Budnitz, at 12:45 p.m.

XXIII Committee Member Comments

The Chair introduced himself, the other members and the Committee’s consultants and Legal Counsel. There were no remarks by members of the Committee at this time.

XXIV Public Comments and Communications

Dr. Budnitz reviewed the protocol for addressing remarks to the Committee. There were no
XXV Information Items Before the Committee (Cont’d.)

The Chair requested Senior Engineering Director Loren Sharp to make the next informational presentation to the Committee.

Status of DCPP’s Focus Area on Station Transformers

Mr. Sharp reported DCPP’s large power transformers are not meeting reliability expectations. The reliability challenges resulted in multiple unscheduled outages during U-2’s operational cycle 15. Mr. Sharp stated DCPP’s goal is to become an industry leader for large power transformer reliability. Accomplishing this goal will require improvement in DCPP maintenance and performance monitoring programs as well as improvement in utilization of industry operating experience. These improvements should prevent critical equipment failures and ensure DCPP is prepared to address large power transformer issues identified through its performance monitoring program. In response to a question from Consultant Booker concerning DCPP’s plans to install a barrier around the U-2 Main Bank Transformers (MBT) to protect personnel working in the Administration Building, Mr. Sharp stated plans and designs were currently being developed and assessed but funding for such a barrier has not been committed and the project is in the planning stage.

Mr. Sharp reported on the objectives established to meet the goals established for large power transformer reliability as follows:

- Improving personnel safety associated with the U-2 main bank transformer located near the Administration Building:
  - DCPP is on track to replace the U-2 transformer porcelain insulators (MBT, lightning arresters and CCVT) with polymer insulators;
  - U-2 MBT-C high voltage (HV) bushing will not be replaced as the transformer is scheduled to be replaced in 2R17 by a transformer using polymer bushings.

- Updating the large power transformer performance monitoring program and maintenance practices to be industry leading:
  - Recommendation on how to effectively use Doble phase-to-phase monitoring equipment complete.
  - Purchased remote thermography camera.
  - Created Plant Health Improvement Process (PHIP) for upgrade and enhancement of dissolved gas analyzers.
  - Established a PM to perform acoustic monitoring of large oil filled transformers.
  - Performed INPO review visit in March 2010 which identified additional tools such as transformer thermal performance in assessing transformer service life.
  - Established at PM to perform thermography of transformer equipment in energized state
prior to return to service.

- Improving readiness (planning and spares) for replacement of large power transformers:
  
  - Completed detailed contingency plans for replacement of large oil filled transformers.
  
  - Identified gaps in readiness/availability of transformer spare parts.

- Addressing transformer reliability challenges associated with single point vulnerabilities:
  
  - Design review of main bank transformers scheduled for 4Q2010 for GE transformers and 1Q2011 for Elin transformers including review of single point vulnerabilities and other transformer reviews to be scheduled in future years.
  
  - Implemented reliability enhancements in 1R16 including cooler upgrades for MBT-B, AUX12 cooler upgrade and Start-up Transformer (SUT) 11.
  
  - Replaced leaking cooler gaskets for AUX11.
  
  - MBT fused disconnects replaced with circuit breakers.
  
  - MBT cooling group setpoints changed to reduce transformer operating temperatures.
  
  - Cooler replacements to continue in 2R16 when coolers for AUX 22 are scheduled to be replaced.

- Assessing implementation of industry operating experience associated with large power transformers and switchyards:
  
  - Self-assessment performed in March 2010 using guidance from “INPO Review Visit for Large Transformers and Switchyard Grid.”
  
  

Mr. Sharp reviewed the results to date of DCPP’s focus on large power transformers as including no transformer-related loss of generation during 2010; identification and resolution of vulnerabilities associated with U-1 large oil filled transformers; and identification of reliability vulnerabilities associated with U-2 large oil filled transformers, and implementation of measures to address same now scheduled for implementation in 2R16.

In response to Dr. Budnitz’ question concerning a recent transformer-related event at another plant, Mr. Sharp replied DCPP monitors the operating experience of other nuclear plants which is shared industry-wide. In response to Mr. Conway’s question concerning Mr. Sharp’s assessment of the strength of the INPO team in reviewing transformer issues, Mr. Sharp stated he was impressed with the knowledge demonstrated by the INPO team during the review visit which also included input from the Electric Power Research Institute (EPRI) and the manufacturer. In response to Mr. Conway’s follow-up inquiry concerning how the schedule for transformer bushing cleaning was
established, Mr. Sharp replied testing was performed every two years and an assessment is made regarding the need for cleaning whenever maintenance or repair activities are performed. Mr. Sharp confirmed salt spray buildup and buildup of diesel exhaust are found more on the U-1 transformers and tests are performed to obtain data regarding the need for additional cleaning. Mr. Sharp stated bushings will be changed out, except for MBT-C, during 2R16 in May 2011. He confirmed, in response to comments by Consultant Booker and Dr. Budnitz, that large transformers of the type employed at DCPP are now manufactured in other countries rather than within the U.S. In response to Mr. Linnen’s inquiry concerning any issues with transformers since U-1 returned to operation four days ago, Mr. Sharp confirmed, to date, no issues have been identified.

A short break followed Mr. Sharp’s presentation.

Mr. John Arhar, Steam Generator Engineer at DCPP was introduced and asked to make the next informational presentation to the Committee.

Results of Steam Generator Tube Testing During the Sixteenth Refueling Outage for Unit-1 (1R16).

Mr. Arhar reviewed the background of the replacement of the steam generators (SGs) for both DCPP units. The replacement SGs are Model Delta 54, designed by Westinghouse. The tubing for the replacement SGs was fabricated at Sandvik, Sweden, major forgings were fabricated at Japan Steel Works and the SGs were assembled at ENSA in Spain. Pre service inspection of tubing, 100% bobbin testing, was performed at ENSA and this has established a baseline for future testing. The U-2 SGs were replaced during 2R14 in 2008 and the U-1 SGs were replaced during 1R15 in 2009.

Mr. Arhar displayed photos comparing the original with the replacement SGs and discussed pertinent internal design improvements of the new SGs over the original DCPP SGs as follows:

- Corrosion resistant Alloy 690 thermally treated tubing (0.75 inch x 0.043 inch tube wall).
- Triangle pitch tubing allows more tubes (4,444 versus 3,388 for the old SGs) and more heat transfer surface (54,000 sf vs. 50,000 sf for the old SGs) allowing reduction in primary side T HOT.
- Stainless steel tube support plates (TSP) with tri-foil broached tube holes.
- Advanced anti-vibration bar (AVB) design in u-bends.
- Hydraulic expanded tubes with no crevices in tubesheet.
- Electropolished channel head reduces personnel dose exposure.
- Feeding spray nozzles with small opening sized to restrain large objects from entering tube bundles.
- Sludge collector collects a percentage of sludge and limits tubesheet sludge pile.
- Integrated blowdown holes in tubesheet improves blowdown efficiency.
- Peripheral trough region facilitates draining of tubesheet region.
- More access ports through shell (4 handholes, 10 inspection ports).
- New SGs have 16 steam separators as compared with 3 for the old SGs.

Mr. Arhar reported SG tube inspection frequency and the extent of the inspections required is governed by TS 5.5.9 as follows:

- Eddy current testing (ECT) of 100% of tubing is required after one cycle of operation.
- After Initial Service Inspection (ISI), inspect each SG every 3rd refueling outage (or 72 effective full power months (EFPM)) if supported by operational assessment.
- Inspect 100% of tubes in each SG every inspection period (144 EFPM, 108 EFPM, 72 EFPM, 60 EFPM). Mr. Arhar noted that these periods are under review and are being revised to 144/120/96/72 EFPM in upcoming TSTF-510.

Mr. Arhar reviewed the results of the SG tube inspections during 2R15 and 1R16, which he described as being excellent for DCPP, as follows:

- 100% of tubes ECT inspected with bobbin coil with excellent results.
- U-2 had one shallow wear indication from a tube support plate (5% through-wall) which was left in-service, no tube plugging. U-1 had one shallow wear indication from an anti-vibration bar (5% through-wall) which was left in service, no tube plugging.
- Operational assessment supports operation for the next three cycles without additional ECT inspection.
- Next TS-required ECT inspection scheduled for 2R18 and 1R19.

In response to Mr. Conway’s questions concerning whether any correction by the manufacturer was requested, Mr. Arhar replied in the negative stating DCPP knew of the potential for wear at the structures and will continue to monitor the wear indications left in service for up to three cycles. In response to Mr. Conway’s inquiry whether there was any industry experience showing wear in the same areas, Mr. Arhar stated no AVB wear had been detected previously and DCPP’s experience was the first of this kind of indication, however, Westinghouse, the manufacturer of the new SGs is not too concerned. Mr. Arhar confirmed Dr. Lam’s observation that in three more cycles DCPP expects a growth rate concerning those indications of wear of approximately 6% per effective full power years (EFPY). In response to Dr. Lam’s inquiry, Mr. Arhar reported 150 gallons per day is the TS limit for operating leakage from the SGs and the DCPP administrative limit for such leakage is 75 gallons per day.

Mr. Arhar reviewed the SG secondary side maintenance and inspection results from 2R15 and 1R16 as follows:

- Sludge lancing and top of tubesheet visual exams performed.
  - Lancing removed 2 to 3 lbs. per SG.
  - Lancing removed all foreign material from top of tubesheet and trough region, as verified by post-lancing visual examinations.
Foreign material found in sludge lance strainers was not significant and was no threat to tubes integrity.

- Very good condition on top of tubesheet region.

Responding to Dr. Peterson’s request to compare these results with those from the old SGs, Mr. Arhar stated that typically 50 pounds of debris were removed from the old SGs by sludge lancing. In response to Mr. Linnen’s inquiry, he stated that the debris removed during 2R15 and 1R16 has not yet been analyzed but does not appear to be unusual and may include some construction generated debris. In response to Mr. Conway’s question whether DCPP was planning on performing sludge lancing during every refueling outage, Mr. Arhar stated the vendor recommends sludge lancing be performed during refueling and DCPP is looking at that issue along with the EPRI and has not made a determination for the long term. Sludge lancing is scheduled to be performed during 2R16. In response to Mr. Linnen’s inquiry concerning wet versus dry lay-up for the SGs during refueling, Mr. Arhar stated DCPP prefers a wet lay-up for its SGs, which are left dry for only approximately one week during a refueling outage for sludge lancing. Mr. Arhar confirmed, in response to Mr. Conway, that a contractor is used to perform sludge lancing and he stated he was unsure whether the contractor was responsible to dispose of the debris resulting from the sludge lancing, which consists of mostly iron. Mr. Arhar again confirmed there was nothing unusual discovered from the first cycle and stated that most of the iron remains on the tubes which represent a long term maintenance issue.

Mr. Arhar concluded his presentation by stating 45 domestic nuclear units will have replaced SGs with Alloy 690TT tubing by the end of 2009. SG replacement with Alloy 690 tubing has guaranteed corrosion-free tubing but has not guaranteed wear-free tubing. Tube wear from support structures and loose parts can limit operation assessment run times. He compared current inspection frequencies at these domestic plants: with 60% of those plants having a three refueling outage (RFO) ECT frequency (including both DCPP units); 20% having 2 RFO ECT frequency; and 20% having 1 RFO ECT frequency (no skips). He stated achieving a three RFO ECT frequency was good news for DCPP. In response to Dr. Budnitz’ question, Mr. Arhar replied it was difficult to say what differences led to a poorer performance by other plants not achieving three RFO ECT frequencies, which included the Oconee, Salem and Palo Verde nuclear plants. In response to Dr. Lam’s observation regarding vibration, he stated Westinghouse AVB design is a good one, while the location of vibration-caused wear at other plants is known, the root cause is not and he confirmed Mr. Booker’s comment that data is reviewed from other Westinghouse designs.

In response to Dr. Peterson’s question, Mr. Arhar confirmed DCPP has measured the quality of the steam produced and the moisture content is very low, which is good for the turbines. In response to Dr. Peterson, Mr. Arhar stated that, compared with the old SGs, enhancements to operational safety from the new SGs include elimination of the through-wall cracks which existed in the old SGs and the resulting risk of primary and secondary side leakage. Mr. Arhar stated a big difference was achieved by the elimination of the need for the strict criteria rules which were necessary for operation of the old SGs, as the new SGs do not need sophisticated models to determine operability. He stated the new SGs have a 10% plugging margin, compared with 15% for the old SGs. Mr. Arhar commented the old SGs were losing efficiency, the new SGs run with higher
temperatures.

Dr. Budnitz thanked Mr. Arhar for his presentation and commented his report demonstrated good work and good planning by PG&E.

Ms. Maureen Zawalick, Senior Advising Coordinator for Emergency Planning at DCPP was introduced by Mr. Loren Sharp to make the final presentation to the Committee.


Ms. Zawalick first reported on the results of the evaluated exercise (EE) by the Emergency Response Organization (ERO) held on August 11, 2010. ERO Performance Roll-Up objectives from the August 11 EE included demonstrating the ability to protect health and safety of plant personnel and the public; coordinating response efforts with San Luis Obispo County and the State of California; and thorough critiques and self-critical analyses concerning performance and risk significant areas. Ms. Zawalick identified risk-significant areas as including event classification, notifications, dose assessment and developing protective action recommendations. She reviewed facility performance during the August 2010 evaluated exercise as follows:

- Control Room /Simulator (CR) Performance – Satisfactory.
- Technical Support Center (TSC) Performance – Satisfactory.
- Operation Support Center (OSC) Performance – Satisfactory.
- Joint Information Center (JIC) Performance – Satisfactory.

During the August 2010 evaluated exercise 10 out of 10 pre identified opportunities were met in a timely and accurate fashion concerning the NRC’s Drill/Exercise Performance (DEP) Indicators. Other identified performance strengths from the August 11 EE, which included a focus area which DCPP has worked on for approximately two years, included: strong operations support and resources in the OSC which helped to improve team dispatch time; rapid, within one minute, identification of release; excellent communication, teamwork and process used for finding release path; good tailboards (i.e., mini meetings amongst the team members concerning their roles and responsibilities during the job to be performed) on “turn back” dose rates and limits for Emergency Response Teams; and JIC team focused on confirming approved information that was released to the media.

Dr. Peterson commented that the DCISC has observed evaluated exercises in the past and has expressed its concern about JIC performance when prescribed answers and responses appear to be evasive or not sufficiently well informed and he stated that during the August 11 EE better answers were given. Ms. Zawalick replied and stated the ERO had reviewed the DCISC’s suggestions and recommendations for improvement, along with independent industry experience, and worked to develop realistic drills dealing with operational experience and in staying in the focus area after the drills. The JIC presenters are not reading from pre scripted information and taping is used to improve responses to questions from the media and DCPP will be reviewing the use of social media.
in the communication of information. Dr. Peterson commented the improvement is noticeable and he commended DCPP for its efforts. In response to Dr. Budnitz’ inquiry, Ms. Zawalick stated San Luis Obispo County’s performance during an evaluated exercise is reviewed by the Federal Emergency Management Agency (FEMA). She stated the feedback received from the County’s Office of Emergency Services was valuable and identified improvements to the performance of the JIC.

**Dr. Peterson observed the plant had been tested prior to the August 11 EE by a real alert and stated the lessons learned were valuable and should be shared with others in the nuclear industry.** He commented that poor communication during an actual event or alert can cause worse consequences than the event itself. Dr. Lam observed that harm may be caused by an overreaction or by not reacting sufficiently to the event or accident and Dr. Peterson agreed there was a need to differentiate and commented the way the evaluation is now being done demonstrates improvement.

Ms. Zawalick identified some of the challenges to the ERO during the August 2010 EE as including: untimely initiation of assembly and accountability due to a 20 minute delay; the initial and continuing accident assessment when control room indications, annunciator, field reports and plant parameter computer displays were not appropriately used to thoroughly diagnose the radiological release through lack of attention to detail; and the Unified Dose Assessment Center (UDAC) experiencing challenges in identified, incomplete documentation of onsite field monitoring teams (FMT) dosimetry reading conversion to TEDE and Thyroid CDE dose which resulted in non conservative redeployment strategies and additional emergency exposure controls were not monitored. Dr. Peterson commented that simulated exercises rely on models and caution is required as those models are approximate and have built in conservatisms which tend to over predict. Training exercises are intrinsically unrealistic and operators should not have a false sense of confidence from such training but rather need to maintain a questioning attitude. Ms. Zawalick agreed and she stated the Scenario Development Team used by DCPP has found that feeding into the radiation model is a challenge.

Ms. Zawalick described and reported on the June 23, 2010, Alert declared when CO₂ was released during planned fire suppression system work. This was the first alert ever declared at DCPP and involved:

- UE HU3.1 for CO₂ discharge in OCA that could impact formal operations.
- Alert HA3.1 for exceeding Immediate Danger to Life and Health (IDLH) limits in/contiguous table H-1 vital areas.
- ERO response and facility activation timely and well done.
- Event duration of approximately five hours.

Ms. Zawalick stated DCPP has shared its operating experience from the June 23, 2010, Alert with Emergency Preparedness managers from other nuclear plants and the post alert report has been shared with INPO and the Nuclear Energy Institute (NEI) and feedback has been received from the NRC and the DCISC.
Ms. Zawalick identified challenges experienced during the June 23, 2010 Alert declaration as including:

- Offsite Fire Departments, Cal Fire and County Fire Department, access to protected area due to security delays.
- Public address system audibility in certain areas.
- Telecommunications equipment problems which resulted in no delays or unintended consequences due to work-around efforts.
- ERO responsibilities and procedure clarity.
- Initial notification - brief description of event which described a toxic gas release, although procedural overrides were available and might have better described the event, however, the County called for clarification before proceeding.

Ms. Zawalick reported DCPP is one of only four or five nuclear plants with its own fire department and Dr. Peterson observed the delay in access experienced by the off-site fire departments due to security procedures was an example of an adverse interaction between emergency response and security.

Ms. Zawalick described and discussed the strengths identified during the June 23, 2010 Alert as including:

- Diablo Canyon fire department response including setting up a unified command center for incident command.
- Leadership oversight in the control room, including the Operations and Emergency Preparedness managers’ presence.
- Communications and coordination with San Luis Obispo County.
- Communications and coordination with the NRC.
- Event termination process and use of procedure.
- Media communications (including use of social media tools, a video featuring the Site Vice President and use of the website to provide information).

Ms. Zawalick commented that local schools were closed on June 23, 2010, however, had the Alert occurred two weeks earlier when schools were open evacuations would have been required by San Luis Obispo County and therefore the June 23 Alert provided learning opportunities for all involved with few unintended consequences. In response to Dr. Budnitz’ inquiry, she stated the NRC responds to approximately six alert notifications every year. Dr. Peterson commented the NRC plays a vital role through its independence in assessing and confirming the technical assessment performed by a plant.

Ms. Zawalick reviewed the results of a Dress Rehearsal held on July 7, 2010, which identified as strengths the Operations crew’s decision to initiate a ramp (3%/hour) due to indications of fuel degradation accelerating; the Alert to General Emergency classification change having been
deliberate with appropriate analysis to ensure a General Emergency was warranted; and excellent intra facility communications. She stated the July 7 and August 11 exercises provided opportunities for training on operational experience in support of the ERO teams. Challenges to the DCPP ERO organization include some in the area of radiological exposure control, which included the following categories and issues:

- Emergency Worker Exposure - emergency exposures not appropriately considered prior to dispatch of in-plant teams due to insufficient strategic review during initial tailboards.
- Tracking Emergency Worker Exposure - controls and “As Low As Reasonably Achievable” (ALARA) dose reduction not effectively implemented or understood.
- Personnel Monitoring & Decontamination - personnel monitoring and decontamination not properly implemented.
- Onsite Contamination - contamination measures and controls not properly implemented for field workers.
- Potassium Iodide - need for potassium iodide was not effectively evaluated for the in-plant release mitigation team demonstrating improvement needed in use of procedure.
- Media Monitoring - not performed in the JIC per procedures.
- Accident Mitigation - timeliness to develop and implement strategies to terminate release, improvements needed to communication between the control room and the TSC and EOF.

Dr. Peterson stated he was pleased by Ms. Zawalick’s presentation which demonstrated impressive work by DCPP. Dr. Budnitz stated the Committee will continue to work with DCPP and will have observers present at future ERO drills and exercises.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

XXVI Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

The Chair again recognized Consultant Jim E. Booker and expressed the thanks and appreciation to Mr. Booker for his 16 years of valuable service to the Committee. Mr. Booker was recognized to address comments to the Committee and to PG&E.

Mr. Booker stated in his remarks he would be expressing his own views and that his views were not reviewed by or presented on behalf of the DCISC. He stated his comments were in no way personal to any of PG&E’s personnel but were intended to be addressed to DCPP upper management not in attendance at this session of the DCISC’s public meeting.

Mr. Booker stated he has observed over the last few years a change in the level of support PG&E is providing to the DCISC’s activities conducted in the Committee’s safety oversight role. He commented, in the past, DCPP presenters at DCISC Fact-finding meetings were well prepared, often with written materials and supporting data. Lately, he stated that has not always been the case. PG&E presenters during fact-findings are knowledgeable but are not as well prepared as previously.
Some presenters have expressed that they were not advised in advance of the fact-finding meeting or, on some occasions, were unable to attend the fact-finding at all.

Mr. Booker stated PG&E has previously prepared data for inclusion in past DCISC Annual Reports but during preparation of the current 20th Annual Report the Committee was advised that PG&E would no longer be able to provide the information as it had in the past.

Mr. Booker observed, in the past, a DCPP vice president was usually present for a significant portion of the DCISC’s public meetings and he recognized that those individuals have busy schedules and demanding jobs, however, by not being present the public is deprived of the opportunity to have direct contact with senior plant leadership.

Mr. Booker concluded his remarks by observing that during this public meeting a presenter from DCPP was unable to attend to make the presentation requested by the Committee. While recognizing that plant considerations must come first this, in Mr. Booker’s opinion, does not reflect well on the cooperation being extended to the Committee by PG&E. Mr. Booker stated that he believes the current level of cooperation being extended to the Committee by PG&E has not had an impact on the Committee’s ability to fulfill its responsibilities under its Charter from the CPUC. However, if it continues, it is an open question whether any such impact may be experienced in the future. Mr. Booker thanked the Chair for the opportunity to make these remarks.

**XXV Adjournment of Sixty-first Public Meeting**

The Chair requested Legal Counsel to work with PG&E on the schedule and location for the next public meeting of the DCISC to be held on February 15-16, 2011, at another location.
Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee’s service list. A copy of the meeting agenda was also posted on the Committee’s website at www.dcisc.org.

Public Tour of Diablo Canyon Nuclear Power Plant

The three members of the DCISC accompanied by 46 members of the public, a PG&E tour guide and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC’s website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Mechanical Maintenance Training Facility and the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

Questions and Comments From the Public

During the ride back to the Energy Education Center the group received information on radiation protection and members of the public took the opportunity to ask questions of Committee members and consultants.

Conclude Public Tour
Agenda

I Call to Order – Roll Call

The February 15, 2011, public meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair, Dr. Robert J. Budnitz, at 1:30 p.m. at the Embassy Suites in San Luis Obispo, California. Dr. Budnitz reported that earlier in the day the Committee conducted a tour of Diablo Canyon Power Plant (DCPP) and he encouraged interested members of the public to register early for future tours. Dr. Budnitz introduced and briefly reviewed the professional backgrounds, appointment and term of each member of the Committee and welcomed the members of the public watching the meeting on live-streaming video via the internet at http://www.slo-span.org.

Roll call was taken.

Present:

   Committee Member Robert J. Budnitz
   Committee Member Peter Lam
   Committee Member Per F. Peterson

Absent:

   None

II Introductions

Dr. Budnitz introduced the Committee's technical consultants, Mr. David C. Linnen, Mr. R. Ferman Wardell and Mr. William F. Conway and DCISC Legal Counsel Robert R. Wellington.

III. Public Comments and Communications

The Chair reviewed the procedures and advice from the agenda for the meeting concerning receipt of comments from members of the public wishing to address remarks to the Committee. Dr. Budnitz reported there were devices for use by persons with hearing impairment available. The Chair advised time would be set aside for members of the public to comment on those matters listed on the agenda at the time the matter was considered by the Committee and inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting. There were no remarks or comments from the public at this time.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee's November 17-18, 2010, public meeting held in Avila Beach.
Items were reviewed for follow up action, clarification was provided to Legal Counsel concerning the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting, and editorial and substantive changes were made to the draft of the November 2011 Minutes.

Minutes of the Committee’s public meetings become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Peterson, seconded by Dr. Lam, the Minutes of the Committee’s November 2010 public meeting were approved as amended, subject to inclusion of the changes provided to its Legal Counsel.

V. Action Items


Following the presentation on the status and plans for the Probabilistic Risk Assessment group, see Item XIX below, the Committee then reviewed and discussed PG&E’s responses to the two recommendations made in the DCISC’s 20th Annual Report and, on a motion by Dr. Peterson seconded by Dr. Lam, unanimously accepted the responses to Recommendations R10-01 and R10-02 and directed that PG&E’s responses to those recommendations be made a part of the 20th Annual Report.

B. Report on DCISC’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP. Dr. Budnitz briefly reviewed with the other members the process used for review of the Committee’s report on Evaluation of Pressurized Thermal Shock (PTS) and Seismic Interactions at DCPP (PTS/Seismic Report) which was prepared in response to a request by the California Energy Commission (CEC) made in the CEC’s 2009 Integrated Energy Policy Report. Dr. Budnitz reported the Nuclear Regulatory Commission (NRC) has completed its initial evaluation of PG&E’s license renewal application for DCPP and has issued a draft Safety Evaluation Report which contains no comments on this topic. He reported PG&E presented its further conclusions on this topic at a public meeting held in San Luis Obispo on January 19, 2011, which Dr. Budnitz attended. The PTS/Seismic Report was revised to include new information received, which reinforce the conclusions contained in the November 2010 public draft.

Dr. Lam complimented and expressed his appreciation to Dr. Budnitz for Dr. Budnitz’ outstanding expertise and for Dr. Budnitz having taken a leading role in preparation of the Committee’s report. Dr. Lam stated he has no disagreement with the current conclusions of the PTS/Seismic Report but Dr. Lam stated he would prefer to see additional assurance provided through inclusion of analysis describing the impact of a joint seismic rupture of the Hosgri and the Shoreline Faults. The PTS/Seismic Report centers on dismissal of this joint seismic activity based upon a probability analysis by PG&E and PG&E’s analysis of geographical considerations. Dr. Lam stated this basis is scientifically defensible, however, an
additional level of assurance would be provided if PG&E continues its efforts to analyze how a joint seismic rupture of both the Hosgri and Shoreline Faults would not produce a ground motion greater than set forth in the original analysis of the Hosgri Fault. Dr. Budnitz observed that PG&E has not completed work on this topic and when final conclusions are available, the DCISC reserves the right to amend the PTS/Seismic Report.

Dr. Peterson observed that while the PTS/Seismic Report looks at both PTS and seismic issues, PTS is associated with neutron embrittlement of the reactor vessel which is not tightly coupled with seismic-related events, because when a nuclear reactor is operating at normal operating temperature, the reactor vessel is not brittle. He stated that a seismic event could cause a safety injection which could cool the reactor vessel to a temperature where it could become brittle, although safety margins should preclude this. He stated the frequency of pressurized thermal shock events is dominated by internal failures and events rather than by seismic events.

On a motion by Dr. Peterson, seconded by Dr. Lam, the Committee unanimously adopted the PTS/Seismic Report and authorized its transmittal to the CEC.

C. Update on Financial Matters and Committee Activities. Mr. Wellington reported financial statements prepared by the Committee's accountant showing DCISC’s assets, liabilities and capital were provided for review. He stated the Committee overspent the 2010 grant balance by $81,000, which includes $33,000 of overspending from the 2009 grant.

D. Discussion of Issues on Open Items List: Dr. Budnitz requested Consultant Wardell to lead a review of items on the Open Items List, used by the Committee to track and follow up on issues, concerns and information identified for subsequent action during fact-finding or public meetings. Items discussed or concerning which action was taken included the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Re:</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO-10</td>
<td>Mispositioning errors</td>
<td>Delete all text following first sentence</td>
</tr>
<tr>
<td>CM-7</td>
<td>Containment concrete inspection</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>EN-28</td>
<td>Licensing Basis Verification Project</td>
<td>See 11/10 PM 10 below</td>
</tr>
<tr>
<td>HP-25</td>
<td>Management Observation Program</td>
<td>Delete first sentence</td>
</tr>
<tr>
<td>EP-2</td>
<td>Emergency drills &amp; exercises</td>
<td>Strike reference to “exercise” from Next Action</td>
</tr>
<tr>
<td>RP-3</td>
<td>Radiation protection outage performance</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>ER-5</td>
<td>Equipment reliability process</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>SE-36</td>
<td>Boric acid corrosion control program</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>SE-38</td>
<td>CFCU modifications</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>SG-6</td>
<td>Steam generator performance metrics</td>
<td>Schedule review for 3Q11</td>
</tr>
<tr>
<td>SF-1</td>
<td>ISFSI operations</td>
<td>Schedule for 2012</td>
</tr>
<tr>
<td>SC-3</td>
<td>Long Term Seismic Program</td>
<td>Fold in LR-1</td>
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<tr>
<td>SC-4</td>
<td>Risk-based probabilistic tsunami hazard analysis</td>
<td>Schedule for fact-finding</td>
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<tr>
<td>SC-5</td>
<td>Seismic safety re bracing of furniture</td>
<td>Schedule for May 2011 FF</td>
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<tr>
<td>OT-6</td>
<td>NRC Work Hour rules</td>
<td>Schedule FF for review of recent ACE</td>
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<tr>
<td>LR-1</td>
<td>PTS/Seismic Report</td>
<td>Fold into SC-3</td>
</tr>
<tr>
<td>LR-2</td>
<td>Offshore faults and pressure vessel integrity</td>
<td></td>
</tr>
<tr>
<td>LR-3</td>
<td>PTS and pressure vessel integrity</td>
<td></td>
</tr>
<tr>
<td>LR-4</td>
<td>License renewal</td>
<td></td>
</tr>
<tr>
<td>CL-1</td>
<td>EPA regulations on closed-loop cooling</td>
<td>Change “Lop” to “Loop”</td>
</tr>
<tr>
<td>6/09 PM 11</td>
<td>Equipment rework</td>
<td></td>
</tr>
<tr>
<td>12/09 PM 2</td>
<td>Transformer Program</td>
<td></td>
</tr>
<tr>
<td>12/09 PM 15</td>
<td>Recirculation valve position interlocks</td>
<td></td>
</tr>
<tr>
<td>12/09 PM 16</td>
<td>Transformer bushings</td>
<td></td>
</tr>
<tr>
<td>2/10 PM 5</td>
<td>Conversion from analog to digital I&amp;C system</td>
<td>Schedule for FF (delete request for addtl. info.)</td>
</tr>
<tr>
<td>2/10 PM 7</td>
<td>NFPA Reg. 805 standards</td>
<td>Delete</td>
</tr>
<tr>
<td>6/10 PM 2</td>
<td>“No solo” issues</td>
<td></td>
</tr>
<tr>
<td>6/10 PM 12</td>
<td>Mispositions in Chemistry &amp; Maintenance</td>
<td></td>
</tr>
<tr>
<td>11/10 PM 3</td>
<td>Line use of operating experience</td>
<td></td>
</tr>
<tr>
<td>11/10 PM 5</td>
<td>Seismic &amp; PTS information</td>
<td>Close (to SC-3)</td>
</tr>
<tr>
<td>11/10 PM 6</td>
<td>Earthquakes and embrittlement</td>
<td>Close (to SC-3)</td>
</tr>
<tr>
<td>11/10 PM 8</td>
<td>Learning Services review of training program</td>
<td>Expedite</td>
</tr>
<tr>
<td>11/10 PM 9</td>
<td>Westinghouse analysis</td>
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</tr>
<tr>
<td>11/10 PM 10</td>
<td>Amend Open Item EN-28 re LVBP updates</td>
<td></td>
</tr>
<tr>
<td>tbd</td>
<td>Multiple references to “following 2R16”</td>
<td>Schedule review for 3Q11</td>
</tr>
</tbody>
</table>

Mr. Wardell concluded his report by observing he meets frequently with the Technical Assistant to the Site Services Director, Mr. Peter Bedesem, who also serves as the primary PG&E/DCPP liaison with the Committee, to resolve items on the Open Items List. The Chair commended Consultant Wardell for his important work in connection with the Open Items List.

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities: Legal Counsel Wellington
reported there have no visits by members to any of their appointing entities since the last public meeting of the Committee in November 2010. Mr. Wellington reported the video presentation on the used fuel loading campaign and the Independent Spent Fuel Storage Installation (ISFSI) is now available for viewing on the Committee’s website at www.dcisc.org as is the latest draft of the Committee’s PTS/Seismic Report to the CEC and the final version will be available there soon.

The Committee members and consultants reviewed and scheduled fact-finding visits and public meetings of the Committee as follows: public meetings of the Committee were scheduled and confirmed for June 21-22 and October 11-12, 2011, and for February 8-9, 2012. Fact-finding visits by a member and a consultant (to be determined) are now scheduled on: February 28- March 1, April 19-20, May 24-25, July 12-13, August 16-17, September 7-8, November 15-16 and December 6-7 during 2011, and on January 10-11, March 13-14, April 3-4 and May 22-23 during 2012.

B. Documents Provided to the Committee: Mr. Wellington directed the Committee’s attention to the list of documents received since its last public meeting in November 2010. A copy of the list was included with the public agenda packet for this meeting.

A short break was taken.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E

The Vice-Chair requested Consultant Wardell to report on the December 15-16, 2010, fact-finding visit to DCPP. Mr. Wardell reviewed the topics discussed with PG&E during the December 2010 visit with Dr. Peterson, including:

- Environmental Protection Agency (EPA) Proposal for Closed Cooling - Mr. Wardell observed this topic will be presented to the Committee at this public meeting. Dr. Peterson stated the closed cooling proposal merits very careful attention by the DCISC as a potential transition by DCPP to a closed cooling system using saltwater cooling towers would have multiple negative impacts on plant safety. Dr. Budnitz stated the Committee should pursue this matter in future fact-finding.

- Plant Health Committee (PHC) Meeting - the PHC is a management committee which looks after the health of systems and programs at DCPP. Mr. Wardell stated the DCISC representatives attended a PHC meeting and he observed the PHC has substantially improved its effectiveness by focusing on health rather than budget issues and by meeting more frequently. System health at DCPP has improved since the PHC changed its focus.

- Environmental Qualification Program (EQP) - a procedure to review and verify documentation, applicable primarily to electrical equipment, is on file and updated. The Program appeared satisfactory to the DCISC team.

- Software Quality Assurance (SQA) - a program to ensure software run on plant computers is configuration-controlled, including not only software developed by DCPP but also software
provided by its suppliers. Mr. Wardell reported the DCISC team found the program to be strong and he observed cyber security, while not specifically reviewed during this visit, is generally not a major issue as the control system computers do not connect to outside computers and those computers at DCPP which do have outside connectivity have multiple software firewalls or are protected by data diodes which typically prevent incoming data or attacks. The SQA program has a strong pre test or factory acceptance testing regime before software is loaded onto plant computers. The DCISC team found the SQA to be a comprehensive and well-designed program.

- **Human Performance (HP) Program** - DCISC team met with the HP supervisor who reported at that time to the DCPP Station Director. Overall trends in human performance at DCPP are improving slightly and Mr. Wardell stated that the plant goal for overall human performance events is being revised downward at the rate of 10% of the twelve-month average rate in order to continually challenge the plant to improve human performance. In response to Mr. Conway’s questions concerning the metrics used, Mr. Wardell confirmed there are a number of measures of human performance and the DCISC team concentrated on: (1) plant-level events, where an improving trend is shown; and (2) department-level events, which he described as less significant, and where the trend is degrading slightly. Consultant Linnen observed that concerning mispositionings, DCPP has refined and tightened its definition of mispositioning to identify those events at a much lower level. Mr. Linnen and Mr. Wardell confirmed, in response to Mr. Conway’s inquiry, they believed the human performance threshold levels for mispositionings and reactivity management at DCPP are appropriate. *Mr. Conway observed a review of the threshold level for other types of events might be an appropriate subject for future fact-finding and Mr. Wardell stated a review will be placed on the Open Items List under the Human Performance category.*

- **License Basis Verification Program (LBVP)** - topic was presented to the Committee during the November 2010 public meeting. The DCISC team concluded the LBVP was warranted based upon past problems at DCPP and the project manager is very qualified, knowledgeable and dedicated.

- **Corrective Action Program (CAP)** - Mr. Wardell reported the NRC identified in March 2010 a cross cutting issue concerning thoroughness of problem evaluation and the World Association of Nuclear Power Operators (WANO) evaluation in 2010 also identified some areas for improvement with the CAP. As a result DCPP has undertaken the LBVP. Mr. Wardell reported the root cause, identified as part of the development of an action plan, included lack of appropriate depth and extended leadership (supervisors and above) not having provided adequate standards by effectively demonstrating behaviors and sustainable programs for problem evaluation. In response to Dr. Budnitz’ inquiry, Mr. Wardell stated DCPP is placing emphasis on supervision in its current attempts to address issues with its CAP. Mr. Conway remarked an assessment of the effectiveness of the CAP was completed on May 17, 2010, and he inquired whether any activity is taking place to remedy problems found by that assessment. Mr. Wardell stated he believed a response to the assessment was rolled into the integrated action plan. Mr. Wardell stated the CAP works but has an issue regarding the thoroughness of problem evaluation to solve.
Used Fuel Storage Program (UFSP) - used fuel loading campaigns for Unit 1 (U-1) and Unit 2 (U-2) were conducted in 2009 and 2010, during which 16 casks with 512 spent fuel assemblies were transferred to the ISFSI. Mr. Wardell reported 12 casks are currently being fabricated. However, there is no schedule for a further loading campaign which would not be until 2012 at the earliest.

- DCISC Member Meeting with Site Vice President - Dr. Peterson reported he met with Site Vice President James Becker.

- DCPP Safety/Security Interface - Mr. Wardell stated the DCISC reviews how security changes effect the ability of the plant to respond to emergencies or affect operability. The NRC has issued new regulations, 10 CFR 73.58 and Regulatory Guide 5.74, which address the safety-security interface at U.S. nuclear facilities. Changes made by Engineering, Maintenance, etc., are now required to be reviewed by Security and changes made by Security are now required to be reviewed by Operations, Maintenance, Engineering, etc., as appropriate. The DCISC found the safety-security interface at DCPP to be satisfactory, however, Mr. Wardell suggested the Committee should conduct follow up at a fact-finding to review how specific modifications were addressed under the new regulatory guidance.

- Outage 1R16 Radiation Protection (RP) Performance - DCISC team reviewed the As Low As Reasonably Achievable (ALARA) performance during the sixteenth refueling outage for U-1 (1R16). Mr. Wardell reported ALARA performance as good, with a goal of 126 person rem which was met by the 118.8 person rem achieved during 1R16. The DCISC team also reviewed performance of the Radiation Protection (RP) organization and found RP met the outage goals for 1R16. Mr. Wardell stated that while DCPP met its RP and ALARA goals during 1R16, the plant is not doing well in an overall comparison with the industry’s ALARA performance and there is work to do to reduce dose in the future. DCPP is increasingly using remote tooling and addressing insulation debris mitigation measures to address radiation in containment to keep high radiation dose jobs more manageable.

- DCISC Open Items - Mr. Wardell met with Mr. Bedesem to address items on the Open Items List.

- DCPP Open House - Mr. Wardell attended an open house held at the PG&E Energy Education Center which features new exhibits on nuclear power and DCPP. PG&E had personnel stationed at the Center to discuss and answer questions from the public. Mr. Wardell stated the event was well attended.

Following Mr. Wardell’s report, on a motion made by Dr. Budnitz, seconded by Dr. Lam, the December 15-16, 2010, Fact Finding Report was approved and its transmittal to PG&E was authorized.

The Chair requested Consultant Linnen to report on the January 25-26, 2011, fact-finding visit to DCPP with Dr. Lam. Mr. Linnen reviewed the topics discussed with PG&E during the visit including:

- Chemistry Program - Mr. Linnen stated the DCISC team focused on iron transport and sulfates in the feedwater pumped from the steam condensers back to the steam generators (SG). Iron
transport in feedwater has been addressed by opening a valve near the bottom of the SG and by blowing water into a drain tank to reduce the amount of suspended solids. DCPP has now tested adding polyacrylic acid to the feedwater to aid in keeping iron in suspension which appears to contribute to reducing iron retained in the SGs. He stated DCPP uses full-flow polishers and the resin used in the polishers contains sulfates and DCPP is now reviewing the use of alternative polisher resins to reduce sulfates. Mr. Linnen stated chemistry issues at DCPP are more of an operational reliability problem rather than a nuclear safety problem.

- Conversion to NFPA 805 Standard - Mr. Linnen stated this is a probabilistic risk assessment (PRA) project and PG&E will be making a presentation at this public meeting. He characterized the project as a large, complex, technical activity and stated DCPP’s goal is to submit its license amendment by the end of June 2011. Mr. Linnen reported the infrastructure cornerstone of DCPP’s Appendix R program is currently in red status for reasons related to the Fire PRA. Dr. Budnitz remarked he received information that the industry judged the quality of the DCPP Fire PRA to be excellent. Dr. Budnitz commented the Fire PRA analysis was more difficult than initially believed because all scenarios in the plant where a fire could disable equipment to cause an accident were required to be analyzed and, for each one, the probability that the event would happen reviewed by looking at the probability of fires of different sizes at various locations. Then a determination was required of the overall probability that a fire somewhere would damage the plant enough to cause damage to the nuclear core. Having gone through all those scenarios and identified those most probable, there is then work to be done to reduce the probability or consequences of fire. Implementation of those safety measures is now covered by a new standard under the National Fire Protection Association (NFPA) referred to as NFPA 805.

- Margin Management - Mr. Linnen described margin management as conservatism included in the design and operation of all systems, structures and components as they interact. He stated DCPP’s Nuclear Safety Oversight Committee (NSOC) also reviews nuclear safety for the plant and the NSOC reported during its review in September 2010 that the top margin issues were identified but specific actions plans needed to be developed. The DCISC team received a list of the top margin issues and a summary of the actions planned and approved by the Margin Management Committee. The DCISC team also reviewed performance metrics for margin management and Mr. Linnen stated the program appeared to be a functional and healthy program capable of identifying and prioritizing responsibilities, actions and completion dates for identified issues. Mr. Conway suggested, as a subject for a future fact-finding review of procedure and documentation, that as equipment is added to DCPP the margins associated with the emergency diesel generators (EDGs) are appropriately reviewed.

- Emergency Planning Dose Assessment Program Status - Mr. Linnen reported San Luis Obispo County and PG&E have agreed on an action plan which will provide for: seven off-site and two on-site meteorological towers; multiple wind speed and direction data inputs to the dose assessment system; thirteen pressurized ion chambers to measure radiation dose; three sonic detection and ranging systems for upper air movement; and an upgrade for dose assessment software to enable the system to be capable of receiving and processing multiple inputs. Mr. Linnen remarked with these changes DCPP is going beyond what is required by federal
regulation and it might be advisable for the Committee to schedule a final presentation by DCPP at a public meeting to review the program. Members and consultants briefly discussed the Committee’s review of this topic and the recommendation made to PG&E in the latest Annual Report. Mr. Conway observed the motivation for the DCISC’s involvement stemmed from a member of the public, a retired San Luis Obispo County Air Pollution Control District employee, appearing and making comments to the DCISC during a public meeting and he commented that the Committee’s review and PG&E’s actions speak to the importance and value of the forum provided by the Committee’s public meetings and made available to members of the public to bring issues to the DCISC which result in the Committee being able to assist in getting something accomplished for the betterment of the plant.

- Self-Assessment of Maintenance and Technical Training - Mr. Linnen stated the purpose of the DCISC team’s review of the self-assessment performed internally by DCPP was not to assess whether the training was meeting regulatory standards but rather to review it against industry best practices. No findings were identified by the self-assessment but six areas were identified with deficiencies involving a lack of rigor including: unclear procedural guidance and documentation regarding qualification of supplemental and contract workers; training developed to address performance issues not following or documenting the deficiencies addressed, in accordance with the Systematic Approach to Training (SAT) model; lack of formal control of training of engineering work groups; on the job training and past performance evaluations not having been conducted in accordance with DCPP standards and not implemented in accordance with industry best practices; and a lack of intrusiveness on the part of DCPP’s Quality Verification (QV) organization.

- Operator Burdens - Mr. Linnen described operator burdens as undesirable conditions in the plant or impediments which cause operators to perform otherwise unnecessary work. A review of operator burdens in September 2010 and noted that DCPP had identified operator burdens but had not addressed them and the number of burdens increased from two to six over the period from May to September 2010. Zero to three operator burdens is considered acceptable. He reported the DCISC team found DCPP has now reduced the number of operator burdens to two through management oversight of this issue.

- Response to Industry Operating Experience - Mr. Linnen described operating experience as the opportunity to learn from the experiences of other utilities. DCPP has an extensive array of tools to examine plant procedures and processes for areas identified as needing improvement from review of operating experience. The DCISC team was comfortable with the procedures and processes being used by DCPP in the area of industry operating experience.

- Review of STARS Activities in 2010 - The Strategic Teaming and Resource Sharing (STARS) group is a group of seven nuclear stations located west of the Mississippi River. The DCISC team reviewed and found the group to be functioning effectively, with the seven plants collaborating and sharing nuclear industry operating information and assisting each other in technical and operational areas. Mr. Linnen reported the STARS group ranks approximately in the middle in terms of performance indicators ranking of other collaborative groups in the nuclear industry while DCPP ranks third on the performance indicators ranking plants within
STARS and DCPP was well above the median in the industry on these performance indicators. The DCISC team concluded DCPP has benefited from sharing information through STARS, providing input and getting input from the other utilities and this is reflected in performance indicators.

- Discussion with NRC Senior Resident Inspector - Dr. Lam reported he met with Dr. Michael Peck the NRC’s Senior Resident Inspector for DCPP. Dr. Lam discussed Dr. Peck’s review of the current seismic design basis for DCPP and the newly identified Shoreline Fault feature. Dr. Lam reported Dr. Peck indicated that even though the Hosgri Fault has a much higher magnitude of earthquakes, the safe shutdown earthquake and the operating basis earthquake standards can be limiting in terms of equipment qualification. Mr. Conway inquired whether Dr. Lam reviewed with Dr. Peck any concerns Dr. Peck might have with the independent safety review programs at DCPP and the responsibilities of the NSOC. Dr. Lam stated he had not reviewed the topic during his fact-finding in January 2011, but would include discussion of this issue in a future meeting with Dr. Peck. Mr. Bedesem stated it was his belief Dr. Peck had a different viewpoint concerning the independent role and what NSOC was supposed to accomplish and that Dr. Peck’s concern was resolved in a discussion with Mr. Darrell Eisenhut, current NSOC chair, and Dr. Peck’s concerns were now satisfied.

- Dr. Lam’s discussion with DCPP Senior Director, Engineering - items of mutual interest were discussed.

Upon a motion by Dr. Budnitz, seconded by Dr. Peterson, the January 25-26, 2011, Fact Finding Report was approved, subject to receipt of any minor editorial changes, and its transmittal to PG&E authorized.

Once the Committee’s fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are made available in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee’s technical consultants involved with preparation of its fact finding reports. Fact finding reports become part of DCISC’s Annual Reports.

Legal Counsel Wellington reviewed the statistics generated by activity on the Committee’s website at www.dcisc.org which included 14,000 visits from 27 different countries.

**VIII. Correspondence**

The Chair directed the members and consultants to the copies of correspondence sent and received at the office of the Committee’s Legal Counsel since the last public meeting of the Committee in November 2010 which was included with the public agenda packet for this meeting.

**IX. Closed Session - personnel matters, conference with Legal Counsel.**

**X. Adjourn Afternoon Meeting**

The Chair adjourned the afternoon meeting of the DCISC at 5:15 p.m.
XI. Reconvene for Evening Meeting

Dr. Budnitz convened the evening meeting of the DCISC at 5:30 p.m. He again introduced the other members, consultants and legal counsel and invited persons watching the meeting on live streaming video to attend in person.

XII. Committee Member Comments

There were no comments at this time from the Committee Members.

XIII. Public Comments and Communications

Dr. Budnitz invited any member of the public to attend this public meeting and to address comments to the Committee. There was no response to this invitation.

XIV. Information Items Before the Committee

The Chair introduced DCPP’s Senior Director of Technical Services Loren Sharp and asked Mr. Sharp to begin the informational presentations requested by the Committee for this public meeting. Mr. Sharp and introduced DCPP Director of Site Services Steve David to make that presentation.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. David reviewed the principal events affecting generation for U-1 for the last twelve months and for the four months since the last public meeting of the DCISC in November 2010, as follows: mid-cycle tunnel cleaning in February 2010; sixteenth refueling outage (1R16) which he reported began one shift early due to a steam leak in the secondary part of the plant, in the Turbine Building, and which ended in just under 42 days, which was in excess of the estimated duration of 34 days; repairs to fix a hydraulic leak on Main Feedwater Pump 1-2 stop valve; and a full flow test performed following replacement of the governor valve on Auxiliary Feedwater Pump 1-1. For U-2, Mr. David reported: U-2 has been operating at power the entire year with a mid-cycle tunnel cleaning performed in November; a power reduction to 50% to address condenser fouling; and a power reduction to 28% to address a Pacific Ocean high swell warning. In response to Mr. Conway’s question, Mr. David stated the result of the full flow test on the auxiliary feedwater valve demonstrated the pump was capable of operating within its bounding limits, albeit with a slightly different performance curve due to internal adjustments caused by a new governor and he confirmed that the results of the test did not cause DCPP to do any other changes. In response to Mr. Wardell’s question, Mr. David explained, that, due to different conditions and equipment giving better efficiency to the secondary system from the initial performance testing done at the beginning of an operational cycle, a unit can exceed its maximum megawatt output without the reactor exceeding 100% rated thermal power.

Concerning the Plant Performance Improvement Report (PPIR) showing areas of improving and declining performance, Mr. David stated that due to the large number of standards that changed as of January 1, 2011, these metrics were not included in the January 2011 PPIR. The changes discussed...
at the monthly Performance Review Meetings in most cases reflected actual changes in performance.

Mr. David reviewed the Quality Verification (QV) Top Quality Performance Issues List including concerns regarding timeliness of the issuance and approval of an assessment of the Emergency Planning Program under 10 CFR 50.54T, which did not initially pass review by the Corrective Action Review Board (CARB) and was sent back for further review and a rewrite. Other findings, deficiencies and gaps were identified by QV in order of significance and status-rated as yellow or red to indicate where the item is in the process including: Corrective Action Program screening due to problems being evaluated, appropriately screened by the Notification Review Team (NRT), and entered into the SAP database; the station trending program; self-assessments and benchmarking; and quality records management.

In response to Mr. Wardell’s question, Mr. David replied that future source term radiation exposure during outages should be much lower than in the past, and the plant loses points on extended outage durations and he stated his belief that changes in source term and shorter outage durations should bring the collective radiation exposure data for DCPP, currently rated as 76 person-rem per unit per year, more in line with the industry’s top quartile performance of a rating of 40.

Mr. David reported there was a higher than expected number of deferrals of preventive maintenance during 1R16 and there is currently a red window for U-1. In response to Mr. Conway’s question, Mr. David stated approval for a maintenance deferral during an outage is required from both Engineering and Outage Management organizations.

Mr. David reviewed the System Health graph and reported only the 230 kV system for each unit continues to impact performance.

Concerning the CAP Index, Mr. David stated DCPP is reviewing root cause evaluations (RCE) cycle times and apparent cause evaluations (ACE) and the age of Significance Level 3 (Sig. Level 3) items. He reported the RCE cycle time average age is trending down from 63 to 41 days and he reported a procedure change has been made to alter the time requirement from 30 to 40 days based upon an industry benchmark. Mr. David stated DCPP needs to improve its extent of condition evaluations and extent of cause evaluations once the root cause is identified and to be more conscious of safety culture considerations in RCEs. Dr. Peterson commented it may be counter-productive to have a time limit on RCEs as it is more important to do the analysis correctly rather than quickly. Mr. David replied it is necessary to find a balance as DCPP is being assessed and evaluated by the NRC to ensure the highest risk significant issues are identified and responded to in a timely manner but he acknowledged there is also a need to take time to get sufficient resources involved so that the root cause can be correctly identified. In response to Consultant Linnen’s inquiry concerning whether a metric exists to measure recurrence, Mr. David stated that metric would be RCE Quality which reflects the scoring of a RCE done by the CARB and he stated in the event a corrective action failed to prevent recurrence a new Notification would be generated. In response to Mr. Conway's request, Mr. David identified evaluation of extent of cause and condition and the evaluation of a safety culture component, especially for issues involving performance of personnel versus equipment, as areas for improvement in RCE and he stated training and qualification of the CARB
members by the Site Vice President is being done with respect to these issues. The CARB continues benchmarking with the Byron Nuclear Generating Station, an Exelon Corporation plant located in Illinois, which Mr. David reported currently maintains industry-leading performance concerning corrective action. DCPP is also reviewing the quality products in CARB and the closed products to verify that actions to be taken were taken and whether the quality of the product and the action meet current DCPP standards. Actions not meeting these tests are reopened. In response to Dr. Lam’s inquiry concerning the assignment of weighting factors in the CAP metrics, Mr. David stated this was done some time ago, probably by the then manager of the Problem Prevention and Resolution (PP&R) group, and the process weights RCEs more heavily in the metric than ACEs or Sig Level 3s. He stated a detailed, comprehensive review of the overall program health for the CAP, some 173 pages for January 2011, is performed with all of the line organizations to address, evaluate and determine for each organization’s RCEs, ACEs and Sig. Level 3s which items are rated in red or yellow status and why, and all of these departmental reviews are combined to determine the station’s index.

Mr. David reviewed the Human Performance Error Rate and stated that the index is largely driven by refueling outages when large numbers of contractor personnel are brought in to perform work. The goal is currently less than 0.18 compared to actual performance of around 0.26 injuries for every 10,000 non outage hours worked. During outages this number increases to 0.40 injuries for every 10,000 hours worked. He confirmed, in response to Consultant Wardell’s observation, the DCPP Station Level Clock has now achieved 580 consecutive days without being reset due to a qualifying event, which surpasses the previous performance of 256 consecutive days.

Mr. David reviewed the Operational Focus Index which provides data on operational workarounds. There was an average of one per unit during January 2011, primarily due to a problem with an annunciator alarm which required compensatory measures and is being addressed within the CAP. He reported there were also issues for U-2 with the Control Rod System with control rods being stepped in 3 ½ steps and, after troubleshooting and monitoring for a number of weeks, three modules were replaced and the issue has now been closed. A steam leak was also repaired for U-2 but a problem still exists with the Index with regard to a LED not being lit for a control room indication. Mr. David stated there are currently 170 Notifications in backlog and reflected on this Index.

Mr. David reviewed the Reactivity Management Program statistics, which rate events on a scale from 1-5 with 1 being the most severe, and reported that primarily the events for U-1 are significance levels 5 and 4. There were two significance 3 events: going into 1R16 when operators added too much boric acid during shutdown causing power to drop below the intended level; and in September 2010 when a fuel assembly was placed in the wrong location within the spent fuel pool (SFP). Mr. David reported long-standing issues were identified, with reference to place-keeping, regarding the fuel assembly issue and procedures have been changed to require a separate sheet for each fuel assembly which should prevent recurrence. For U-2, the Reactivity Management Program consists primarily of significance level 4 or 5 events, with the exception of an equipment issue with a make-up controller.

DCPP Critical Equipment Clock Resent data indicates green status for both units although Mr. David
reported the station is now at the target value of six and he stated the metric is in a monitoring mode to determine whether an adverse trend exists. He highlighted two issues from the Engineering Program Health data including with the Appendix R Fire Protection Program and with performance monitoring equipment, both of which are in red window status. Mr. David commented the Appendix R Fire Protection Program issue concerns DCPP taking credit for operators’ actions in response to a fire which the NRC has not approved. With regard to performance monitoring equipment, additional rigor and oversight are being applied. In response to Dr. Budnitz’ inquiry, Mr. Sharp responded that with regard to performance monitoring equipment, personnel, process, and infrastructure, the reference to infrastructure is in the nature of governance oversight.

In concluding his presentation, Mr. David reported the Recordable Injuries data is consistent at 0.23 per 10,000 hours worked and is reported on an 18-month rolling average. There was a single recordable injury, which is per the Occupational Safety and Health Administration (OSHA) standard an injury requiring medical attention, during 1R16 and a total of five for 2010. Based on getting to green status, the goal for 2011 is to have no more than three recordable injuries. Mr. David confirmed, in response to Dr. Lam’s inquiry, the industry’s recordable injury metric is based on the OSHA standard but the NRC uses a different standard. Dr. Peterson commented this performance was demonstrative of the extraordinary safety demonstrated by the nuclear industry as a whole and represents performance which is four times safer than the statistics for office workers in the U.S. Mr. David confirmed DCPP’s statistics for recordable injuries were much lower than those for PG&E corporate-wide. Dr. Peterson observed mortality rates for nuclear workers are lower than for the population in general and he opined this may be due to the emphasis on safety culture within the nuclear industry.

Following Mr. David’s presentation a resident of San Luis Obispo, Ms. Sherry Lewis, was recognized and addressed remarks to the Committee. Ms. Lewis stated that with regard to the nuclear industry a culture which is much safer is required because what is being dealt with is so inherently dangerous and she encouraged the Committee not to hide this fact. Dr. Peterson stated he agreed and observed that rigorous oversight is required concerning activities involving nuclear energy because of intrinsic hazards associated with the materials being used. But he observed there are also some ancillary benefits associated with this rigor in that nuclear workers tend to live longer than the general population and he confirmed, in response to Ms. Lewis, that this was borne out by a study comparing all occupations which demonstrates recordable injury rates for nuclear facilities are one-quarter of similar injuries for comparable non nuclear industrial manufacturing facilities. Drs. Budnitz and Peterson agreed with Ms. Lewis’ observation that it is essential that nuclear culture be better than that for non nuclear and Dr. Peterson reported performance in the nuclear field has improved significantly over the past 25 years due to an increased focus on improving human performance and safety at nuclear facilities and resulted in an average of 0.23 injuries compared to an average of 4-7 per 10,000 hours worked in non nuclear industrial facilities and tracking of injuries is done at a much lower level of first aid events developing trends before they become significant. Mr. Linnen remarked that the nuclear industry has recognized and addressed the factor of complacency and the need to remain vigilant in promoting safety.

Mr. Sharp introduced DCPP Regulatory Services Manager Tom Baldwin to make the next
Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin reported during the period November 2010 through January 2011, there was a single Licensee Event Report (LER) submitted and one declaration of an unusual event, subsequently retracted, by DCPP as follows:

- LER 1-2011-001-00 was issued on January 5, 2011, to report an improper mode transition with an inoperable turbine-driven auxiliary feedwater pump 1-1 and violation of Technical Specification (TS). A declaration of inoperability was made due to the new governor not taking control at the expected speed, resulting in the operating speed of the pump being too high and it was a violation of TS to make a mode transition with the pump in that condition. The two redundant motor driven pumps were available and there was no challenge to the ability to perform specified safety function. Dr. Peterson remarked a major contributor to the initiation of the accident at Three Mile Island Nuclear Generating Station was failure of an auxiliary driven feedwater pump to function correctly due to its having been valved off incorrectly. He stated DCPP’s actions on January 5, 2011, demonstrated a philosophy to catch and monitor errors at levels of very low safety significance and taking appropriate corrective actions. In response to Dr. Lam’s question, Mr. Baldwin stated, as there was only some small amount of decay heat within the reactor, one motor auxiliary feedpump would have been sufficient to remove any heat to mitigate an event in Mode 3 condition and he confirmed the steam driven auxiliary feedpump has twice the capacity of the motor driven pumps.

- An Unusual Event was declared on December 25, 2010, due to an indication of high peak wind speeds in excess of 80 miles per hour. This event was investigated and found to be caused by a faulty wind speed signal due to probable water intrusion into the instrument causing the incorrect signal. The event declaration was retracted on January 28, 2011. DCPP has reported the event to the industry in an operating experience report. Mr. Baldwin confirmed DCPP has redundant wind speed indicators at different elevations on the meteorological tower, as well as indicators of a different design on the secondary, backup, meteorological tower, none of which indicated the same high peak wind speed provided by the erroneous indicator. The wind speed indicator has now been sealed to prevent water intrusion. In response to Mr. Conway’s inquiry, Mr. Baldwin confirmed there was some older operating experience from a Texas plant in 2005 which experienced a similar failure with a wind detector of the same design as that which failed at DCPP. Drs. Lam and Peterson discussed the effect of a wind in excess of 80 miles per hour and concluded in that event there would be little or no damage to the plant but the transmission lines could be damaged and thereby the risk of a plant trip in response would be increased.

Mr. Baldwin reported on six non cited violations (NCVs) and five licensee-identified violations during the period November 2010 through January 2011, reported in the NRC’s inspection report issued on February 7, 2011. All NCVs were determined to be of very low or minor safety significance (i.e., green), as follows:

- A NCV was received when PG&E failed to maintain the integrity of Fire Door 155 (Cross-
A functional water suppression sprinkler system was available at the location but, as there was a previous event involving unsuccessful control of a fire door, it was determined this event occurred as a result of a lack of timeliness in implementing corrective actions from the previous event. Mr. Baldwin stated corrective actions have now been implemented and established standards for all personnel passing through fire doors.

- A NCV was received for PG&E failing to maintain established combustible material control in the U-1 12kV switchgear room while U-1 was shutdown and U-2 was operating (C-C Aspect H.2(c) Documentation). This was a failure to proceduralize the fire hazard analysis efficiently, as procedural controls did not require establishment of transient combustible controls in the U-1 switchgear room and failed to recognize that particular switchgear room also contained non vital U-2 equipment.

- A NCV was received for PG&E failing to adequately document the basis for operability of two degraded conditions in accordance with plant procedures (C-C Aspect H.1(b) Conservative Assumptions). Engineers had not performed a thorough analysis and identification of licensing requirements but when challenged, they were able to provide adequate documentation.

- A NCV was received for PG&E failing to control postulated post-accident flow path from the reactor cavity reactor vessel nozzles to the post accident recirculation containment sumps in accordance with design (C-C Aspect H.2 (c) Documentation). It was discovered during refueling that the flow path was covered by a large concrete plug and the failure to discover this condition was the result of using circa 1970 drawings that were found not to be reflective of the current configuration.

- A NCV was received for PG&E failing to establish an adequate testing program for full load rejection testing of a emergency diesel generator (EDG) (C-C Aspect P.1(c) Evaluation). Subsequent testing satisfactorily demonstrated that the EDGs performed as expected.

- A NCV was received for PG&E failing to address an adverse trend in the problem evaluation process in the 2008 QV audit of the CAP (C-C Aspect P.3(c) Audits). The QV Department has changed its processes to provide a more robust challenge to the QV organization in monitoring adverse trends.

- PG&E identified a violation for its failure to establish a reactor coolant system (RCS) vent path before reducing RCS pressure below 90° F. Mr. Baldwin stated this was not safety significant as it was well within the capabilities of the system to mitigate an event but was contrary to DCPP procedural controls.

- PG&E identified a violation for its failure to obtain NRC approval before implementing a procedure to allow operators to control pressurizer level outside the programmed control board. This was identified through review of operating experience and previously identified by a LER reported at the last public meeting of the DCISC.

- PG&E identified a violation for its failure to maintain RCS flow restrictors on RCS pressure boundary test lines. This was also identified by a LER reported at the last public meeting of the DCISC.
- PG&E identified a violation for its failure to revise the auxiliary feedwater pump test procedures following replacement of the speed governor which affected its performance characteristics.

- PG&E identified a violation for its failure to control use of fibrous insulation inside containment in accordance with design analyses. Insulation was found at some hidden piping penetrations to the reactor vessel and the metal insulation around the pipes shielded the penetration and the fibrous insulation inside.

Summarizing NRC enforcement, Mr. Baldwin stated inspection reports were issued for:

- Resident Integrated Inspection (IR 2010-005, 02/07/11)

A total of 11 findings were reported since the last meeting of the DCISC, all of which were determined to be of very low safety significance. Currently 13 NCVs in the last four quarters have a cross-cutting aspect of P.1(c) Evaluation.

Mr. Baldwin reported concerning the NRC Performance Indicators for U-1 which are generally showing improvement with the exception of that for safety system functional failures. The indicator for unplanned power changes for 7,000 critical hours was impacted by a secondary, non safety-related, piping flange leak which will be reflected in that metric for one year. Safety system functional failure was impacted by loss of offsite power approximately one year ago involving a deficiency in the settings of DCPP’s loss of power relays. The Final Safety Analysis Report (FSAR) has been corrected to document the plant’s design requirements and the relays for both units reset to more appropriate settings. The 230 kV off site power was found to have been inappropriately cross-tied, per plant operating procedures, on several occasions in the past for more than 72 hours, contrary to DCPP’s approved licensing basis and TS basis. Three occasions were identified during which this occurred. Mr. Baldwin stated another event concerned the U-1 auxiliary feedwater pump and Mode 3 entry with a component incapable of performing a safety function and he stated DCPP expects to retract that based upon further evaluation. The U-1 Auxiliary Building ventilation system experienced a single failure due to one damper being slow to reposition and, as a result, the logic system shut down both trains of the Auxiliary Building’s ventilation system making that system incapable of performing its safety function. Mr. Baldwin stated the fix will be a programming change which has not yet been implemented.

Mr. Baldwin reported for U-2 the same events, with the exception of the auxiliary feedwater pump problem and the addition of an old 2008 event with respect to the Auxiliary Building ventilation system, affected the NRC Performance Indicators. He discussed with the DCISC members and consultants the infrequency of single failures at the plant and stated the ventilation system for the Auxiliary Building had previously been normally operated primarily in its safeguards alignment because a non safety charging pump was previously a highly unreliable reciprocating pump and in the past the plant was often operated with the more reliable safeguards centrifugal charging pump in operation.

Mr. Baldwin reported for the last four quarters there have been nine violations with the cross-cutting aspect of conservative assumptions used in decision making and this is now an area being
closely watched. A common cause analysis was performed and a number of corrective actions have been implemented which have resulted in significantly improved performance for the past six months. In response to Mr. Conway’s question concerning how the plant arrives at a point where the NRC takes action on degraded performance in a cross-cutting issue Mr. Baldwin stated a dialogue is maintained with the NRC to demonstrate DCPP recognizes that a problem exists, has been appropriately identified and analyzed, and the station is demonstrating behavior that the NRC recognizes as an appropriate response.

Mr. Baldwin reported Problem Identification and Resolution (PI&R) corrective action evaluation has been an ongoing topic and a significant cross-cutting issue is assigned to DCPP by the NRC in problem evaluation. A root cause evaluation (RCE) has been completed and a number of corrective actions implemented focusing on the station’s evaluations programs. He reported station performance has improved but it has not stopped all of the problems and problem evaluations. In response to Mr. Conway’s observation that DCPP had problems with PI&R during the period of 2003-2004, Mr. Baldwin confirmed cross-cutting issues were assigned by the NRC to PI&R and Human Performance during this period. These cross-cutting issues were addressed by the inception of a significant amount of station performance monitoring and by implementing the monthly reviews now conducted with the DCPP leadership team. However, Mr. Baldwin observed DCPP has not improved at the same rate as the industry and there may have been some deterioration in rigor. He stated part of the problem is DCPP’s capacity and capability of challenging itself not to accept something that had previously been accepted and he stated that development of those capacities and capabilities is still a work in progress. He observed a much greater level of intrusive investigation, to get down to the root of calculations and licensing requirements and the original circa 1970-1980 licensing documentation and correspondence, is required and he agreed with Mr. Conway that a significant part of this issue involves absorbing what the industry has learned and making it part of DCPP’s learning. Mr. Baldwin stated his organization is working with DCPP’s STARS partners and the Nuclear Energy Institute (NEI) in this effort, particularly on the next generation of 10 CFR 50.59 guidance.

Mr. Sharp called upon and requested Mr. Steve David to make the next informational presentation.

Activities of PG&E’s Nuclear Safety Oversight Committee.

DCPP Site Services Director David reported that a meeting of the DCPP Nuclear Safety Oversight Committee (NSOC) was convened on January 19, 2011 to discuss:

- Plant performance and operational status
- Quality Verification (QV) organization’s top three performance issues
- Independent Review Program
- NRC Inspection Readiness
- Operations Subcommittee Report
- Maintenance Subcommittee Report
- Engineering Subcommittee Report
Organizational Effectiveness Subcommittee Report

Mr. David stated the NSOC presentation on plant performance and operational status was similar to the presentation he made earlier this evening to the DCISC. PG&E has not received the Executive Summary for the January 19, 2011, meeting of NSOC. While the evaluative conclusions were not yet available, the NSOC did discuss the following topical areas on that occasion:

- Station Performance Indicators
- Station Safety Culture
- NRC Inspection Readiness
- Subcommittee Report Outs by NSOC’s Operation, Engineering, Maintenance and Organization subcommittees

Mr. David stated as he was not a member of any of the NSOC’s subcommittees he could not comment on details of the subcommittees’ considerations. Dr. Budnitz reported he attended the January 19, 2011 NSOC meeting and commented there was a good deal of discussion about security questions which are outside the purview of the DCISC. Dr. Budnitz stated he was impressed by the thoroughness and quality of the NSOC team and he remarked he has been acquainted with two current members of NSOC for 35 years. Mr. David reported that the day prior to a NSOC meeting is devoted to meetings of the NSOC subcommittees which include DCPP director and manager level personnel.

XV. Adjourn Evening Meeting

Dr. Budnitz invited any persons watching or present in the audience to attend the next day’s meeting of the Committee commencing at 8:00 A.M. at the Embassy Suites in San Luis Obispo or to follow the proceedings online. The Chair then adjourned the evening meeting of the Committee at 7:15 p.m.

XVI. Reconvene for Morning Meeting

The February 16, 2011, morning public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Budnitz, at 8:00 A.M. Dr. Budnitz introduced the other members and the Committee’s consultants and legal counsel. He welcomed those persons watching on the internet and invited their attendance in person at this public meeting. He reviewed the Committee’s policies and procedures for addressing remarks to the Committee and invited interested persons to also contact the Committee in writing with questions or concerns and he commented the Committee’s website at www.dcisc.org offers a convenient link for that purpose.

XVII. Committee Member Comments

There were no comments from Committee members at this time.

XVIII. Public Comments and Communication

The Chair invited any comments from members of the public. There were no comments at this
XIX. Information Items Before the Committee

Dr. Budnitz requested DCPP Senior Director of Technical Services Loren Sharp to continue with the next informational presentations requested by the Committee for this public meeting. Mr. Sharp requested DCPP Site Services Director Steve David to continue with the presentations to the Committee.

Overview of the Site Services Organization.

Mr. David stated he began his career at DCPP in 1981 and he provided an overview of the organizational structure of DCPP Site Services, an organization consisting of approximately 100 persons which he directs. He reported Site Services component organizations include and are led by: Administrative Services by Ms. Carol Waltos; Emergency Planning by Mr. Michael Ginn; Problem Prevention and Resolution by Mr. Gary Close; Procedure and Document Services by Mr. Lance Hopson; and Regulatory Services by Mr. Tom Baldwin.

Administrative Services manages administration and support functions at the plant including: payroll services, the implementation of the NRC Fatigue Management Rule (FMR), workforce software to manage employee hours, clerical staff management, and food services. Mr. David reported phase one of the new Workforce software has been implemented and phases two and three will be combined and implemented immediately after 2R16. In response to Dr. Lam’s question, Mr. David confirmed the new software procured from the Workforce firm will streamline the process of tracking hours to assure compliance with the FMR and he stated approximately one-half of all U.S. nuclear power plants now use Workforce software. He confirmed, in response to Dr. Budnitz’ question, clerical staff management includes not only clerical staff assigned to Site Services but also overall responsibility for clerical support of the line organizations.

Emergency Planning develops, coordinates and implements emergency planning functions including those related to: emergency response training; Emergency Response Organization (ERO) management and evaluation of performance for four separate ERO teams including training on the Simulator facility for shift foremen and shift managers; facilities and equipment; updating the emergency plan, procedures, and regulatory commitments and obtaining required reviews and approvals; and the ERO’s interface with local, county, state, federal, and industry organizations. In response to Dr. Peterson’s inquiry, Mr. David replied that the entire ERO is not under his control as only the Site Services employees on the ERO teams report directly to him, with employees from other organizations with ERO functions reporting within their respective line organizations and not to him in his role as Site Services director. There are four ERO teams which rotate primary responsibility for emergency response every two weeks. He confirmed, in response to Dr. Budnitz, that the team members of the teams not currently on call are not involved in any response and about 80 persons are required to respond to staff both on site and off site ERO facilities. Backups are handled on a case-by-case basis and personnel must remain within a one-hour response time criterion and be fit for duty for the entire time. In response to Consultant Wardell’s inquiry about ERO equipment maintenance issues, Mr. David replied the current process is
adequate and includes a list of all equipment priorities. Critical equipment will be identified at both on and off site facilities and assigned a work priority. In response to Dr. Budnitz question, Mr. David stated at present there are no identified issues affecting the relationship with local, state, federal agencies or with the industry.

Dr. Peterson inquired concerning the process for picking scenarios for ERO training exercises and commented on the need to include additional training on more likely scenarios which postulate less severe types of events. Dr. Peterson stated he has a concern that there is a tendency for the San Luis Obispo County (County) personnel to make a precautionary decision for an evacuation too early in a scenario which in an actual emergency might be adverse to safety. Dr. Peterson remarked it is unclear, had schools been in session during a recent alert that was caused by an inadvertent discharge of carbon dioxide into an electrical room, which was very unlikely to result in any release of radioactive material, whether the County would have ordered an evacuation. Mr. David replied DCPP is required to meet certain objectives through its training program to fully test the ERO and County, State and Federal participants and this, at times, requires escalating a postulated event through four levels, including general emergency and offsite release, which requires the postulated failure of multiple, redundant systems and multiple barriers, and while he acknowledged that in actuality such scenarios were very unlikely to occur, the ERO teams must be trained to respond. Mr. David stated as an emergency director, his role would be to make a recommendation to the County regarding protective actions such as evacuation, shelter in place, etc., but the responsibility rests with the County to make a decision concerning any protective action. Dr. Peterson stated he remained concerned that County officials were not being sufficiently exposed to more realistic scenarios and, therefore, might be prone to making poor decisions in an actual event. Mr. Sharp stated that DCPP tests whether the proper criteria are met to ensure that PG&E makes a correct recommendation to the County concerning precautionary actions but if Dr. Peterson’s question concerns the County’s actions in response to PG&E’s recommendations, Dr. Peterson’s question might be better addressed to the County. Dr. Peterson stated that while the responsibility for an incorrect precautionary action to evacuate rests with the County, in some sense PG&E might bear some responsibility if the reason for such an unfortunate decision was found to be the result of the County not having sufficient exposure to drill and exercise scenarios where precautionary evacuation would be an incorrect choice. In response to Dr. Peterson’ question whether the County during emergency drills and exercises routinely orders precautionary evacuations before PG&E makes a recommendation concerning such actions or whether the County has ordered an evacuation contrary to PG&E’s recommendation, Mr. David stated he would review with Mr. Ginn the frequency of such events during combined drills and exercises with the County over the past three-year period to determine whether during a drill or exercise there could be a trend toward over-conservatism on the County’s part. Mr. Sharp commented that the DCISC made a recommendation in its 2009 Annual Report regarding training on this point and reported DCPP had trained specifically on lower level events and the DCPP drill scenario development has been modified to do precisely what the DCISC recommended in 2009.

In response to Dr. Lam’s question, Mr. David confirmed minimum staffing requirements for ERO teams apply at any time, day or night, 24-hours per day, 7-days per week and periodic drills are conducted to confirm this capacity. Mr. David stated all human error performance improvement.
tools used in other contexts at the plant were applicable to the ERO.

Mr. David observed the Problem Prevention and Resolution function of the Site Services organization is the area which occupies most of his focus as Site Services Director and includes program ownership and implementation oversight for the CAP, including RCEs, ACEs and Sig. Level 3 work group evaluations; and for performance improvement programs, the Self-Assessment, Benchmarking, OE, Observation and Coaching Programs, and the Performance Improvement Integration Matrix. There were nine RCEs and more than 200 ACEs performed during 2009. Dr. Peterson commented on the importance and significance of reporting problems at a very low level in the attempt to recognize trends and preclude more significant problems and he stated these efforts were largely responsible for the huge improvement in performance, including forced outage rates, within the nuclear industry over the past 20 years. He stated that having zero tolerance for error is extraordinarily counterproductive in improving performance. Dr. Peterson observed, and Mr. David agreed, it is important the public understand that it is a misconception that the NRC is being ‘soft’ on its nuclear licensees when large numbers of low safety-significant errors are reported at nuclear facilities, as these numbers may be evidence that problem reporting is being encouraged by the licensees. Dr. Peterson observed more concern should be directed at problems that recur rather than the number of problems reported, as problem reporting is the best strategy for safety when coupled with an effective CAP. Mr. David stated it is important that employees believe in the CAP and understand it is management’s expectation that all problems will be entered in the CAP and go through a screening process. He stated reporting a problem does not necessarily result in the expenditure of resources and as a result of the screening process approximately 40-50% of problems reported will be closed after having trend codes entered with no further action required. Trends are evaluated on a weekly and monthly basis to discover whether there are emerging trends indicated by the data which would justify expenditure of resources to address problems at a low level and implement corrective actions before those issues can become safety significant. Dr. Lam agreed resources are limited and each problem cannot be accorded the same level of significance but rather any response must be weighted by safety significance. Mr. Conway inquired, with respect to the number of inputs to the CAP which require trending only, how frequently trends were reviewed and, in response, Mr. David replied that typically a monthly review by individual organizations is conducted inclusive of everything that is being trended and on a quarterly basis all organizations are brought together to do a site roll-up review to make sure the same or similar problems are not evident across departmental lines.

In response to Dr. Budnitz’ inquiry regarding a RCE performed in 2010 for a cross-cutting issue on problem evaluation, Mr. David stated the RCE was based upon a lack of thoroughness in problem evaluation due to a lack of senior leadership and resulted in a primary corrective action to create an overall procedure for program governance requiring metrics and health reports for each of approximately 16 identified programs. Mr. David reported that during Mr. Baldwin’s presentation, Mr. Baldwin reported that NCVs have begun to show a downward, improving trend and compared to one year ago plant performance has significantly improved. A number of procedures have been strengthened as a result of the review of process problems to ensure verification and evaluation of the licensing basis is included in addition to technical issues. There are now newly created review boards at the departmental level, requiring manager approval, to conduct review of corrective
Mr. David reviewed the performance improvement programs including self-assessments and benchmarking. In response to Mr. Conway’s question, Mr. David stated DCPP limits the implementation of recommendations from benchmarking visits to between two and five per visit. The OE Program at DCPP has implemented a new process using industry event reports with significance level ratings from one to four. Based on the review, a determination is made whether the operating experience at another facility is applicable to DCPP. In response to Dr. Lam’s questions, Mr. David stated the Operating Experience (OE) Program team is a cross discipline, matrixed team including the program owner from Site Services working together with personnel from Maintenance, Engineering and Operations. In response to Dr. Budnitz’ comment, Mr. David stated it is believed that the new processes being used in the OE Program will reduce workload for the single individual in the Site Services organization now assigned to the OE Program, as it is expected approximately 40% of low level events will be screened out. In response to Dr. Budnitz’ observation that an event might be incorrectly screened-out, Mr. David stated that all of the OE will still be available through an industry website. In response to Mr. Conway’s question, Mr. David stated screening of OE is done weekly by a team which looks beyond just the technical issues to the lessons learned from the event and he confirmed, in the past, OE from boiling water reactors was screened out but that was no longer necessarily the case.

The Observation and Coaching Program creates customized checklists of items that should be reviewed and rated in a database during observations by supervisors in the field. In response to Dr. Peterson’s inquiry about evaluation of safety versus issues of physical security Mr. David stated that by proper management there can be synergistic benefits for safety and security. Dr. Peterson stated that the approach to evaluating plant security is antiquated compared to evaluations for safety and he inquired to what degree the observation programs were integrated from the perspectives of safety and security. Mr. David stated that every supervisor at the station is trained in behavioral observation related to fitness for duty and security issues separately from the program for management observations in the field, which function to set expectations, reinforce standards and correct inappropriate behaviors immediately. He stated the Management Observation Program is a completely separate database from behavioral observation done to meet NRC requirements for access to the power plant and is administered separately. Mr. David stated that in the event of a human performance error which could result in personnel injury, equipment damage or loss of generation the Security organization is involved from the inception of the review. Dr. Peterson remarked that the Committee, in its review of operational safety in context of the safety-security interface, is comfortable with the separation of the Security department from Site Services. In response to Mr. Conway's inquiry concerning qualifications to become a coach, Mr. David stated the coaching program is commonly referred to as the Management Observation Program and all supervisors are expected to identify gaps observed in the field with coaching being done immediately or shortly after the observation. He commented coaching is done against documented standards. Mr. David reported the DCPP Site Standards Handbook contains all the basic expectations and procedures and in his opinion is adequate to set the standards for coaching at DCPP. In response to Mr. Conway’s query, Mr. David confirmed that DCPP employees appear to accept and appreciate coaching feedback. In response to Mr. Wardell’s question about the
Continuous Simplification and Innovation Program, Mr. David replied that program is separate from the Performance Improvement Program with the Continuous Simplification and Innovation Program, being focused more on efficiency and cost savings and less around human performance and that program is administered site-wide at DCPP.

Mr. David reviewed the responsibilities of the Procedure and Document Services organization including: management and oversight of the Procedure and Document Program; oversight of the Administrative Procedure Program; collecting input for Operations and Engineering procedure revisions including assessing the efficacy of those resulting from design change; Maintenance working level procedure revisions; document control and the Records Management System to maintain documentation for the life of the plant; and management of the Procedure Upgrade Project to upgrade processes and procedures to current industry standards. In response to Dr. Peterson's question, Mr. David stated most of DCPP's documents within its document management system are in Word format and the process for review, approval, and revision control is accessible through the Filenet database using tools provided by Procedure Navigator. He stated most of the control copies previously used throughout the plant have been eliminated. However, the Control Room and Main Library retain control copies of procedures which are available throughout the plant in electronic format. In response to Mr. Conway's question whether a system exists to determine how many different procedures are impacted by a change or modification to a system Mr. David confirmed Document Services maintains a log of all controlled sets of procedures and can determine which require immediate distribution. He further replied the Procedure Commitment database tracks every commitment made, with a tracking number, and if a step in a procedure is based upon a commitment, a superscript annotation is inserted in the procedure to reference the particular commitment tracking number. In response to Mr. Conway's inquiry Mr. David reported the extent of the procedure backlog for Operations, Maintenance and Engineering now totals approximately 700 items with most backlogged items representing enhancements or clarifications and he confirmed there is not, at present, concern about the number of backlogged items and two procedure writing groups are engaged in addressing the backlog. In response to Consultant Linnen, Mr. David replied approximately less than 5% of procedural revisions are necessitated by procedures having been identified as initially incorrect, while the vast majority of backlogged items are generated by other issues reported by the procedure users.

Mr. David stated Regulatory Services has a total of nine persons on Mr. Baldwin’s staff and provides two primary functions at DCPP including: managing the licensing and regulatory interface process through management of the plant’s operating License, management of License amendments, management of TS changes, and implementation of new licensing requirements; and a compliance function including responsibility for NRC inspection interface with the resident inspectors and NRC inspection teams, event reporting and routine reports. In response to Dr. Lam, Mr. David stated there are approximately six changes to TS now in progress at DCPP and, over the life of the plant there have been hundreds of license amendments for the two units. In response to Mr. Wardell’s inquiry concerning the future responsibility for the Licensing Basis Verification Project (LBVP) once that multi-year project is completed, Mr. David stated the responsibility for maintaining the licensing basis will reside with Regulatory Services. Mr. Sharp stated the LBVP now reports to him in his role as Senior Director of Technical Services and, in many cases, when adjustments or
clarifications are required, the document is prepared within the LBVP but processed through the Regulatory Services organization. Mr. Sharp stated there were also a great number of commitments and changes associated with the License Renewal Project. In response to Mr. Wardell’s inquiry, Mr. David replied that when the LBVP is complete the additional procedural guidance training and rigor in the program will assist in assuring procedures will remain correct and he stated the controls now in place should be adequate for that effort.

In response to Mr. Linnen’s question concerning whether an issue involving correct payroll payments being made to Operations personnel had been resolved, Mr. David confirmed in the past some errors were made but he stated he is unaware of any current issues between management and the plant operators in this regard. In response to a question from Mr. Linnen, Mr. David stated that only a small percentage of the procedural backlog was more than one year old.

A short break followed this presentation.

Site Services Director Steve David continued with the next informational presentation to the Committee.

**Overview of the Performance Improvement Review Board.**

Mr. David stated performance improvement (PI) at DCPP is intended to allow the plant to achieve sustainable, leading industry performance by making PI a core business for DCPP. A relatively new process in this effort now includes the Performance Improvement Review Board (PIRB) which is based on industry benchmarking. The function of the PIRB is to review the different line organizations’ Performance Improvement Integration Matrix (PIIM) reports. PI monitoring includes performance monitoring; analyzing, identifying and planning solutions; and implementing those solutions. Mr. David reviewed the PI tools being used at DCPP including:

- Corrective Action Program
- Self-Assessment
- Benchmarking
- Operating Experience
- Trending
- Management Observations
- Internal Oversight (QV organization)
- External Oversight (NRC, INPO, NSOC and DCISC)

Mr. David remarked that Mr. Baldwin’s Regulatory Services organization is monitoring regulatory trends to review violations received by other nuclear stations to identify emerging trends and to ensure DCPP is prepared to deal with a changing regulatory environment.

Mr. David stated the PI efforts require strong leadership and oversight, along with a dynamic learning environment, to promote effective improvement. Boards working to provide leadership and oversight include the PIRB, the Self-Assessment Review Board (SARB) and the Corrective
Action Review Board (CARB). In response to Dr. Lam’s inquiry, Mr. David stated the boards are chaired by either the Site Vice President or a senior director, with a quorum of members at the director level, with alternative members designated at the manager level.

Mr. David reported the PIRB works to achieve and maintain performance excellence by ensuring effective use of PI tools to improve personnel and plant performance; fostering effective performance results from a strong partnership between the line and PI coordinators in the areas of trending and work group evaluations; using OE to enhance learning and work products; and providing effective use of feedback and observation to improve PI Program quality and to make sure employees are familiar with DCPP standards and the expectations for meeting those standards.

The PIRB is assisted through the use of the PIIM, based on industry best practices, which Mr. David described as a tracking tool which provides a graphical representation of the PI tools in use. The line organizations are brought into the process to discuss their current level of performance and the PIIM is used to assess and determine if a DCPP organization is self-critical; seeks excellence in performance; is diverse in approach and not reliant on a single process or program to identify gaps in performance; prioritizes appropriately and effectively; develops effective corrective actions; and implements those actions well and with rigor; and represents broad organizational involvement.

Mr. David reviewed with the members and consultants the PIIM for Operations Services Chemistry and Radiation Protection organizations for the period January 1, 2010 through December 31, 2010. The matrix includes entries for: tracking numbers for the Notification and associated due dates; identification of the performance gap or issue; other stakeholders; whether the issue is part of the 2011 Station Initiatives; how the performance gap was identified; the method to be used to resolve the issue; and resolutions being monitored. Mr. David described the three basic areas within the PIIM: identification and prioritization of performance gaps; how the gap was discovered and what is planned to address it; and how improvement and performance will be tracked. In response to Mr. Linnen’s question, Mr. David stated one of three significance levels is assigned to a condition report with Significance Level 1 receiving a RCE, Significance Level 2 an ACE, and Sig. Level 3 either a work group evaluation or a close-to-trend determination. In response to Consultant Linnen’s question, Mr. David stated there are milestones each month where all data must be submitted to the person administering the PIIM, analysis is then done and the report is published and distributed and reviewed and discussed during a meeting with 40-50 persons including the Site Vice President, the directors, managers, and some supervisors. Mr. David, in response to Mr. Linnen, stated PI indicators which have remained low would be shown on the QV organization’s top issues list and be addressed in the QPAR. Mr. Sharp stated that in the Performance Review Meetings an indicator in other than green status would be discussed publicly and receives the attention of DCPP senior management. Mr. David confirmed, in response to Dr. Budnitz’ inquiry, that one person in each organization listed on the PIIM is responsible for coordinating the input to the PIIM and Mr. David stated that while creating the PIIM was a significant effort, efforts to maintain and to use the PIIM are not excessive, based upon the value of the PIIM to the organization.

Mr. David reviewed the results to date of PI efforts at DCPP and stated as a result of those efforts a larger segment of the workforce has been engaged through reinforcement of a vision for improvement; high standards have been set which challenge the status quo at DCPP; and a level of
assurance is provided that basic processes are robust, well-supported, effectively monitored and sustained. Dr. Lam stated he was persuaded the PI tools were of exceptional value and in response to Dr. Lam’s question, Mr. David stated the PI coordinators, who are closely integrated with the line organizations, as well as the managers and directors have been engaged in the PI efforts for some time and are familiar with all the tools currently being used, which lay out a clear picture for Mr. David, as Site Services Director, as to what priority items need to be addressed and who is responsible for them.

Results of the July 2010 Self-Assessment of Training. - this topic was not presented.

Mr. Mark Sharp, P.E. currently the Manager of the LBVP and formerly the supervisor of the DCPP Probabilistic Risk Assessment (PRA) group was requested by Senior Director of Technical Services Loren Sharp to make the next presentation to the Committee

Status and Plans for the Probabilistic Risk Assessment Group.

Mr. Sharp stated that Mr. Ken Bych is now supervising the PRA group at DCPP but due to other commitments Mr. Bych was unable to attend this meeting of the Committee. He then reviewed PRA staffing at DCPP and a recent survey from 2010 of 15 domestic utilities with a total of 61 nuclear units which found an average PRA staff consists of 2.9 full time equivalent employees per unit, including the supervisor. DCPP’s average staffing was 2.0 full time equivalent employees including a supervisor for the PRA group. In response to Dr. Peterson’s request, Mr. Sharp agreed to provide the median number of full time equivalent PRA staff members because utilities, such as Exelon Corporation, which operate fleets of nuclear units may affect the data. Dr. Budnitz observed that the PRA supervisor at most plants is also a PRA practitioner and he stated this was a significant issue in a group of three total employees. The survey found the average industry PRA group to have 8.6 years of PRA experience while the average years of experience for the PRA group at DCPP was 4.5 years. Mr. Sharp stated that in 2010, using this data, DCPP added an additional PRA analyst and currently the DCPP PRA group has three qualified PRA analysts and one new hire engineer on a rotational assignment but who is destined to become an analyst. In January 2011, Mr. Sharp was reassigned to the LBVP and replaced by Mr. Ken Bych as a rotational supervisor. Mr. Sharp reported DCPP is currently seeking a permanent replacement. In response to Dr. Lam’s inquiry about whether there was any attempt in the survey to gauge quality of PRA staffing, Mr. Sharp replied only years of experience and experience with specific projects was included in the survey. Dr. Budnitz commented staffing levels vary depending upon the projects and it is crucial to review whether PRA staffing is well matched to current applications. Mr. Sharp stated that for immediate operational analysis, the DCPP staff is well matched and DCPP uses contractors for larger, specific projects. The recent efforts in the area of the Fire PRA involved 20-25 contracted analysts.

Mr. Sharp reviewed the PRA group’s accomplishments during 2010 as follows:

- In December 2010, following a four-year effort, the Fire PRA model was reviewed by the Westinghouse Owners Group Peer Review Team. The Fire PRA was judged to be of excellent quality and is to be used as a benchmark for an industry standard. The Fire PRA model is now ready to apply to the National Fire Protection Association (NFPA) 805 Program. The DCPP PRA group is currently working to close Internal Events Model open items to support NFPA 805
and other submittals.

- The Safety Monitor on line and outage risk management model, which will replace the currently used ORAM Sentinel tool, has been developed for on line maintenance risk assessment.

- DCPP has funded and is preparing, with its partners in the Strategic Teaming and Resource Sharing (STARS) resource sharing group, for joint implementation of Risk Informed Technical Specifications (RITS) Initiative 5B to concentrate on more risk-significant surveillance as part of a risk-informed surveillance frequency program.

Mr. Sharp reviewed with the Committee the PRA Strategic Plan which includes compliance with Regulatory Guide 1.200 by 2014. These efforts will include: the PRA Seismic Update to address seismic hazards as identified and peer-reviewed by the PG&E Geosciences Department; an equipment seismic fragility gap assessment and update with Civil Engineering which is now ongoing and will continue; and targeting a seismic PRA gap assessment and model update by the end of 2011. The PRA Strategic Plan also includes a PRA Internal Flooding update, for which Mr. Sharp reported the gaps are well understood, which has received its funding allocation but for which work is being deferred until the Internal Events and Seismic PRAs are completed. Dr. Peterson commented that design studies and analyses are underway concerning proposals to switch from once-through-cooling (OTC) and a long list of negative safety impacts, including a greater potential for flooding because of the possible use of cooling towers, has been identified and he inquired whether the PRA group is doing any work on these issues. Mr. Sharp replied those issues are not being reviewed at present but would be if design change modules were forthcoming. Mr. Sharp and Dr. Lam observed that an accurate PRA assessment cannot be undertaken unless the final configuration of the plant is understood, however, Dr. Peterson remarked that these would be potentially massive changes that would require extensive review and he opined that task might be better undertaken sooner rather than later.

Mr. Sharp reported that the PRA Strategic Plan is expected to be fully leveraged by 2015 include:

- Risk Informed Technical Specification (RITS) Initiative 4B including Risk-Informed Allowance Outage Completion Times (“flexible AOT”) to extend outage times in a controlled fashion. In response to an inquiry from Mr. Conway, Mr. Sharp stated this would require a license amendment but as it is a one-time allowance changes to the TS should not be required.

- 10 CFR 50.69 to provide risk-informed categorization and treatment of Systems, Structures and Components (SS&C) to effectively reduce regulatory review due to the creation of better risk significance documentation.

In response to Dr. Budnitz inquiry, Mr. Sharp stated the PRA has no plans at present for individual systems and Dr. Budnitz stated these last two major initiatives would have an impact only after the Seismic PRA has been updated.

Dr. Budnitz thanked Mr. Sharp for an excellent presentation.

The Chair reviewed the dates established for future public meetings and fact-finding visits as
Public meetings of the Committee are now scheduled on June 21-22 and October 11-12, 2011, and for February 8-9, 2012.

Fact-finding visits by a member and a consultant are now scheduled on February 28-March one, April 19-20, May 24-25, July 12-13, August 16-17, September 7-8, November 15-16 and December 6-7, 2011, and on January 10-11, March 13-14, April 3-4 and May 22-23, 2012.

Ms. Jane Swanson, representing the group San Luis Obispo Mothers for Peace, was recognized to address remarks to the Committee. Ms. Swanson reported the NRC has scheduled a special inspection related to license renewal for DCPP on April 6-7, 2011. The Chair thanked Ms. Swanson and confirmed the Committee was aware of the upcoming inspection. Ms. Swanson then stated she wished to inquire about a Licensee Event Report reviewed earlier during this public meeting when, on December 25, 2010, faulty equipment on one of DCPP’s meteorological towers erroneously indicated a wind speed of 80+ miles per hour. Ms. Swanson stated it was her understanding this event resulted in the primary Meteorological Tower being declared inoperable and she asked whether the equipment had been repaired and how many meteorological towers were currently operable. DCPP Senior Director of Technical Services Sharp replied that one piece of equipment at a single elevation on the tower was found to be faulty and both meteorological towers at DCPP are currently fully operational. Dr. Lam mentioned he pursued this issue with PG&E previously from the standpoint of whether the equipment was sufficiently robust to survive winds of 100 miles per hour and was satisfied that winds of such strength would not pose a safety challenge to the plant. Ms. Swanson observed that it was her understanding both towers needed to be operational to provide information in the event of a radiological release. Mr. Peter Bedesem, Technical Assistant to the Site Service Director at DCPP who also serves as the liaison between PG&E/DCPP and the DCISC, replied that a conservative decision was made on December 25, 2010, to declare the primary Meteorological Tower inoperable and to utilize alternative methods of accurately measuring the wind speed and he confirmed that both primary and secondary systems are now available to provide multiple redundancy. Ms. Swanson commented on the difficulty of predicting wind conditions at the site and Dr. Peterson remarked that in the event of a radiological release monitoring systems would be needed further away from the plant site.

The Committee then reviewed and briefly discussed PG&E’s responses to the two recommendations made in the DCISC’s 20th Annual Report on the Safety of Diablo Canyon Nuclear Power Plant operations and, on a motion by Dr. Peterson seconded by Dr. Lam, unanimously accepted the responses to Recommendations R10-01 and R10-02 and directed that PG&E’s responses to those recommendations be made a part of that Annual Report.

Mr. Wardell concluded the morning meeting with the observation that, concerning item CM-7 on the current Open Items List, a concrete inspection report was completed for U-1 in November 2010 and will be provided for review. Concrete inspection for U-2 will be conducted during 2R16 and a report should be available by the end of 2011.

XX Adjourn Morning Meeting
The Chair adjourned the morning session at 11:10 A.M.

XXI Reconvene for Afternoon Meeting

The afternoon meeting of the DCISC was called to order by Committee Chair, Dr. Budnitz, at 1:00 p.m.

XXII Committee Member Comments

The Chair introduced himself, the other members and the Committee's consultants and Legal Counsel. There were no remarks by members of the Committee at this time.

XXIII Public Comments and Communications

Dr. Budnitz reviewed the protocol for addressing remarks to the Committee. There were no comments from members of the public at this time.

XXIV Information Items Before the Committee (Cont'd.)

The Chair requested PG&E’s Senior Director of Technical Services, Mr. Loren Sharp, to continue with the next informational presentation to the Committee.

Mr. Sharp introduced DCPP Director of Quality Verification Dennis Petersen to make that presentation.

Quality Verification Organization’s Perspective on Plant Performance; the Quality Performance Assessment Report; and Quality Verification’s Top Concerns.

Mr. Petersen reviewed the new station gap areas identified by Quality Verification (QV) including weaknesses in the Foreign Materials Exclusion (FME) Program; and inadequate Owner Acceptance Reviews of vendor design work. He stated that both of these new station gaps were identified during the recent cycle 16 refueling outages. DCPP has addressed the identified gaps in its FME Program through the use of human error prevention tools, training and monitoring. The gap to inadequate Owner Acceptance Review of vendor design work was addressed through re analysis, further review of operability issues, and hardware modification. Mr. Petersen stated that PG&E retains the responsibility to validate that its vendors’ designs are correct and, in response to Consultant Linnen’s inquiry, he stated QV's statistical sampling of owner acceptance reviews was based upon risk significance, complexity, and impact of the specific design. In response to Consultant Wardell’s question, Mr. Petersen confirmed the inadequately reviewed designs were installed in the field and he gave as an example a design which resulted in a temperature error in connection with a control rod drive mechanism which, while having no impact on safety, was found to have resulted from an inadequate review by the vendor.

Mr. Petersen reviewed and identified new department gaps including those associated with: deficient Maintenance department work practices caused by inconsistent tailboards, incomplete work packages, inadequate use of operating experience in work packages, and insufficient oversight of supplemental workers; problems being screened out of the Corrective Action Program.
(CAP) thereby resulting in untimely and ineffective corrective actions; Security department training not fully utilizing the Systematic Approach to Training (SAT) process; and Security procedures not being adequately developed and maintained. In response to Mr. Wardell’s inquiry, Mr. Petersen confirmed QV now includes personnel with licensed reactor operator and security supervisory experience necessary to review the safety-security interface, which forms a principal focus of the DCISC’s review of security-related issues.

Mr. Conway observed that a self-assessment of the FME Program performed in May 2010, which was reported in July 2010, found the FME Program and the corrective actions taken to date to have been effective and Mr. Conway queried what might have changed since then. Mr. Petersen replied that QV did not find the FME Program to be ineffective but rather QV identified weaknesses in the Program sufficient to justify monitoring station performance and worker practices in the field. Mr. Petersen stated QV reviewed the results of the self-assessment by the FME Program and identified key corrective actions associated with communication of standards and expectations and the monitoring of performance. He observed there appeared to be inadequate follow up concerning those issues entering into the cycle 16 refueling outages and the resulting monitoring of the FME team’s performance during the cycle 16 outages did not show the desired improvement over that from prior outages. In response to Consultant Wardell’s question, Mr. Petersen stated that if the corrective actions applied to the FME Program were effective, during cycle 17 those errors addressed by QV should no longer be found. In response to Dr. Lam’s inquiry concerning how untimely or ineffective were the gaps identified by QV, Mr. Petersen replied that based on four assessments of CAP documents, the issues not retained by the CAP should have shown a reduction but that was not the case and he confirmed there was an issue identified with timeliness in the first quarter of 2010, with no improvement observed by fall of 2010, so essentially there were issues of untimeliness.

Mr. Petersen reviewed the CAP implementation shortfalls at DCPP as including the NRC’s area of Problem Evaluation during the period of the Quality Performance Assessment Report (QPAR) for the third period of 2010, during which the highest volume and most significant. CAP-related problems identified by QV were those related to the area of Problem Evaluation including: a failure to evaluate a nonconforming condition; problems screened out of the CAP; and repeated occurrences of untimely NRC Maintenance Rule determinations. He reported that a weakness in CAP trending was identified as a mid-cycle review Area For Improvement and Mr. Petersen observed that the CAP is increasingly reliant on the robustness of its trending process. In response to Mr. Wardell’s question, Mr. Petersen replied he believed the areas of key component weakness identified in the CAP should be addressed and resolved by the second quarter of 2011. Mr. Petersen stated the processes employed by the Corrective Action Review Board (CARB) are improving and that CARB reviews drive improved performance and quality of apparent cause evaluations (ACE) and identify and correct inadequately closed SAP Notifications. Mr. Petersen observed that trending program weakness represents an ongoing area of vulnerability and QV has recommended a line performance analysis to try to identify staff knowledge gaps and associated training needs.

Mr. Petersen reviewed weaknesses in the DCPP Security Program as including: procedures not being adequately developed or maintained resulting in error reduction tools not being adequately supported; information not being readily available to Security personnel; an incorrect or
inconsistent level of use; and a misplaced procedural focus on reformatting procedures rather than updating procedure content. He observed that procedural details need to be commensurate with the tasks. Training weaknesses in DCPP’s Security Program include: inadequate objective evidence which demonstrates program maintenance is occurring; instructors focusing on the development and implementation phases of the SAT process at the expense of the other phases; and the VISION database not being utilized or maintained as intended. Mr. Petersen identified some of the contributing factors and provided further insight including: without procedures in place the Security Program cannot ensure that critical actions are repeatable and sustainable; and that the Security Training Program would benefit from an instructional technologist who could make efficient use of the SAT process.

Mr. Petersen reviewed DCPP site leadership’s actions related to the significant Cross-Cutting Issue of Evaluation of Thoroughness by the NRC as including inclusion of Thoroughness Evaluation as a focus area of the 2011-2015 Operating Plan; development of an action plan; and completion of the pilot review of the License Basis Verification Project (LBVP). He reported DCPP is following up on the NRC’s inspection and the proposed violation resulting from the 2008 CAP audit when and where these problems should have been reported. An ACE has identified key corrective actions including: the use of the Quality Assurance (QA) training program to ensure proficiency in key functions; revision and improvement of audit checklists to include review of operating experience and NRC trends; establishment of recurring QA training for specific high level, risk significant ‘evaluative’ areas; and ensuring all QV work functions are appropriately represented within the QV Curriculum Review Committee (CRC). The NRC's resident inspector has also suggested revising RCEs to provide for and include a role for QA. RCE measures will be made more clear and quantifiable and the RCE process will be institutionalized to review missed opportunities for QV's insight. Mr. Petersen stated that contributing factors and insights include governance and metrics needing more run time and he stated that appropriate actions are being taken regarding this gap in station performance.

Mr. Petersen discussed trends within the nuclear industry regarding establishment of a Safety Culture Monitoring Panel, which originated with the Nuclear Energy Institute’s (NEI) work with the NRC, stakeholders and pilot plants and, for DCPP involved the addition of Evaluation Thoroughness as a focus area to the 2011-15 Operating Plan and the completion of the pilot review of the LBVP. The objective of the NEI’s initiative is to provide a repeatable, holistic approach, using multiple data sources, to assess safety culture. The process includes quarterly review by a panel to integrate data from a variety of sources to collectively propose actions in a report that is submitted to the DCPP Site Vice President and senior leadership team. The senior leadership team may then concur with or modify the Safety Culture Monitoring Panel’s proposed actions and then report the results to PG&E’s Chief Nuclear Officer (CNO). Mr. Petersen, in response to Mr. Wardell’s inquiry, confirmed the Safety Culture Monitoring Panel will interface with the Employee Concerns Program. In response to Dr. Budnitz’ question of how such a panel can assist in determining what is a cultural issue or a missed issue, Mr. Petersen stated the Safety Culture Monitoring Panel process is not expected to be onerous, rather it is well laid out and has been benchmarked at other plants. Mr. Petersen stated that in the past data has not always been analyzed in a manner designed to filter out singular events and anomalies. Mr. Conway observed that this process appears to collect a
large amount of data which is submitted to the Site Vice President and to the CNO and Mr. Conway stated it was difficult not to concur with hard data. Mr. Petersen replied that the conclusions drawn from the data and the right corrective actions represent the areas where a dialogue is expected to occur. Mr. Petersen confirmed the report is intended to be informative, and not to be subject to change, so as to provide a collective, attributable and accepted review. Mr. Conway observed the report appeared to be workable but he stated the process could get sidetracked and, as the report measures safety culture, it will be necessary to find out if the process and resulting report are actually working.

Mr. Linnen inquired regarding a self-assessment performed by Maintenance and Engineering during 2010 which discussed the lack of a systematic approach to training and included the observations that QV was not sufficiently intrusive, as a QV staff position was not filled at the time of the self-assessment. Mr. Petersen replied that this situation was the result of a QV auditor approaching retirement and Mr. Petersen confirmed that as a result the position was vacant for too long, resulting in not enough oversight of certain areas. Mr. Petersen stated that QV now has a licensed operator on the team, as well as supplemental assistance, and has tightened up its rigor for providing feedback.

Following Mr. Petersen’s presentation, Ms. June Cochran of Shell Beach was recognized and addressed several remarks to the Committee.

Ms. Cochran referred to Mr. Petersen’s presentation and asked why Maintenance department work practice experience remained weak. Mr. Petersen replied that his remarks were in reference to weaknesses with the use of operating experience as on certain past occasions certain operating experience was not seen as very useful and often operating experience is tangential, however, at times relevant operating experience was inadequately addressed in job briefings. Ms. Cochran then commented on a remark made by Dr. Lam concerning the time taken by the CAP to address issues. Mr. Petersen replied that some changes to the process were postponed due to the immediacy of the fall 2010 refueling outages and he commented QV disagreed with the resulting delay. Ms. Cochran remarked on her perception from Mr. Petersen’s presentation that Security training at DCPP is not up to the standards within the nuclear industry and she inquired when it might be and requested an example of below standard Security training at DCPP. Mr. Petersen explained that in his presentation he had not referred to DCPP Security training as not up to standard, rather his comments were in regard to elements of Security training and procedures that were not being used as robustly as desirable. Ms. Cochran requested an example of a DCPP Security procedure which had not been adequately maintained, however, Dr. Budnitz replied that this issue was not within the scope of the DCISC’s review. Ms. Cochran then asked whether the cross-cutting measures which were resolved within the last six months included a clearance by the NRC resident inspector. Mr. Petersen replied and stated that these measures included common ground with the CAP issues and he stated proven performance on the NRC’s cross-cutting measures can and should be achieved by the second quarter of 2011.

**Impacts of Elimination of Once-Through Cooling.**

Mr. Bryan Cunningham displayed a schematic drawing showing the operation of once-through...
cooling (OTC) with reference to a pressurized water reactor such as U-1 and U-2 at DCPP and he stated that DCPP was the largest OTC plant on the West Coast. He stated the cooling source water for DCPP comes from the Pacific Ocean and the plant circulates 2.5 billion gallons per day when operating at full power. He reported this is an amount greater than the volume circulated by the San Onofre Nuclear Generating Station (SONGS) near San Diego. The discharged water averages 19.8°F Fahrenheit (F) above ambient seawater temperature.

OTC impacts include thermal discharge; impingement resulting from trapping of larger aquatic organisms on bar racks or screens; and entrainment, which Mr. Cunningham stated was a larger issue for DCPP than impingement, where small organisms and eggs are drawn through the cooling system. Mr. Cunningham explained that there is a regulatory assumption that impingement or entrainment results in 100% loss of the aquatic organisms. However, in response to Dr. Peterson’s query, he stated the federal and state policy assumption was not based on fact but was used by the regulators to establish clear benchmarks for all facilities. In response to Dr. Lam’s query, Mr. Cunningham replied that different mortality rates applied for different species and facilities and he confirmed DCPP has done some tabulation on species which go through the DCPP cooling system and survive but PG&E does not have detailed assessments of the actual mortality rates. He stated there is a difference in assessing losses due to impingement and entrainment in absolute numbers as opposed to ecological population losses. He observed there is a significant cost to nuclear and fossil fuel plants to deal with the regulations and reported that DCPP has the lowest impingement rate of any OTC plant on the West Coast. In most cases entrainment results in incremental mortality to larvae only and is not expected or observed to impact reproductive populations and Mr. Cunningham agreed with Dr. Peterson’s observation and stated it was his opinion that the impact of taking measures to sustain habitats could be more effective than preventing impingement or entrainment of aquatic species by OTC facilities. Mr. Cunningham stated he believed that shutting all OTC plants would not produce any effect on the recovery of certain species as it was the destruction of habitat and depletion of reproductive stock which have the greatest effects. He agreed with Dr. Peterson’s observation that the site of DCPP which preserves 15 miles of undisturbed and undeveloped coastline is likely to compensate for DCPP’s effect on aquatic organisms due to impingement or entrainment. Drs. Budnitz, Peterson and Lam briefly discussed the relevance and responsibilities of the Committee regarding the absolute numbers of impacted species as well as the design changes at DCPP which could be mandated by regulatory changes and have a negative effect on operational safety at the plant.

Mr. Cunningham reported there are 18 power plants in California using OTC, representing 35% of the state’s generating capacity and 19% of its generation. Both DCPP and SONGS represent baseload electricity generating resources for California and the two plants represent 8% of the OTC capacity and 11% of electric generation overall for California. DCPP generates 20% of PG&E’s delivered electricity and is PG&E’s only OTC facility. Nationwide, 38 nuclear facilities use OTC with 9 facilities using saltwater and 29 using fresh or brackish water. Mr. Cunningham stated that there are no closed-cycle cooled saltwater make-up nuclear plants. Palo Verde Nuclear Generating Station in Arizona uses recycled water and Hope Creek Nuclear Generating Station in New Jersey uses pure fresh or 3 parts per million fresh water.

Mr. Cunningham provided data from the California State Water Resources Control Board’s (SWRCB)
Substitute Environmental Document showing the percentages of OTC flow from DCPP compared to the impacts from impingement and entrainment. Overall DCPP flow is 22% but because of the plant’s location this flow represents only 1% of total OTC impingement and 8% of total OTC entrainment.

Mr. Cunningham reported that California State OTC Regulatory Policy does not mandate change but rather favors OTC plant retirement, re powering or closed-cycle retrofit. He commented that retrofitting is a significant expenditure. Plant specific compliance schedules have been established with DCPP’s being December 31, 2024 and that for SONGS’ being December 31, 2022, at the ends of their respective current license periods. A Statewide Advisory Committee on Cooling Water Intake Structures is now being assembled. Compliance alternatives have been identified for OTC facilities with Track 1 being reduction of each unit intake flow rate by 93% which he reported is only commensurate with closed-cycle cooling; and Track 2 being reduction of impingement and entrainment losses to comparable level achieved by Track 1. Mr. Cunningham reported the problem is that none of the technologies under consideration work well in saltwater ocean facilities. There is a separate requirement established for a special study of nuclear-fueled power plants which is to be conducted by an independent third party under the oversight of a review committee to examine scientific, technical and environmental issues related to a closed-cycle retrofit of DCPP and SONGS established by the SWRCB executive director which will report to the SWRCB. Mr. Cunningham confirmed, in response to Dr. Budnitz’ and Dr. Lam’s questions, that nuclear safety would be part of the review and that license review is being considered by the review committee. The SWRCB will consider the results of the special studies and evaluate the need to modify policy including the cost of compliance, the ability to achieve compliance with Track 1, and potential environmental impacts and tradeoffs of compliance with Track 1. Alternative requirements for nuclear plants may be established if compliance costs are determined to be wholly out of proportion compared to costs the State considers in establishing Track 1 compliance costs. The Tetra Tech firm has estimated the cost to refit DCPP at $1.62 billion. If alternative requirements are established, the difference in impacts required to be mitigated will be assessed. In response to Dr. Budnitz’ inquiry, Mr. Cunningham stated that conflict with nuclear safety requirements would exempt plants from requirements. On motion of Dr. Budnitz, seconded by Dr. Peterson, the DCISC directed that a letter be drafted to acquaint the Nuclear-Fueled Power Plant Review Committee with the role, responsibilities and expertise of the DCISC.

Mr. Cunningham reviewed the 2011 revision of 316(b) Phase II Rule by the U.S. Environmental Protection Agency which revised rule has been forwarded to the Federal Office of Management and Budget for review and which is expected to be published in the Federal Register on March 15, 2011, which will commence a 90-day comment period on the revised rule.

Mr. Cunningham discussed alternative technologies to OTC available to DCPP and stated impingement is not an issue for DCPP but alternatives to OTC relative to entrainment include fine mesh and cylindrical wedgewire screening, dry cooling and natural draft towers, all of which were found to be infeasible. Mechanical draft towers were determined to be likely realistic but infeasible due to engineering and permitting issues, adverse impacts and the cost. Enercon Services, Inc. performed a retrofit feasibility study for DCPP in 2009 which provided a detailed conceptual evaluation of mechanical draft cooling tower installation using saltwater make-up. Mr. Cunningham
described the parameters of a closed-cycle cooling retrofit assessment as including:

- Identification & scoping of a realistic conceptual design
- Identification of nuclear safety concerns
- Assessment of potential adverse impacts
- Identification of permitting and approval challenges
- Estimating the costs based on concept installation
- Development of a realistic conceptual project schedule

He displayed a photo of a conceptual model of the installation and the resulting tower plumes and stated neither DCPP nor SONGS were designed or sited for closed-cycle cooling as the SWRCB during the 1960s and 1970s encouraged the use of ocean versus fresh water for cooling purposes. Mr. Cunningham observed the wind patterns at DCPP mandate that closed-cycle cooling towers must be located to the south but he noted that even with the towers to the south approximately 15% of the time the electrical transmission lines would be blanketed with salt.

Mr. Cunningham summarized the engineering, nuclear safety, adverse environmental impacts, permitting, and cost/scheduling challenges as follows:

**Engineering Challenges**

- Conceptual Layout - 80 total tower cells located on eight acres.
- Demolition - 170,000 square feet of existing buildings, parking for 1,000 vehicles and rerouting the existing ISFSI haul road.
- Excavation - 2 million cubic yards of soil and rock.
- Modification - of major existing systems including main condensers, service cooling water heat exchangers and electrical systems.
- Tie-in Process - extreme difficulties given existing underground facilities to the west and south.
- Offshore Diffuser System Construction - on the ocean floor necessary to accommodate remaining 120 million gallons per day discharge.
- Saltwater Systems - impacts during construction phases.

**Nuclear Safety Challenges**

- Auxiliary Saltwater System - must remain on OTC.
- Turbine Building - flooding possible due to elevated system configuration.
- Transmission Systems - salt deposition impact on electrical arcing and plant trip risks, elevated salt and moisture entrainment in air intakes and accelerated aging of equipment site-wide.
- ISFSI Cask Haul Road - required rerouting.
Security Risks - due to opening established protected area during construction.

**Adverse Environmental Impacts**

- Significant visible plumes.
- Salt Drift - 7,500 tons per year.
- Greenhouse Gas Emissions - for replacement power.
- Fossil Fuel Consumption - for implementation.

**Permitting Challenges**

- Coastal Development Permit - significant level of on-site construction.
- Air Emissions Permit to operate - necessary credits not currently available.
- National Pollutant Discharge Elimination System (NPDES) Permit - for new discharges.
- Army Corps of Engineers CWA Section 404 Permit - required for tower blowdown discharge diffuser and intake construction.
- New State Lands Commission Lease - required for discharge diffuser installation.

**Cost/Schedule Challengers**

- 17-Month Dual Outage Required - both DCPP units out simultaneously.
- Initial Costs (2008 Dollars) - $2,689,000,000 capital projects plus $1,806,000,000 for replacement power for a total of $4.5 billion.
- Average Lost Capacity Post-Retrofit (“Derate”) - 27.7 MW per unit.
- Post Implementation Costs (2008 Dollars) - decommissioning fund increase of $67,200,000, replacement power due to derated capacity of $31,600,000 per year and Additional ODM cost of $7,400,000 per year.
- Unknown Plant Reliability Impacts Post-Retrofit.

Mr. Cunningham summarized, in concluding his presentation, the key issues from PG&E's perspective which include: nuclear plants are non greenhouse gas emitting baseload generation facilities with significant remaining useful life essential to meeting the emissions goals of California Assembly Bill 32; the enormous costs to retrofit which are not viewed favorably by the CPUC; the negative environmental and safety impacts during and following retrofit including the need for replacement power generation due to plant derate; and the required study of OTC alternatives for nuclear plants which must be performed by a qualified, experienced third party vendor.

**Dr. Budnitz stated the DCISC will continue to take seriously the charge to review the safety impacts of the elimination of OTC at DCPP and provide analysis and input to the process.** Dr. Lam cautioned the Committee to wait until the time is ripe to initiate any studies. Dr. Peterson stated the Fact Finding is the first review by the Committee. Drs. Budnitz and Peterson observed that any degradation of the current safety envelope would be a poor outcome and proposals for elimination
of OTC at DCPP have been greeted with skepticism by persons working in the area of reactor safety.

Following Mr. Cunningham’s presentation, Ms. Liz Apfelberg of San Luis Obispo was recognized to address comments to the Committee. Ms. Apfelberg stated she was aware of the proposals regarding OTC but not of the safety and economic costs of eliminating OTC. She observed that as OTC elimination would not be required prior to the end of the present operating license so why not shut the plant down at that time? Dr. Budnitz replied that the DCISC is charged with reviewing operational safety at DCPP and Ms. Apfelberg’s question of whether the plant should continue to operate is beyond the remit from the CPUC for this Committee.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

**XXV Concluding Remarks and Discussion By Committee Members of Future DCISC Activities**

These matters having been previously addressed, there was no discussion by members at this time.

**XXVI Adjournment of Sixty-second Public Meeting**

Dr. Budnitz thanked the personnel from AGP Video who performed video and sound recording for this meeting. There being no further business, the sixty-second public meeting of the Diablo Canyon Independent Safety Committee was adjourned by its Chair, Dr. Robert J. Budnitz, at 3:06 p.m.
Notice of Meeting

A legal notice of plant tour and public meeting and several display advertisements were published in local newspapers and mailed to the media and those persons on the Committee’s service list. A copy of the meeting agenda was also posted on the Committee’s website at www.dcisc.org.

Agenda

I Call to Order – Roll Call

The June 21, 2011, public meeting of the Diablo Canyon Independent Safety Committee (DCISC) was called to order by Committee Chair, Dr. Robert J. Budnitz, at 8:30 A.M. at the Avila Lighthouse Suites in Avila Beach, California. Dr. Budnitz welcomed the members of the public present and those viewing the meeting on the internet by streaming video at www.dcisc.org or www.slospan.org, he introduced and briefly reviewed the professional backgrounds, appointment and term of each member of the Committee.

Roll call was taken.

Present:

Committee Member Robert J. Budnitz
Committee Member Peter Lam
Committee Member Per F. Peterson

Absent:

None

II Introductions

Dr. Budnitz introduced the Committee's technical consultants, Mr. David C. Linnen and Mr. R. Ferman Wardell and DCISC Legal Counsel Robert R. Wellington and Mr. Pete Bedesem, Technical Assistant to the Site Services Director at Diablo Canyon Power Plant (DCPP), who serves as Pacific
III. Public Comments and Communications

The Chair reviewed the procedures and advice from the agenda for the meeting concerning receipt of comments from members of the public wishing to address remarks to the Committee. The Chair advised time would be set aside for members of the public to comment on those matters listed on the agenda at the time the matter was considered by the Committee and inquired whether there were any members of the public present who wished to address remarks to the Committee on items not appearing on the agenda for the public meeting.

Ms. Sherry Lewis, who identified herself as a member of the group San Luis Obispo Mothers for Peace (MFP) was recognized. Ms. Lewis stated she had read a series of articles in the local newspaper which discussed the dangers of nuclear power and she stated that it was the radioactive waste which was of the greatest concern to her. She stated her opinion that nuclear power was just too unforgiving of human error and there is no way to prevent accidents. She observed the waste produced by nuclear power will remain toxic for generations and will burden our descendants far into the future. She stated she believes people are too used to having radioactivity around in their daily lives and that when levels increase, standards have been relaxed. Ms. Lewis commented she viewed a film about efforts in Finland to permanently store and safeguard two years worth of nuclear waste into the future and stated the film discussed the many problems encountered in that effort. She stated that nuclear power is simply not worth the effort and expense which could be better employed in finding alternative sources of energy and stated that nuclear power should be stopped as soon as possible.

Dr. Budnitz thanked Ms. Lewis for her comments.

IV. Consent Agenda

The only item on the Consent Agenda was approval of the Minutes of the Committee’s February 15-16, 2011 Public Meeting held in San Luis Obispo.

Items were reviewed for follow up action, clarification was provided to Legal Counsel concerning the accuracy of certain references in the draft Minutes provided in the agenda packet for this meeting, and editorial and substantive changes were made to the draft of the February 2011 Minutes.

Minutes of the Committee’s public meetings, following their approval at a public meeting, become part of its Annual Reports on Safety of Diablo Canyon Nuclear Power Plant Operations (Annual Report). On a motion by Dr. Peterson, seconded by Dr. Lam the Minutes of the Committee’s February 2011 public meeting were approved as amended, subject to inclusion of the changes provided to its Legal Counsel.

V. Action Items

A. Update on Financial Matters and Committee Activities. Mr. Wellington reported financial
statements prepared by the Committee’s accountant showing the assets, liabilities and capital were provided for review. The current capital balance for the Committee’s accounts is $55,000 on hand which compares favorably with the prior year. Mr. Wellington reported the Committee will soon receive the second payment from the grantor trust which funds its activities. He stated the Committee's activities in 2010 resulted in its overspending its grant for that year and he commented the Committee would need to carefully monitor its activities during 2011.

In response to a question from Ms. Sherry Lewis Mr. Wellington explained that the Committee’s funding is provided in accordance with a California Public Utilities Commission (CPUC) decision which requires PG&E to include funding for the DCISC in its rate base. Mr. Wellington and Dr. Budnitz explained, in response to Ms. Lewis’ inquiry, that there is no conflict of interest created by PG&E providing funding to the Committee as PG&E has no control over the amount of the DCISC’s funding nor does it have any discretion in providing the funds as those matters are mandated by the CPUC which must approve PG&E’s rates for service.

B. Discussion of Issues on Open Items List. Dr. Budnitz requested Consultant Wardell lead a review of items on the Open Items List, used by the Committee to track and follow up on issues, concerns and information identified for subsequent action during fact-finding or public meetings. Mr. Wardell commented that items shown in italics on the list represent new items or items concerning which changes have been made since the list was last issued. Prior to their consideration of the current Open Items List, Members and Consultants discussed and the Members directed that a new category on the next edition of the Open Items List be created in order to separately track those items identified in connection with the review of the events at the Fukushima Daiichi Nuclear Power Plant (Fukushima Daiichi) in Japan which followed the March 11, 2011, magnitude 9.0 earthquake and the resulting tsunami. Members and Consultants discussed the rationale for and the method to be used, including cross-referencing, to organize this category which will be a part of the next edition of the Open Items List.

Items discussed and concerning which action was taken at the meeting included the following:

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<th>Item</th>
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<tr>
<td>TBD</td>
<td>Spent Fuel Pool (SFP) cooling</td>
<td>List or cross-reference under Fukushima Daiichi</td>
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<tr>
<td>EN-20</td>
<td>Plant Health Committee meeting</td>
<td>Remove RJB initials</td>
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<tr>
<td>EN-28</td>
<td>Engineering Issues</td>
<td>Pull out items related to Licensing Basis Verification Project (LBVP) to a separate EN item</td>
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<td>EP (Category)</td>
<td>Emergency Preparedness</td>
<td>List or cross-reference under Fukushima Daiichi</td>
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<tr>
<td>SE-36</td>
<td>Boric Acid</td>
<td>Change next action to 1Q12</td>
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Corrosion Control

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<tr>
<td>SE-38</td>
<td>Containment Fan Cooler Units</td>
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<td>SC-3</td>
<td>Long-Term Seismic Program</td>
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<td>SC-4</td>
<td>Tsunami Hazard Analysis</td>
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<td>SC-5</td>
<td>Seismic Personnel Safety</td>
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<td>SC-6</td>
<td>Seismic System Interaction</td>
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<tr>
<td>CL-2</td>
<td>Closed Loop Cooling</td>
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The Committee directed that items not addressed above and identified for closure on the June 2011 edition of the Open Items List be closed as recommended.

During discussion of the Open Items List, Dr. Budnitz, in response to a query by Ms. Sherry Lewis, described the process and the role of the determination of design margin and the rationale for categorizing something as being within or outside of a plant’s design basis, which includes the calculation of when, in an accident scenario or otherwise, the failure of a particular piece of equipment may be expected after that equipment has exceeded its design basis and the extra margin which is built into the equipment and the consequences of such failure.

C. Approval of Letter to the State Water Resources Control Board (SWRCB) Nuclear Review Committee. A draft of this letter having been included in the agenda packet for this meeting, Members, Consultants and Legal Counsel discussed the letter which is intended to acquaint the SWRCB Nuclear Review Committee with the role and expertise of the DCISC in context of the Nuclear Review Committee’s charge to review issues related to the elimination of once-through cooling at California’s nuclear power plants. The Members directed that a sentence be added to the letter mentioning the Committee has performed an initial fact-finding concerning the potential elimination of once-through cooling at DCPP and offering to provide the report of the fact-finding to the Nuclear Review Committee. On a motion made by Dr. Peterson, and seconded by Dr. Lam, the letter as revised was unanimously approved and its transmittal to the SWRCB Nuclear Review Committee was authorized.

D. Nomination and Election of Chair and Vice Chair for the July 1, 2011 - June 30, 2012 Term. On a motion made by Dr. Peterson, seconded by Dr. Budnitz, with Dr. Lam abstaining, the Committee elected Dr. Lam to the position of DCISC Chair for a term of office from July 1, 2011 through June 30, 2012. On a motion by Dr. Lam, seconded by Dr. Budnitz, with Dr. Peterson abstaining, the Committee elected Dr. Peterson to the position of DCISC Vice Chair for a term of office from July 1, 2011 through June 30, 2012. Dr. Lam thanked and commended Dr. Budnitz for his service to the Committee as Chair during the period July 1, 2009 through June 30, 2011.
A short break followed.

VI. Committee Member Reports and Discussion

A. **Public Outreach, Site Visits and Other Committee Activities:** The Committee members and consultants reviewed and scheduled fact-finding visits and public meetings of the Committee as follows: public meetings of the Committee were scheduled and confirmed for October 5-6, 2011, in San Luis Obispo, changed from October 11-12, 2011, and for February 8-9 and June 20-21, 2012, both in Avila Beach; fact-finding visits by a member and a consultant to DCPP are now scheduled on July 12-13, August 10-11, September 7-8, November 15-16, December 6-7, 2011, and on January 10-11, March 13-14, April 3-4 and May 22-23, June 20-21, July 18-19, August 7-8 and September 11-12, 2012.

B. **Documents Provided to the Committee:** Mr. Wellington directed the Committee’s attention to the list of documents received since its last public meeting in February 2011. A copy of the list was included with the public agenda packet for this meeting.

VII. Staff-Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E

The Chair requested Consultant Wardell report on a fact-finding visit to DCPP. Mr. Wardell reported on the February 28-March 1, 2011, fact-finding visit to DCPP with Dr. Budnitz. Items and topics reviewed with PG&E during that visit included:

- **Reactor Coolant Pumps - DCISC representatives reviewed the reactor coolant pumps for each unit and the pump seals, of which each pump has three. Mr. Wardell reported there is some normal leak-off from these seals and in March 2010 reactor coolant pump 1-4 experienced excessive seal leakage due to a problem with foreign material. DCPP took action and the leakage problem was resolved satisfactorily.**

- **Employee Concerns Program Visibility Initiative - Mr. Wardell reported the Nuclear Regulatory Commission (NRC) identified the Employee Concerns Program (ECP) as an area which required enhanced visibility at DCPP. Management has taken action to enhance the ECP’s visibility with the DCPP workforce and has developed a program whereby Notifications, the document used by plant personnel to input problems into the plant’s Corrective Action Program (CAP), may be made anonymously. Mr. Bedesem confirmed this program has been implemented at DCPP and stated his belief that the program conferred complete anonymity for persons choosing to use it for purposes of generating Notifications. Dr. Peterson commented the DCISC was contacted by a retired DCPP employee concerning issues related to tsunami hazards at DCPP and he stated that the retired employee was unaware that he could also, despite not being a current DCPP employee, utilize the ECP. Mr. Bedesem commented that the individual was then currently working at DCPP as a contractor. Dr. Peterson stated it was important that retired employees or others know that the DCISC will take appropriate action when concerns are brought to it. Mr. Wardell stated these issues should be further reviewed when the DCISC next reviews the CAP or the ECP at DCPP.**
- **Digital Control Systems** - Mr. Wardell reported DCPP is migrating from analog to digital control systems and the Fact-finding Team reviewed the Instrument & Control organization’s obsolescence management program and an analog to digital replacement program involving the reactor protection system, termed the Process Protection System which is the third time this system has been replaced at DCPP and which requires two diverse software systems, one manufactured by the firms of Triconics and Westinghouse, in order to provide defense-in-depth. The DCISC representatives were impressed with the overall program which provides more control and flexibility. Areas identified at DCPP where analog to digital changes have been completed include the main turbine control system, feedwater control system, and the plant process computer. Future conversion is scheduled for the main generator voltage regulator and the emergency diesel generator (EDG) control system. Mr. Wardell stated the program and changes have been successful and were well managed.

- **Transformer Leaks** - which the Committee has been following for a number of years. Mr. Wardell reported the cause for the leaks was determined to be a less than adequate transformer preventive maintenance program and this has now been corrected.

- **System Engineering Program** - DCISC Fact-finding Team reviewed the System Engineering Program and system health. Mr. Wardell observed DCPP is placing more emphasis on system health and the trend concerning unhealthy systems has recently been very positive.

- **License Renewal Update** - PG&E has requested the NRC to defer or delay its review of its application for license renewal for DCPP. Mr. Wardell reported that the group San Luis Obispo Mothers for Peace (MFP) has filed four contentions concerning license renewal which have been approved for a hearing, one of which is technical-related and three of which are environmental-related.

- **Foreign Material Exclusion Program** - Mr. Wardell reported the DCISC representatives found the Foreign Material Exclusion (FME) Program to be a fairly good program, however during two recent refueling outages the plant experienced a significant number of instances where foreign material was found. A cause analysis was performed which found employees were not focused sufficiently on preventive activities and focus has been placed plant-wide on FME to raise awareness. Mr. Wardell stated the DCISC should follow DCPP’s progress in improving FME performance.

- **Engineering Evaluation Rigor Improvement Action Plan** - the NRC has identified a significant cross-cutting aspect concerning DCPP’s Problem Identification and Resolution efforts, which is called the Corrective Action Program at DCPP. This is centered on engineering evaluations which lacked sufficient rigor. DCPP has developed an evaluation thoroughness action plan to address this issue. A self-assessment was begun but was stopped before completion and Mr. Wardell commented the DCISC team believed DCPP missed a key opportunity to receive feedback on the action plan by not continuing with the self-assessment and has recommended that a self-assessment be performed. Mr. Wardell stated that the Committee should continue to follow this issue.

- **Outage Safety Plan for the Sixteenth Refueling Outage for Unit-2 (2R16)** - Mr. Wardell stated...
the DCISC representatives found the 2R16 Outage Safety Plan to be similar to past outage safety plans and the risk appeared to be acceptable. He commented the plan focused on infrequently performed tests or evolutions, modifications to be performed during the outage and contingency planning. The DCISC team found the plan to be comprehensive and well designed to achieve proper outage safety.

Following Mr. Wardell’s presentation, Ms. Sherry Lewis was recognized. Ms. Lewis stated the DCISC recommendation in the fact-finding report that DCPP perform a self-assessment of the engineering evaluation rigor improvement action plan appeared to be a weak response and she inquired whether an evaluation has been done concerning whether persons using the ECP were punished for having done so. She stated she has heard that DCPP employees are fearful of losing their jobs or pensions if they act as whistle-blowers. In response to Dr. Budnitz’ request, Ms. Lewis stated she would not elaborate on the source of her information. Mr. Wardell stated there were a number of confidential avenues for employees to raise their concerns including through the ECP as well as with the NRC, which also receives concerns anonymously and in confidence. Dr. Budnitz reported that on occasion the DCISC has also received concerns both anonymously and where the reporting party has chosen to identify him or herself and, in response to Ms. Lewis, he confirmed the DCISC takes those concerns it receives seriously. She inquired whether the DCISC felt it was warranted to review issues of confidentiality and commented that confidentiality can be leaked. Dr. Budnitz replied this was the rationale for an entirely anonymous program. Mr. Wardell stated the DCISC has reviewed the ECP regarding the program’s maintaining confidentiality of the identity of persons bringing concerns to it and has found and has been satisfied that the ECP does maintain strict confidentiality. Mr. Wardell stated regarding the self-assessment of the engineering evaluation rigor improvement action plan the DCISC believed that the self-assessment should have been allowed to continue to completion and has recommended that DCPP perform a self-assessment of the plan.

Upon a motion by Dr. Lam, seconded by Dr. Peterson, the February 28-March 1, 2011 Fact Finding Report was approved and its transmittal to PG&E authorized.

Once the Committee’s fact finding reports are approved at a public meeting they are no longer considered to be in draft form and are made available in a binder for inspection by members of the public, together with information concerning the professional backgrounds of the Committee’s technical consultants involved with preparation of its fact finding reports. Fact finding reports become part of DCISC’s Annual Reports.

The Chair then requested Consultant Wardell report on the next fact-finding visit to DCPP. Mr. Wardell reported on the April 19-20, 2011, fact-finding visit to DCPP with Dr. Lam.

Items and topics reviewed with PG&E during that visit included:

- Online Maintenance – Mr. Wardell stated online maintenance is performed on components when the plant is operating normally, as opposed to during a refueling outage, and DCPP does less online maintenance than most other nuclear plants. Risk analysis is performed concerning the consequences of taking components out of service for maintenance and the components are not permitted to be out of service for more than one-half of the allowable
DCPP currently uses the Outage Risk Analysis Maintenance (ORAM) Sentinel Program but will be switching during the latter part of 2011 to what Mr. Wardell termed a better, more quantitative approach for implementing risk analysis by changing to use of the Safety Monitor system. He reported the procedure for online maintenance appeared satisfactory.

A meeting with the NRC Senior Resident Inspector – the DCISC team discussed four issues with the NRC’s Senior Resident including: an unresolved item concerning the Hosgri and Shoreline seismic faults and the DCPP’s current design basis; the events at Fukushima Daiichi including review of DCPP’s Severe Accident Management Guidelines (SAMGs) and beyond design basis guidelines, the results of which are due for release by NRC in mid-May which Mr. Wardell stated is expected to conclude DCPP’s actions are acceptable; the 230 kV offsite power system which provides emergency power capacity to support safe shutdown of both units; and the NRC’s finding of a substantive cross-cutting issue concerning Problem Identification and Resolution (PI&R) at DCPP, concerning which Mr. Wardell reported the NRC will perform a reinspection of DCPP.

Union/Operator Concerns – the DCISC team met with the union steward, the employee concerned, and with senior DCPP management concerning an issue brought to the DCISC’s attention by the union steward concerning the treatment of an operator within the DCPP disciplinary program. Mr. Wardell stated that none of the parties with whom the DCISC representatives met expressed a concern that this matter involved issues of operational safety at DCPP. The union steward did raise the issue of operator morale which if left unaddressed can have safety implications. Mr. Wardell stated the DCISC team learned that an anonymous Notification has been initiated concerning this matter. Dr. Lam stated that in the meetings with the concerned parties there was no factual dispute and involves solely a matter of interpretation which does not implicate nuclear safety. Dr. Lam commented that PG&E should consider that having a disgruntled employee with unresolved concerns is not a good situation and it would be beneficial to resolve this issue. As the matter was found not to concern operational safety, further involvement in this matter by the DCISC is not anticipated.

Residual Heat Removal System Check Valve Maintenance and Testing - the Residual Heat Removal (RHR) System functions to remove decay heat upon reactor shutdown and takes suction from the containment sump to provide post loss-of-coolant accident (LOCA) cooling. The eight to ten valve testing procedures were reviewed by the DCISC team and found to be satisfactory as was the testing program.

Cyber Security - Mr. Wardell reported this is an international issue and the NRC has provided guidelines to U.S. nuclear facilities. The DCPP program appeared to be off to a good start and is expected to be finalized by the end of 2012. Training activities would then commence and are scheduled to be completed by 2015.

DC Power System - the Fact-finding Team reviewed the battery operated DC power system which uses batteries and battery chargers and consists of three separate systems. Each DCPP unit has 150 batteries and DC power would last for two hours without the batteries being recharged. The DCISC representatives toured the system and found it acceptable with an appropriate design and a knowledgeable system engineer. Dr. Lam commented the DC power
system used to have a cross-tie capability but this was disassembled due to other considerations and he commented this was an example of the complexities of system interconnection at a nuclear power plant. Mr. Wardell observed that the DC power systems are capable of being manually cross tied.

- DCPP Response to Events at Fukushima Daiichi - Mr. Wardell stated this topic will receive extensive review during this public meeting. He observed that DCPP has received a generally positive review in context of its emergency preparations.

- 2010 & 2011 DCPP Operating Plans - the DCISC team reviewed the 2010 Operating Plan and Mr. Wardell reported that the results in 2010 were mixed, with DCPP not having met its expectations in all areas. He stated the 2011 Operating Plan is similar to 2010 but some of its goals have been tightened.

- Institute of Nuclear Power Operations (INPO) Update - INPO reports are confidential and only limited information may be presented in a public forum. Mr. Wardell stated the next evaluation of DCPP by INPO is scheduled for August 2011 and the DCISC team reviewed some of the actions taken previously to address INPO’s concerns and INPO-identified gaps to performance excellence.

- Spent Fuel Pool Inventory – Dr. Lam stated the DCISC Fact-finding Team discussed with PG&E the recommendation made by the California Energy Commission (CEC) in its 2008 Integrated Energy Policy Report Update that DCPP take action to return its spent fuel pools (SFPs) to open racking as soon as possible while maintaining compliance with NRC dry storage requirements. Dr. Lam reported the DCISC learned there are real technical barriers to DCPP’s compliance with the CEC recommendation as there is only limited space to place the spent fuel in the SFPs and the ISFSI is licensed for only a certain number of casks and those casks must be within the designed thermal limits which requires a mix of spent fuel of differing ages. There are also limiting factors which affect the speed at which the casks can be loaded and cask procurement from the manufacturer is also an issue for DCPP. Dr. Lam stated DCPP is aware of the CEC’s recommendation. Dr. Peterson reported he recently learned that PG&E has made a commitment to accelerate dry cask storage of spent fuel but a significant inventory would still remain within the SFPs.

- Dr. Lam met with DCPP’s Site Vice President Jim Becker to discuss items of mutual interest.

Following Mr. Wardell’s presentation Ms. Sherry Lewis was recognized. Ms. Lewis inquired what the DCISC’s function was relative to the CEC recommendation concerning the SFPs and if the SFPs cannot comply with the CEC recommendation why is a decision not being taken to stop making more waste. Dr. Budnitz replied that the DCISC has not recommended that reconfiguring the SFPs was necessary but rather such reconfiguration and lower density would be desirable. Dr. Budnitz stated the DCISC believes the NRC regulations in this regard are adequate and that DCPP is in compliance with those regulations. Drs. Budnitz and Peterson stated the DCISC has no authority, is not a regulator, and can only make recommendations to the CEC, the California Public Utilities Commission (CPUC), the California Attorney General and the Governor, any of whom may choose whether to use their considerable influence concerning any of the DCISC recommendations. Ms. Lewis replied that this was a real problem.
Upon a motion by Dr. Budnitz, seconded by Dr. Peterson, the April 19-20, 2011 Fact Finding Report was approved and its transmittal to PG&E authorized.

The next fact-finding report was presented following the first of the informational items presented to the Committee by PG&E.

Following Site Vice President Becker's presentation, the Chair requested Consultant Linnen to report on the next fact-finding visit to DCPP. Mr. Linnen reported on the May 24-25, 2011, fact-finding visit to DCPP with Dr. Peterson. Mr. Linnen commented that four of the items on the agenda for the May 24-25 fact-finding bore a direct relationship to issues which were identified during the events at the Fukushima Daiichi plant following the earthquake and tsunami of March 11, 2011. Items and topics reviewed with PG&E during that visit included:

- **Auxiliary Saltwater (ASW) System Review** - Mr. Linnen described the function of the ASW System as providing saltwater to the component cooling water (CCW) heat exchangers to cool multiple plant systems. Each DCPP unit has two ASW pumps and two CCW heat exchangers and there is a cross-tie capability between the units. The ASW System is rated in green status for both units. One of the ASW pumps for Unit-2 (U-2) experienced vibration and was replaced during 2R16 and has operated satisfactorily thereafter. DCPP has portable pumps and hoses available and now has the capability to inject seawater from the Pacific Ocean directly into the ASW System. This was a key lesson from Fukushima Daiichi and Dr. Peterson commented that disabling of the ASW System due to debris was a most likely consequence of a beyond design basis tsunami and portable pumps and hoses are the most robust way to provide backup capabilities.

- **Auxiliary Building Control Board Replacement Project** - this was reviewed as a part of the Obsolescence Project and Mr. Linnen commented the Project was unique in that the Project Team was working closely with the Operations group. He stated the DCISC team found the project was progressing well.

- **Unexpected Control Rod Movement** - U-2 had experienced control rods slowly stepping-in to the core by 3½ steps for reasons which were not understood at the time. The problem was particularly difficult to diagnose as it occurred only intermittently. Mr. Linnen reported the U-2 control rods were placed in manual operation to prevent their stepping-in unintentionally and the problem was diagnosed and troubleshooting was performed to identify the source of the erroneous signal without the rods actually moving. He reported the problem was traced to a module. The DCISC Fact-finding Team found the investigatory process was well constructed and implemented to preserve nuclear safety.

- **Seismic Bracing of Tall Furniture** - Mr. Linnen reported that since this issue was reviewed with DCPP last year, not much has occurred. There has been some bracing of tall furniture on the first floor of the Administration Building but the station has no timetable to address other areas. The DCISC representatives recommend that DCPP develop a schedule and commence efforts to educate plant staff on the dangers of unbraced furniture. Dr. Peterson stated this issue needs to be acted on proactively as it is important.

- **Spent Fuel Pool (SFP) System Review** - This issue was related to issues at Fukushima Daiichi.
Mr. Linnen reported the SFPs at DCPP provide a temporary storage location for spent fuel before it is moved to the Independent Spent Fuel Storage Installation (ISFSI) and also for new fuel before it is placed into the reactor core. DCPP has taken action on a number of issues including inspection of the SFP heat exchangers and the development of a backup cooling system to allow the heat exchangers to be inspected.

- Seismically Induced Systems Interaction (SISI) Housekeeping Program - Mr. Linnen stated this program protects safety-related equipment and plant systems from damage due to earthquakes. He stated the DCISC Fact-finding Team found a noticeable improvement from the last time this program was reviewed and that plans to inspect are being developed and the program is rated as being in green status. Dr. Peterson and Mr. Linnen commented there is a dichotomy between the attention DCPP has placed upon protecting the physical equipment and systems within the plant from seismic-related damage and that placed upon protecting plant personnel in the office spaces.

- Tour of Unit-2 (U-2) Containment Building and other Selected Areas - as 2R16 was underway during their visit, Mr. Linnen and Dr. Peterson were able to tour all levels of U-2 containment, the SFP, Auxiliary Building and the Turbine Deck. Mr. Linnen stated they found all areas to be clean, orderly and well labeled. Low radiation levels of 0.2 mrem each were experienced during the one hour visit and the DCISC team’s escort was knowledgeable and vigilant concerning radiation levels and protective clothing. Dr. Peterson stated he was impressed with the conditions and the competent, knowledgeable personnel he encountered during the visit. Dr. Budnitz observed that the radiation levels received by the team were approximately one-half the level they would have received had they been flying in an airplane for one hour.

- Dr. Peterson met with DCPP Station Director Ken Peters.

Upon a motion by Dr. Lam, seconded by Dr. Peterson, the May 24-25, 2011 Fact Finding Report was approved and its transmittal to PG&E authorized.

As this presentation followed the first of the informational presentations by PG&E (see below), adjournment of the Committee’s morning meeting followed.

VIII. Correspondence

The Chair directed the members and consultants to the copies of correspondence sent and received at the office of the Committee's Legal Counsel since the last public meeting of the Committee in February 2011, which were included with the public agenda packet for this meeting.

IX Information Items Before the Committee

The Chair introduced DCPP’s Senior Director of Technical Services Loren Sharp and asked Mr. Sharp to commence the informational presentations requested by the Committee for this public meeting. Mr. Sharp introduced DCPP Site Vice President Jim Becker to make that presentation.

Update on Plant Events, Operational Status and Performance Indicators.

Mr. Becker reviewed the generation history and daily load profiles for both DCPP units for the
past twelve months and stated that reliability for both units was strong in 2010 with very good online performance and minimal lost generation. In response to Dr. Lam’s question, Mr. Becker stated that the DCPP year-to-date capacity factor, as is the practice in the industry, was calculated against the maximum dependability capacity which uses routine factors as a comparison and therefore, under optimum conditions such as low ocean temperatures, the capacity factor may at times exceed 100% and he confirmed Dr. Peterson’s observation that this was not a reflection on safety of operations and that at no time were the reactors operated in excess of their maximum power outputs. Mr. Becker reviewed generation history for both units for the past four months, through May 31, 2011, and he stated Unit-1 (U-1) has demonstrated strong generation reliability while U-2 experienced a manual trip and forced outage on March 28, 2011, for repair of a steam leak in the Turbine Building and was delayed in returning to operation due to a problem with intermediate range nuclear instrumentation. U-2 entered its sixteenth regularly scheduled refueling outage on May 1, 2011.

Vice President Becker reviewed the Plant Performance Improvement Report and noted improving and declining areas of performance. In reviewing the Quality Verification (QV) organization’s Top Quality Performance Issues List, where red indicates actions which have not yet been fully developed or which are not on track, Mr. Becker identified issues in red status which are currently being addressed including: the impact of non nuclear steam leaks on the Maintenance Rework Program; the impact of inadequate timeliness and effectiveness in response to QV issues; and the corrective actions taken for 2R16 concerning the FME Program performance which is being addressed by training, more rigorous requirements and increased awareness. In response to Dr. Lam’s question Mr. Becker stated foreign material consists of material which is found to be where it is not intended or where it should not be located and he commented a successful FME Program was key to safe, reliable operations in a non nuclear context as well. In response to Mr. Linnen’s comment, Mr. Becker confirmed that radiation levels in containment during 2R16 were much lower than previously experienced prior to the replacement of the reactor vessel head and the steam generators (SGs) and he also attributed lower radiation levels to improved chemistry control including zinc and subsequently depleted zinc injection.

Concerning the age of systems which have been in red or yellow status, Mr. Becker reported that slow but steady progress is being made due to cooperation among the Engineering, Maintenance, Operations and Outage Management organizations and PG&E’s commitment to provide funding. Mr. Becker briefly reviewed the Corrective Action Program Index for the station and stated that issues of timeliness drove the index lower during 2R16 and improvement should follow the conclusion of that outage. The Human Performance Error Rate for the station changed from green to yellow status in May and Mr. Becker reported that during 2R16 the station met its safety-related but not its human performance goals. He reported this is a focus area for DCPP and action plans have been developed and include learning activities and observations in the field. Vice President Becker reviewed the Operational Focus Index and described it as including many factors which together show the plant’s operational focus. He stated good progress is being made but commented that the current attention and focus on the plant’s design and licensing basis does not really assist Operations. Mr. Becker reported that Maintenance backlogs and Control Room Notifications have shown improved performance on the Operational Focus Index. In response to
Consultant Linnen’s inquiry, Mr. Becker stated an index showing operational focus is commonly used in the industry and other plants use an index similar to that employed at DCPP. Mr. Becker observed the Reactivity Management Program remains in green status and attention is focused on the index by the Reactivity Management Leadership Team. Past performance which currently impacts this index should roll-off by this summer. Mr. Becker briefly commented on an issue experienced with mislatching of a fuel assembly during its offload by Westinghouse technicians to the spent fuel pool and stated this issue has been entered in the CAP and is being reviewed by Westinghouse.

Vice President Becker reported the Critical Equipment Clock Resets equipment reliability index is currently not meeting the goal set and items have been entered into the CAP. Concerning the Engineering Program Health matrix, Mr. Becker identified the Appendix R Fire Protection program as currently being in red status and DCPP is awaiting industry developments and information from the NRC before submitting a Licensee Amendment Request (LAR). Dr. Budnitz stated that the industry review of DCPP’s performance relative to the National Fire Protection Association (NFPA) 805 performance based standards for nuclear reactors found the performance to be good and he stated the industry peer review team believed DCPP’s NFPA 805 team did an excellent job.

In concluding his presentation, Vice President Becker reviewed DCPP’s performance concerning Recordable Injuries and stated the station is showing slow, steady improvement with 2010 being the plant’s best year. There has been one recordable injury and no lost time injuries to date in 2011. He reported industrial safety remains part of an action plan based around programs to raise program performance which also includes confined space and rigging. He confirmed, in response to Dr. Peterson’ inquiry, that DCPP also records all requests for first aid and the leadership team is debriefed regarding injuries and actions taken in response. First aid requests, however, are not trended so as not to drive a message which would encourage not reporting minor injuries.

In response to Dr. Budnitz’ question concerning whether the industry and DCPP review of issues stemming from the events at the Fukushima Daiichi plant in Japan has had an impact on allocation of resources at DCPP, Mr. Becker replied that those issues have been dealt with by creating an organization led by Mr. Bill Guldemond, Special Assistant to Mr. Becker which reports directly to Station Director Peters who serves on an industry working group. Mr. Becker stated that beyond design basis gaps are entered into the CAP and procurement decisions are under consideration to improve margins. He gave as an example the replacement of the Reactor Coolant System (RCS) pump seals, without adversely affecting the seal packages and the resulting improvement in station blackout conditions and Dr. Peterson agreed replacement of the RCS seals was an excellent improvement. He commented that DCPP is working through its plant processes and is utilizing the latest industry guidance to review issues concerning its spent fuel pools. He observed it is a matter of prioritization but he could not provide an example of where something was omitted, postponed or not funded due to the ongoing analyses of the events at the Fukushima Daiichi plant. In response to Dr. Peterson’s comment on the importance of having the authority for making decisions during beyond design basis situations, Mr. Becker agreed U.S. nuclear plants have a different organizational structure from that employed in Japan and decision making in a structured setting, including the turnover process for decision making, is regularly practiced and U.S. plants have explicit guidance concerning decision making authority. Vice President Becker stated that DCPP will
address the lessons learned and those to be learned from Fukushima Daiichi along with the industry. Dr. Peterson stated the Japanese have acknowledged they had problems concerning decisions being required to be made at high levels of authority where information was not readily available. In response to Consultant Linnen’s inquiry, Mr. Becker replied that a decision to commence salt water injection into a reactor core would be taken, in accordance with the present structure of the emergency response protocol at DCPP, by Emergency Operations Facility and Control Room personnel.

Dr. Budnitz thanked Mr. Becker for his presentation.

X Adjourn Morning Meeting

The Chair adjourned the afternoon meeting of the DCISC at 12:30 p.m.

XI Reconvene for Afternoon Meeting

Dr. Budnitz convened the afternoon meeting of the DCISC at 1:30 p.m. He reviewed the agenda and the topics to be presented by PG&E at the request of the Committee.

XII. Committee Member Comments

There were no comments at this time from the Committee Members.

XIII. Public Comments and Communications

Dr. Budnitz invited any member of the public to attend this public meeting and to address comments to the Committee.

Ms. Sherry Lewis, a resident of San Luis Obispo and member of MFP was recognized. Ms. Lewis stated she wished to reiterate her position concerning the problems of toxic nuclear waste and human error which is always present. She observed there have been some catastrophic events and there will be more. She stated radioactive waste is too toxic and should not have to be dealt with at all. She stated her belief the DCISC’s role is to make sure things at DCPP are as safe as they can be and the safest thing would be to have no nuclear power at all as it will be impossible to control it forever.

XIV. Information Items Before the Committee

The Chair recognized DCPP’s Senior Director of Technical Services Loren Sharp and asked Mr. Sharp to continue the informational presentations requested by the Committee for this public meeting. Mr. Sharp requested DCPP Regulatory Services Manager Tom Baldwin make the next informational presentation to the Committee.

Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators.

Mr. Baldwin reviewed and discussed with the Committee the Licensee Event Reports (LERs) which PG&E, as the DCPP licensee, submitted to the NRC for the period February 2011 through June 2011. There have been four LERs issued during that period and four Non Cited Violations (NCVs), one
of which was PG&E identified, all of which were determined to be of very low safety significance. He reviewed these as follows

- **LER 1-2011-002-00** was issued March 11, 2011 to report discovery on January 10, 2011, of an Auxiliary Building Ventilation System design flaw that created a single failure vulnerability. The System was in the process of realigning to its non-safeguards function when a damper failed to reposition and the logic system caused the entire Auxiliary Building Ventilation System to fail and to be unable to perform its safeguards function to provide charcoal filtration. Mr. Baldwin observed the operators can reset the system logic from the Control Room and the Auxiliary Building Ventilation System would then have been functional. He confirmed that an alarm and annunciator were activated in the Control Room and procedures are in place to provide for these actions. Mr. Baldwin stated the Auxiliary Building Ventilation System design contained an inherent flaw and DCPP is working to correct it and is meanwhile maintaining the System in its safeguards configuration. In response to Dr. Budnitz’ question, Mr. Baldwin replied DCPP provides operating experience reports to INPO and to the industry concerning actions taken in response to LERs.

- **LER 2-2011-001-00** was issued May 25, 2011 to report a manual reactor trip which occurred on March 26, 2011, due to a trip of a main feedwater pump. The pump failure occurred due to a non radioactive water leak on its control panel. The pump trip was recognized and the plant was manually shut down. An improperly torqued flange on a relief valve to a feedwater heater was found to be the cause of the leak and Mr. Baldwin, in response to Dr. Budnitz’ query, confirmed this resulted from inadequate procedural guidance.

- **LER 1-2011-003-00** was issued April 28, 2011, following the events at the Fukushima Daiichi plant in Japan to report deviation from the security plan made pursuant to 50.54(x) as a result of a tsunami warning which required DCPP to reposition some of its security personnel. There was no significant tidal surge at DCPP due to the earthquake off the coast of Japan. Mr. Baldwin stated this was also a reportable event and was reported under Security rules (see below).

- **LER 1-2011-003-01** was issued May 10, 2011, to provide security reporting detail due to the deviation from the security plan caused by the tsunami warning.

Mr. Baldwin reported on the four NCVs received since the last public meeting of the Committee in February 2011, through June 2011, all of which were determined to be of very low safety significance (Green), as follows:

- **NCV (Green)** - Inadequate Design Control for the Preferred Offsite Power System (NRC Cross-Cutting (C-C) Aspect P.1(c) Evaluation). This was identified by NRC and was due to inappropriate system capacity analysis which should have analyzed for shutdown of both units at the same time. Mr. Baldwin confirmed Consultant Linnen’s observation that this has been an unresolved issue at DCPP for approximately two years.

- **NCV (Green)** - Failure to Document Design Basis of Containment Fan Cooler Unit (CFCU) Cooling Coil Casings (C-C Aspect H.2(c) Accurate Documents). This was discovered during an inspection in December 2010 when the CFCU casing frames were found to be corroded and
the proper safety function for the frames, to direct air flow, was not identified. However, Mr. Baldwin reported that the frames retained their functionality. In response to Dr. Lam’s question, Mr. Baldwin replied the corrosion will be addressed by restoring or repairing the coating on the frames during upcoming refueling outages for both units. Meanwhile, corrosion rates are being monitored.

- **NCV (Green)** - Inadequate Design Control for the Auxiliary Building Ventilation System Control Panel Modification (C-C Aspect H.4(a) Human Error Techniques). The Auxiliary Building Ventilation System design was an original plant design feature and when the panel was replaced, a missed opportunity to identify its vulnerability occurred. Design procedures have been modified to provide for evaluation and not simply replacement.

- **PG&E Identified** – PG&E identified that three-hour fire barriers internal to conduits were missing or not installed in accordance with design requirements. Mr. Baldwin reported this did not constitute an unanalyzed condition as combustible control procedures were determined to have been adequate.

**Summarizing NRC enforcement**, Mr. Baldwin stated inspection reports were issued for:

- **Annual Assessment Letter for DCPP (IR 2011-001, 3/4/11)** - 0. The cross-cutting issue in problem identification was found to be continuing.

- **Integrated Inspection Report (IR 2011-002, 5/11/11)** - 3/1. Four NCVs reviewed above were identified.

- **Temporary Instruction 2515/183 Inspection Report (IR 2011-006, 5/13/11)**. Issued following the events at Fukushima Daiichi regarding vulnerability assessment.

A total of four findings were reported since last meeting of the DCISC. All were determined to be very low safety significance. Mr. Baldwin reported that currently 11 NCVs in the last four quarters have a cross-cutting aspect of P.1(C), Problem Evaluation. In response to Consultant Wardell’s inquiry concerning the 230 kV System, Mr. Baldwin replied issues with the 230 kV System have not been resolved and there are ongoing discussions taking place with the NRC in Washington DC. In response to Mr. Wardell’s inquiry concerning issues concerning the seismic design basis, Mr. Baldwin replied PG&E has met with the NRC in context of the license amendment application, but this remains an unresolved issue. In response to Dr. Lam’s inquiry concerning how the issues in the Temporary Instruction report were being addressed, Mr. Baldwin stated the process requires DCPP to review each item and issues are being closed out. He stated the process was one of the station being able to demonstrate that it has the ability to do what it claimed it can do.

The current status of the NRC Performance Indicators was reviewed, all of which are in green status for NRC performance measures. Mr. Baldwin stated that five station performance indicators, with lower thresholds than the NRC, are currently in Yellow (or unacceptable) status. These include:

- **SP-05 Unplanned Scrams per 7000 Critical Hours** - due to U-2 reactor trip due to main feedwater pump 2-1 trip as a result of the flange leak.

- **SP-07 Unplanned Power Changes per 7000 Critical Hours** - due to U-1 being ramped to low
power then offline due to MSR drain flange steam leak.

- SP-12 Safety System Functional Failures Affecting Two Indicators - for U-1 not meeting station goal of 0 due to: 1) TS 3.3.5, “Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation,” Surveillance Requirement 3.3.5.3.b, “Degraded voltage initiation of Load Shed Allowable Value greater than or equal to 3785 V with a time delay of less than or equal to 20 seconds” is non-conservative TS surveillance. (60026031) (July 2010) 2) 230 kV TS AOT exceedance when crosstied (50309644) (Aug 2010) 3) AFW M3 Entry with AFW Pump Inop (50368977)(Jan 2011) 4) Aux Bldg Vent System Single Failure (50370080)(Feb 2011) 5) 3 SSFF anticipated for loss of offsite power (230 kV), 1 to be reported in 2Q’2011 and 2 in 3Q’2011.

- SP-15 Emergency Planning Drill - DCPP no longer meeting station goal of >96.4%.

Mr. Baldwin reviewed with the Committee a chart used by all the members of the joint nuclear utility initiative, termed the Strategic Teaming and Resource Sharing (STARS) plants, to track the NRC Cross-Cutting Issue Matrix on an annual basis over the last four quarters. Currently DCPP is in red status with more than four identifications of failure to use conservative assumptions and to properly evaluate the extent of problems. In response to Consultant Wardell’s inquiry concerning the Conservative Assumptions category Mr. Baldwin stated DCPP has implemented corrective actions to achieve a process to get all required information and he stated that the issue has been observed outside of Engineering but Operational Decision Making does not appear to be a factor. In response to Mr. Wardell’s observation, Mr. Baldwin confirmed the numbers of NCVs have come down and the long-term trend is about one-half of previous numbers of NCVs received which he attributed to the impact of listening and understanding questions and having a questioning attitude. Mr. Baldwin commented it is difficult to change long standing behaviors in a large organization like DCPP in a short time. Concerning the Evaluation of Extent category Mr. Baldwin stated the trend is improving but this category remains a focus area and is being monitored. He commented that all matrix areas which are out of tolerance receive a common cause analysis.

Following Mr. Baldwin’s presentation, members of the audience asked questions.

Ms. Elizabeth Apfelberg, a resident of San Luis Obispo and member of MFP was recognized. Ms. Apfelberg referred to the LER 1-2011-002-00 concerning the Auxiliary Building Ventilation System design flaw and inquired whether this was discovered by PG&E or by the NRC. Mr. Baldwin stated the failure was self-revealing when the System failed but the NRC resident inspector identified the missed opportunity in connection with the replacement of the control panel.

Ms. June Cochran, a resident of Shell Beach, was recognized. Ms. Cochran stated that she has heard references to the terms ‘procedure flawed,’ ‘guidance error,’ ‘inappropriate analysis of system,’ and ‘long-term degradation’ many times during PG&E presentations to the DCISC and to the NRC. She stated such references were worrisome to her as the issues related to these references do not appear to be improving nor are they as perfect as possible. She stated that with reference to DCPP there should be no missed opportunities or failures to install installations such as fire barriers according to regulations. She cited a presentation by PG&E on the degradation of the Fire Protection System at DCPP and inquired whether that system had improved to Green from its previous Yellow status. She commented PG&E has stated that the system cannot be fixed and she
displayed a photo which showed a degraded section of piping. She observed that in response to her inquiries PG&E has stated that it does not inspect all underground piping but instead waits for problems to occur before addressing them. Ms. Cochran stated this was not comforting. She cited a reference from the Chief of the NRC’s Reactor Program that acknowledged that problem evaluation at DCPP has not proven effective. She inquired how long the public should put up with these issues and stated that the DCISC should take a stand. Ms. Cochran stated the issue Mr. Baldwin reported on with the Security organization showed a trend in the NRC downgrading its requirements and she cited the example of the compliance waiver received by DCPP until April 13, 2011, which was extended to June 30, 2011, and now has been extended for another year and she questioned whether security issues were being adequately addressed. Finally she inquired when PG&E might not have 200 corrective actions to deal with every week.

Dr. Budnitz replied that from a Corrective Action Program perspective regarding personnel safety it is preferable to have large numbers of low level incidents reported. As to Ms. Cochran’s inquiry about how long the public should put up with issues at DCPP, Dr. Budnitz stated the DCISC is not empowered to direct PG&E to take any specific action and can only review issues and write reports. He stated the DCISC has reported on the status of the Fire Protection System at DCPP on numerous occasions. Dr. Peterson remarked that the Corrective Action Program is aimed at finding low level problems and correcting them and a substantial number of problems being reported is a good thing as otherwise a chilling environment to reporting safety issues may develop. Dr. Peterson stated it was possible to have recurring problems and he observed that fire protection systems represented an important problem. He commented that after the post-earthquake experiences at the Kasiwazaki-Kariwa and Fukushima Daichi power plants, concern over piping has been heightened and he noted that facilities which sat on the base mats for those plants generally survived well but that this was not the case with buried piping systems. Dr. Peterson commented, however, that not all buried piping at DCPP serves safety-related systems although some would bring water from the raw water reservoirs to the plant and the plant now has the capability to use fire hoses, if necessary, for this function although initially there were some issues identified with security in this effort. Dr. Peterson stated that in context of maintaining a continuing questioning attitude repeated problems were a concern. Dr. Budnitz commented concerning systems that cannot be inspected, design requirements do not allow for a single failure of such systems to cause a significant accident. Mr. Baldwin observed that safety systems are required to be redundant so that the failure of a single component would disable only one of two trains of safety equipment. Dr. Peterson replied that he was not sure a reliance on redundancy was adequate in context of a common mode failure. Mr. Baldwin stated that system designers are required to address issues of inspection and testing in their designs and the nuclear industry is currently working on a buried piping inspection program and the goal is to inspect all piping but this is not a risk-significant issue.

Dr. Budnitz stated there is a hierarchy of equipment with regard to safety and problems occur more often in the less important systems, although systems of higher safety importance do sometimes fail and he inquired of Mr. Baldwin concerning recurrence. Mr. Baldwin replied it was not DCPP’s intention to revisit safety significant issues and a root cause analysis is performed to address all vulnerabilities. Repeat instances of failure receive enhanced, elevated review to determine why the problem recurred and this, he noted, is a problem in itself. Dr. Budnitz posed a question to PG&E
whether PG&E’s representatives believe they could implement actions to reduce all instances of problem reporting by a factor of 10%. Mr. Sharp replied that licensing basis and TS maintenance are driven by the most safety significant systems and then the plant focuses its attention on long standing issues. Dr. Budnitz stated that systems are designed to cope with systemic failure rather than of individual components, and with regard to corrective actions improvement is possible but not by making large changes over a short time and he used the improvement in the DCPP capacity factor over the period from 1990 to present as an example. He stated that the role of the DCISC concerning these matters is to ensure, while attention is paid incrementally to small changes, to make sure that nothing of significance escapes attention. Consultant Wardell reported that the Fire Protection System at DCPP is now currently in either White or Green status, both of which are considered acceptable and the system has remained fully operational throughout its transition from Red and Yellow status. Dr. Peterson stated the Committee would obtain current information on the current status of the Fire Protection System at DCPP and would provide that information to Ms. Cochran.

Ms. Sherry Lewis was recognized. Ms. Lewis stated that a single failure of a pipe could lead to increased levels of tritium, which have occurred in 83% of reactors, so that this would represent multiple failures which can cause cell damage. Dr. Budnitz replied that tritium leaks at nuclear facilities have not been found to be dangerous as there has been no contamination of drinking water.

A short break followed.

Quality Verification (QV) Organization’s Perspective on Plant Performance, the Quality Performance Assessment Report (QPAR) and QV’s Top Issues. – Due to the unavailability of the PG&E presenter this topic was not presented and will be rescheduled.

Mr. Sharp introduced DCPP Emergency Planning Manager Michael Ginn and asked Mr. Ginn to make the next informational presentation to the Committee.

Efforts and Actions Remaining to Improve and Expand the Emergency Preparedness Dose Assessment System including the Meteorological Information and Dose Assessment System (MIDAS).

Mr. Ginn reported he has met on numerous occasions with DCISC members and consultants during their fact-finding visits to DCPP. He stated PG&E has completed the following actions over the past twelve months and since the last DCISC update on June 3, 2010:

- Upgrade the Emergency Assessment Response System (EARS) server to support additional inputs to dose assessment. EARS provides the front-end input to the dose assessment system and EARS now has the capability to provide additional inputs to MIDAS. This was accomplished in coordination with the State of California (State), the County of San Luis Obispo (County) Office of Emergency Services and the County Air Pollution Control District and is now complete.

- Upgrade the MIDAS software program to add the capability for input from multiple offsite meteorological towers to assist decision making by the County. This action is complete.
- Installed upper air meteorological Sonic Detection and Ranging (SODAR) equipment. SODAR equipment is now located at DCPP, in Los Osos and at the PG&E Energy Education Center. Mr. Ginn commented the next closest SODAR equipment is located at Vandenberg Air Force Base. This action is complete.

Mr. Ginn discussed and reviewed with the Committee members the following actions which have also been completed:

- Upgrade six offsite meteorological towers and install a new seventh meteorological tower in Grover Beach, where the County Air Pollution Control District previously had a station. These meteorological towers provide input to MIDAS which is in addition to the PG&E primary meteorological tower located at DCPP.

- Upgrade twelve Pressurized Ion Chambers (PICs) and install new thirteenth PIC, recommended by the County to be located onsite at the DCPP on the Old Steam Generator Storage Facility. Mr. Ginn commented that all PIC data is available to Emergency Response and Uniform Dose Assessment assigned personnel.

- Provide dedicated website for ready access for daily use to offsite meteorological tower data and provide SODAR-View software for upper air meteorology assessment.

- Train PG&E and County emergency responders on MIDAS and SODAR-View software.

Dr. Budnitz observed during the events at the Fukushima Daiichi plant in Japan the power grid was inoperable and he inquired whether in a similar situation at DCPP the SODAR equipment would continue to function. **Mr. Ginn stated that PICs, SODAR and the meteorological towers all have uninterrupted power sources (UPS). Mr. Ginn stated he believed the UPS duration to be 12-14 hours but would have to check and verify that information.** Dr. Budnitz observed that at Fukushima Daiichi cellular telephone communication was overloaded and Mr. Ginn confirmed that all sites have dedicated communication lines.

Dr. Peterson remarked that the U.S. did extensive radiation surveys in connection with the releases from Fukushima Daiichi and dispersion models were run by Lawrence Livermore Laboratories. He suggested preliminary data may indicate that these capabilities were not as great as expected and he commented DCPP may want to follow the updates of those models and ensure that the vendor for MIDAS does likewise. **Mr. Ginn stated DCPP is working with the U.S. Department of Energy and the NRC and used the previous tracer studies to validate the DCPP model and believes it selected a capable vendor for MIDAS. Dr. Budnitz commented that while tracer studies may validate the path of a radiation dose from point A to point B they do not address the deposition phenomena and the events at Fukushima Daiichi present an opportunity to collect actual radionuclide data in the field. Dr. Peterson stated the Committee would schedule an action for follow up during a future fact-finding to validate the code from the results of the data obtained from Fukushima Daiichi and he commented that over the upcoming year DCPP’s vendor should also be doing this.** Mr. Ginn stated that presently DCPP is working with INPO, the Nuclear Energy Institute (NEI) and with the NRC on these efforts.

Dr. Peterson stated the lessons learned in emergency response and protective action
recommendations from Fukushima Daiichi also warrant study and review, especially the effect of the U.S. using data to develop protection actions for its citizens which differed from those developed by the Japanese. Mr. Ginn stated he had attended a recent conference in Washington D.C. which found this to have been the result of a lack of good information and not to be solely dose-based. Dr. Peterson stated he and Dr. Budnitz were involved in the assessment of the events at Fukushima Daiichi and the decision concerning protective action by the NRC affected the confidence and relationship between the U.S. and Japan. He remarked that it was important to think about all dimensions of a protective action recommendation and to communicate well concerning risk as unintended consequences which may not be trivial can follow. In response to Dr. Lam’s inquiry Mr. Ginn stated the DCPP Emergency Planning Zone extends 18 miles to the north and 22 miles to the south of the plant, is approximately twice as large as required by the NRC, and includes sirens out to those distances and standard operating procedures to be followed by the agencies and local jurisdictions within that area. He remarked the difference from the NRC’s requirements was not based on risk but rather on input from the State. A map of the Emergency Planning Zone is contained in the local AT&T telephone book, along with 12 pages of emergency planning information. He commented PG&E is currently working with the County on a new document regarding DCPP emergency planning.

Mr. Ginn displayed and described a printout from the data available on the PG&E website concerning wind speed and wind direction in the local area and he displayed photographs of the implementation of the project.

In concluding his presentation, Mr. Ginn stated that the PG&E project team is completing final actions with the forecast for completion of all project milestones on track for June 30, 2011, including:

- Documentation of all Software Quality Assurance (SQA) verifications, design verification testing and site acceptance testing.

- Conduct of tabletop drill June 29, 2011, and after.

Dr. Peterson thanked Mr. Ginn for his presentation and commented the DCISC has been following this topic for approximately two years and he expressed his appreciation to PG&E for the effective actions taken.

Ms. June Cochran, a resident of Shell Beach was recognized to address remarks to the DCISC. Ms. Cochran stated that the map in the local telephone book does not include streets by name to let the public know what zone they may be within. She remarked that Los Osos Valley Road would create problems for those persons wishing to evacuate the area of Avila Beach, especially because those persons responding to the emergency would be proceeding in the opposite direction. She commented there has never been an actual practice evacuation and predicted that in any such situation there would be gridlock within ten minutes. She inquired how PG&E could infer that persons in zones other than those designated to be evacuated would not join in the exodus from the area and she questioned, as the NRC recommended a 50 mile evacuation zone from around the Fukushima Daiichi plant, why 50 miles should not be the starting point for DCPP’s evacuation zone? Mr. Ginn stated he was glad to receive input and questions from residents and he replied that
detailed planning went into the determination of the zone designations and it was a conscious decision to make the map more understandable by showing cities and towns rather than streets. He stated the County has more detailed maps in its possession. He commented that traffic studies have shown that while the local roadways are challenging, the key to a successful evaluation is good public information and leadership and that planning is conducted from closest to the hazard outward. In response to Dr. Peterson’s inquiry concerning what capabilities exist to extend the Emergency Planning Zone around DCPP, Mr. Ginn stated that a 50 mile Ingestion Pathway Zone radius now exists and trained responders are located within that zone which extends to Santa Barbara to the south and to Camp Roberts to the north.

Ms. Sherry Lewis was recognized and she commented Mr. Ginn had not addressed the situation mentioned by Ms. Cochran where persons outside of a designated evacuation zone choose to join in the evacuation.

Ms. Elizabeth Apfelberg was recognized and she described an incident which occurred two years ago when she was prevented for over one hour from reaching Avila Beach due to a head-on traffic collision which occurred during a time of shift change at DCPP and she stated her opinion that in the event of an evacuation the plans would not work.

Mr. Ginn replied and stated based upon his personal experience in law enforcement and in hazardous materials and emergency response, and from his review of studies performed by Sandia Laboratories of actual past evacuations including the Morro Bay evacuation due to ammonium leak, it is usually necessary for the authorities to create a sense of urgency before large numbers of persons will take action. He remarked that it is most important that persons follow the direction of law enforcement and he recognized that as a PG&E employee some members of the public would not trust his words but in an actual emergency situation directions would be given by trusted authorities such as the local fire chiefs. In response to Ms. Apfelberg, Mr. Ginn stated that as a former California Highway Patrol (CHP) officer, he was aware that the CHP treats traffic collisions in a different manner than an emergency situation. In response to Dr. Lam’s inquiry, Mr. Ginn confirmed that a tendency to disregard authority was not consistent with evacuation studies and he further stated that in the event of an actual emergency at DCPP the area around the plant is relatively remote, with few persons residing in the immediate area. He commented that nuclear emergency situations typically take some time to develop and during that time precautionary actions would be under consideration and could be implemented by the County. Dr. Peterson confirmed that the events at Fukushima Daiichi took a substantial amount of time to develop and although the earthquake did cause significant damage to roads and bridges, the evacuation proceeded in an orderly fashion. He observed the State has made significant progress in seismically retrofitting its highways and bridges. Mr. Ginn agreed but he stated that he did not want to impart a false sense of security that there would not be challenges.

Dr. Budnitz thanked Mr. Ginn for his presentation.

DCPP Director of Outage Manager Tim King made the next informational presentation requested of PG&E by the DCISC.

**Station Performance during the 16th Refueling Outages for Units 1 and 2 (1R16 and 2R16)**
Including Performance of the New Steam Generators and Reactor Vessel Closure Heads.

Mr. King commented that his title would soon be changed to Director of Work Management in recognition of the fact that his organization performs daily work as well as during scheduled refueling outages.

Mr. King reviewed the major scope of work for the primary side of the plant during 2R16 as follows:

- Reactor Dis/Re-assembly.
- Full Core Offload / Reload.
- Reactor Vessel Hot Leg / Cold Leg Exams and Lower Internals Removed & Replaced - which Mr. King stated was performed with good results and with low dose rates.
- Charging Pump 2-2 Casing Replacement - to reduce iron transport to primary.
- Reactor Vessel Level Indication System Cap Fill.
- Steam Generator Platforms.
- Window 5 Optimization - outage schedule Window 5 related to the duration of maintenance improved significantly due to elimination of the need to drain water from the SGs because since their replacement the new SGs only require inspection activities to take place every third outage. In response to Dr. Peterson’s question Mr. King confirmed that eddy current testing is performed for all SGs in one outage which takes place every third outage.
- Thimble Tube Replacement.

Mr. King reviewed the major scope of work on the secondary side of the plant during 2R16 as follows:

- EDG 2-2 Major Maintenance Outage Window (MOW).
- High Pressure Turbine Inspection.
- 3 Main Stop Valve Disc/Nut Inspections - to ensure changes previously made were effective.
- SG Sludge Lance and FOSAR - to check for manufacturing debris or errors and concerning which no objects were found and approximately one pound of sludge was removed which Mr. King stated resulted from better secondary chemistry.
- Condenser Expansion Joint (Dog Bone) Replacement.
- Feed Water Pump 2-1 Inspection.
- ASW 2-1 Pump Swap.
- ASW 2-2 Motor Swaps.
- Outfall Tunnel Inspections & Repairs - to assess cleaning and inspection methods for the future.

Mr. King reviewed and discussed items of major scope during 2R16 with regard to electrical components including:
- Vital Battery 2-1 Replacement - performed on a normal schedule.
- Main Bank and Start-Up (SU) Bank Maintenance - to remove the last porcelain components and to replace radiators.
- 480v Bucket Replacements Bus 2H & 25D.
- Bus H Maintenance.
- TRY 26 Replacement.
- 230 kV Reliability 2 - 230 kV SU Power Outages - to install a common unit panel which will now have current separation and a new control scheme to provide independent isolation. In response to Dr. Budnitz inquiry, Mr. King confirmed that DC power is used to control the 230 kV breakers and there is a cross-tie capability.

Mr. King discussed and reviewed the goals and performance during 1R16 as follows:

<table>
<thead>
<tr>
<th>Performance Goals</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordable &amp; Disabling Injuries</td>
<td>≤2/0</td>
<td>0/0</td>
</tr>
<tr>
<td>Nuclear Safety Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human Performance Events</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Outage Duration (days)</td>
<td>&lt;33</td>
<td>35.8</td>
</tr>
<tr>
<td>Dose Goal (Rem)</td>
<td>&lt;68</td>
<td>29.7</td>
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<tr>
<td>Significant Foreign Material Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cost</td>
<td>≤$32.6m</td>
<td>TBD</td>
</tr>
<tr>
<td>Power Ascension (days)</td>
<td>≤5</td>
<td>3.4</td>
</tr>
<tr>
<td>Reliable Run at 100% Power (days)</td>
<td>≥90</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Concerning nuclear safety events Mr. King reported there were no challenges on loss of decay heat removal and this had a significant impact on achieving the goal of no such events. There was a single Site Human Performance Clock reset which resulted from a worker receiving a 120V shock during hinge wire replacement work on non-vital busses due to an inadequate power supply circuit check. The worker was not injured but it was observed that had this event involved higher voltage there could have been a serious injury or death as a result. In response to Dr. Lam’s question, Mr. King reported approximately 600 persons were involved in the population for determination of the excellent dose goal results achieved during 1R16.

Concerning personal contamination events during 1R16 there were 14 actual versus the goal set of 25 or fewer and Mr. King attributed this to good worker practices. Radiation dose during 1R16 was 29.7 person rem actual versus the 68 person rem goal. No person exceeded the dose limits and Dr. Budnitz commented this was an extremely low dose and demonstrated an impressive performance by DCPP. Chemistry control was improved with zinc injection into primary to inhibit nickel coming out of the metal as well as by forced oxygenation which reduced the source term. Worker practices were also improved as a result of planning activities prior to performing work. The previous actions to change out the reactor vessel heads and to replace the steam generators also contributed...
significantly to an excellent performance concerning dose during 1R16. Mr. King displayed a graph which contrasted and compared department-level events during 1R16 and 2R16.

Mr. King reviewed the challenges during 2R16 as follows:

- **Human Performance**
  - Error in relay testing caused loss of 230 KV offsite power to U-1 caused by human error due to the complexity of the separation of circuits
  - RHR pump test flow transmitter by-pass valve left open following previous maintenance activities which caused testing delays.
  - Charging Pump orifice installed in wrong location

- **Equipment**
  - Polar Crane Relays due to aging issues. Mr. King reported the polar crane relays are scheduled to be upgraded during the next refueling outage.
  - Refueling Equipment due to aging issues which will be addressed in the future.
  - 480V Bus Ceramic insulator found broken and repaired with an extent of condition evaluation completed as required by the seismic qualification of the bus.

- **Foreign Material Exclusion (FME), number of low level events**
  - 24 FME Conditions found due to legacy issues and personnel performance.
  - 3 Threat/Vulnerabilities.
  - 0 Significant Events.

Mr. King discussed and reviewed with the Committee the successes during 2R16 as follows:

- **Safety**
  - Nuclear Safety – no events and no challenges with decay heat removal.
  - Industrial Safety – 0 recordable injury
  - Radiological Safety – Dose goal, PCE’s and source term reduction.
  - Security Loggable Events - nine vs. goal of ten, principally due to violations resulting from the use of key cards to access entry and failure to latch doors following entry. In response to Dr. Budnitz’ inquiry Mr. King stated that while past violations have been caused by contractor personnel it was PG&E employees who were responsible for the violations during 2R16. Training is provided using an access door mock up and counseling is provided to address violations. Dr. Lam remarked that the rate of incidents appears to be very low

- **Planned System Health Work completed**
○ 30 System Health Improvements to improve safety and reliability.
○ 230 KV Reliability Improvements.
○ Aux and SU Bank transformer maintenance.
○ HL/CL Exams.

In response to Dr. Peterson’s inquiry Mr. King stated he could not provide statistics concerning how the replacement of the reactor vessel heads and the steam generators may have improved outage performance during 1R16 and 2R16. Mr. King commented that the elimination of the challenges of inspecting u-tubes in the old steam generators improved safety, focus and the dose rate for Instrument & Control personnel working in the area of the SGs. Concerning opportunities for further outage performance improvement Mr. King stated he would defer to the Licensing Basis Verification Project to identify any issues for the future. Dr. Peterson agreed and stated that lessons learned from the events at the Fukushima Daiichi plant in Japan will also need to be addressed. Mr. King commented that the U.S. nuclear industry did a good job of analyzing required changes following 9-11-2001 attack on the World Trade Center in New York, some of which were relevant to events at Fukushima Daiichi and Dr. Peterson agreed that Japan would have benefited from having performed activities such as those required by the NRC’s B.5.b mandates.

XV. Adjourn Afternoon Meeting

The Chair reminded those persons present and watching the proceedings by live streaming online video that the Committee would be reconvening during the evening to receive presentations concerning the events at the Fukushima Daiichi plant in Japan following the March 11, 2011, earthquake and tsunami and he then adjourned the afternoon meeting of the Committee at 4:40 p.m.

XVI. Reconvene for Evening Meeting

Dr. Budnitz convened the evening meeting of the DCISC at 5:30 p.m. He again introduced the other members, consultants and legal counsel and welcomed members of the public present in the audience and following the meeting on through the streaming video available through a link on the Committee’s website at www.dcisc.org and at www.slospan.org.

XVII. Committee Member Comments

Dr. Peterson stated there had been earlier discussions during the day relative to topics to be presented this evening and that more information on the events at the Fukushima Daiichi nuclear power plant in Japan, following the earthquake and tsunami on March 11, 2011, will be provided as it becomes available to the DCISC members. Dr. Budnitz stated the Committee will be conducting a tour of DCPP tomorrow morning which was fully subscribed through prior reservation. Dr. Lam remarked that Drs. Budnitz and Peterson both serve on a U.S. Department of Energy (DOE) panel tasked with reviewing the events at Fukushima Daiichi and therefore the Committee is fortunate for they are able to provide relevant and material information about those events.

XVIII. Public Comments and Communication
Dr. Budnitz invited any member of the public to attend this public meeting and to address comments to the Committee.

Mr. Mark Phillips, a resident of Atascadero, was recognized to address remarks to the Committee. Mr. Phillips stated he received information that the radiation levels at the Fukushima Daiichi plant were higher than had been previously reported. He stated that it was the stakeholders with the most at stake who appear to be in control of information about the events in Japan. He questioned whether PG&E would be in that role if an accident were to happen at DCPP and would the public be at the mercy of PG&E? Mr. Phillips stated he had no confidence in the NRC. He remarked that at another public meeting he attended the NRC was unable to address questions regarding the length of time radioactive waste remains significantly hazardous and had promised to get back to him with answers but never did. He observed the Environmental Protection Agency has stated such waste remains dangerous for one million years and he does not trust information provided by PG&E or the NRC.

Dr. Budnitz replied that the institutional arrangements for dealing with a nuclear emergency are different in the U.S. from those in Japan. During the accident at Three Mile Island Nuclear Generating Station the federal government appointed a representative to provide information and in doing so kept the public’s trust. Dr. Budnitz stated DCPP’s Joint Information Center (JIC) is manned by officials from PG&E, the County and the State. Dr. Peterson observed the damage at Fukushima Daiichi caused by an externally initiated earthquake and tsunami was different from past accidents which were caused by human error and equipment failure and he confirmed that organizationally things are different in the U.S. than was the case in Japan. He stated that everyone had difficulty getting accurate information concerning the damage at Fukushima Daiichi and the Japanese authorities have recognized that many decisions were not made by those persons ‘on the ground’ at the plant but rather by persons removed from the activities at the site. He stated that Mr. Phillips’ observation that accurate information did not flow during the events at Fukushima Daiichi was accurate. Mr. Phillips commented that the early information concerning the accident at Three Mile Island was also inaccurate. Dr. Budnitz commented the damage to the Fukushima Daiichi plant occurred in context of a huge disaster to the entire region which made it more difficult and he stated that could be the case in California and therefore there were important lessons to be learned. Mr. Phillips agreed and stated that Dr. Budnitz’ statement was one of the reasons he does not support nuclear power. Dr. Lam inquired what the NRC or PG&E could do to gain Mr. Phillips’ trust, to which Mr. Phillips replied he could not envision any scenario where that might occur as PG&E lies and the NRC promotes nuclear power.

Mr. Klaus Schumann of Paso Robles was recognized. Mr. Schumann stated he served on the San Luis Obispo Nuclear Waste Management Committee. He stated the goal is to keep the area free of contamination. He remarked that DCPP should never have been built in its present location and should not be relicensed. He further directed the Committee’s attention to a recent series of news articles in the San Luis Obispo Tribune. He further directed the Committee’s attention to, and he showed copies of, several news articles including articles concerning the NRC’s relationship with nuclear utilities; the Alvarez article on spent fuel pools; the Nuclear Information Resource Service article regarding safeguarding waste; an article on predicting beyond design basis earthquake...
activity on the San Andreas fault; a Russian study on the effects and consequences of the accident at the Chernobyl Nuclear Plant, published in the Washington Spectator which Mr. Schumann stated found a total of 985,000 fatalities as a result; an article published in 2009 concerning the history of tsunamis on the California coastline, which described past tsunamis as reaching heights of 55 - 100 feet locally. Mr. Schumann stated that risk assessment was applied to Three Miles Island and Chernobyl and determined the probabilities of those events to be very low. He questioned what the probability risk analysis would have been for the earthquake and tsunami at Fukushima Daiichi which resulted in three reactor meltdowns. He stated those previous predictions were very far off from what actually occurred and he wondered just how useful were these risk assessments and if they are not accurate how can the design of a plant be conservative?

Ms. Sherry Lewis, a resident of San Luis Obispo and member of MFP was recognized. Ms. Lewis stated the two earlier sessions included discussion of the dilemma of nuclear waste storage. She observed that all the DCISC can do is to make PG&E aware of issue, the Committee has no authority or ability to force PG&E to do anything. She commented the independence of the Committee encouraged complacency in that each member of the Committee must believe that nuclear power is a good thing. She stated that someone should address the waste issue. She remarked that she had spoke with a person who worked at the NRC who assured her that a use would be found for nuclear waste but Ms. Lewis observed people have previously repeatedly tried to turn lead into gold and failed and she stated there are no safe storage options for this waste.

Dr. Budnitz replied to Ms. Lewis and stated each of the DCISC members is appointed by a different entity including the Governor, the Chair of the California Energy Commission and the California Attorney General. In this process members’ views are known. A member of the DCISC is appointed each year by an open process in which public participation is invited. Dr. Lam stated that during his appointment process by the CEC his personal views on nuclear power were not solicited and he stated he has never publicly expressed his personal views as to nuclear technology.

Ms. Joyce Pallela, a resident of Avila Beach, was recognized. Ms. Pallela inquired whether any of the members believe nuclear power is too dangerous or too expensive? Dr. Budnitz replied he has never considered the issue in terms of economics but it was his view that nuclear plants are dangerous and he has spent his career in the effort to make them safer. Dr. Peterson stated he shared Dr. Budnitz views and he observed that continued operation of nuclear facilities is governed by policy questions which are separate from safety considerations. The issue is whether to limit replacement of older nuclear and coal plants. Dr. Peterson observed that nuclear plants are different from each other in design. He remarked that his service to the Committee, to the best of his ability, is to confirm that DCPP is being run as safety as possible and there is a wide variety of issues to be considered in that role including opportunities for improvement and lessons to be learned.

XIX. Informational Presentation by the Committee

Dr. Budnitz made the next presentation.

“Big Picture” Presentation on the Events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, Magnitude 9.0 Earthquake and Resulting Tsunami.
Dr. Budnitz began his presentation by displaying a map showing the location of the 26 nuclear sites with a total of 40 reactors on the Japanese islands. He stated nuclear power supplies approximately one-half of Japan’s power requirements. He identified the location of the March 11, 2011, earthquake as off the northeast coast of the island of Honshu, the largest and most populous of the islands which make up Japan and stated it is believed to be the largest earthquake in the 2,000 years of Japanese recorded history. He identified the four nuclear power plants with a total of 14 reactors which were affected by the resulting tsunami. He observed the Fukushima Daiichi plant which was most affected consists of six nuclear reactors while DCPP consists of two nuclear reactors. Dr. Budnitz displayed a photograph of the Fukushima Daiichi plant which showed the location of Reactors 1-6, the dry spent fuel storage and common spent fuel pool. The Fukushima Daiichi plant consists of, and was in the following configuration, on March 11, 2011:

- Reactor 1: 439 MWe BWR, built in 1971 and in operation prior to the event.
- Reactor 2: 760 MWe BWR, built in 1974 and in operation prior to the event.
- Reactor 3: 760 MWe BWR built in 1976 and in operation prior to the event.
- Reactor 4: 760 MWe BWR, built in 1978 and in an outage with fuel removed.
- Reactor 5: 760 MWe BWR, built in 1978 and in an outage with fuel removed.
- Reactor 6: 1067 MWe BWR, built in 1979 and in an outage with fuel removed.

The earthquake on March 11, 2011, at 3:45 p.m. local time occurred along a 250 mile long fault located 75 miles offshore and resulted in one side in the middle of the fault falling up to 75 feet in a few seconds which produced a huge wave, known as a tsunami. Initially there was a considerable amount of damage on the land due to the earthquake while the tsunami went east and west at approximately 200 miles per hour. Dr. Budnitz reviewed the characteristics of a tsunami which are not similar to a normal ocean wave but rather result from a large mass of water, with a one to two mile long wave-length, moving across open water and when that mass of water subsequently rises and subsides, subsequently inundating the shoreline. Dr. Budnitz stated the size of the tsunami on March 11, 2011, which reached 44-45 feet in height, was the cause of the accident at Fukushima Daiichi.

Dr. Budnitz reported all operating units automatically shut down when the earthquake occurred and, while offsite power to the plant was lost due to the earthquake the emergency diesel generators worked properly until the tsunami arrived. The tsunami inundated the buildings on the plant site and the emergency diesel generators, which played a crucial role in the accident, which were above sea level but not high enough to escape the tsunami. The emergency diesel generators were rendered inoperable due to the tsunami and the station lost power and was in a blacked out condition causing all motor operated pumps including those associated with the Emergency Core Cooling System to become inoperable. Dr. Budnitz displayed graphically the tsunami run-up heights and inundation heights all along the Japanese coastline and reported that in some areas the tsunami reached 100 feet in height. He displayed a graph with the tsunami heights and the heights of the sea walls built to protect the land, some of which were 30-40 feet high and stated that almost everywhere along the coastline the tsunami exceeded the height of the seawall. There were a total of 26,000 fatalities as a result and 400,000 persons were evacuated. He commented this
error and the resulting lack of protection will cost Japan hundreds of billions of dollars and he remarked the accident to the reactors at Fukushima Daiichi is only a part of this damage. Dr. Peterson observed that the tsunami warning system worked and undoubtedly saved lives but the tsunami shelters proved to be inadequate.

Dr. Budnitz described the principal components and basic operation of a boiling water reactor (BWR) which he described as utilizing a direct, single loop wherein water, all of which is slightly radioactive, boils and makes steam to operate the turbine generator. In comparison to a pressurized water reactor (PWR) the operation of a BWR is simpler. Dr. Budnitz graphically displayed the operation of nuclear fission, a chain reaction which occurs within power reactors and he displayed a photo of and briefly described the: uranium fuel pellets; the zirconium-cladded fuel rods, approximately 12 feet in length which contain approximately 33,000 fuel pellets; the 538 individual, 8' by 8', fuel assemblies, containing 62 fuel rods each; and the reactor vessel with 500 water-covered fuel assemblies located in its core. Dr. Budnitz displayed a photo of the primary containment and torus of the BWR under construction at the Browns Ferry Nuclear Plant and pointed out the presence of a person in the photo for purposes of showing the scale and size of the reactor. He described the components and configuration of a BWR including: the reactor building which performs a limited safety/confinement function; the spent fuel pool, located high in the reactor building: the reactor pressure vessel; the vessel’s primary containment, consisting of an 8" steel liner and reinforced concrete; and the torus structure, which surrounds the primary containment and provides a suppression pool for purposes of cooling. Dr. Budnitz reviewed the refueling configuration of Fukushima Daiichi Reactor 4 where the reactor pressure vessel head was removed to allow water to flood the core and the fuel to be moved through the refueling gate to the spent fuel pool. He displayed photos of the reactor and the primary containment inside the reactor building and an empty spent fuel pool and a drawing of a BWR in normal operating configuration.

Dr. Budnitz reported the following took place in Reactors 1, 2 and 3 at Fukushima Daiichi on and after March 11, 2011:

- Electric power grid lost due to the earthquake.
- Operating reactors shut down (scram).
- Reactor vessels cooled by water pumped by electrically operated pumps.
- Emergency diesel generators start as designed and power core cooling pumps.
- Emergency diesels provide power for 45 minutes until tsunami strikes.
- Tsunami disables emergency diesel generators.
- Separate steam-driven pump operates to pump water from torus to cool reactor.
- Batteries required to control feedwater control system for steam-driven pump become exhausted.
- Water injection to reactor vessel is lost and water in reactor boils.
- Fuel rods in the core become uncovered.
At 3,200°F the zirconium cladding melts, zirconium oxide is produced and uranium melts and sinks to the bottom of the vessel.

At 4,500°F the fuel rods break and create debris bed inside the core.

At around 4800°F uranium-zirconium eutectics melt.

Gases, steam and heat are produced as the core melts and fill the vessel.

Gases, including hydrogen, are released to the air.

Radioactive water escapes.

Dr. Budnitz stated the total amount of reactivity released by Fukushima Daiichi is estimated to be approximately 4%-6% of the total amount of reactivity within the cores. Dr. Budnitz displayed the probable configuration of core debris in the lower heads and stated that it is not yet certain but at Fukushima Daiichi Reactors 1, 2 and 3 core debris may have escaped outside their primary containments but as this material is now underwater it should stay safe and stable provided it remains covered.

Dr. Budnitz reported seawater injection using a fire truck was used to prevent much larger releases. Using photographs he reviewed the damage to Reactors 1, 2 3 and 4 where hydrogen explosions severely damaged the reactor buildings and the roofs of Reactors 1, 3 and 4. Dr. Budnitz reported it is now believed that hydrogen may have migrated through a pipeline, which was severed by the explosions, from Reactor 3, which was operating at the time of the earthquake, to Reactor 4 which was shut down for refueling. He observed there was not much radioactivity released from Reactor 4 but observers were initially convinced its spent fuel pool was dry. However, an inspection conducted one month after the accident found the pool and the fuel intact and found that the water was not very radioactive. Spent fuel pools for Reactors 1, 2 and 3 were also intact. Dr. Budnitz reported the U.S. provided a fresh water barge to assist in coping with the events at Fukushima Daiichi.

In reviewing what went wrong at Fukushima Daiichi, Dr. Budnitz identified the following:

- Reactors were located where the tsunami height was too large for their design. The seawall was 18 feet high while the tsunami was more than 40 feet in height.
- The electrical power systems didn’t survive.
- Institutional problems in that the Control Room staffs did not have authority to violate procedures without receiving authorization from the plant’s owner, Tokyo Electric Power Company (TEPCO), and the Japanese government in Tokyo. Dr. Budnitz observed a Control Room supervisor at Fukushima Daiichi took the initiative to violate procedures and saved the plant from even more damage. He commented that in U.S. nuclear plants, control room supervisory staff has the authority to take action in emergency situations.
- None of the reactors at Fukushima Daiichi were designed to withstand a long-term station blackout and this remains a fundamental issue to be addressed following the events of March 11, 2011.
Using a map, Dr. Budnitz reviewed the location of the 104 U.S. commercial nuclear reactors and he observed that in the United States there are a total of 24 General Electric Mark-I BWR's similar to the reactors at Fukushima Daiichi. He reported the average dose of radiation in the U.S. is 620 mrem/year for an individual and reviewed how that is received, with 200-300 mrem/year occurring naturally. He reviewed using a map of the areas around the Fukushima Daiichi plant at a radius of 12 miles, 18 miles and 50 miles out from the plant and stated the wind contamination during the events following March 11, 2011, distributed the radioactive products to the northwest of the plant. The Japanese government made the decision to evacuate approximately 40,000 persons who lived within an area located approximately 20 miles to the northwest of the plant site where they would have received 2000 mrem/year or above had they continued to reside in the area. These areas will require clean-up and decontamination. Dr. Budnitz reported direct doses to the population as a result of the events at Fukushima Daiichi were small, with some contamination to the food and in the seawater. However, the events at Fukushima Daiichi represent a huge economic disaster for Japan with the cost of the cleanup expected to reach $10-$20 billion dollars, however the entire cost to clean up following the tsunami is expected to cost $400-$500 billion dollars.

In conclusion, Dr. Budnitz stated the reactors at Fukushima Daiichi are destroyed. The event represents a disaster for the zone around the plant. Among workers a small number received large doses of radiation while others suffered smaller doses. The experience has resulted in the industry reviewing, studying, and being prepared to understand fundamental design changes which may be required. He stated that PG&E will make a presentation immediately following his which may in some respects overlap with the information he presented and he asked the members of the public to hold their questions until after PG&E’s presentation.

XX Information Items Before the Committee (Cont’d.)

Special Assistant to the DCPP Site Vice President Mr. Bill Guldemond made the next informational presentation.

Summary of Preliminary Lessons Learned by DCPP from the Fukushima Daiichi Events and Actions Taken and Planned by DCPP in Response to these Events.

Mr. Guldemond began his presentation with a discussion of what is known about the events at the Fukushima Daiichi plant. He reported that a magnitude 9 earthquake caused the automatic shutdown of the operating reactors at the Fukushima Daiichi plant, as designed, and the loss of offsite power to all six reactors. A substantial quantity, as much as ten feet, of water “sloshed” out of the spent fuel pool in Reactor 4 during the seismic event. Emergency diesel generators and other safety systems actuated as expected to stabilize the plants. A large tsunami wave struck the plant ~1 hour later which had been anticipated. The tsunami alert system worked and an evacuation ensued. Mr. Guldemond stated that water entered the plants, disabling nearly all plant electrical and safety systems in Reactors 1-5. One emergency diesel generator continued to run in Reactor 6 and was used to supply power to reactor 5 on the following day. With the loss of batteries, essentially all plant monitoring instrumentation was lost compromising operator ability to monitor and manage plant conditions. Mr. Guldemond reported that remaining core cooling systems failed leading to substantial core damage in Reactors 1, 2 and 3, with possibly some migration of fuel
outside of primary containment, but this has yet to be confirmed. Explosions in Reactors 1, 2, 3 and 4 are believed to be caused by hydrogen. Spent fuel pools heated up.

Concerning what is believed about the events at Fukushima Daiichi, Mr. Guldemond stated the seismic events are not believed to have caused significant plant damage. The reactors are equipped with containment vents which permit venting to preserve primary containment integrity, remove decay heat, and control combustible gas. Containment venting did not occur on one reactor until well after design pressure was exceeded due to a complicated decision-making process regarding containment venting which affected decisions by those in authority.

Preliminary lessons from the events at the Fukushima Daiichi plant include:

- The susceptibility of stations to multiple unit events from beyond design basis natural phenomena. Single unit events formed the focus of previous thinking and Mr. Guldemond stated the nuclear industry will need to revisit mitigating strategies for multi-unit events.

- The importance of robust capability to prevent/recover from station blackout conditions. Currently 10CFR50.63 regulations provide for a duration of four hours during which plants must cope without electrical power.

- The importance of managing spent fuel pool conditions under upset conditions. Mr. Guldemond stated this concern has somewhat subsided as no significant damage has been discovered to the spent fuel pool for Reactor 4.

- The importance of timely decision-making. This was a particular issue in making the decision to vent containment in Reactor 1, which pressurized to 122 pounds-per-square inch (psi), preventing injection and lifting the reactor dome and causing release of hydrogen.

In response to Dr. Lam’s inquiry concerning the adequacy of earlier industry assessment and consensus regarding the risk assessment from a station blackout, Mr. Guldemond stated there is increased industry study of this issue and vulnerabilities exist, even for PWRs, but he could not answer Dr. Lam’s question concerning the adequacy of previous risk assessment.

Mr. Guldemond discussed and reviewed with the Committee DCPP’s response to the events which occurred in Japan and provided some comparisons of DCPP to Fukushima Daiichi for similar vulnerabilities:

- Seismic/tsunami vulnerability:

<table>
<thead>
<tr>
<th>Fukushima Daiichi License/Design Basis</th>
<th>Fukushima Daiichi Reported Conditions</th>
<th>DCPP License/Design Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original design ground Acceleration: 0.36 g</td>
<td>Foundation Acceleration: 0.3 - 0.5 g</td>
<td>Ground Acceleration: 0.75 g</td>
</tr>
<tr>
<td>Upgrade Design Ground Acceleration: 0.6 g</td>
<td>Estimated Free Field Ground Acceleration: 0.4 - 0.7 g</td>
<td></td>
</tr>
<tr>
<td>Tsunami Wave Height:</td>
<td>Tsunami Wave Height: 10-14</td>
<td>Combined Tsunami, Storm Waves</td>
</tr>
</tbody>
</table>
Mr. Guldemond reviewed and compared the respective elevations of DCPP and Fukushima Daiichi above sea level which are 85 feet and 20 feet respectively and the elevations of various features at the DCPP site in relation to sea level at the site:

<table>
<thead>
<tr>
<th>DCPP Installation</th>
<th>Approx. Height Above Sea Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Saltwater System Snorkels</td>
<td>45 ft.</td>
</tr>
<tr>
<td>Power Block - Emergency Diesel Generators</td>
<td>85 ft.</td>
</tr>
<tr>
<td>Electrical Distribution System</td>
<td>From 85 ft. to 100 ft</td>
</tr>
<tr>
<td>Surface of Spent Fuel Pools</td>
<td>140 ft.</td>
</tr>
<tr>
<td>Dry Cask Storage and Fresh Water Reservoirs</td>
<td>310 ft.</td>
</tr>
</tbody>
</table>

- Robustness of DCPP emergency power:
  - Six air-cooled diesel generators; three per unit with cross-ties to allow a generator from one unit to supply both units – alternate AC licensing basis.
  - Two underground diesel fuel storage tanks with a seven day supply of fuel for each diesel generator.
  - Protected from tsunami by 85 ft bluff.

- Spent Fuel Pool (SFP) management capabilities:
  - SFP locations for PWRs more accessible than those of BWRs.
  - Have a temporary backup cooling system with cross-connect capacity.
  - Makeup available from multiple sources under normal and abnormal conditions:
    - RWST via gravity or pump with AC power.
    - Makeup Water System with electrical power required.
    - Condensate Storage Tank with electrical power required.
    - Demineralized Water System gravity fed if piping system is intact.
  - Procedures in place for maintaining SFP inventory under upset conditions:
    - EDG-1, Internal Spent Fuel Pool Makeup.
    - EDG-2, External Spent Fuel Pool Makeup.
    - EDG-3, Spent Fuel Pool Cooling via Spray.
    - EDG-4, Spent Fuel Pool Leakage Control Strategies.

Dr. Peterson observed it was important to emphasize that some of the distinctions between DCPP and the situation in Japan at Fukushima Daiichi represent substantially important differences.
Preparedness for significant events:

- Severe Accident Management Guidelines (SAMG) – an industry initiative to provide for:
  - Controlling RCS pressure and temperature by focusing on resources.
  - Injecting into Steam Generators.
  - Controlling containment pressure and hydrogen concentration.
  - Flooding Containment.

- Extreme Damage Mitigation Guidelines (EDMG) – which were mandated by the NRC after the events of 9-11-2001, to provide for actions to be taken to address extensive plant damage from a large fire or an explosion.
  - SFP water replacement and spray via fire water and portable pump (fire truck).
  - Depressurization of steam generators using atmospheric dump valves.
  - Ability to reduce containment pressure even with no power or air available.
  - Start emergency diesel generators with no power available.

Mr. Guldemond observed that the U.S. nuclear industry is ahead of Japan regarding consideration of extreme conditions, and procedures to address same are available. The following actions are being taken by DCPP and the industry:

- Verification through walkdowns that mitigating equipment for beyond design basis events bounded by security events is available and functional.
- Verification through walkdowns that procedures to implement the strategies for the events described above are in place and executable.
- Verified that qualifications of staff needed to implement the procedures are current.
- Verified that applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of assumed events. In DCPP’s case it was found that an agreement was required to address road blockage issues in the event diesel fuel deliveries were required.
- Verification that the capability to mitigate station blackout (SBO) conditions required by station design is functional and valid.
- Verification that required materials and equipment for design basis internal and external flooding are adequate and properly staged.
- Verification through walk downs and inspections of important equipment needed to mitigate fire and flood events that the equipment’s function would not be lost during seismic events appropriate for the site.

Mr. Guldemond reported that some shortcomings were identified at DCPP and entered into the plant’s Corrective Action Program and he provided as an example a long term cooling water pump
which failed a test. In response to Dr. Lam’s inquiry concerning whether the NRC’s temporary instruction would require follow-through Mr. Guldemond stated that this consists, essentially, of verifying that plants have done as INPO instructed.

Mr. Guldemond described additional organizational capacities at DCPP as including:

- Long Term Seismic Program
  - Dedicated geosciences department

- Onsite Fire Department
  - Minimum of five personnel on site 24/7
  - Two fire engines

- Recurring Operator Training
  - Nominal once per six weeks with simulator training/evaluations and periodic job performance measures including for performance regarding off-normal and upset conditions.

- Recurring Emergency Preparedness Training
  - Differs from that provided by Japanese plants.
    - Four Emergency Response Organization (ERO) teams.
    - Dedicated on-site and off-site emergency response facilities.
    - Periodic table-top and full-scope drills with offsite agencies (minimum of four annually which is more than in Japan).

- Timely decision-making
  - Decision-making authority for emergency actions is vested with DCPP.
    - 10 CFR 50.54(x) authorizes licensees, PG&E in the case of DCPP, to take reasonable action in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent. Mr. Guldemond stated that at DCPP a senior reactor operator, of which there is always one on duty, would make decisions in concert with personnel at the Emergency Operations Facility. Dr. Peterson stated this keeps the decision making function with the personnel with the most knowledge of plant conditions and is a most important distinction when operating outside of procedures.
    - Emergency operating, severe accident management, and extreme damage mitigating strategies are in place with personnel training and have been NRC inspected. Mr. Guldemond commented this pre-positioning of instructions shortens
Looking Forward - a Beyond Design Basis Response Team has been chartered and is led by Mr. Guldemond to:

- Reduce the potential for DCPP, including the ISFSI and spent fuel storage pools, to experience a fuel damaging event as a result of beyond design basis (BDB) events through modifications, procedures, and training.
- Strengthen the capability of PG&E to respond in the unlikely event that a fuel damaging event occurs at DCPP with a radioactive release.
- Critically examine emergency preparedness for postulated BDB events including those situations where significant infrastructure damage to areas around the plant may have occurred.
- Coordinate DCPP response to industry and NRC initiatives.
- Authorized acquisition and onsite storage of a backup cooling water system for the Auxiliary Saltwater System consisting of four diesel pumps and 8,000 feet of hose.
- Authorized a project to replace reactor coolant pump seals with low leakage design.
- Enhancing the capability to conduct diesel generator restart and SFP monitoring following a beyond design basis blackout.

Mr. Guldemond stated the Beyond Design Basis Response Team charter will be revisited to include recently published lessons learned from the Japanese experience. In response to Consultant Linnen’s inquiry, Mr. Guldemond stated the low leakage reactor coolant pump seals have been used by the Farley, McGuire and Sharon Harris nuclear plants. Dr. Peterson commented this action should provide more time in an emergency situation. In response to Dr. Lam’s inquiry, Mr. Guldemond stated the pump seals provide essentially a zero-leak seal.

Mr. Guldemond discussed the initial response of the nuclear industry to the events at Fukushima Daiichi and reported that Chief Nuclear Officers (CNOs) chartered a working group to:

- Identify and communicate to members domestic industry design and operational strategies used to mitigate events similar to those impacting Japanese nuclear power stations such as experienced by plants in the southeastern portion of the U.S. which resulted in total loss of offsite power during tornadoes in April.
- Recommend additional industry actions and their priority to address lessons learned from the events.
- Recommend to members domestic industry support for Japanese nuclear power industry.

Mr. Guldemond reported that Diablo Canyon has a representative who is actively participating with this working group. Dr. Budnitz commented a report of more than 900 pages has just been issued on the industry’s response to Fukushima. Dr. Peterson observed that it would be preferable to have
an international approach to nuclear safety programs and Mr. Guldemond replied that the NRC has recently declassified access to NEI 06-12 and made that report available.

The Electric Power Research Institute (EPRI) and Nuclear Energy Institute (NEI), in conjunction with senior utility executives, have continued the industry response by creating a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at Fukushima Daiichi, termed the “Way Forward,” which is publicly available. Mr. Guldemond stated this will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. Continuing response by the nuclear industry also includes:

- **Strategic Goals:**
  - Nuclear workforce focused on safety and operational excellence.
  - Timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling following SBO should be synchronized to preclude fuel damage following station blackout.
  - U.S. nuclear industry should be capable of responding to any significant event in the U.S. with the response being scalable for international event. DCPP provided boric acid to Japan during the crisis at Fukushima Daiichi
  - SAMGs, security response strategies (B.5.b), and external event response plans should be effectively integrated to ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site.
  - Margins for protection from external events, along with a need to stay current regarding external events, should be sufficient based on the latest hazards analyses and historical data.
  - Spent fuel pool cooling and makeup functions should be fully protective during periods of high heat load in the spent fuel pool and during extended station blackout conditions.
  - Primary containment protective strategies should be effectively managed and post-accident conditions mitigated, including elevated and enhanced pressure and hydrogen concentrations.

Mr. Guldemond reported the NRC’s response to the events at Fukushima Daiichi include forming an internal task force focusing on:

- Protection from design basis natural phenomena.
- Consideration of beyond design basis natural phenomena.
- Mitigation for long-term Station Black Out, including multiple unit events.
- Emergency Preparedness and Adequacy of Current Regulations.
- NRC Programs.

Mr. Guldemond stated the NRC is expected to respond with new regulations. Dr. Peterson
commented that when forced to deal with beyond design basis issues it is due to something that was not anticipated and it is important to have flexibility and authority vested in those with the most current knowledge. He stated, and Mr. Guldemond agreed, that while the Japanese were inventive regarding strategies, beyond design basis tools can be improved. The NRC has issued two generic communications:

- Information Notice 2011-05 providing preliminary information on the events at Fukushima Daiichi.
- Bulletin 2011-01, "Mitigating Strategies", requesting information on mitigating strategies to determine if additional assessment of program implementation is needed, if the current inspection program should be enhanced or, if further regulatory action is warranted. Responses from the industry are required in 30 and 60 days following issuance.

The NRC has also conducted two inspections using Temporary Instructions:

- TI 2515-183
  - Assess capability to mitigate beyond design basis events.
  - Assess station blackout mitigation capability.
  - Assess capability to mitigate internal and external flooding.
  - Assess thoroughness walkdowns and inspections of equipment to mitigate fire/flood events to identify potential for function to be lost during seismic events.

- TI 2515-184
  - Determine that severe accident management guidelines (SAMGs) are available and maintained.
  - Determine the nature and extent of licensee implementation of SAMG training and exercises.

Mr. Guldemond then reviewed the recently published five lessons learned from the Japanese experience at Fukushima Daiichi which include:

- Lesson 1: Sufficiency of preventive measures against a severe accident.
  - Strengthen measures against earthquakes and tsunamis.
  - Ensure availability of power supplies.
  - Ensure robust cooling functions for reactors and containments.
  - Ensure robust cooling functions of spent fuel pools.
  - Thorough severe accident management measures.
  - Capability to handle multiple unit events.
  - Design vulnerabilities complicating response.
Ensuring water tightness of essential equipment.

Lesson 2: Enhancement of response measures against a severe accident.
- Control of hydrogen.
- Adequacy of containment venting – functionality and control of release of radioactive materials.
- Control room habitability.
- Adequacy of radiation exposure management.
- Adequacy of training for responders.
- Thorough severe accident management measures.
- Adequacy/availability of instrumentation post accident.
- Ability to mobilize rescue teams and emergency supplies.

Lesson 3: Enhancement of emergency response.
- Response to coincident large scale natural disaster and prolonged evacuation of local population.
- Adequacy of environmental monitoring.
- Adequacy of coordination.
- Communication capability following a natural disaster.
- Infrastructure for accepting outside assistance.
- Ability to project radiological consequences following a natural disaster and accident.
- Evacuation/sheltering strategy for a prolonged exposure period.

Lesson 4: Reinforcement of safety infrastructure.
- Clear roles and responsibilities/coordination of governmental agencies.
- Availability of expertise on severe accident management.
- Ensuring independent and diversity of safety systems.
- Use of PSA to identify and address vulnerabilities.

Lesson 5: Thoroughly instill a safety culture.
- Importance of defense in depth.
- Maintaining a learning environment.
- Constant search for improvement.

In concluding this presentation, Mr. Guldemond observed that design features, procedures, and training lessen the vulnerability of DCPP to some aspects of the events similar to those at
Fukushima Daiichi but there are still multiple lessons to be learned which will require analysis. Actions have been taken or initiated in response to the initial lessons learned but there are more actions to take and many lessons yet to be learned, and DCPP is prepared to act on those lessons regardless of the source.

Public comment followed. Dr. Peterson reminded those present that the Committee would be receiving further presentations on the events at the Fukushima Daiichi plant on the following day. Dr. Budnitz informed the members of the public that the Committee and, if necessary, PG&E would address questions after receiving them from all members of the public who cared to address the Committee.

Ms. Elizabeth Apfelberg was recognized and she identified herself as a resident of San Luis Obispo and member of MFP. Ms. Apfelberg stated the tsunami size was the cause of the accident at Fukushima Daiichi, the tsunami reached the plant one hour after the earthquake and she stated this was not addressed by Mr. Guldemond during his presentation. She observed unlike evacuees from areas impacted due to radiation, the evacuees from areas damaged by the tsunami can return.

Ms. Sherry Lewis was recognized. In response to Ms. Lewis question Mr. Guldemond stated his position at DCPP was Special Assistant to the Site Vice President and he serves as the team leader in PG&E’s efforts to understand and assess the lessons learned from the events in Japan. Ms. Lewis stated she was bothered by her impression that Mr. Guldemond’s presentation was too glib sounding, akin to a to-do list. She inquired whether the information presented was information which was to be acquired and gave as an example Mr. Guldemond’s reference to a focus on excellence. She expressed her belief that there was very little detail given.

Mr. Mark Phillips, a resident of Atascadero was recognized. Mr. Phillips stated he would prefer that the Committee members address his questions as he asked them. He stated that it is apparent all blame for the events at Fukushima Daiichi is being placed on the tsunami. He commented that he read an article which stated that radiation levels at that plant were found to have increased prior to the arrival of the tsunami. He observed Mr. Guldemond spoke about the roads not being adequate for DCPP to received supplies of diesel fuel and he questioned their adequacy for evacuation purposes in the event of an accident at DCPP. He stated that the local population does not trust PG&E because of this type of information.

Mr. Klaus Schumann was recognized. Mr. Schumann stated he shared the disappointment that things that should have been done were not. He inquired about the design basis for the Fukushima Daiichi plant and about any affect on the events there due to aging components. Mr. Schumann observed that ultimately the events at Fukushima Daiichi occurred because of a beyond design basis earthquake and tsunami and the contributions of an operator acting outside the regulations were a primary contributor to making the impact on the plant less severe than it might have otherwise been and he questioned whether the public can rely on operators to make similar decisions in the future. Mr. Guldemond, responding to Mr. Schumann’s question, reported the surface of the SFPs at DCPP are at an elevation of approximately 140' above sea level and Dr. Budnitz commented the bottom of the DCPP SFPs are about 5' below the 85' elevation above sea level, with the top of the fuel assemblies 20' below the surface of the water. Mr. Schumann stated it was his understanding.
that PG&E has made the decision to accelerate transfer of spent fuel out of the SFPs. Mr. Guldemond replied that he had no information concerning that issue. Mr. Schumann stated it was his understanding there were now 1,100 fuel assemblies in each SFP and at PG&E, three months prior to the events at Fukushima Daiichi, there was fear that a full DCPP core could not be offloaded into a SFP and he queried whether DCPP maintained its capacity for a full core offload into a SFP.

Ms. June Cochran of Shell Beach was recognized. Ms. Cochran stated her belief that the Task Force being formed by DCPP in response to the events at Fukushima Daiichi should have subcategories and should include participation by environmentalists and members of the local community. She stated it was important that the Task Force’s work have complete transparency and if PG&E again tried to keep the local community out of the process she wondered how PG&E could regain its trust. She stated in her review of DCISC reports she noted that a lack of thoroughness and oversight by senior DCPP leadership had been referenced and that this oversight was now needed from DCPP and from the nuclear industry.

Dr. Budnitz in replying to the comments from members of the public stated that the seismic design basis at Fukushima Daiichi was reevaluated to 0.6 g. The earthquake which occurred on March 11, 2011, approximately 70 miles from the plant, was close to the design basis and did not exceed it by much. He stated he did not understand the reference to increased levels of radiation being detected prior to the tsunami and stated his belief that such reports were false. He stated it was his best understanding that absent the tsunami Fukushima Daiichi would not have suffered core damage and no release would have occurred. He commented that the Fukushima Daiini plant came through the earthquake and tsunami without significant damage. He stated that based on his review, it was not the earthquake that caused the roadways and the power grid to be damaged rather it was the tsunami which caused those event. Dr. Budnitz stated his understanding that the age of the components at Fukushima Daiichi was not a contributor to the damage but he observed there is still much to be learned. Dr. Budnitz stated it was the industry’s understanding and conclusion that the control room operators at Fukushima Daiichi performed their jobs heroically and he stated it was his hope and belief the U.S. control room staff would act similarly and that past experience has shown that trained, educated and motivated individuals may be relied on in emergency situations. In response to Dr. Budnitz request, Mr. Guldemond confirmed that DCPP has standard procedures in place to provide for transporting personnel and equipment by helicopter if necessary and has an agreement with the California National Guard concerning overland transport. Consultant Linnen commented concerning evacuation of the local population, PG&E as a utility provider does not manage or control the roads outside the plant. PG&E Senior Director of Technical Services Sharp stated information provided by PG&E to County officials concerning evacuation routes included a recommendation that two bridges be improved but generally the local roads are deemed to be adequate for purposes of emergency evacuation.

Dr. Budnitz stated, with regard to the hydrogen explosion which tore off the roof of Fukushima Daiichi Reactor 4, the initial conclusion was that the SFP level had dropped and the fuel was uncovered, however, the inspection which took place six weeks later found that the water levels were only somewhat low with modest amounts of radioactivity detected and that therefore the hydrogen had not come from the SFP. Dr. Budnitz reported that every U.S. reactor is required to maintain its ability to fully offload the core from the reactor vessel to a SFP. Mr. Sharp commented
that the SFPs at DCPP are loaded in a checkerboard fashion. Dr. Budnitz commented that a decision on the part of PG&E to accelerate transfer of spent fuel from the SFP to dry cask storage would be reviewed by the DCISC.

Dr. Budnitz observed that from Mr. Guldemond’s presentation it was clear that there were many issues which remain to be addressed. There appear to be approximately two dozen categories and each will be subject to the DCISC’s continuing review during this year and into the future. Each topic merits more attention and there are many sources for the lessons to be learned but Dr. Budnitz stated the nexus for the DCISC’s review must be the application of these issues to DCPP and the Committee will adjust its resources to that end. He invited members of the public who wish to provide input to the DCISC concerning these or other matters to send a letter or an email to the Committee. Concerning the request that the DCPP Task Force include public participation, Dr. Budnitz stated that this was a matter for PG&E and Mr. Guldemond confirmed that the request had been heard and will be reviewed. Dr. Lam commented that it was his belief that there has been no attempt at deception by omission concerning the events at Fukushima Daiichi, but for members of the public their knowledge and perception of the events at Fukushima Daiichi may be affected by the complexity of the subject matter and the overwhelming amount of information. Dr. Budnitz reported that he and Dr. Peterson have been serving as members of a DOE Advisory Group concerning the events at Fukushima Daiichi and have gathered information from many other sources other than DCPP and this Advisory Group is in the process of trying to assimilate all this information. Dr. Peterson stated that he is confident that the job to date is insufficient and that strategies will be developed to review the lessons learned and to be learned. He commented these types of catastrophic events require preparation to analyze and respond and those responses are never perfect. He observed that it is important to emphasize there are locations in Oregon through Alaska with thrust faulting features that rival or exceed those causing the earthquake and tsunami in Japan on March 11, 2011, however, he stated it was his belief in some respects the northern west coast from Northern California to Alaska is not as prepared as Japan was for natural disasters. He stated while DCPP is a substantively different design than Fukushima Daiichi, the DCISC will evaluate in depth the lessons learned and that in many respects U.S. nuclear facilities are better prepared than were Japanese nuclear facilities but it will be necessary to systematically go through and make improvements to U.S. nuclear plants and how to organize this effort remains to be finalized. Dr. Peterson stated the Committee takes seriously its responsibilities in this respect and will in the future be providing updates to the public.

XXI Adjourn Evening Meeting

The Chair commented the Committee has scheduled a public tour of DCPP for the following morning which has been fully subscribed by prior reservation, and then adjourned the evening meeting of the Committee at 8:29 p.m.

Public Tour of Diablo Canyon Nuclear Power Plant

The three members of the DCISC accompanied by 48 members of the public, a PG&E tour guide and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning
the public tour placed in a local area newspaper and on the DCISC's website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility and the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant and viewed the ocean water Intake and Outfall Facilities where DCPP pulls in and expels seawater used for cooling.

Questions and Comments From the Public

During the ride back to the Energy Education Center the group received information on radiation protection and members of the public took the opportunity to ask questions of Committee members and consultants.

Conclude Public Tour

XXII Reconvene for Afternoon Meeting

The June 22, 2011, morning public meeting of the Diablo Canyon Independent Safety Committee was called to order by its Chair, Dr. Robert J. Budnitz, at 1:30 p.m. Dr. Budnitz welcomed members of the public present and he introduced the other members and the Committee’s consultants and legal counsel. He commented the Committee conducted a tour earlier in the day and welcomed those persons watching on the internet and invited their attendance at future public tours. He reviewed the agenda for this afternoon’s meeting and the Committee’s policies and procedures for addressing remarks to the Committee.

XXIII Committee Member Comments

There were no comments from Committee members at this time.

XXIV Public Comments and Communications

The Chair invited any comments from members of the public.

Mr. Greg Davis of Livermore was recognized. Mr. Davis remarked the presentations made and the tour conducted during the morning had been excellent and the information received useful. Dr. Budnitz thanked Mr. Davis for his comments and reminded the members of the public that the
Committee generally conducts a tour of DCPP in conjunction with each of its public meetings.

Ms. Sherry Lewis was recognized. Ms. Lewis stated she is a member of the MFP group and that she was inquiring this afternoon on her own behalf and that of another individual. She referred to the presentation made by Dr. Budnitz the previous evening on the Japanese earthquake and tsunami and their effect on the Fukushima Daiichi nuclear plant. She stated that as the SFP for Reactor No. 4 was found to be filled with water, it was a mystery why an explosion which blew off the roof of Reactor No. 4, caused by hydrogen from Reactor No. 3, had occurred. She wondered how a pipe break associated with Reactor No. 3 could have resulted in a hydrogen buildup in Reactor No. 4. Dr. Budnitz replied that it is believed the pipe was severed by the explosion and he stated that although it is hard to conceive, no other explanation has yet been offered. Dr. Peterson commented it is known that Reactor No. 3 vessel fuel damage resulted in hydrogen being released but it is not understood why the vessel venting system did not work properly. It is possible that the loss of power at Reactor No. 3 may have impacted the vent valves or their controls. He observed the explosion at Reactor No. 3 took place approximately 19 hours before the explosion at Reactor No. 4. Dr. Peterson commented concerning the SFP that the fuel elements represented another potential source for the hydrogen but were found intact with low levels of radiation in the SFP water. More information may become available when Reactor No. 4's fuel rods are able to be removed and to be examined for oxidation. Dr. Budnitz commented that there will also be an examination of the piping system and there is a great deal of forensic examination yet to be performed at Fukushima Daiichi.

In response to Ms. Lewis inquiry concerning why the water did not boil off in the Reactor No. 4 SFP, Dr. Peterson replied the Reactor No. 4 SFP had the largest heat load, with fresh fuel having been placed within the SFP. However, he stated that after fuel has been in a SFP for eight to twenty-four months, the heat drops off enormously. Research in the U.S. concerning time-to-boil for a SFP has shown it could take up to two to three weeks for the water to boil. Dr. Peterson commented that while the earthquake was a 9.0 magnitude event, the peak ground acceleration was not large but the ground shaking was prolonged and this may have caused a considerable amount of water to be displaced from the SFP. He further observed that the Reactor 4 SFP was found to be watertight, with no leaks of significance located and that none of the other SFPs at Fukushima Daiichi had enough heat to boil. In response to Ms. Lewis remark that the zirconium cladding on the fuel was gone, Drs. Budnitz and Peterson replied that this is not believed to be the case as none of the fuel has yet been found to be damaged. In response to Ms. Lewis inquiry as to whether the water was circulating, Dr. Budnitz replied that the water was not circulated but there is strong evidence that no fuel was damaged.

Ms. Lewis concluded her remarks with the observation that she was not satisfied and that she hoped the Committee was also not satisfied with what is known to date about these events. Dr. Budnitz commented that one of the important lessons learned so far was the absence of the ability to obtain a direct measurement of the SFP water level.

Ms. June Cochran of Shell Beach was recognized. Ms. Cochran stated when she reads the NRC's inspection reports for DCPP it is evident that PG&E is required to admit when problems are found and to enter those problems into the CAP. She remarked that recently 11 violations were identified.
which included an adverse trend in problem identification and resolution which does not appear to be going away. She cited PG&E’s description of issues related to problem identification and resolution which indicate a lack of involvement by senior leadership at DCPP. She stated that the red status for the DCPP fire protection system is not reassuring to the public and that she has not received a response to her inquiry of PG&E concerning when, if ever, the fire protection system is expected to return to acceptable status. She stated her belief that as DCPP is an older plant utilizing older technology and equipment, the plant should be decommissioned. In response to PG&E’s question of how PG&E might regain the trust of the public, she stated that while PG&E has expressed its commitment to sustainable energy, there is no evidence that PG&E is taking any action on site at DCPP toward this goal.

Mr. Tom Shuman, a resident of San Luis Obispo, was recognized. Mr. Shuman commented that San Luis Obispo and Santa Maria are both within a 50 mile radius of DCPP and that this was the distance the NRC found to be within the danger zone following the events at the Fukushima Daiichi plant and he wondered whether an accident at DCPP could result in 150,000 refugees being evacuated to Santa Barbara and Salinas in the event of a similar accident at DCPP?

Mr. Doug Whitney, who identified himself as an energy consultant, was recognized and he thanked the Committee for the tour conducted during the morning. Mr. Whitney observed that while the focus and background of the DCISC is mainly mechanical, nuclear and environmental, it may also be important to review issues related to software engineering and electronic hardware. For instance, he stated there is no longer a need to use electrolytic capacitors and commented that review of these types of issues may be useful. Dr. Budnitz responded that the Committee has given significant attention to DCPP control systems, particularly in context of conversion of those systems from analog to digital but such efforts necessarily require that a significant level of assurance be obtained concerning reliability and the Committee will continue its review of these issues. Consultant Wardell remarked that a recent DCISC fact finding report concerning Instrument & Control obsolescence has been issued which addresses replacing instruments and controls and Mr. Wardell commented DCPP’s program in this regard is, in his opinion, industry leading. Mr. Wardell offered to provide a copy of the DCISC’s report to Mr. Whitney. Dr. Peterson observed that considerable efforts were made to upgrade the Control Room Simulator facility as computing power has greatly increased. Dr. Peterson agreed that the Committee members’ backgrounds were primarily mechanical and nuclear related and that Mr. Whitney had raised a valid point with his comments.

Mr. Sharp reported DCPP has engaged in a significant amount of digital conversion work and is currently serving as a pilot plant for digital conversion. However, he commented that there is a much higher threshold of testing required by the NRC for digital conversion involving nuclear facilities. In response to Mr. Whitney’s inquiry, Dr. Budnitz replied that testing requirements are applicable to different generations of digital applications and DCPP’s experience will inform others in the industry. Mr. Sharp remarked that DCPP was among the first to digitalize feedwater control with the installation of the Eagle 21 system, which has subsequently been replaced with a newer system but it requires an enormous amount of effort to verify that these replacement systems will function correctly and there are many challenges in such conversions.
XXV Information Items Before the Committee (Cont’d.)

Dr. Budnitz requested DCPP Senior Director of Technical Services Loren Sharp to continue with the next informational presentations requested by the Committee for this public meeting. Mr. Sharp requested DCPP Special Assistant to the Site Vice President Bill Guldemond to continue with the presentations to the Committee.

DCPP Facility and Design Overview Compared to Fukushima Daiichi Nuclear Power Plant.

Mr. Guldemond began his presentation with an overview of DCPP’s design. DCPP’s two reactors are four-loop Westinghouse manufactured pressurized water reactors (PWR) which operate at 2,235 pounds pressure, with no in-core boiling and heat transferred through the SGs which use no radioactive steam. The reactors operate in large, dry containments (2.6 million cubic feet) equipped with containment spray for borated water and with internal hydrogen recombiners which require electric power to operate. Decay heat removal is typically accomplished through the SGs to the condensers or the atmosphere. Emergency feedwater is supplied by two kinds of auxiliary feedwater pumps, motor and turbine driven and he stated the turbine driven auxiliary feedwater pumps can be operated without electric power. AC power is not required for decay heat removal through the SGs down to 150 pounds. DCPP can remove decay heat by primary feed and bleed to containment only if AC power is available to support the RCS makeup. In response to Mr. Wardell’s inquiry concerning how long the emergency steam driven feedwater pump would continue to operate as decay heat declined, Mr. Guldemond replied it would be a matter of days. Dr. Budnitz observed the steam would be sufficiently hot for weeks to maintain hot standby. In response to Dr. Peterson’s inquiry, Mr. Guldemond confirmed DCPP could supply water to the SGs from its Raw Water Reservoirs, by fire trucks or otherwise if required. Dr. Budnitz discussed the failure mechanisms experienced at the Fukushima Daiichi plant and commented that the Fukushima Daiichi plant experienced station blackout and pump failure which was essentially a failure of the pump control systems due to battery depletion and Mr. Guldemond replied that at DCPP the pumps can be operated manually by operators and are not entirely dependent on DC battery power. Dr. Peterson observed the ability of PWRs to reject heat to the environment and thereby to not heat up containment was a significant difference from the boiling water reactors (BWRs) at Fukushima Daiichi. In response to Consultant Linnen’s inquiry, Mr. Guldemond replied the auxiliary feedwater pumps can take suction from the 200,000 gallon Condensate Storage Tank but there were also other sources available.

Mr. Guldemond reported AC power is required for RCS makeup from the charging system, charging injection, safety injection and for low pressure injection but there is one passive accumulator per loop. There are procedures provided for emergency makeup capability from multiple sources for spent fuel in the Fuel Handling Building and dry storage of the spent fuel inventory is also available at the ISFSI. There are three emergency diesel generators (EDGs) per unit which have cross-tie capability to the other unit. Mr. Guldemond commented the DCPP design and licensing basis does not assume total loss of AC power. The EDG’s switchgear and batteries are at grade level, 85′ or more above sea level and access from above is provided if necessary. In the event of a seismic or other event DCPP also has capabilities including: battery backup to its various instruments and controls; two 2.5 million gallon fresh water reservoirs; and automatic trips capabilities for both
units. In response to Consultant Wardell’s inquiry concerning whether the EDGs may be started manually in the event compressed air is unavailable, Mr. Guldemond replied in the affirmative, provided there is sufficient pressure and he stated DCPP is currently in the process of designing and procuring a diesel driven air compressor for use with the EDGs. Dr. Budnitz observed that were the plant in danger of losing air pressure, the EDGs could at that point simply be started. In response to Dr. Peterson’s question, Mr. Guldemond stated the plant has six to eight hours of batter capacity and he observed there is further work to do on this issue. In response to Dr. Lam’s inquiry about depletion of battery power due to its being required to power building systems such as lighting, Mr. Guldemond stated that it was his belief the lighting system had its own battery backup system but he would need to review and confirm that this is the case. Mr. Guldemond stated there was a system which could strip loads from the batteries in order to preserve power. Dr. Lam stated the auxiliary feedwater dependency on DC power and batteries was reviewed by the NRC 25 years ago under Dr. Lam’s supervision and at that time it was found there was a considerable amount of nuances between plants which created the potential to disable the entire system and he commented this is an issue which requires current, renewed focus. Mr. Guldemond stated DCPP has reviewed air system applications and he confirmed DCPP can feed the SGs, absent air and DCPP through local manual manipulation, and that the DCPP auxiliary feedwater systems will work without air and DC power. In response to Dr. Lam’s inquiry concerning whether the required areas could be accessed, Mr. Guldemond stated that many of the areas are readily accessible but in the event of core damage there could be some accessibility issues.

Mr. Guldemond reviewed a schematic cutaway diagram of a PWR and noted the large amount of volume within containment.

The Fukushima Daiichi plant includes six General Electric manufactured BWRs with Mark I containments for reactors one through four utilizing a torus for pressure suppression and decay heat removal. Mr. Guldemond observed that BWRs typically have an inert, nitrogen atmosphere within containment. The BWRs have a hard pipe vent system to vent containment for pressure control or decay heat removal from the torus to the atmosphere. BWRs accomplish decay heat removal by either steaming reactor coolant to the main condenser, with one Fukushima Daiichi unit having been equipped with an isolation condenser; or to the torus through safety relief valves; or, and as a last resort, by venting containment to the atmosphere. All means of decay heat removal for a BWR require AC power with the exception of containment venting to the atmosphere.

RCS makeup at Fukushima Daiichi is provided by high pressure turbine-driven injection; reactor core isolation cooling (turbine, if equipped); core spray (motor); and control rod drive cooling (motor). Spent fuel is stored in a SFP at a high elevation in the reactor buildings, adjacent to the reactors, which complicates the task of adding water if necessary. Emergency power at Fukushima Daiichi is provided by two EDGs per unit, all of which lost functionality due to the tsunami. Battery backup is provided to various instruments and controls with the EDGs, switchgear, and the batteries all being located below grade level, less than 20' above sea level, and all proved to be susceptible to inundation by the tsunami. The reactors were equipped with automatic trips on a seismic event.

Mr. Guldemond reviewed and described a schematic cutaway diagram of a BWR similar to the design of those at Fukushima Daiichi. In response to Mr. Wardell’s inquiry, Mr. Guldemond
confirmed the reactor building did function as a secondary containment (or a confinement) structure but was nowhere as strong or effective as primary containment. In response to Dr. Lam’s question, Mr. Guldemond stated most BWRs use high pressure coolant injection and AC power is required for the standby liquid control system. Dr. Lam commented for many years General Electric maintained that BWRs were superior to PWRs due to multiple means of injecting water, to which Mr. Guldemond replied that this was true but BWRs require AC power to do so.

Mr. Guldemond again reviewed information on the earthquake and tsunami experienced by the Fukushima Daiichi plant, compared with the license/design basis for DCPP by displaying a slide used during his presentation the previous evening.

In concluding his presentation, Mr. Guldemond noted the following with respect to the events of March 11, 2011 and following at the Fukushima Daiichi plant:

- DCPP can conduct protracted decay heat removal without AC power. In response to Consultant Wardell’s observation Mr. Guldemond stated it was correct that neither AC nor DC power was required and DCPP does not require access to its ultimate heat sink for some period of time. Dr. Lam observed operation without AC or DC power would require manual intervention and Mr. Guldemond confirmed that information which would be required by operators concerning SG flow rate, level, and pressure is available to them at the location where manual intervention would occur.

- DCPP has a more robust emergency power system than is the case at Fukushima Daiichi.

- DCPP emergency power and electrical distribution systems are less susceptible to inundation by a tsunami as they are located at higher elevations relative to sea level.

- DCPP containments are larger and less susceptible to high pressures. Decay heat is dissipated outside containment and DCPP does not use a method involving releasing reactor coolant to containment as a means of heat removal.

- DCPP containments are equipped with hydrogen recombiner capability, utilizing a catalytic converter, however its operation does require AC electrical power. Mr. Guldemond commented BWRs can release steam to the atmosphere or containment (the torus) without explosion, provided the atmosphere remains inert. **Dr. Budnitz remarked, and Mr. Guldemond agreed, there is a question about the capacity of the catalytic converters and this should be placed on the Open Items List, or provided by Mr. Guldemond, to examine what capacity per minute may be achieved by the hydrogen recombiners.** Mr. Guldemond confirmed that management of combustible gases is currently a DCPP focus area.

- DCPP consists of two rather than six nuclear units.

- PG&E is evaluating enhancements required for extending availability of DC power and SFP cooling at DCPP.

Dr. Peterson observed and Mr. Guldemond agreed that the hydrogen explosions greatly degraded Fukushima Daiichi’s ability to respond to events and Mr. Guldemond stated that loss of secondary containment and confinement also contributed to this degradation. **Dr. Budnitz commented there was also contribution due to adverse interaction including hydrogen migration between multiple**
units, principally Fukushima’s Reactors Nos. 1 and 2 and Dr. Budnitz stated there was a further need to review issues of adverse interaction between units at DCPP. Mr. Guldemond stated DCPP will continue to evaluate these issues including procuring backup cooling water systems and he stated that while the NRC has strong licensing requirements he agreed with Dr. Budnitz that there are learning opportunities presented. In response to Dr. Lam’s question, Mr. Guldemond stated primary feed and bleed is accomplished using the high pressure charging injector pumps or the RCS head vent with DC power with the bleed going to the sumps.

Ms. Sherry Lewis was recognized from the audience to address comments to the Committee. Ms. Lewis inquired whether the manual procedures discussed with Dr. Lam were practiced by operators at the plant, to which Mr. Guldemond replied in the affirmative that those procedures were part of operator training and were reviewed in detail and revisited frequently. Ms. Lewis observed, and Drs. Peterson and Budnitz confirmed, that although the BWR containment was a nitrogen atmosphere the explosions at Fukushima Daiichi occurred within its secondary containments. She stated that the tsunami may have reached 100 feet in height. Dr. Budnitz replied, however, that was not the height of the tsunami when it reached the Fukushima Daiichi plant site but he stated the tsunami may have reached that height at other areas along the Japanese coastline and he stated he did not believe a tsunami of 100 feet was included in the Safety Analysis Report for DCPP. Dr. Peterson stated he would provide references regarding the projected tsunami height for DCPP and he stated that tsunamis were more likely to be produced by seismic action along thrust faults than along strike-slip faults such as exist in the vicinity of DCPP. Ms. Lewis stated it was her understanding that there were some thrust faults found in the vicinity of DCPP to which Dr. Budnitz replied that was not consistent with his understanding and he offered to review any information or evidence Ms. Lewis might be able to provide concerning thrust faults in the vicinity of DCPP. DCPP Senior Director of Technical Services Sharp stated it was his belief that the only subduction, or thrust fault, zone in the vicinity of DCPP was located off the Oregon coastline. Dr. Peterson commented that underwater landslide activity can also produce a tsunami and it is the auxiliary saltwater systems at nuclear facilities which are most vulnerable to the effects of a tsunami and he stated DCPP is capable of removing heat without that system, even in the event the EDGs were to be disabled through the use of portable equipment and he stated that at DCPP the level of vulnerability was less and the ability to cope greater than had been the case at Fukushima Daiichi. Dr. Peterson stated his opinion that, given the consequences of a tsunami, it was important to make improvements to the tsunami warning system in California. In response to Ms. Lewis question whether the ability to cross-tie systems make them more or less vulnerable, Mr. Budnitz replied that the ability to cross-tie systems generally enhances the systems by increasing its capabilities.

Mr. Sharp requested Mr. Guldemond to continue with the final presentation to the DCISC for this public meeting.

DCPP Systems of Normal Operating Procedures, Emergency Operating Procedures, Severe Accident Management Guidelines and Extensive Damage Mitigation Guidelines for Plant Control and Accident Mitigation and PG&E’s Organizational Structure for Responding to Plant Events.

Mr. Guldemond reviewed the two areas of regulatory framework which govern the application
of procedures and guidelines in the nuclear industry. He stated 10CFR50 Appendix B Criterion 5, which governs most procedures at DCPP, requires that activities affecting quality be prescribed by and accomplished in accordance with appropriate document instructions, procedures or drawings. Actions in extreme conditions are governed by 10CFR50.54(x), (y) which specify that reasonable action that departs from a license condition or a TS may be taken in an emergency when immediately needed to protect the public health and safety and no action consistent with license conditions and TS that can provide adequate or equivalent protection is immediately apparent, and that such actions shall be approved, as a minimum by a licensed senior operator.

Mr. Guldemond stated procedures generally fall into two categories, those to manage and support the plant and external actions to protect public health and safety. He then identified, described and reviewed the procedures for managing and supporting the plant as follows:

- Normal operating procedures - regularly used by operators to direct actions for plant maneuvering, system operation and component operation under normal conditions. These procedures may be frequently referenced by alarm response procedures, abnormal operating procedures, Emergency Operating Procedures (EOPs), Severe Accident Management Guidelines (SAMGs) or Extreme Damage Mitigation Guidelines (EDMGs). Examples include:
  - OP L-1 - Plant Heat-up from Hot Shutdown to Hot Standby.
  - OP B-1C:I - 4% Boric Acid System - Alignment Checklist and Flowpath Change Instructions.

- Annunciator (i.e., alarm) response procedures - direct operator actions to be taken in response to plant annunciators indicating potentially off-normal conditions or equipment response. These are regularly exercised in the plant and in the Control Room Simulator during training and reference normal operating procedures, abnormal operating procedures or EOPs. Examples include:
  - AR PK12-04OP L-1 - Combined Polisher Effluent Dissolved Oxygen.
  - AR PK01-18- Containment Spray Actuation.

In response to a question from Dr. Peterson, Mr. Guldemond replied that should an annunciator register a high or low level alarm in a SFP, personnel would be dispatched from the Control Room to visually inspect the SFP and this would be included within the abnormal operating procedures as would other procedures to drain or re-fill the SFP.

- Abnormal Operating Procedures - direct operator actions to be taken in response to off normal conditions or equipment response. These are regularly exercised both in Control Room Simulator training and during examinations and reference normal operating procedures, abnormal operating procedures or EOPs. Examples include:
  - OP AP-30 o Main Generator Malfunction.
  - OP AP-26 Loss of Non Vital Offsite Power - a separate procedures deals with the loss of vital power.
Emergency Operating Procedures (EOPs) - direct operator actions to be taken in response to an actual or potential plant emergency condition. These are entered upon receipt or indication of the need for a reactor trip or safety injection, or upon a loss of all vital AC power. These are extensively exercised in both Control Room Simulator training and during operator examinations. These procedures are prepared using Westinghouse Owners Group guidelines, based on lessons learned by the nuclear industry following the accident at the Three Mile Island Nuclear Generating Station and are symptom based and do not require operators to diagnose problems. Mr. Guldemond stated EOPs require extensive verification and validation requirements and changes are not made lightly. In response to Mr. Wardell’s question, Mr. Guldemond stated that each EOP has a series of procedures driven by specific plant conditions and loss of all vital DC power is not included in the EOPs but that condition is addressed by Abnormal Operating and Casualty Procedures. Examples of EOPs include:

- EOP E-0 - Reactor Trip or Safety Injection.
- EOP E-1 - Loss of Reactor or Secondary Coolant.
- EOP ECA 0.0 - Loss of All Vital AC Power - i.e., a station blackout requiring removal of decay heat and plant cooldown.
- EOP E-2 - Faulted Steam Generator Isolation.
- EOP E-3 - Steam Generator Tube Rupture.

Functional Recovery Guidelines (FRGs) - supplement the EOPs to direct operator actions when a critical safety function is challenged. These functions include reactivity, core cooling, heat sink, containment integrity or pressurized thermal shock. FRGs are part of the EOP network of procedures and are prepared using Westinghouse Owners Group guidelines and require monitoring of status trees which provide priority for operator actions. FRGs transition back to the applicable EOP when the challenge is resolved. Examples include:

- EOP FR-S.1 Response to Nuclear Power Generation Anticipated Transient Without Scram (ATWS)
- EOP FR-C.1 - Response to Inadequate Core Cooling.

In response to Dr. Lam’s inquiry, Mr. Guldemond stated that upon a failure to trip, the reactor would be manually tripped, the turbine would be tripped, auxiliary feedwater would be initiated along with manual rod insertion and emergency boration begun, all of which must occur in approximately 30 seconds. He commented that at DCPP, unlike some other plants, the power to the control rod drive sets may be de energized at the electrical bus. Mr. Guldemond confirmed Dr. Budnitz observation that the plant would not enter functional recovery unless operating within the EOPs and that when emerging from FRGs the plant would return to implementation of EOPs.

Severe Accident Management Guidelines (SAMGs) - provide actions to respond to an event where the reactor is believed to be damaged, core exit thermocouples >1200°F. SAMGs were
prepared using Westinghouse Owners Group Guidelines and are entered as directed by the EOPs. Mr. Guldemond commented these are high-level guidelines rather than detailed, prescriptive procedures. A declaration under 10CFR50.54(x) is required upon entry as being beyond design/licensing basis as is command and control transition from Operations to the Emergency Response Organization (ERO) located in the Technical Support Center (TSC). Flowcharts are utilized to prioritize activities. Examples include:

- SACRG-1 Severe Accident Control Room Guideline Initial Response.
- SAG-1 Inject Into the SGs.
- SAG-7 Reduce Containment Hydrogen.
- SACRG-2 Severe Accident Control Room Guideline from Transients after the TSC is Functional.
- SAG-2 - Depressurize the RCS.
- SAG-3 - Inject into the RCS.
- SAG-4 - Inject into Containment (Low Level Flood).
- SAG-5 - Reduce Fission Product Releases.
- SAG-6 - Control Containment Conditions.
- SAG-8 - Flood Containment.
- SCG-1 - Mitigate Fission Product Releases.
- SCG-2 - Depressurize Containment.
- SCG-3 - Control Hydrogen Flammability.
- SCG-4 - Control Containment Vacuum.

In response to Drs. Peterson and Budnitz, Mr. Guldemond stated the reference to ‘guidelines’ indicates they provide general rather than prescriptive direction, more in the nature of strategies to address what are the conditions, what resources are available and how should those resources be deployed. In response to Consultant Linnen’s question, Mr. Guldemond stated it was possible to envision a situation where, in consultation with the Control Room and the TSC, both SAMGs and EOPs were entered. In response to Dr. Peterson’s observation concerning the station blackout at the Fukushima Daiichi plant, where the procedural reliance was on a single, steam driven pump, that it might be prudent to stage portable equipment, Mr. Guldemond replied that there are no clear ties between EOPs and EDMGs and, in response to Dr. Budnitz’ comment, he stated that operating under EOPs was preferred as use of EMDGs must be warranted under 10CFR50.54(x). Dr. Peterson commented this situation may warrant further review as a station blackout leaves a plant vulnerable and that vulnerability requires the plant to be prepared to enter EMDGs, Mr. Guldemond agreed but stated EMDGs have specific scenarios and presume severe damage. In response to Dr. Peterson’s comment that delays in implementing EDMGs at Fukushima Daiichi was a problem, Mr. Guldemond stated U.S. plants are at an advantage as extreme strategies have been thought out in advance.
- Extreme Damage Mitigation Guidelines (EDMGs) - written to aid in making the necessary decision to combat an event which has occurred and involves loss of large areas of a plant due to beyond design basis conditions. EDMGs are implemented by the Emergency Response Organization (ERO) and require a declaration under 10CFR50.54(x). Responsibility and authority for the EDMGs rests with the on-site Technical Support Center facility personnel and they provide tools that can be used to help mitigate events such as:

  - Alternate means of SFP cooling for excessive SFP leakage.
  - Decay heat removal using SGs.
  - RCS release mitigation strategies.
  - Alternate sources of make-up water.
  - Guidance to start an EDG without DC power.
  - Guidance for water usage from the Raw Water Reservoirs.
  - Guidance for isolating damaged sections of the fire system.

EDMGs are implemented only if control of the plant cannot be established from the Control Room or the Hot Shutdown Panel, or damage to the SFP has occurred that results in leakage greater than the capability of normal make-up to the SFP. Assumptions include:

  - A loss of all electrical power to one unit.
  - Turbine Drive Auxiliary Feedwater pump started approximately 30 minutes following the event.
  - Only one Unit damaged enough to require implementation (a different situation than in Japan).
  - Provides mitigation strategies for the first 24 hours following the event.

Dr. Budnitz remarked that, following the events at Fukushima Daiichi, industry-wide this set of assumptions will be revisited to cope with other situations or events which don’t meet these assumptions. Mr. Guldemond stated that 10CFR50.54(x) creates a certain latitude and provides a variety of strategies in a number of situations but it is important not to create a problem greater than that you’re trying to solve. Examples of EDMGs include:

  - EDMG-1 - Extensive Damage Mitigation Guidelines.
  - EDWM-1 - Fire System Management Strategies.
  - MDG-1 - Internal SFP Makeup.
  - EDG-2 - External SFP Makeup.
  - EDG-3 - Spent Fuel Cooling via Spray.
  - EDG-4 - SFP Leakage Control Strategies.
  - EDG-5 - Refueling Water Storage Tank Makeup.
EDG-6 - Makeup to Condensate Storage Tank.

- EDG-7 - Manually Depressurize SGs to Minimize RCS Inventory Loss.
- EDG-9 - Use of Fire Engine to Supply Water to SGs.
- EDG-11 - Vent Containment.
- EDG-12 - Start EDGs without DC Power
- EDG-14 - Portable Sprays.
- EDG-14 - EDMG Equipment Annual Inventory.

- Casualty Procedures (CPs) - address actions in response to external events or fires and provide direction to Operations and other organizations including the ERO, to manage the indicated conditions. CPs are used in parallel with other procedures mitigating event consequences. Examples include:
  - CP M-4 - Earthquake.
  - CP M-5 - Response to Tsunami Warning.
  - CP M-6 - Fire.
  - CP M-12 - Stranded Plant where access to the plant is lost.

Procedures for external actions to protect the public health and safety include:

- Emergency Plan Implementing Procedures (EPIPs) - focus on actions to protect the health and safety of the public during a declared emergency at DCPP and include procedures to communicate with the public and for backup emergency facilities, both problematic during the Fukushima Daiichi event. Examples include:
  - EP G-2 - Interim ERO.
  - EP RB-8 - Instruction for Field Monitoring Teams.
  - EP RB-10 - Protective Action recommendations.
  - EP RB-12 - Plant Vent Iodine and Particulate Sampling during Accident Conditions.
  - EP RB-14 - Core Damage Assessment Procedure.
  - EP RB-16 - Operating Instructions for the EARS computer program.
Mr. Guldemond stated the Emergency Organization has extensive resources and operates collaboratively and within PG&E consisting of:

- Control Room Staff.
- TSC Staff.
- Operations Support Center Staff.
- Emergency Operations Facility Staff.
- Uniform Dose Assessment Center Staff.
- Joint Information Center Staff.

Personnel are also involved representing the County, the State, the NRC and the Federal Emergency Management Agency (FEMA).

In concluding this presentation Mr. Guldemond observed DCPP has an extensive network of procedures dealing with both a wide variety of plant conditions from normal operation to beyond design basis events. There are opportunities to make these better and after Fukushima Daiichi there are mandates to do so. Emergency preparedness procedures are in place and are practiced frequently, including those for assuring prompt and complete communication with the public and activation of backup emergency response facilities as necessary. The responsibilities for implementing these procedures are clearly delineated and provisions are in place, both procedurally and in the regulatory framework, to assure decisions necessary to protect the health and safety of the public can and will be taken locally and expeditiously by technically qualified personnel. Mr. Guldemond identified this as a key lesson learned from the events at Fukushima Daiichi.

In response to Mr. Wardell’s inquiry concerning Control Room habitability during a station blackout Mr. Guldemond stated heating, ventilation and air conditioning would be lost but emergency lighting would be available. In response to Dr. Lam’s inquiry he replied the conditions at the location of the Emergency Shutdown Panels would not be much better.

Mr. Tom Schuman, a resident of San Luis Obispo was recognized from the audience to address a question to the Committee. Mr. Schuman inquired how often DCPP practices emergency actions? Dr. Budnitz replied that each Operations shift dedicates one out of every five weeks to Control Room Simulator training and this training includes random problem solving exercises as well as pre-planned training scenarios. Dr. Peterson commented the U.S. is better prepared than Japan but that should not instill absolute confidence. He commented, and Mr. Guldemond agreed, that it would be surprising not to see U.S. nuclear operators taking actions that were not taken by Japanese operators at Fukushima Daiichi.

Ms. Sherry Lewis was recognized. She commented she was puzzled by the reference to the lighting situation in the Control Room in the event of a station blackout. Mr. Guldemond replied there is
backup lighting available but it is battery powered and does not have infinite endurance. Ms. Lewis also inquired whether there was sufficient makeup water for the SFPs available, as it was her understanding the onsite supply was insufficient to totally resupply both SFPs. Dr. Budnitz replied there is 2.5 million gallons of water in each of the onsite reservoirs which should be more than sufficient for that purpose. In response to Ms. Lewis’ inquiry concerning the water demands of the reactors, Dr. Budnitz replied that in a situation where the SFP inventory was depleted, the reactors would be shutdown, generating only decay heat and therefore would require much less water. In response to Ms. Lewis further inquiry concerning the SFP water inventory, Mr. Sharp stated the SFPs at DCPP are designed to survive ground shaking events and a situation which would result in a gross loss of water from the SFPs was difficult to envision. Dr. Peterson replied, and Mr. Sharp agreed, that, among other strategies DCPP could use sea water pumped by a fire truck if necessary to refill the SFPs. Dr. Budnitz observed DCPP is one of only a few nuclear power plants which have their own onsite fire departments.

This concluded the informational presentations requested by the Committee from PG&E for this public meeting.

**XXVI Concluding Remarks and Discussion By Committee Members of Future DCISC Activities**

The Chair remarked that a separate category had been created by Consultant Wardell for the Committee’s Open Items List to recognize and track lessons learned from the events at the Fukushima Daiichi nuclear plant in Japan following the March 11, 2011, earthquake and tsunami. Mr. Wellington reported the next public meeting of the Committee would be held on October 5-6, 2011 at the Embassy Suites in San Luis Obispo.

**XXVII Adjournment of Sixty-third Public Meeting**

There being no further business, the sixty-third public meeting of the Diablo Canyon Independent Safety Committee was adjourned by its Chair, Dr. Robert J. Budnitz, at 4:00 p.m.
4.2.1 Overview and Previous Activities

The following are maintenance-related topics the DCISC reviewed in the previous reporting period:

- Status and Challenges of the Instrumentation and Control (I&C) Group
- Review of the Preventive Maintenance Backlog
- Maintenance Department Overview

The DCPP Maintenance Program continued to function satisfactorily. However, maintenance work backlogs were noted to be above industry norms. An Operational Focus Action Plan was developed during this reporting period, and maintenance work backlog was selected to be one of the performance indicators being monitored under this program. The DCPP Instrument and Control Group appeared to be taking the necessary actions to reduce its Preventive Maintenance backlog. Other maintenance focus areas were electrical safety, Continuous Simplification and Innovation, benchmarking and self-assessment, transformer reliability, and performance in the Corrective Action Program.

4.2.2 Current Period Activities

The DCISC reviewed the following DCPP Maintenance topics during the current reporting period:

- Post-maintenance Testing Self-assessment
- Foreign Material Exclusion Program
- On-line Maintenance

Post-maintenance Testing Self-assessment (Volume II, Section D.2, Section 3.4)

The self assessment was conducted to identify any gaps in the Post-maintenance Testing (PMT) processes and provide recommendations to close any gaps between DCPP performance and industry best practices. The primary focus was on how the PMT processes are managed on a daily basis. A secondary focus was on evaluating the effectiveness of the established barriers within the PMT processes.

A key finding was that while the process for implementing PMT activities at DCPP was well defined and complied with ANSI standards, NRC Regulatory Guides and industry guidelines, the program could not be described as industry leading. The process relied heavily on experienced personnel in
key positions to ensure that PMT was performed effectively. The self-assessment team observed a sharp decline during the prior five years in personnel awareness of various aspects of PMT due to the attrition of key experienced personnel. This, in turn, led to a declining awareness of the importance of PMT as viewed by plant personnel, negatively affected how DCPP applied PMT in its maintenance processes. Several areas and procedures were identified where clarification and more support would enhance the process. Examples included guidance for specifying Operations Verification Testing (OVT) in maintenance orders and procedures as well as the need for a Senior Reactor Operator (SRO) to perform a review for OVT early in the process. Also, outage-related maintenance activities were not being consistently evaluated for OVT and did not have a review process similar to the process outlined for daily maintenance activities.

It was further noted that site wide implementation of the PMT process was not being consistently applied at DCPP. Work packages were being issued without the proper OVT being specified or reviewed. In many cases, this omission occurred in different areas of the PMT process and was not addressed until the final milestone was approached, i.e. return to service.

Planner performance was identified as needing improvement, and expectations for planners needed clarification. It was noted that at most facilities the planners are responsible for specifying OVT. The difference was that most of these facilities have robust desk guides, data bases or dedicated personnel in place to provide the planners with that support. DCPP conducted a valuable self-assessment of the Post Maintenance Testing (PMT) program. No nuclear or industrial safety issues were identified. However, the PMT program could not be described as industry leading. A sharp decline was observed during the past five years with regard to personnel awareness of the elements of PMT and its importance. This was concluded to be due primarily to the attrition of key experienced personnel. Improvements were found to be needed in a number of areas such as clarity of procedures and work packages, Operations Verification Testing, and the involvement of a Senior Reactor Operator early in the process.

Foreign Material Exclusion (FME) Program (Volume II, Section D.9, Exhibit 3.7)

The objective of the FME program is to prevent the introduction of foreign material into plant systems or components. An FME program goal is to provide a focus on a preventive attitude among workers. This means workers should think through the activities they will perform in an FME area and take precautions to prevent introducing foreign material into plant equipment and systems.

DCPP had preventable FME events during Outage 1R16 and performed an Apparent Cause Evaluation (ACE) to identify causes and actions for improvement.

Outage 2R15 and 1R16 objectives were as follows:

<table>
<thead>
<tr>
<th>FME Category</th>
<th>1R16 Actual (Goal)</th>
<th>2R15 Actual (Goal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threats/Vulnerabilities</td>
<td>9(6)</td>
<td>9(0)</td>
</tr>
<tr>
<td>Conditions</td>
<td>25(15)</td>
<td>22(0)</td>
</tr>
</tbody>
</table>

Of the total number of FME events identified in 1R16, ten events were preventable human
performance errors in Maintenance (4), Radiation Protection (1), and Construction Services (5). Five of the ten were classified as FME Threats/Vulnerabilities, which could have had significant consequences or caused equipment damage if not detected. These five Threats/Vulnerabilities were 50% caused by in-house workers and 50% by supplemental workers.

The ACE described 46 Corrective Action Program (CAP) Notifications documenting FME events during 1R16 and compared these to FME events in Outage 2R15. These were very low-level incidents but were of concern to the plant. Of these 46:

- System coatings degradation inside Containment – 8
- Reactor Coolant Pump seals* – 7
- Loose debris in Steam Generator secondary sides – 5

* A separate ACE was performed for RCP seals.

Two apparent causes were identified:

1. Organizational Weakness – awareness and FME prevention practices while working near or within FME areas had not been employed by supplemental and in-house personnel.
2. Organizational Weakness – human performance tools for assisting workers preparing and performing work in high-risk areas were lacking.

Corrective actions included industry benchmarking to adopt good practices leading to reduced FME incidents and tightening up and better publicizing DCPP FME. DCPP FME was classified as a Maintenance Department program, but it was decided to have it become an official plant-wide “program” in mid-2011, in order to raise its importance, visibility, and control. DCPP was updating its Job Hazards Analyses to include FME. The intent was to have written outage FME plans beginning with Outage 2R16 in May 2011. DCPP was planning a post-Outage 2R16 FME self-assessment.

The DCISC Fact-finding Team reviewed the plant FME procedure and concluded that it was appropriate to control FME effectively, if implemented properly. The procedure contains the following:

- Scope and Responsibilities
- FME Levels and Controls
- Maintaining Standard and High Risk FME Areas
- Special Controls
- FME Boundaries and Barriers
- Material Accountability Controls
- FME Integrity
- Inspections
Reactor Cavity and Spent Fuel Pool FME Plans, Maps, and Signage
- Material Accountability and Personnel Entry Logs
- Outage and Non-Outage Walk-down Procedures and Reconciliations
- Record-keeping

FME Program Health at the time of the DCISC Fact-finding visit is shown in the following chart:

As shown in the chart, FME Program Health was Red (unhealthy) based on a rolling 6-month average of FME incidents. An improving trend existed (97+ scores for November, December, January and February as compared to the October 1R16 Outage score of -10), and DCPP expected program health to return to Green (healthy) in April 2011, barring no new events.

DCPP’s Foreign Material Exclusion (FME) Program performance degraded during refueling outages 2R15 and 1R16 but showed an improving trend after 1R16 in October 2010. DCPP was making improvements in the program to better address outage and non-outage FME performance. These improvements appeared satisfactory.

On-line Maintenance (Volume II, Exhibit D.10, Section 3.1)

DCPP, like many nuclear power plants, uses on-line maintenance (OLM) to help reduce the maintenance burden during refueling outages and to maintain high reliability of safety related equipment between outages. OLM requires equipment to be temporarily taken out of service which could reduce the safety of the plant if the equipment was needed to maintain the unit on-line (avoid a plant trip) or to prevent or mitigate an accident. OLM risk management for Operating Modes 1-4 is governed by DCPP Procedure AD7.DC6, “On-Line Maintenance Risk Management.” The DCPP reviewed the latest version of this procedure and concluded it was appropriate for effectively controlling OLM.

DCPP’s OLM had been upgraded from procedure-level to a formal station program. This gave it more visibility, scrutiny, and formal control.

DCPP minimizes the risk of performing on-line maintenance by:

Performing only those preventive and corrective maintenance items on-line required to maintain the reliability of the structure, system, or component (SSC)
Minimizing the cumulative unavailability of safety-related and risk-significant SSCs by limiting the number of at-power maintenance outage windows

Minimizing the number of SSCs out-of-service (OOS) at the same time

Minimizing the risk of initiating plant transients/trips that could challenge safety systems by implementing compensatory measures

Avoiding higher risk combinations of OOS SSCs using Probabilistic Risk Assessment (PRA) techniques

Maintaining “defense-in-depth” by avoiding combinations of OOS SSCs that are related to similar safety related functions or that affect multiple safety functions

DCPP required that at no time should any SSCs out-of-service duration exceed one-half of the Technical Specification Allowable Outage Time (AOT). For most components this is 36 hours (one-half of 72 hours AOT).

When Maintenance proposes OLM, Operations performs a “train level” review and tracks what components are planned to be OOS for that train of components or system. The Shift Foreman first checks the equipment line-up against Technical Specification requirements. Then, the semi-quantitative risk is determined by the Shift Foreman using the ORAM (Outage Risk Assessment Maintenance) tool. ORAM is a PRA-based model which determines the relative risk based on the number and function of equipment OOS. The result of the ORAM determination is a color (Green, Yellow, Orange, and Red [in increasing amounts of risk]) signifying the level of risk of Core Damage Frequency (CDF) applied as follows:

- **Green** is acceptable without further action, although compensatory actions may be prudent.
- **Yellow**, considered “moderate degradation,” is acceptable with the Shift Foreman’s approval and with additional compensatory actions such as tailboards (pre-job briefs), protection of redundant equipment, etc.
- **Orange** risk condition, “significant degradation,” requires Operations Manager approval, a documented basis for approval, compensatory measures such as additional protection of redundant equipment, and documentation in an Action Request.
- **Red** risk condition, “severe degradation,” is not normally allowed; however, it is permitted with prior Plant Staff Review Committee (PSRC) approval, control of the activities by Procedure OP1. ID4, “Conduct of Infrequently Performed Tests or Evolutions,” and documentation of the Red configuration in an Action Request.

For situations where the equipment OOS is not included in ORAM, the PRA Group is to be contacted for a custom risk analysis.

Special emphasis is placed on trip risks – both planned and emergent. Compensatory measures and Operations Manager approval are required. Further, consideration must be given to trip mitigation functions provided by redundant offsite power (both 230 kV and 500 kV), Emergency Diesel Generators, Auxiliary Feedwater System trains, and Auxiliary Saltwater System trains. An industry analysis showed that a significant fraction of maintenance activities involving electrical transients (e.g., relay testing), Feedwater System transients, and transfer of trip circuit power supplies have
caused reactor trips. These activities are considered top maintenance trip risks and treated accordingly.

Risk analysis is the basis for assuring nuclear safety for OLM operations, and DCPP was making improvements in this area. DCPP currently uses ORAM-Sentinel, a PC-based program, to predict the risk of taking trains/components out of service for maintenance while at operation. The “qualitative” assessment had been removed from ORAM, leaving a more “quantitative” approach. Also, because ORAM is no longer supported by its vendor or industry, DCPP was moving to Safety Monitor, which will be implemented in the 4th Quarter 2011. Training for this change was planned to begin following the 2R16 Refueling Outage. In addition to the formal risk analysis, DCPP was beginning to use a “what if” approach to OLM risk, similar to that used at the Callaway plant. DCPP performed risk assessments at the train level and was moving to a more component-level basis with Safety Monitor.

DCPP had no routine procedures, which would take it into the “Yellow” risk level; however, if other configurations led to Yellow, they would be reviewed by a Risk Challenge Board, whereas before this review they would have been performed by the Senior Reactor Operator.

The DCPP FFT reviewed a request, identified in a Notification, to the PRA Group to perform a risk analysis for replacing a valve in the Service Air System, which required isolation of PAC-8 and PAC-9, crossties of instrument air and service air. The resultant analysis considered a variety of plant configurations involving normal and emergency electric power, Containment functionality, Auxiliary Saltwater (ultimate heat sink) availability, and Emergency Diesel Generator status. The result to maintain a Green risk was a limitation on the number of hours at this plant configuration. The analysis was satisfactory.

The DCPP On-Line Maintenance (OLM) Program, satisfactory in past DCISC reviews, had been improved by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level. DCPP OLM procedures appeared satisfactory.

4.2.3 Conclusions and Recommendations

Conclusions:
The DCPP Maintenance Program appeared to be functioning satisfactorily. No concerns were identified pertaining to nuclear safety. However, a sharp decline was observed during the past five years with regard to personnel awareness of the elements of Post Maintenance Testing (PMT) and its importance. This was concluded to be due primarily to the attrition of key experienced personnel. Improvements to better support PMT were also found to be needed in a number of areas such as clarity of procedures and work packages, Operations Verification Testing, and the involvement of a Senior Reactor Operator early in the process. DCPP’s Foreign Material Exclusion (FME) Program performance was noted to have degraded during refueling outages 2R15 and 1R16 but showed an improving trend after 1R16 in October 2010. DCPP was making improvements in the program to better address outage and non-outage FME performance. The DCPP On-Line Maintenance (OLM) Program, continued to improve by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level.
Recommendations:

None
Telephone calls and e-mails have been received by the DCISC Legal Counsel’s office with questions, concerns and requests for information. During this reporting period, 100 calls and 13 e-mails were received from individuals. The breakdown of these calls and e-mails is as follows:

<table>
<thead>
<tr>
<th>Number of Calls</th>
<th>Number of E-mails</th>
<th>Reason for Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>7</td>
<td>DCPP issues or nuclear information requests</td>
</tr>
<tr>
<td>98</td>
<td>6</td>
<td>Other (administrative, document requests, media, tour requests and miscellaneous)</td>
</tr>
</tbody>
</table>

When requested, answers, responses or documents were provided either during the call, a return call, or by a letter, email or documents from the Committee. The DCISC Telephone/Correspondence Log is included as Exhibit G.1 and correspondence with the public is included with Exhibit G.2.

The Committee maintains a California toll-free telephone number (800-439-4688), an E-mail address (dcsafety@dcisc.org) and a site on the worldwide web at www.dcisc.org for receiving questions, concerns or information to and from the public. The DCISC has developed an information pamphlet describing the Committee and its function. The Pamphlet is provided to attendees at DCISC public meetings and plant tours.
21st Annual Report, Volume 1, Exhibit 8.2, DCISC Internet – Worldwide Web Page Activity

The DCISC maintains a frequently updated web page on the worldwide web. The DCISC established its web page and presence on the internet to provide a convenient and accessible forum for interested members of the public to learn about the Committee, its history, background and role in safety oversight at DCPP; its current members and consultants; Volumes I and II of the Committee’s latest Annual Report; previous annual reports; the current schedule of future DCISC public meetings; and the agenda for the Committee’s next public meeting, which is posted on the website prior to the meeting.

The web page also provides visitors with an opportunity to download or print pages from the DCISC web site and offers a convenient email link to permit interested persons to communicate directly with the Committee and to receive an expedited response to questions and concerns. When the Annual Report is finalized, the entire report is published on the website and is also published and distributed to local public libraries and interested persons on compact disk.

The DCISC’s site on the worldwide web has been further developed during this report period with the addition of a video concerning the replacement of Diablo Canyon’s steam generators and information on how to sign up for the Committee tours of Diablo Canyon and continues to provide a convenient and accessible forum for interested members of the public. The Committee continues to post the agendas for all its public meetings on the website, as well as general information about the Committee, its members and consultants. A list of useful links is included to topics of interest to the general public, to PG&E’s website for information concerning Diablo Canyon Power Plant, to the NRC and to the International Atomic Energy Agency for agency and industry-related information and to an indexed webcast of streaming video of its past public meetings through electronic archives and to the public meetings in real time when they are in session. During the DCISC’s November 17-18, 2010 public meeting, the live-streaming video of the meetings was accessed 76 times. The live streaming video feed of the DCISC’s February 15-16, 2011 public meeting was accessed 62 times. During the DCISC’s public meeting on June 21-22, 2011, the live stream video was accessed 86 times. These data represent the total number of times visitors entered the site including those visitors who may have come and gone from the site more than once. The website also provides access to a convenient glossary of nuclear power terms and a list of acronyms in common use in the industry. Both Volumes of this Annual Report are available on the website in fully-linked php-text format, as is an animated depiction of the operation of a pressurized water nuclear reactor such as those in operation at Diablo Canyon.

The most meaningful statistics provided for July 1, 2010 through June 30, 2011 were the actual "visits," the actual, unique visitor numbers, regardless of how many pages that visitor actually viewed on the DCISC’s website during the period of this report included the following:
<table>
<thead>
<tr>
<th>Month</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2010</td>
<td>687</td>
</tr>
<tr>
<td>August 2010</td>
<td>728</td>
</tr>
<tr>
<td>September 2010</td>
<td>765</td>
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<tr>
<td>October 2010</td>
<td>816</td>
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<td>November 2010</td>
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<td>April 2011</td>
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<tr>
<td>May 2011</td>
<td>985</td>
</tr>
<tr>
<td>June 2011</td>
<td>687</td>
</tr>
</tbody>
</table>

Among the most common "key phrases" typed into internet search engines, such as MS Internet Explorer, Google Chrome, Firefox, Safari, Opera and Mozilla were: “president organization chart”, “organizational chart president”, “animation organizational chart”, “nrc performance indicators”, “north anna sfp capacity”, “extensive damage mitigation guideline”, “responsibilities of plant nuclear safety committee”, “engineering services organizational chart”, “robert budnitz nuclear”, and “transformer failure due to fme”.

The most visited pages were:

/index.php
/references/alphabet/n.php
/general-information/org chart vp3.php
/general-information/org-chart-vp4.php
/annual-report18th-volume1/18th-4-07-emergency-pre ...
/agendas/19-b8-2009-06.php
/Japan-20110update.php
/about/committee/member-budnitz.php
/annual-report-20-2009-2010/20th-voume1/20th-8-5-public-meeting-member.php
/pts-press-release.php
/fact-finding/20-d07-2010-03-15-16-17.php
/annual-report-20-2009-2010/20th-volume1/20th-4-06 performance.php
21st Annual Report, Volume 1, Exhibit 8.3, Comments Received at DCISC public meetings

As is its pattern, during this period (July 1, 2010 - June 30, 2011), the Diablo Canyon Independent Safety Committee (DCISC) held three public meetings in the vicinity of Diablo Canyon Power Plant (DCPP). The meetings included numerous informational, programmatic and plant status presentations by PG&E and by Committee Consultants and questions and comments from the public. The Committee always holds an evening session on the first of the two days of the public meeting for the convenience of the public. During the evening session of the June 21, 2011, public meeting the Committee presented and arranged for presentations by PG&E on the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the 9.0 magnitude earthquake at tsunami on March 11, 2011. The meetings are webcast in real time, videotaped, archived and cablecast afterwards on the local public access television station and by indexed webcast.

The DCISC encourages members of the public to attend and speak at its three public meetings. Times are set aside throughout the meetings for public questions and comments. During the reporting period July 1, 2010 – June 30, 2011, no persons appeared and spoke at the November 17-18, 2010, meeting; four persons appeared and spoke at the February 15-16, 2011, meeting; and 10 persons appeared and spoke a total of 29 times at the June 21-22, 2011 meeting.

These comments are summarized in Volume II, Exhibit G.3 and the comments and questions, together with the Committee’s and PG&E’s responses, are contained in the meeting minutes included in Volume II, Exhibit B.6 and B.9.
The DCISC holds public tours in conjunction with its three public meetings each year. As part of the DCISC outreach program, each tour now provides an opportunity for interested persons to see the plant as interact with DCISC Members and Consultants. These tours are described below.

8.4.1 November 17, 2010 Public Tour

On Wednesday morning, November 17, 2010, the members of the DCISC accompanied by 47 members of the public, a PG&E tour guide and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC’s website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and received a briefing from PG&E representatives on the various external features and buildings. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility, a full scale mock-up of the Unit-1 (U-1) Control Room; and observed the plant’s Intake and Discharge structures where DCPP pulls in and expels cooling water from and into the Pacific Ocean and then visited the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

8.4.2 February 16, 2011 Public Tour

On Wednesday morning, February 16, 2011, the three members of the DCISC accompanied by 46 members of the public, a PG&E tour guide and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC’s website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an
opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Mechanical Maintenance Training Facility and the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant.

8.4.3 June 22, 2011 Public Tour

The three members of the DCISC accompanied by 48 members of the public, a PG&E tour guide and the Committee’s consultants, conducted a tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). The members of the public responded to the DCISC advertisement concerning the public tour placed in a local area newspaper and on the DCISC’s website. The group met at the PG&E Energy Education Center for an introduction to the Committee members and consultants and a short presentation on the background and role of the Committee. PG&E representatives provided a brief overview of DCPP including its history, operation, the nuclear fuel cycle, spent fuel storage and plant security. A presentation was made by PG&E on the Independent Spent Fuel Storage Installation (ISFSI) and an opportunity was provided to ask questions. PG&E discussed how the plant’s cooling systems work, with the ocean water two physical barriers away from the reactors. The group was issued visitor badges and then departed for DCPP.

The bus first drove by the site of the ISFSI for a description of its purpose and features and then stopped at the plant overlook site and received a briefing from PG&E representatives on the various external features and buildings. The group then arrived at the Nuclear Power Generation Training Building. The members of the public were then divided into two groups, each accompanied by at least one DCISC member and consultant, and each group visited in turn the Control Room Simulator Facility and the lobby of the Security Building for a demonstration of screening of personnel entering the protected areas of the plant and viewed the ocean water Intake and Outfall Facilities where DCPP pulls in and expels seawater used for cooling.
The DCISC has been successful in implementing its Public Outreach Program as demonstrated by the descriptions above. The attendance and comments received at the June 21-22, 2011, public meeting following the nuclear accident in Japan on March 11 as a result of the 9.0 magnitude earthquake and resulting tsunami demonstrates that interest remains high in the local community concerning nuclear power-related issues. The public tours of DCPP have continued to be fully booked with between 46 and 48 attendees and a standby list. The website, e-mail and telephone channels are used frequently as indicated above. The public meetings now usually have from four to ten people attending and speaking, usually including representatives of the San Luis Obispo Mothers for Peace.
NOTICE IS HEREBY GIVEN that on November 17, 2010, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee (DCISC) will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). This tour, which will take approximately three and one half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission (NRC).

Following the tour, or in the alternative if security considerations preclude the public tour on November 17th, the DCISC may convene an informal question and answer session at the Pacific Gas & Electric Company (PG&E) Community Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on November 17-18, 2009, at the Avila Lighthouse Suites, Point San Luis Conference Center, 550 Front Street, Avila Beach, California, a Public Meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session – (11/17/2010) – 1:30 p.m.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of June 2-3, 2010, public meeting; discussion of administrative matters, including review and approval of the DCISC 20th Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2009 - June 30, 2010; an update on financial matters and activities during 2010 and 2011; review of the Open Items List; a Resolution of Appreciation and Commendation to Committee Consultant Mr. Jim E. Booker; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

2. **Evening Session – (11/17/2010) – 5:15 p.m.** Committee member comments; receive public comments and communications to the Committee; report on and discussion of DCISC’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent NRC Notices of Violation, Licensee Event Reports, NRC...
Notices of Violations and NRC Performance Indicators; and the recent activities of PG&E’s Nuclear Safety Oversight Committee.

3. **Morning Session** – (11/18/2010) – 8:00 A.M. Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on pressurized thermal shock evaluation, seismic interactions and design life; the status of DCPP’s focus area on problem evaluation thoroughness; an overview of the Site Services organization; the results of the sixteenth refueling outage for Unit 1 (1R16); and approval of the DCISC’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP.

4. **Afternoon Session** – (11/18/2010) – 12:45 p.m. Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the status of DCPP’s focus area on station transformers; results of steam generator tube testing during 1R16; and the activities of the Emergency Response Organization during 2010; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, November 15, 2010 at the Reference Department of the Cal Poly Library in San Luis Obispo. For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee’s website at www.dcisc.org.

Dated: November 7, 2010.
DCISC Agenda for the November 17-18, 2010 Public Meeting

Present:

Committee Member Robert J. Budnitz
Committee Member Peter Lam
Committee Member Per F. Peterson

Absent:

None

Wednesday and Thursday, November 17-18, 2010
Avila Lighthouse Suites, Point San Luis Conference Center
Northwest corner of First & San Francisco Streets
Avila Beach, California

Public Tour – 11/17/2010 – 8:00 A.M.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center
(Prior registration and security clearance required of all public participants.)

The Members of the Independent Safety Committee, accompanied by members of the public, will conduct a tour of the Plant.

In the alternative, if the tour must be cancelled for any reason, the Committee may convene an informal question and answer session at the PG&E Energy Education Center (formerly the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 11/17/2010 – 1:30 p.m.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so
now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action. (Please Note: (a) The Committee may consider at any time requests to change the order of a listed agenda item; (b) Information distributed to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of written material, pictures, etc. must be provided to the Committee’s Legal Counsel for this purpose.)

IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of June 2-3, 2010 Public Meeting: Approve

V. Action Items

B. Update on Financial Matters and Committee Activities during 2010-2011 – Discussion/Action
C. Discussion of Open Items List – Discussion/Action
D. Resolution of Appreciation and Commendation: Mr. Jim E. Booker – Approval

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities
B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
   Fact-finding Topics; Reports on and Approval of August 11, 2010, September 7–8, 2010, and September 21-22, 2010 Fact-finding Reports
B. David C. Linnen:
C. Jim E. Booker:
   Fact-finding Topics; Report on and Approval of August 4-5, 2010, Fact-finding Report
D. Robert Wellington:
   Administrative, Regulatory and Legal Matters

VIII. Correspondence
IX. Adjourn Afternoon Meeting


X. Reconvene For Evening Meeting

XI. Committee Member Comments

XII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XIII. Committee Member Report and Discussion

A. Evaluation of Pressurized Thermal Shock (PTS) and Seismic Interactions at DCPP

XIV. Information Items Before the Committee (Cont’d.)

A. Informational Presentations Requested by the Committee of PG&E Representatives

1. Update on Plant Events, Operational Status and Performance Indicators
2. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators
3. Activities of PG&E’s Nuclear Safety Oversight Committee

XV. Adjourn Evening Meeting

Morning Session – 11/18/2010 – 8:00 A.M.

XVI. Reconvene for Morning Meeting

XVII. Committee Member Comments

XVIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XIX. Information Items Before the Committee (Cont’d.)
4. Update on Pressurized Thermal Shock Evaluation; Seismic Interaction and Design Life
5. Status of DCPP’s Focus Area on Problem Evaluation Thoroughness
6. Overview of the Site Services Organization
7. Results of the Sixteenth Refueling Outage for Unit 2 (2R16)

XX. Evaluation of PTS and Seismic Interactions at DCPP – Approval

XXI. Adjourn Morning Meeting

Afternoon Session – 11/18/2010 – 12:45 p.m.

XXII. Reconvene for Afternoon Meeting

XXIII. Committee Member Comments

XXIV. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XXV. Information Items Before the Committee (Cont’d.)

8. Status of DCPP’s Focus Area on Station Transformers
9. Results of Steam Generator Tube Testing During the Sixteen Refueling Outage for Unit 1 (1R16)
10. Activities of the Emergency Response Organization During 2010

XXVI. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee
B. Further Information to Obtain/Review
C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXVII. Adjournment of Sixty-first Public Meeting

The Committee’s policy is to schedule its public meetings in locations that are accessible to people with disabilities. Devices for attendees who may be hearing impaired are available.
NOTICE IS HEREBY GIVEN that on February 15, 2011, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee (DCISC) will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). This tour, which will take approximately three and one half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission (NRC).

In the alternative, if security considerations preclude the public tour on February 10th, the DCISC may convene an informal question and answer session at the Pacific Gas & Electric Company “PG&E” Energy Education Center (formerly known as the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on February 15-16, 2011, at the Embassy Suites, Conference Facility, located at 333 Madonna Road, San Luis Obispo, California, a Public Meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session – (02/15/2011) – 1:30 p.m.** Opening comments and remarks; receive Public Comments and Communications to the Committee; approve minutes of November 17-18, 2010, Public Meeting; discussion of administrative matters, including review of PG&E’s response to the DCISC 19th Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2009 – June 30, 2010; review and approval of the DCISC’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP; an update on financial matters, consultant compensation and activities during 2011; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

2. **Evening Session – (02/15/2011) – 5:30 p.m.** Committee member comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators;
recent NRC Notices of Violation, Licensee Event Reports, NRC Notices of Violations and NRC Performance Indicators; and the recent activities of PG&E’s Nuclear Safety Oversight Committee.

3. **Morning Session – (02/16/2011) – 8:00 A.M.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an overview of the Site Services organization; an overview of the Performance Improvement Review Board; the results of the July 2010 Self-Assessment of Training; and the status/plans for the Probabilistic Risk Assessment (PRA) Group.

4. **Afternoon Session – (02/16/2011) – 1:00 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the Quality Verification organization’s perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification’s top concerns; and the impacts of elimination of once-through cooling; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Friday, February 11, 2011, at the Reference Department of the Cal Poly Library in San Luis Obispo. For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee’s website at www.dcisc.org.

Dated: February 5, 2011.
Committee Members:

    Robert J. Budnitz
    Peter Lam
    Per F. Peterson

Tuesday and Wednesday, February 15–16, 2011
Embassy Suites Conference Facility
333 Madonna Road
San Luis Obispo, California

Public Tour – 02/15/2011 – 8:00 A.M.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center
(Prior registration and security clearance required of all public participants.)

The Members of the Independent Safety Committee, accompanied by members of the public,
will conduct a tour of the Plant.

In the alternative, if the tour must be cancelled for any reason, the Committee may convene an
informal question and answer session at the PG&E Energy Education Center (formerly the PG&E
Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 02/15/2011 – 1:30 p.m.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so
now. The public may comment on any matter listed on the Agenda at the time the matter is being
considered by the Committee. There will be a time limit of not more than five minutes for each
speaker. No action will be taken by the Committee on matters brought up under this item but they
may be referred to staff for further study, response or action. (Please Note: (a) The Committee may
consider at any time requests to change the order of a listed agenda item; (b) Information distributed
to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of
IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of November 17-18 2010 Public Meeting: Approve

V. Action Items


B. Report on DCISC's Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP – Discussion/Action

C. Update on Financial Matters and Committee Activities – Discussion/Action

D. Discussion of Open Items List – Discussion/Action

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities

B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
   Fact-finding Topics; Report on and Approval of December 15-16, 2010 Fact-finding Report

B. David C. Linnen:
   Fact-finding Topics; Report on and Approval of January 15-16, 2011 Fact-finding Report

C. Robert Wellington:
   Administrative, Regulatory and Legal Matters

VIII. Correspondence

IX. Closed Session – Personnel Matters – Conference with Legal Counsel

X. Adjourn Afternoon Meeting

   Evening Session – 02/15/2011 – 5:30 p.m.

XI. Reconvene For Evening Meeting

XII. Committee Member Comments
XIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. *There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIV. Information Items Before the Committee

A. Informational Presentations Requested by the Committee of PG&E Representatives
   1. Update on Plant Events, Operational Status and Performance Indicators
   2. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators
   3. Activities of PG&E’s Nuclear Safety Oversight Committee

XV. Adjourn Evening Meeting

Morning Session – 02/16/2011 – 8:00 A.M.

XVI. Reconvene for Morning Meeting

XVII. Committee Member Comments

XVIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. *There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.*

XIX. Information Items Before the Committee (Cont’d.)

4. Overview of the Site Services Organization
5. Overview of the Performance Improvement Review Board
6. Results of the July 2010 Self-Assessment of Training
7. Status and Plans for the Probabilistic Risk Assessment Group

XX. Adjourn Morning Meeting

Afternoon Session – 02/16/2011 – 12:45 p.m.

XXI. Reconvene for Afternoon Meeting
XXII. Committee Member Comments

XXIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XXIV. Information Items Before the Committee (Cont’d.)

8. Quality Verification Organization’s Perspective on Plant Performance; the Quality Performance Assessment Report (QPAR); and Quality Verification’s Top Concerns

9. Impacts of Elimination of Once-Through Cooling

XXV. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee

B. Further Information to Obtain/Review

C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXVII. Adjournment of Sixty-second Public Meeting

The Committee’s policy is to schedule its public meetings in locations that are accessible to people with disabilities. Devices for attendees who may be hearing impaired are available.
NOTICE IS HEREBY GIVEN that on June 22, 2011, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee (DCISC) will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant (DCPP). This tour, which will take approximately three and one half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission (NRC).

In the alternative, if security considerations preclude the public tour on June 22nd, the DCISC may convene an informal question and answer session at the Pacific Gas & Electric Company “PG&E” Energy Education Center (formerly known as the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on June 21-22, 2011 at the Avila Lighthouse Suites, Point San Luis Conference Facility, located at First & San Francisco Streets, Avila Beach, California, a Public Meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session - (06/21/2011) - 8:30 A.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of February 15-16, 2011, public meeting; discussion of administrative matters, including an update on financial matters and activities during 2011; review of the Open Items List; nomination and election of DCISC Chair and Vice Chair for the July 1, 2011 - June 30, 2012 term; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; review of Committee correspondence and documents received; and receive informational presentation requested by the Committee from PG&E on review of plant events, operational status and station performance indicators.

2. **Afternoon Session – (06/21/2011) – 1:30 p.m.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including recent NRC Notices of Violation, Licensee Event Reports, and NRC Performance Indicators; the
Quality Verification organization’s perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification's top concerns; DCPP performance during the 16th refueling outages for Units 1 and 2; and efforts and actions to improve and expand the Emergency Preparedness Dose Assessment and Meteorological Information and Dose Assessment Systems.

3. **Evening Session – (06/21/2011) – 5:30 p.m.** Committee member comments; receive public comments and communications to the Committee; Committee presentation on the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami; and receive further informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including a summary of preliminary lessons learned from the Fukushima Daiichi events and actions taken and planned by DCPP in response.

4. **Afternoon Session – (06/22/2011) – 1:00 p.m.** Reconvene public meeting; comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including DCPP facility and design overview compared to the Fukushima Daiichi Nuclear Power Plant; DCPP systems of normal operating procedures, Emergency Operating Procedures, Severe Accident Management Guidelines and PG&E’s organizational structure for responding to plant events; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Friday, June 17, 2011, at the Reference Department of the Cal Poly Library in San Luis Obispo. **For further information regarding the Public Meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee’s website at www.dcisc.org.**

Dated: June 1, 2011.
21st Annual Report, Volume 2, Exhibit B8, DCISC Agenda for the June 21-22, 2011 Public Meeting

Committee Members:

Robert J. Budnitz
Peter Lam
Per F. Peterson

Tuesday & Wednesday, June 21-22, 2011
Avila Lighthouse Suites, Point San Luis Conference Center
Northwest corner of First & San Francisco Streets
Avila Beach, California

Morning Session – 06/21/2011 – 8:30 A.M.

I. Call To Order – Roll Call

II. Introductions

III. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action. (Please Note: (a) The Committee may consider at any time requests to change the order of a listed agenda item; (b) Information distributed to the Committee at a Public Meeting becomes part of the public record of the DCISC. A copy of written material, pictures, etc. must be provided to the Committee’s Legal Counsel for this purpose.)

IV. Consent Agenda

Routine items which the Committee can approve with a single motion and vote. A member may request that any item be placed on the regular agenda for separate consideration.

A. Minutes of February 15-16, 2011 Public Meeting: Approve

V. Action Items
A. Update on Financial Matters and Committee Activities – Discussion/Action
B. Discussion of Open Items List – Discussion/Action
C. Approval of Letter to the State Water Resources Control Board Nuclear Review Committee – Discussion/Action
D. Nomination and Election of Chair and Vice Chair for the July 1, 2010 - June 30, 2011 Term – Discussion/Action

VI. Committee Member Reports and Discussion

A. Public Outreach, Site Visits and Other Committee Activities; scheduling and confirmation of future fact-findings and public meetings
B. Documents Provided to the Committee

VII. Staff – Consultant Reports and Receive, Approve and Authorize Transmittal of Fact-finding Reports to PG&E.

A. Ferman Wardell:
   Fact-finding Topics; Reports on and Approval of February 28-March 1, 2011 and April 19-20, 2011, Fact Finding Reports
B. David C. Linnen:
   Fact-finding Topics; Report on and Approval of January 15-16 and May 24-25, 2011, Fact Finding Reports
C. Jim E. Booker:
   Fact-finding Topics; Report on and Approval of August 4-5, 2010, Fact-finding Report
D. Robert Wellington:
   Administrative, Regulatory and Legal Matters

VIII. Correspondence

IX. Information Items Before the Committee

A. Informational Presentations Requested by the Committee of PG&E Representatives
   1. Update on Plant Events, Operational Status and Performance Indicators

X. Adjourn Morning Meeting

   Afternoon Session – 06/21/2011 – 1:30 p.m.

XI. Reconvene For Afternoon Meeting

XII. Committee Member Comments

XIII. Public Comments and Communications
Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XIV. Information Items Before the Committee (Cont’d.)

2. Licensee Event Reports, Review of NRC Notices of Violations, and NRC Performance Indicators

3. Quality Verification (QV) Organization’s Perspective on Plant Performance, the Quality Performance Assessment Report (QPAR) and QV’s Top Issues

4. Station Performance during the 16th Refueling Outages for Units 1 and 2 Including Performance of New Steam Generators and Reactor Vessel Closure Heads

5. Efforts and Actions Remaining to Improve and Expand the Emergency Preparedness Dose Assessment System including the Meteorological Information and Dose Assessment System (MIDAS)

XV. Adjourn Afternoon Meeting

   Evening Session – 06/21/2011 5:30 p.m.

XVI. Reconvene for Evening Meeting

XVII. Committee Member Comments

XVIII. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XIX. Informational Presentation By the Committee

   1. “Big Picture” Presentation on the Events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, Magnitude 9.0 Earthquake and Resulting Tsunami

XX. Information Items Before the Committee (Cont’d.)

6. Summary of Preliminary Lessons Learned by DCPP from the Fukushima Daiichi Events and Actions Taken and Planned by DCPP in Response to these Events

XXI. Adjourn Evening Meeting
Public Tour – 06/22/2011 – 8:00 A.M.

Public Tour of Diablo Canyon Nuclear Power Plant to assemble at the PG&E Community Center (Prior registration and security clearance required of all public participants.)

The Members of the Independent Safety Committee, accompanied by members of the public, will conduct a tour of the Plant.

In the alternative, if the tour must be cancelled for any reason, the Committee may convene an informal question and answer session at the PG&E Energy Education Center (formerly the PG&E Community Center), 6588 Ontario Road, San Luis Obispo.

Afternoon Session – 06/22/2011 – 1:30 p.m.

XXII. Reconvene for Afternoon Meeting

XXIII. Committee Member Comments

XXIV. Public Comments and Communications

Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. The public may comment on any matter listed on the Agenda at the time the matter is being considered by the Committee. There will be a time limit of not more than five minutes for each speaker. No action will be taken by the Committee on matters brought up under this item but they may be referred to staff for further study, response or action.

XXV. Information Items Before the Committee (Cont'd.)

7. DCPP Facility and Design Overview Compared to Fukushima Daiichi Nuclear Power Plant

8. DCPP Systems of Normal Operating Procedures, Emergency Operating Procedures, Severe Accident Management Guidelines and Extensive Damage Mitigation Guidelines for Plant Control and Accident Mitigation and PG&E’s Organizational Structure for Responding to Plant Events

XXVI. Concluding Remarks and Discussion By Committee Members of Future DCISC Activities

A. Future Actions by the Committee

B. Further Information to Obtain/Review

C. Scheduling of Future Site Visits, Study Sessions and Meetings

XXVII. Adjournment of Sixty-third Public Meeting

The Committee's policy is to schedule its public meetings in locations that are accessible to people.
with disabilities. Devices for attendees who may be hearing impaired are available.
The DCISC sends legal notices of meetings and press releases with the informational items for discussion at its public meetings to those persons who have requested same and to governmental entities, interested groups and to the news media. This exhibit includes a list of the governmental and public entities, interested groups and the news media outlets who regularly receive information regarding the DCISC’s public meetings.

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21st Annual Report, Volume 2, Exhibit D.1, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on July 6-7, 2010 by Per F. Peterson, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the July 6-7, 2010 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 include:

1. Thoroughness of Problem Evaluations
2. 2009 Annual Radiological Releases
3. Seismic Bracing of Tall Furniture
4. Meeting of Dr. Peterson with Site Vice President
5. Operational Focus
6. Seismically Induced System Interactions (SISI) Housekeeping Activities
7. Follow-up on Functional Failure of Emergency Core Cooling System Recirculation Suction Valve Interlocks
8. Unplanned Release of Carbon Dioxide (CO2) from Unit 1 CARDOX System

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval
by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Thoroughness of Problem Evaluations

The DCISC Fact-finding (FF) Team met with Lance Hopson, Acting Director of Site Services, and former Problem Prevention and Resolution Manager to discuss issues related to the thoroughness of problem evaluations at DCPP. The DCISC last reviewed this topic during its June 2010 Public Meeting (Reference 6.1) in which Dennis Petersen, Director, Quality Verification, discussed this topic as one of DCPP’s Quality Verification Perspectives. The DCISC also reviewed this topic in its March 2010 Fact-find review of the station’s most recent Corrective Action Program self-assessments (Reference 6.2) when DCISC concluded the following:

The two self-assessments of the DCPP Corrective Action Program (CAP) appeared to have been performed satisfactorily. Both found the CAP acceptable overall and identified several gaps to excellence, along with recommendations to close the gaps. DCPP will perform effectiveness evaluations which the DCISC should review when complete.

The “gaps to excellence” mentioned above included the following weaknesses that had been identified in the two self-assessments and which were noted to have affected the quality of analyses in both Apparent Cause Evaluations (ACE) and Root Cause Evaluations (RCE):

- The training for ACE analysts may not meet the needs of the analysts.
- ACE preparers and approving managers often do not attend ACE critique meetings, missing valuable opportunities to obtain feedback to improve the quality of their evaluations.
- The qualification requirements for RCE analysts do not assure that analysts are trained in techniques to address equipment, human, and organizational problems, nor do they contain provisions to assure that proficiency is maintained.
- RCE initiation does not meet industry standards for timeliness.
- RCE reports do not contain objective evidence of analysis tool usage. The outputs of the various tools are not available for review.
- DCPP has more flexibility than average in the ways in which RCEs, ACEs, and Work Group Evaluations (WGE) may be used for a given station significance level. Downgrades from RCE to ACE and from ACE to WGE are not well documented and occur at a frequency that exceeds industry norms.
- DCPP lacks an understanding of “what good looks like” with respect to performance and approval processes of ACE’s and RCE’s.
- There was a lack of consistency and understanding on what is required to perform common cause and work group evaluations.
- Some Notifications had been misclassified by the Notification Review Team.
In Mr. Petersen’s presentation during DCISC’s June 2010 Public Meeting, he provided additional detail on a number of the areas for improvement in DCPP’s approach to problem evaluation:

- Problem statements, causes, and corrective actions have been too narrowly focused and sometimes inaccurate.
- Authors sometimes inaccurately characterize a problem.
- ACE’s are sometimes used in place of RCE’s.
- CAP items are sometimes improperly screened as Significance Level 5 (non-CAP).
- There has been some loss of proficiency in performing evaluations.
- The station has been slow to accept and respond to feedback on CAP.

In addition, during past years the Nuclear Regulatory Commission (NRC) has expressed concern regarding Diablo Canyon Power Plant’s (DCPP) ability to evaluate and solve station technical problems. The following history of problem evaluation weaknesses is documented in DCPP’s Root Cause Analysis (RCA), Order 60024480, “Cross-cutting Issues,” dated April 6, 2010:

- In its March 3, 2004 Inspection Report (IR) 2004001, NRC identified a Substantive Cross Cutting Issue (SCCI) in the area of Problem Identification and Resolution (PI&R) based on inadequate root cause and problem analysis and of inadequate extent of condition evaluations.
- In its August 30, 2005 Mid-cycle Performance Review, NRC stated that the SCCI is resolved.
- In its February 6, 2009 Integrated Inspection Report (IR 2008005), NRC identified 11 examples constituting an adverse trend in DCPP’s ability to evaluate problems and notes that the adverse trend began in the fourth quarter of 2007.
- NRC’s concern regarding the PI&R cross-cutting issue was reinforced in NRC’s Annual Assessment Letter IR 2009001 dated March 4, 2009.
- Most recently, in its March 4, 2010, Annual Assessment Letter to DCPP, NRC states:
  “Additionally, the staff has identified a substantive cross-cutting issue in the area of problem identification and resolution associated with the thoroughness of problem evaluation [P.1(c)]. The staff first identified this theme in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter. The staff has concluded that this theme continued again through the current 12 month assessment period with six Green findings documented with this cross-cutting aspect.”

With respect to the problems pertaining to engineering evaluations that are addressed in the above mentioned NRC documents, an Engineering Evaluation Rigor Improvement Action Plan has been developed and put into effect. The plan first specifies several interim actions. One is to review all documents that are presented to the Plant Safety Review Committee. Mr. Hopson stated that DCPP’s Manager of Technical Support Engineering has been assigned on this interim basis to review
all Licensing Basis Impact Evaluations (LBIE) before they get to the Plant Safety Review Committee or other review bodies. This is currently being performed. Another interim action is to sequester experienced managers for 4 months whose primary duty is to review all documents provided to the PSRC, submitted to the NRC, or contain technical evaluations. This review is generally expected to be an inline review prior to document issuance. This review process is also being implemented. Some of the other activities prescribed in the action plan and their status are as follows:

- Review feedback from various sources -- e.g. Nuclear Safety Oversight Committee (NSOC), NRC resident, INPO, Problem Identification and Resolution (PI&R) findings. This review is complete and a Common Cause matrix is also complete.
- Benchmark results of the above review against industry best practices, such as INPO standards – This is underway and scheduled for completion by July 30, 2010.
- Perform Licensing Basis Verification Project – pilot is for Auxiliary Feedwater and Component Cooling Water – expected completion in December 2010
- Perform system design review following completion of licensing basis verification – expected completion in December 2010.
- Continue LBIE 50.59 improvement plan – in progress
- Develop a comprehensive benchmarking/self-assessment plan to confirm that configuration management processes and metrics are robust and monitoring the appropriate areas – scheduled for completion July 30, 2010

Mr. Hopson stated that DCPP will also be spending about a year to ensure that the procedure on conducting technical evaluations (OM7.ID13) can be fully implemented, i.e. that DCPP can understand the bases for issues. This procedure was revised in May 2010 to include requirements for reviewing Significant Events Reports when performing technical evaluations.

Mr. Hopson provided the DCISC FFT with a draft Station Programs Health performance indicator (PI) sheet that is to be part of the Plant Performance Improvement Report (PPIR). The sheet lists 16 areas of performance, which are yet to be graded, as follows:

Operability Determinations
LBIE Program
Cause Analysis
On-line Risk Assessment
Informal Evaluations
Operating Experience Assessment
Program Governance
DRT/NRT
Reportability Determinations
Seismically Induced System Interactions
Employee Concerns
License Amendment Requests
Operational Decision Making
Trending
Troubleshooting
FSAR Update

Related to this PI sheet is an extensive matrix that Mr. Hopson also provided to the FFT. It lists some of the same areas that appear on the above PI sheet, and for each area it identifies, among other things, Applicable Industry Standards, gaps between DCPP practice and industry standards, identification and development status of governing documents, station target groups for training, and the oversight that is in place and functioning for each performance area. Mr. Hopson stated that DCPP is benchmarking its standards for these activities against appropriate industry standards, and taking corrective action when needed. For example, with respect to Operability Determinations, the NRC inspection manual provides the standards, and DCPP has established an operability determination board that reviews all Shift Manager operability determinations daily.

Conclusions:

Collectively, the topics, issues, and activities associated with addressing DCPP problem evaluation are extensive and detailed. The issues include not only DCPP’s use of its Corrective Action Program to analyze and correct emergent station problems but also DCPP’s examination of the impact that station activities have and have had on its design and licensing basis. DCPP has developed an extensive action plan and is utilizing a wide array of performance indicators to track progress on this issue. Many actions have been completed or are well underway. The DCISC needs to follow station progress on this topic, but further reviews should focus on selected performance areas, e.g. Operability Determinations, Cause Analysis, On-Line Risk Management, etc, in addition to a periodic review of overall progress. The new PPIR performance matrix sheet that will rate performance in each of 16 areas listed in the discussion above should be reviewed monthly by the DCISC to determine which areas require appropriate attention.

3.2 2009 Annual Radiological Releases

The DCISC Fact-finding Team met with John K nemeyer, Chemistry Engineer, to review DCPP’s 2009 annual radiological releases. The DCISC last reviewed radiological releases in August 2009 (Reference 6.3) when it concluded the following:

DCPP’s 2008 liquid and gaseous radiological releases were all controlled and were very small fractions of amounts permitted by regulations and Technical Specifications. There were no unusual or unexpected discharges during 2008. The Radiological Environmental Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment.
DCPP submitted its 2009 Annual Radioactive Effluent Release Report and its 2009 Annual Radiological Environmental Operating Report to the Nuclear Regulatory Commission (NRC) on April 28, 2010. The former report described the quantities of radioactive gaseous and liquid effluents released from the plant and the solid radioactive waste shipments during the year 2009. In all cases the releases were well below Technical Specifications limits for the year. The latter report provided the results of the radiological monitoring and sampling performed on and around the plant site in 2009.

Based on radioactive releases, the following whole body radiation doses to a theoretical “maximum exposed individual” at the site boundary and their corresponding percent of Technical Specifications limits for the year 2009 were calculated to be as follows:

<table>
<thead>
<tr>
<th>Effluent Type</th>
<th>Calculated Radiation Dose</th>
<th>Percent of Tech. Spec. Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>0.0003 milliRem</td>
<td>0.011%</td>
</tr>
<tr>
<td>Gaseous</td>
<td>0.0045 milliRad</td>
<td>0.039%</td>
</tr>
</tbody>
</table>

The Radiological Environmental Operating Report describes the results of the Radiological Environmental Monitoring Program (REMP) used to assess the levels of radiation or radioactivity in the environment. The 2009 REMP included more than 1100 samples (including Thermo-luminescent Dosimeters [TLD]) with approximately 2300 radionuclide or exposure rate analyses being performed. Samples included surface water, drinking water, marine samples, vegetation, food crops, milk, and meat. The report concluded the following:

The results of the 2009 REMP showed no unusual findings from site operations. These results were also compared to preoperational data and showed no unusual trends. The operation of DCPP had no significant radiological impact on the environment.

Direct radiation is continuously measured at 31 locations surrounding DCPP using thermo-luminescent dosimeters (TLD). These 31 locations are made up of 29 indicator stations and 2 control stations. The dosimeters are collected and read every calendar quarter. The results are trended with preoperational and historical operating values for adverse trends. No adverse trends were noted in 2009.

Beginning in February 2009, the DCPP Unit One (U-1) Steam Generators (SG) were replaced and the old U-1 SGs (four total) were stored onsite within the Old Steam Generator Storage Facility (OSGSF). Beginning in October 2009, the DCPP Unit Two (U-2) Reactor Head was replaced and the old U-2 Reactor Head was also stored onsite within the OSGSF. As of December 31, 2009, the OSGSF contained eight old SGs and one old Reactor Head. The OSGSF did not cause any changes to the ambient direct radiation levels in the DCPP environment during 2009.

The OSGSF sumps were inspected quarterly as part of the REMP. Rainwater was found in the U-2 Old SG vault # 30 during the fourth quarter inspection due to rains in October. This rain water had tritium concentrations consistent with rain water washout concentrations. As a conservative measure, the rain water from the sump was removed and processed via an approved radwaste...
Beginning in June 2009, DCPP began loading of the Independent Spent Fuel Storage Installation (ISFSI). In addition to the 31 TLD locations mentioned above, direct radiation is also continuously measured at eight locations surrounding the ISFSI using TLDs that are all well within the site boundary. Specifically, two TLDs are located on each of the four sides of the ISFSI pad. No adverse trends were noted in 2009 at this ISFSI inner ring of 8 TLDs due to the installation of the ISFSI casks. In fact, the readings of these inner ring TLDs actually trended downward in correlation with a downward fluctuation in the environmental TLDs.

Tritium levels in three monitoring wells beneath the power block were all below the Environmental Protection Agency (EPA) drinking water standard of 0.02 microCuries per liter. Ground water at the site all flows into the Pacific Ocean and is not a source of drinking water.

On October 11, 2009 DCPP experienced an unplanned and uncontrolled release of gaseous radioactivity from two Gas Decay Tanks. The release occurred while Operations was performing a valve lineup to clear and drain the Emergency Core Cooling System for the Unit 2 refueling outage core offload window. During the evolution, a series of valves were opened to drain water. Three of the four valves that were opened were outside of the Master Clearance boundary. As a result, gas was released to the Auxiliary Building atmosphere, and ultimately through the plant vent to the outside atmosphere. The plant vent radiation monitoring system monitored the release. The release rate was less than 0.02 percent of the allowable rate.

During 2009 a design change was made to modernize the Auxiliary Building Control Board Operator Station which controls the operation of various valves for the receiving, storage, treatment and discharge of liquid and gaseous radioactive waste products generated by both Units. The prior pneumatic fluid logic system was replaced by a digital control system. The new digital system consolidates needed information onto a display that provides a more effective picture of system operations. This new system was designed with redundant networking and independent power sources.

The DCISC reviewed the methods and data presented in the two reports and agreed with the conclusions.

**Conclusions:**

DCPP’s 2009 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. DCPP experienced an uncontrolled venting of two gas decay tanks in October 2009, which amounted to 0.02 percent of the allowable rate. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2009.

**3.3 Seismic Bracing of Tall Furniture**

The DCISC Fact-finding Team (FFT) met with Ken Pazdan, Construction/Facilities Maintenance...
Manager to discuss DCPP’s approach toward the seismic bracing of tall furniture. DCISC has not formally discussed this issue in a Fact-finding visit, but has examined station conditions during a number of visits and documented its observations in its report for the May 2010 Fact-finding visit (Reference 6.4), as follows:

Though it has not formally looked into the seismic bracing of tall furniture at DCPP for plant personnel protection, the DCISC is observing the extent of bracing at its fact-finding meetings. The Fact-finding Team observed that the tall cabinets in the Operations Training Building just outside the main operator training classrooms had recently been braced. This is a positive move. The DCISC should follow up in the near future on this subject to learn of DCPP’s plans and program for additional bracing.

Mr. Pazdan is the station owner of this issue. He stated that DCPP is taking more aggressive action to address the seismic hazard that pertains to unsecured tall furniture at DCPP. He acknowledged not only the personal injuries that can result from personnel being struck by tall furniture and/or their contents in the event of an earthquake but also the impact on nuclear safety that can result from injured personnel not being able to respond to an event as needed or from other personnel having to choose between responding to an event or tending to the injured.

Mr. Pazdan provided the DCISC FFT with a draft copy of a new PG&E procedure, “Bracing Cabinets and Storage Racks.” The procedure defines the criteria by which file cabinets, book cases, and storage racks are selected to be braced as follows:

- All storage cabinets and book cases over 5 feet high
- All storage cabinets and book cases that can be easily tipped (i.e. width of the base or legs is less than two thirds the height)
- All free standing storage racks
- All storage cabinets over 4 feet high with un-restrained roll-out drawers
- All storage cabinets with high center of gravity (i.e. majority of the weight is in the upper half of the storage cabinet)
- Also, storage cabinets or racks that are mounted on wheels and are greater than 5 feet high will be restrained.

The procedure further specifies methods to be used for bracing and also identifies methods that should be avoided. The Project Design Group serves as the authority for performing this work. Mr. Pazdan mentioned that doors will also be installed on open racks to restrain the contents. He also indicated that tall cabinets are no longer being purchased. The intent is to limit the height of new cabinets to the height of office cubicle partitions. A listing of affected storage furniture and a planned timetable for completion was not available at the time of this review.

The FFT informed Mr. Pazdan that the Electric Power Research Institute (EPRI) issued a report in December 2008 titled “Benchmarking for Seismic Housekeeping at Nuclear Power Plants,” and a
segment of that report covers precautions in office-type environments. The EPRI report was discussed in station Order 60023821, a preliminary High Tier Apparent Cause Evaluation dated March 22, 2010, entitled “Adverse Trend – SISI {i.e. Seismically Induced System Interactions} Identified Issues.”

Conclusions:

DCPP has begun to more aggressively address the need for seismic bracing of tall furniture. The Construction/Facilities Maintenance Manager has been assigned overall responsibility for this program. A draft procedure has been prepared that defines the criteria for bracing and restraining tall furniture. The DCISC should continue to monitor station progress on this issue, and should walk down areas such as the Training Building and Control Room during a future plant inspection to verify implementation of bracing systems.

3.4 Meeting of Dr. Peterson with Site Vice President

Dr. Per Peterson met with Mr. Jim Becker, DCPP Site Vice President, to discuss various elements of this DCISC Fact-finding visit and other subjects of mutual interest.

3.5 Operational Focus

The DCISC Fact-finding Team met with Mr. Tim King, Outage Services Director, who is the DCPP lead for this Station Initiative. This is the DCISC’s first review of this activity. This initiative was developed during the fourth quarter of 2009. It is separate and distinct from the Operations Revitalization Action Plan and from the Operator Concerns issue, which have focused on a strained relationship that has existed in Operations between personnel at the management and worker levels. This Operational Focus Initiative was developed in recognition of the fact that during recent years, the station has necessarily been engaged in a number a number of capital and outage-related projects that have drawn the focus of station management. These include replacement steam generators, new reactor vessel integrated head assemblies, and a new independent spent fuel storage installation. As these above major efforts have neared completion, it was determined that an intensified focus should be placed on some specific indicators that reflect how well the plant is operating and that an Action Plan should be developed to achieve desired improvements through this heightened operational focus.

Two existing composite indicators from the Plant Performance Improvement Report (PPIR) were selected as the measures of how well the station is performing with respect to an operational focus. These indicators are the Operational Focus (composite) index and the Work Management (composite) index. The individual performance indexes comprising the Operational Focus composite index are:

- Operational Workarounds
- Operator Burdens
- Control Room Deficiencies
- Main Annunciator Deficiencies
Clearances with Tags Hanging >90 days
Corrective Maintenance Backlog
Elective Maintenance Backlog
Temporary Alterations
Prompt Operability Assessments

The individual indexes comprising the Work Management (composite) Index include the following:

Scope Stability
Schedule Adherence
Planning Completion
Corrective Maintenance Backlog
Elective Maintenance Backlog

The ratings of these indicators are expressed as Green (no action needed), Yellow (action required), and Red (unsatisfactory). Each of these ratings depends upon a quantitative performance measure of each indicator.

As can be seen above, the two Maintenance Backlog indicators are included in both the Operational Focus and Work Management (composite) Indicators. However, the quantitative performance measures for Green, Yellow, and Red ratings for these two Backlog indicators are slightly different for the Operational Focus Indicator than they are for the Work Management Focus Indicator. DCPP should compare these differences to determine whether they are appropriate or whether adjustments should be made.

Mr. King discussed DCPP's approach to improving Operational Focus. The Operational Focus performance indicator sheet in the PPIR contains broad statements of what DCPP intends to do to improve its operational focus. These broad statements then appear in eight specific objectives of DCPP's Operational Focus Action Plan, which are, in turn, supported by over 100 individual actions. Over 90 percent of these individual actions have been completed. The one objective that still needs work is to “Establish Work Management Process Oversight.” The specific actions in this Objective that remain open are scheduled to be completed by August 2010.

The DCISC FFT reviewed past PPIRs dating back to September 2009 to determine any trend(s) that could be noted in the quantitative measures of the Operational Focus and Work Management Focus. Both of these composite indicators have improved noticeably from September 2009 to June 2010, as described below. The numerical rating system for each composite indicator is as follows:

<table>
<thead>
<tr>
<th>Operational Focus</th>
<th>Work Management Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>0 – 0.75</td>
<td>46 – 50</td>
</tr>
<tr>
<td>Yellow</td>
<td>White</td>
</tr>
<tr>
<td>0.76 – 1.5</td>
<td>26 – 45</td>
</tr>
</tbody>
</table>
DCPP’s Operational Focus composite indicator improved from about 1.3 in the September and October 2009 time period to about 0.85 in the May and June 2010 time frame. The reason that the Operational Focus composite indicator has not reached Green status is because the Prompt Operability Assessment indicator has remained in Red since mid-April 2010. A recovery plan has been developed to address this performance issue. DCPP’s Work Management Focus composite indicator has improved from about 25 in the September and October 2009 time period to about 44 in the May and June 2010 time period.

The DCPP FFT reviewed the PPIR for other performance indicators that could be considered to be measures of operational performance. Two stood out and were communicated to Mr. King for possible inclusion in the Operational Focus composite indicator: Critical Equipment Clock Resets and Human Performance Error Rate.

Conclusions:

DCPP’s approach to improving the Operational Focus of the station is well structured and appears to be resulting in steady improvement. The Operational Focus Action Plan, which is nearing full implementation, directly addresses the areas for improvement that are identified in DCPP’s PPIR. Station performance, as measured by the composite indicators of Operational Focus and Work Management Focus, have improved noticeably in the past 9 months. Any future follow-up by the DCISC should be based on any observed negative trends in station performance.

3.6 Seismically Induced System Interactions (SISI) Housekeeping Activities

The DCISC Fact-finding Team met with Craig Stolz, Work Week Manager in the Outage Management Department. DCISC’s most recent review of SISI Housekeeping Activities was during a presentation on this topic by Mr. Dennis Petersen, DCPP’s Director, Quality Verification (QV), at DCISC’s June 2010 Public Meeting (Reference 6.5). Mr. Petersen noted that this issue had been determined to be a new Key Station Gap as discussed in QV’s Quality Performance Assessment Report (QPAR), covering the period November 14, 2009 to April 16, 2010. The issue was stated as: “SISI housekeeping inspections are not consistently performed and documented. Additionally, the storage of quality records from SISI inspections and SISI training for area owners and managers are inadequate. This gap is owned by Maintenance Services.” The QPAR also documented the following corrective actions that have been taken by DCPP:

- SISI Housekeeping metrics have been recorded and are now included in the Plant Performance Improvement Report (PPIR).
- Inspection results for each individual area owner/manager are recorded on a DR80 order operation. Inspection documentation now meets the requirements of ANSI N45.2.9-1974.
- Increased management oversight and effective accountability have resulted in compliance with station SISI Housekeeping commitments for March 2010.
The issue of inadequacies in DCPP’s SISI Housekeeping activities dates back a number of years. The following information is provided in DCPP’s Apparent Cause Evaluation (ACE), Order 60010601, “NRC Finding, 2008 Problem Identification and Resolution (PI&R): SISI Program Implementation,” dated February 14, 2009:

- Up until 2006 the Quality Verification (QV) Department performed and documented all SISI Housekeeping walk-downs in keeping with a 1984 commitment letter to the Nuclear Regulatory Commission (NRC). In 2006 DCPP submitted a commitment change request to the NRC to remove the language requiring quality oversight to do the inspections, shifting the responsibility to the maintenance organization.

- The program was transferred to Maintenance, which assigned a program owner and designated area owners. These area owners were each to be responsible for a specific area of the plant.

- A Design Criteria Memorandum (DCM) document created in 1997 requires regular inspections for potential SISI interactions between any uncontrolled objects in certain areas and systems, components, or equipment in those same areas that are important to safety and whose operation could be adversely affected by being struck by those unsecured objects during an earthquake.

- The current SISI Program that is controlled by procedure AD4.DC2, Plant Material and Housekeeping, states that area owners, consisting of designated line managers, shall perform monthly housekeeping and SISI housekeeping inspections of their areas per AD4.ID1 and AD4.ID3 respectively and directs line managers to perform SISI housekeeping inspections. This was to be tracked by the housekeeping program owner. However, the ACE noted that the SISI housekeeping inspections were not being tracked or documented.

In November 2008, during a walk-through of SISI areas, the NRC found two instances of potential SISI interactions. Follow-up on this issue revealed that neither Maintenance nor the Quality Department was aware of the monthly inspection requirement in the DCM discussed in the above paragraph. Interviews with several newly appointed area owners also revealed that they were unaware of the need to identify potential SISI related interactions as part of their responsibility for house-keeping walk-downs. Since the DCM was created after the 1984 DCPP commitment to the NRC, there was no reference to the DCM in either that original commitment or in a subsequent commitment change request.

More recently, a DCPP Preliminary High Tier Apparent Cause Evaluation, HT ACE, (Order 60023821) dated March 22, 2010 noted that since November 2008 there have been repeat SISI incidents at DCPP, and that the incidents have occurred “proportionally” during outage and non-outage periods. That is, from November 2008 through February 17, 2010, 31 Notifications have been initiated pertaining to SISI housekeeping issues. The HT ACE cites “Three Simple Rules” that were developed in 2005 to address this issue as a result of an ACE at that time: 1. Tie it Down 2. Set it Back 3. Evaluate it. The HT ACE also states that this 2005 ACE was the result of a deficiency noted by the Institute of Nuclear Power Operations (INPO).

Among the items noted in the above March 22, 2010 HT ACE are the following:
Weaknesses in SISI Housekeeping activities have existed at least since 2005.

Monthly surveillances have not been effective in identifying SISI issues or documenting walk-downs.

The Engineering Department is the primary program owner for evaluating conditions and determining SISI targets.

The SISI has not been recognized as a program or process within Engineering.

Outage Management is the implementation owner that serves as SISI Housekeeping Coordinator. As such, Outage Management owns procedure AD4.ID3, “SISI Housekeeping Activities.”

The SISI Housekeeping Program Owner/Coordinator has changed multiple times.

The SISI Program does not have a single point-of-contact owner. The program, by default has two contacts, and neither essentially performs the true role as the Program Owner.

There has been no in-depth formal training or computer data-based training for some personnel who must adhere to the SISI program. Some managers and area owners assigned the walk-downs have not been provided training. The program may be understood by some groups, and other groups may not understand all aspects. In Maintenance, the understanding of the program differs between supervision and craft.

The SISI Housekeeping Coordinator had not been maintaining records or identifying the inconsistent support of the monthly walk-downs.

Results of SISI Housekeeping activities had not been visible to station leadership because the Plant Performance Indicator Report (PPIR) contained no metrics for that program.

The Electric Power Research Institute (EPRI) issued a report in December 2008 entitled, “Benchmarking for Seismic Housekeeping at Nuclear Power Plants.” Among other things, the report discusses a variety of topics including: responsibilities and training, situations in which seismic housekeeping is applicable, precautions near electrical equipment, precautions in office-type environments, and erection of seismically qualified scaffolding and ladders.

DCPP is unique in that seismic activity is a major focus item since the site is more susceptible to earthquakes than other nuclear stations. Accordingly, benchmarking DCPP seismic programs against those of other nuclear stations should not be expected to yield the level of rigor required in DCPP’s seismic programs.

Mr. Stolz noted that during the past few months DCPP has been more aggressively responding to this issue. He noted that, while Engineering is responsible for the technical aspects of this program, Area Managers and Area Owners have been assigned responsibilities for the monthly SISI housekeeping inspections and for documenting results. Mr. Stolz stated that he is responsible for tracking the completion of and reviewing the contents of area SISI housekeeping inspections. Performance metrics have been developed for this program and have been reported in DCPP’s monthly Plant Performance Improvement Report (PPIR) since February 2010. Station performance in February was Red, i.e. Unsatisfactory. Performance in March and April was Green, i.e. No
corrective action needed, based on the reported performance. Any missed inspections will be included as an indicator in future PPIR’s. Mr. Stolz also noted that 22 SISI “safe areas” have been identified where temporary storage is permitted.

Conclusions:

DCPP’s seismic risk puts the station in a unique position in the industry and dictates a level of rigor in the station’s seismic housekeeping program that exceeds what would be expected of other nuclear plants. For a number of years the station’s seismic housekeeping program has not met that higher standard. In recent months DCPP has been more rigorous in structuring and implementing the seismic housekeeping program, and performance appears to be improving. The DCISC should continue to monitor station efforts as implementation of this program continues. This should include a review of SISI training of appropriate station personnel.

3.7 Follow-up on Functional Failure of Emergency Core Cooling System Recirculation Suction Valve Interlocks

The DCISC Fact-finding Team met with Pat Nugent, Manager of Technical Support Engineering, to discuss a few follow-up questions regarding the functional failure of the interlocks on the Emergency Core Cooling System (ECCS) containment recirculation suction valves and their associated modifications. The DCISC last reviewed this topic in April 2010 (Reference 6.6) when it concluded the following:

1. DCPP conducted a thorough Root Cause Analysis of the sequence of events leading up to the discovery during Unit 2 refueling outage 2R15 that the interlocks between the #1 and #3 Rotor limit switches for Valves 8982A&B were not functional. Corrective Actions to address Root and Contributing Causes appear to be appropriate. However, DCISC should review the following items in follow-up to this Fact-finding visit:
   a. The DCPP safety analysis that includes the requirement for the containment sump suction isolation valves to stroke open in no more than 25 seconds
   b. The technical and operational bases for DCPP’s decision in 2006 to reduce the scope of MOV interlock testing at the end of each outage
   c. The contents of “the more comprehensive procedure” used by DCPP during refueling outage 1R15 to successfully modify and test the Unit 1 containment sump suction isolation valves 8982A/B.

2. The station’s descriptions of this sequence of events and its analysis of root and contributing causes do not appear to acknowledge the fact that the adjustment made to the #1 Rotor limit switch to shorten valve travel on Valves 8982A&B was indeed a part of the modification that was performed on those two valves. DCPP’s descriptions seem rather to categorize the installation of the replacement worm gear mechanism as the modification and the necessary, additional Rotor limit switch adjustment as a maintenance activity. Recognizing the limit switch adjustment as an integral part of this modification would have dictated the need to test all functions associated with that limit switch, including the #1/#3 limit switch interlock.
NRC's finding on this issue clearly cites this failure to implement the design control process by using maintenance procedures to reduce the valve stroke lengths.

One of the analytical techniques utilized by DCPP was a meticulous, detailed application of Kepner-Tregoe analysis, which, among other things, employs sequences of “why” questions to “drill down” to the ultimate root causes. This allowed DCPP to “drill down” and identify specific station procedures needing adjustment to prevent recurrence. However, DCISC also concludes that one of the possible answers to the question: “Why was the interlock not tested after adjusting the #1 Rotor limit switch to reduce valve stroke length?” should have been, “Because the adjustment of the #1 limit switch was not treated as part of the design change.”

3. DCISC further concludes that the initial failure of the valves to meet the 25 second limit for opening after the worm gear replacement and its depiction in a station analysis as “an urgent, emergent, issue with potential outage schedule implications, thereby requiring a prompt solution” may well have created a sense of urgency that affected decisions made and actions taken to return Valves 8982A/B to an operable status, including the lack of development of documentation for some of the activities that were conducted and their results. This sense of urgency could also have created an atmosphere of haste which may even have contributed to the station misclassifying the adjustment of the #1 Rotor limit switch as a maintenance activity rather than a design change. In so doing, the station was not able to benefit from the more formal, but lengthy, design change process of analysis, development, review, approval, implementation, and testing.

4. This series of events is recognized as being of very low safety significance. The affected valves always had the capability of being operated manually. Nevertheless, the embedded issues were considered sufficiently important that the NRC dispatched a team of inspectors on site to conduct a Special Inspection of DCPP activities and documentation. DCISC affirms the significance of this matter. A number of issues embedded in these events e.g. adequacy of procedures, misclassification of a design change, revisions to testing requirements without adequate review, design control inadequacies, documentation inadequacies, overlooked safety analyses, and time pressure can, if continued over time, have a negative cumulative effect on safety margin.

The origin of this functional failure came from analysis that indicated that pressure drop across this valve could be too high for it to be capable of opening. The installation of a larger motor, with greater torque, was ruled out because the larger mass of the motor would reduce seismic margins and the replacement would be expensive. Instead, a new gear set was installed with a lower gear ratio, to provide higher torque, but with slower opening speed. While calculations indicated that the new gear would open in under 25 seconds, after the gear was tested it was determined that the actual opening time was slightly over, with the precise value being 25.3 seconds.

The first area of follow-up pertains to the safety analysis that includes the requirement for the containment sump suction isolation valves to stroke open in no more than 25 seconds. The DCISC FFT was provided Design Calculation STA-061 Revision 4, dated October 30, 2008, whose purpose is to “establish the time required and time available to perform the changeover from the injection
The problem encountered during outage 2R14 caused DCPP to look more closely at how to perform the work during 1R15. This led to a process in 1R15 that treated the adjustment of the limit switches as a modification, not a maintenance activity, as had been incorrectly performed during 2R14. Therefore, it was recognized during that process that the adjustment of the open limit switch could also affect the interlock function, and the appropriate adjustments were made to keep the Unit 2 ECCS suction valve interlocks functional.

**Conclusions:**

The follow-up questions pertaining to the 25-second timing requirement for the opening of the...
ECCS containment recirculation suction valves, the bases for DCPP’s decision to reduce the scope of end-of-outage testing of motor operated valves in 2006, and the differences between the work on the ECCS containment recirculation suction valves during outages 2R14 and 1R15 have been resolved. The increase in opening time occurred due to changing the actuator gear ratio to increase opening torque to prevent pressure differential from keeping the valve closed. An alternative approach to adjusting limit switches to comply with the opening time requirement would have been to apply risk-based analysis to increase the 25-second requirement, since the actual valve opening time remained well within the uncertainty for the operator action time. While the alternative approach could have been preferable, the final approach taken by DCPP is acceptable.

3.8 Unplanned Release of Carbon Dioxide (CO2) from Unit 1 CARDOX System

The DCISC Fact-finding Team met with Mike Wright, Manager, Mechanical Systems Engineering. This is DCISC’s first review of this event. On June 23, 2010, 10:56am, an Alert was declared by PG&E due to an inadvertent discharge and unplanned release of CO2 from a gaseous fire suppression system in the Unit 1 Main Turbine Building Lube Oil Reservoir Room. This occurred during a planned maintenance activity on the fire suppression system. The activity involved “puff” testing of the system, which involved briefly and individually opening and then shutting each of the 18 CO2 release valves for the system. Each of those valves is controlled by its own pilot valve. Typically the test releases about 1% of the contents of the tank. However, the unplanned release amounted to about 28% of the tank’s contents. The CO2 contains no radioactivity beyond what would be present in the earth’s atmosphere. However, high concentrations of CO2 can cause asphyxiation which could incapacitate or impede workers in the area to the point where they would need to don breathing apparatuses in order to be able to respond to any other potential, simultaneous events related to nuclear safety that might occur in the affected area. No such simultaneous nuclear safety related problems occurred; but nevertheless the event met the Nuclear Regulatory Commission’s (NRC) criteria for declaring an Alert, which led to the activation and manning of DCPP’s Technical Support Center (TSC), Emergency Operations Facility (EOF), and Joint Information Center (JIC). It also required that PG&E notify the appropriate authorities at the County, State, and Federal levels and that these governmental bodies activate their respective response centers. An Alert is the second lowest of four levels of Emergency Classification, the others being (from lowest to highest): Unusual Event, Site Area Emergency, and General Emergency.

Mr. Wright noted that a Root Cause Evaluation (RCE) was being performed and was nearing completion. He noted that the problem appeared to be due to the pilot valve for one of the CO2 tank release valves (flow control valves) that were being tested (FCV-101). Both FCV-101 and its pilot valve had been replaced on June 22, 2010, the day before the “puff” testing. The pilot valve is normally shut, but when it is opened, either manually or by an electrical solenoid, the pilot valve passes CO2 from the tank to its associated release valve, and the release valve opens to vent the CO2 storage tank. Closing the pilot valve vents the control gas from the release valve, which immediately shuts and terminates the “puff” test. For the “puff” test, each pilot valve is operated manually. During the test of those valves in question, the pilot and FCV-101 opened as expected.
However, when the pilot valve was shut, above normal venting was experienced at the manual pilot valve cabinet. At this point, the operator tried pushing the small manual lever arm for the pilot harder toward the closed position, with no effect. The operator then moved that lever arm for the pilot valve back about 5 degrees toward the open position to see if this minor adjustment might terminate the venting. Nevertheless, the venting continued to the point where CO₂ was noted to be escaping through the bottom of the lube oil room doors. At the same time, personnel who had been assigned to monitor conditions notified the Test Director, who in turn, directed the shutting of a separate, primary isolation valve for the tank (FP-0-95), which terminated the discharge.

After careful match-marking the position of the manual handle on the pilot valve and removal of the pilot valve, it appeared that the pilot valve actually may have been in the closed position, as evidenced by the plunger being in its inserted position, with the handle being in a mid-position. Mr. Wright indicated that the alignment of the internals of the pilot valve with the actuating arm appeared to have affected the venting process. Further, the slight 5 degree movement of the pilot valve manual lever arm back toward the open position may have isolated the actuator supply gas between the pilot valve and FCV-101, thus preventing relief of the gas from the release valve operator, and continuing to hold FCV-101 in an open position.

As stated in the first paragraph of this section, the unplanned and uncontrolled release of CO₂ from the Unit 1 CARDOX system resulted in PG&E's declaration of an Alert Emergency Action Level and notification of appropriate government authorities. Accordingly, the DCISC FFT also reviewed the responses to this event that were taken by PG&E and the County as well as the public announcements that were disseminated by PG&E, the County, and the Nuclear Regulatory Commission (NRC). The DCISC FFT noted that, based upon the earlier DCISC recommendation to practice more realistic scenarios in its emergency response exercises (Reference 6.7), DCPP had recently practiced an Alert that was very similar to this current event, i.e. a CARDOX release from an Emergency Diesel Generator Room. This practice proved to be very relevant and helpful in PG&E's responding appropriately to this actual event.

The station's initial review of its response to the event in Notification 50323903 noted the following:

- The initial declarations of an Unusual Event and then Alert were made within the required time periods, based on plant conditions. Likewise, notifications to the County, State, and NRC were all within the required time frames for both declarations of Unusual Event and Alert.
- The fire alarm could have been sounded earlier to better communicate the need for personnel to evacuate the affected areas. The alarm was sounded about nine minutes after the discharge.

The DCISC Fact-finding Team reviewed and compared the written public announcements that were issued during this event by PG&E, the San Luis Obispo County, and the NRC. Both the PG&E and the County releases contained wording that could potentially cause members of the public to be unnecessarily concerned about the risk posed by the event. The NRC release provided a more accurate reflection of the potential impact of this event beyond the site boundary. Examples follow:

- The PG&E statement that “At this time there is no release of radioactive material to the
environment…” prompts concern that a radioactive release could be a real possibility. This statement could bias government personnel toward evacuating certain residents unnecessarily. The PG&E release further reinforces that same impression by stating: “Under NRC regulations, nuclear power plants are permitted to release very small amounts of radioactive material during operations, which have no public impact.” In contrast the NRC release did not raise a potential radioactivity issue at all. It stated that CO$_2$ was released and that the affected room was immediately sealed off.

- The PG&E report stated that “There have been no reports of injury,” whereas the NRC report stated that “No one was injured …”. The PG&E release stated that CO$_2$ “would have proven harmful to operators …”, whereas the NRC release did not address the potential harmful impact on site personnel.

- The County release included the complete definition of an Alert that includes “a security event that involves the probable life threatening risk to site personnel …” but the County provided no description at all regarding the nature of this event. The County response also included the intent to perform an evacuation of Montana de Oro State Park, which given the risks generated by initiating evacuations would not be justified for this event.

The above issues pertaining to PG&E’s press release appear to have been influenced by the utility’s use of standard “boiler plate” wording for various releases.

Regarding the County’s above announcement to evacuate the Montana de Oro State Park, this action was required by the State of California. DCPP reports that County officials decided to recommend against any evacuations. The decision to recommend against evacuations resulted, in part, from experience gained in the earlier emergency response exercise involving a simulated CARDOX release in a diesel generator room. Although the state park evacuation was initially ordered, the decision was rescinded, and the only action taken was to close access to the park. However, if this event had occurred a number weeks earlier when schools were in session, the potential evacuation of schools could have created communication problems within the county between parents, children, the school system, and the county office, with potential self-initiated, ad hoc evacuation efforts and consequent risk to the public. Thus the County can be commended for its decision to recommend against any evacuations during this Alert.

**Conclusions:**

The station appears to have performed an accurate causal analysis of the unplanned release of carbon dioxide from the Unit 1 CARDOX System. PG&E’s and the County’s public notifications of the Alert that stemmed from this problem both contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event, while the NRC public notification provided more accurate risk communication. The announcement of the intent to evacuate an area (Montana de Oro State Park), which was not justified for this event, could have potentially led to additional ad hoc public responses, creating negative impacts for public safety. The DCISC has previously noted the importance of risk communication during Emergency Response exercises. This actual Alert provides important lessons, particularly that events may occur that do not involve plant conditions that warrant precautionary evacuations.
The DCISC should continue to follow DCPP’s response to this event.

3.9 July 7, 2010 Emergency Preparedness Drill

The DCISC Fact-finding Team (FFT) observed the Emergency Response Organization (ERO) Emergency Drill Dress Rehearsal. The DCISC last reviewed one of the emergency drills in September 2009 (Reference 6.8) when it concluded the following:

*It appears from the drill critique that PG&E successfully demonstrated implementation of the Diablo Canyon emergency plan including timely and accurate event classification and notification of offsite authorities, and in this sense the drill was successful. The DCISC Fact Finding Team’s (FFT) observation was that the personnel at the Simulator (Control Room), Technical Support Center (TSC) and Emergency Operations Facility (EOF) performed their duties and responsibilities correctly. But the DCISC Fact Finding Team observation at the Joint Information Center (JIC) was that they (PG&E spokesperson) needed improvement with supplying detailed information to the News Media, more time for the news conferences, someone available to discuss radiation dose, and information about offsite recommendations for the public.*

The FFT first observed the briefing of the drill Control Team one hour prior to the commencement of the Dress Rehearsal. It was stressed that Dress Rehearsal was not a training exercise and that it was being conducted in preparation for the Nuclear Regulatory Commission’s (NRC) graded exercise on August 11. However, participants were to be stopped if they perform improper actions so that the scenario would be able to progress as planned. Assembly and accountability would not be performed, and participants would not be donning protective clothing or respirators. Communications between the Control Room and operators in the plant would be conducted via hand held radios. The simulator set-up for this Dress Rehearsal was exactly the same as it will be for the August 11 graded exercise, although the actual scenario will be different.

The FFT began its observation in the Control Room Simulator where the operating crew was checking plant status and performing walk-downs of panels as if they were in an actual Control Room. Unit 1 was simulated. Initial plant conditions at 0800 were that the plant was operating at 100% power with an open fuel defect on one or two rods that restricted the unit’s ramp rate to a limit of 3% per hour. Letdown was established at 120 gpm for performing primary system clean-up.

At this point the Shift Manager and Shift Foremen discussed the contingency of possibly needing to reduce power to 50%. The Shift Foreman for the two control operators then performed a very effective briefing of how a ramp to 50% power would be performed, if needed. She moved from her normal position behind the operators to a position in front of them so the operators could continue to view their panels while looking at and interacting with her. On at least one other occasion during the first hour of this evolution, it was necessary for her to brief her control operators, and in each case she positioned herself in the same manner, spoke very clearly, and verified their understanding of the situations.

Within the first few minutes of the drill, a pressurizer high level alarm actuated. The crew correctly diagnosed the problem to be a failed level instrument. All communications were proper throughout...
the crew’s response to this condition as well as to the remaining drill conditions observed in the Control Room Simulator by the FFT. Three-way communication was uniformly used. The phonetic alphabet was also used effectively to clarify communications when needed. Occasional plant status briefings were effectively performed where appropriate.

During the next 15 minutes, increased radiation levels were noted on monitors in the containment building, the charging pump room, the Nuclear Steam Supply System (NSSS) sample area, and the Auxiliary Control Board area. A few minutes later several high radiation alarms actuated. This started a 15-minute time requirement for the conditions to be recognized as requiring the declaration of an Unusual Event and then an Alert. According to the time line maintained by the FFT, it appeared that these declarations were met, but with not much time to spare. During this same 15-minute period the Shift Manager announced an order to ramp down for the purposes of shutting down, due to fuel degradation.

The declaration of the above emergency action levels then started another 15-minute time clock for the event to be notified to the NRC. It appears that this notification was made within the required 15 minutes.

About 10 minutes later and 55 minutes into the drill scenario, the control room was informed that both the Technical and Operational Support Centers (TSC and OSC) had been activated. The Shift Manager then conferred with the TSC and about 10 minutes later announced over the public address system that the TSC had been activated and had assumed command and control for response to the event. At this time, the DCISC FFT determined that the future events in this drill would be occurring in too short a time span to make observations in the TSC productive. Therefore, the FFT conferred with the DCPP site contact, received directions to the offsite emergency facilities, and proceeded directly first to the Joint Information Center (JIC) and then to the Emergency Operations Facility (EOF).

Within the JIC, conditions were somewhat hectic and crowded. The simulated accident had not yet occurred. Initially there were comments from PG&E personnel that it was difficult to get information from the plant. No media personnel appeared to be present, but rather were role played very effectively by other personnel. Their attitudes and questions were realistically assertive, skeptical, and challenging. This first press conference appeared to be conducted to meet the demands of the simulated media, but both the county and PG&E spokespersons were composed and cordial. Only limited information could be given out at that time, and responses by the spokespersons were brief, direct, and understandable. There had been no release of radioactivity. There was no threat to public health and safety. However, some precautionary measures were being taken. Montana de Oro State Park was being closed and evacuated, but only as a precautionary measure. Other smaller parks were being closed to additional guests, but not evacuated. No children were in the one school in the currently affected area. Los Osos did not require evacuation at that time. The PG&E spokesperson mentioned that the DCPP Site Vice President (VP) was on his way to the JIC.

Almost coincident with this first press conference, a simulated 200 gallons per minute (gpm) Steam Generator Tube Rupture (SGTR) occurred which created the conditions for declaring a Site Area
Emergency due to the fact that two fission product barriers had been breached (i.e. fuel cladding and the Reactor Coolant System). However, this particular drill scenario added a complicating factor in which, almost concurrent with the SGTR, one of the Steam Generator Relief Valves stuck in a partially open position. This brought the site to an emergency action level of a General Emergency because all of the barriers between the fuel and the external atmosphere had been breached. Therefore, the plant had moved directly from an Alert condition to a General Emergency. From information received later at the EOF, these simulated accident conditions were properly identified, classified, and reported within their respective time requirements by the PG&E teams. The DCISC FFF notes here that this exercise scenario is very similar to the October 29, 2008 annual Emergency Preparedness NRC-evaluated exercise (Reference 6.7). The conditions in the 2008 exercise dictated sheltering in place for Protective Action Zones 1 and 2, whereas the conditions in this current exercise warranted evacuation in Zones 1 and 2 and sheltering in Zone 3, as discussed below.

The second press conference, and the last one attended by the DCISC FFT, was held by the same two personnel who held the first one plus the DCPP Site VP, who concluded the briefing. All three presenters effectively handled almost all questions from the media, but the first two presenters naturally deferred to Mr. Becker for the technical explanations. The Site VP used slides to show diagrams of relevant systems, structures, and components that were affected in the event. His explanations were clear and should have been understandable to the general public and his demeanor was both professional and cordial. Prior to the Site VP’s presentation the PG&E representative mentioned that unnecessary personnel were being evacuated from the DCPP site, and the county representative mentioned that precautionary evacuations were being conducted in Zones 1 and 2. These statements prompted considerable media interest in how these evacuations might affect one another. This was a difficult question that wasn’t completely answered. The DCISC notes at this time that communications with the media in the 2008 NRC-evaluated exercise and in the September 2, 2009 drill had revealed numerous problems that appear to have been reduced in this current exercise.

The DCISC FFT then observed activities in the facility that housed the following:

- Emergency Operations Facility (EOF)
- Unified Dose Assessment Center (UDAC)
- Engineering and Operations
- State Emergency Services Director’s Group
- Recovery Manager
- Logistics
- Shelter and Welfare
- Government Relations

There appeared to be agreement between PG&E and the UDAC regarding the decision to limit evacuations to Zones 1, 2, and 3. However, the Scenario Synopsis provided to the DCISC FFT prior to the dress rehearsal stated that the expected responses were to be evacuations only of Zones 1 and
During the post exercise critique, DCPP’s Radiation Protection Manager was given credit for periodically walking over to UDAC and sharing information for the purpose of maintaining a consistent picture of how radioactivity was being dispersed. The simulated meteorological conditions may also have facilitated this consistency. The drill scenario provided what appeared to be a steady wind moving in a constant direction, which resulted in a narrow plume moving in a straight line, which in turn reduced the extent of dispersion.

One area of inconsistency between DCPP and the County is that they use different doses for when to administer Potassium Iodide (KI) tablets to their workers in the field and to the general public. PG&E follows EPA 400, which has KI being administered to workers who are expected to receive 25 Rem from iodine to the thyroid and to members of the general public who are expected to receive 5 Rem to the thyroid. The County’s action levels are more conservative, 10 Rem and 3 Rem respectively.

The DCISC FFT observed the EOF joint debrief that was conducted after the various individual groups prepared their input. Highlights of the debrief are as follows:

- Behaviors were supportive throughout the exercise. UDAC was especially noteworthy.
- UDAC was asking for some information from the control room, in keeping with their procedures, but the EOF was maintaining that information.
- A less hectic pace should be maintained at the beginning.
- Briefings in the EOF could be more timely.
- The EOF did a good job examining changing plant conditions and recognizing that the emergency action level increased from Alert to General Emergency.
- Periodic joint briefings allowed UDAC and EOF to compare their determinations.
- It is important to remember that having problems can be acceptable, but what is very important is to be able to self-identify the problems rather than having an outside organization identify them.

**Conclusions:**

Responses to the simulated event by Control Room personnel were methodical and effective. The entire emergency response organization was commended for both recognizing a simulated steam generator tube rupture followed quickly by a stuck open steam generator relief valve and then diagnosing that the plant had transitioned quickly from a simulated Emergency Action Level of Alert, with pre-existing failed fuel cladding, through the Site Area Emergency classification to a simulated General Emergency. PG&E and the County appeared to be consistent in recommending evacuations of Zone 1, 2, and 3 whereas the exercise scenario stipulated evacuations only for Zones 1 and 2, but sheltering for Zone 3. Media briefings in the Joint Information Center (JIC) appear to have improved substantially since the October 29, 2008 NRC-evaluated exercise and the September 2, 2009 Emergency Planning Evaluated Exercise Dress Rehearsal. Adequate time was devoted to news conferences. Personnel in the JIC were sensitive to the need to disseminate information on a timely basis. Information was presented at press conferences in a manner that
should have been understandable to the general public. The Site Vice President provided a credible source of information at these conferences, effectively explaining technical issues and answering questions in layman’s terms.

4.0 Conclusions

4.1

Collectively, the topics, issues, and activities associated with addressing DCPP problem evaluation are extensive and detailed. The issues include not only DCPP’s use of its Corrective Action Program to analyze and correct emergent station problems but also DCPP’s examination of the impact that station activities have and have had on its design and licensing basis. DCPP has developed an extensive action plan and is utilizing a wide array of performance indicators to track progress on this issue. Many actions have been completed or are well underway. The DCISC needs to follow station progress on this topic, but further reviews should focus on selected performance areas, e.g. Operability Determinations, Cause Analysis, On-Line Risk Management, etc, in addition to a periodic review of overall progress. The new PPIR performance matrix sheet that will rate performance in each of 16 areas listed in the discussion above should be reviewed monthly by the DCISC to determine which areas require appropriate attention.

4.2

DCPP’s 2009 total liquid and gaseous radiological releases were very small fractions of amounts permitted by regulations and Technical Specifications. DCPP experienced an uncontrolled venting of two gas decay tanks in October 2009, which amounted to 0.02 percent of the allowable rate. The Radiological Environment Monitoring Program confirmed that the operation of DCPP had no significant radiological impact on the environment in 2009.

4.3

DCPP has begun to more aggressively address the need for seismic bracing of tall furniture. The Construction/Facilities Maintenance Manager has been assigned overall responsibility for this program. A draft procedure has been prepared that defines the criteria for bracing and restraining tall furniture. The DCISC should continue to monitor station progress on this issue, and should walk down areas such as the Training Building and Control Room during a future plant inspection to verify implementation of bracing systems.

4.4

DCPP’s approach to improving the Operational Focus of the station is well structured and appears to be resulting in steady improvement. The Operational Focus Action Plan, which is nearing full implementation, directly addresses the areas for improvement that are identified in DCPP’s PPIR. Station performance, as measured by the composite indicators of Operational Focus and Work Management Focus, have improved noticeably in the past 9 months. Any future follow-up by the DCISC should be based on any observed negative trends in station performance.

4.5

DCPP’s seismic risk puts the station in a unique position in the industry and dictates a level of rigor in the station’s seismic housekeeping program that exceeds what would be expected of other
nuclear plants. For a number of years the station’s seismic housekeeping program has not met that higher standard. In recent months DCPP has been more rigorous in structuring and implementing the seismic housekeeping program, and performance appears to be improving. The DCISC should continue to monitor station efforts as implementation of this program continues. This should include a review of SISI training of appropriate station personnel.

4.6

The follow-up questions pertaining to the 25-second timing requirement for the opening of the ECCS containment recirculation suction valves, the bases for DCPP’s decision to reduce the scope of end-of-outage testing of motor operated valves in 2006, and the differences between the work on the ECCS containment recirculation suction valves during outages 2R14 and 1R15 have been resolved. The increase in opening time occurred due to changing the actuator gear ratio to increase opening torque to prevent pressure differential from keeping the valve closed. An alternative approach to adjusting limit switches to comply with the opening time requirement would have been to apply risk-based analysis to increase the 25-second requirement, since the actual valve opening time remained well within the uncertainty for the operator action time. While the alternative approach could have been preferable, the final approach taken by DCPP is acceptable.

4.7

The station appears to have performed an accurate causal analysis of the unplanned release of carbon dioxide from the Unit 1 CARDOX System. PG&E’s and the County’s public notifications of the Alert that stemmed from this problem both contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event, while the NRC public notification provided more accurate risk communication. The announcement of the intent to evacuate an area (Montana de Oro State Park), which was not justified for this event, could have potentially led to additional ad hoc public responses, creating negative impacts for public safety. The DCISC has previously noted the importance of risk communication during Emergency Response exercises. This actual Alert provides important lessons, particularly that events may occur that do not involve plant conditions that warrant precautionary evacuations. The DCISC should continue to follow DCPP’s response to this event.

4.8

Responses to the simulated event by Control Room personnel were methodical and effective. The entire emergency response organization was commended for both recognizing a simulated steam generator tube rupture followed quickly by a stuck open steam generator relief valve and then diagnosing that the plant had transitioned quickly from a simulated Emergency Action Level of Alert, with pre-existing failed fuel cladding, through the Site Area Emergency classification to a simulated General Emergency. PG&E and the County appeared to be consistent in recommending evacuations of Zone 1, 2, and 3 whereas the exercise scenario stipulated evacuations only for Zones 1 and 2, but sheltering for Zone 3. Media briefings in the Joint Information Center (JIC) appear to have improved substantially since the October 29, 2008 NRC-evaluated exercise and the September 2, 2009 Emergency Planning Evaluated Exercise Dress Rehearsal. Adequate time was devoted to news conferences. Personnel in the JIC were sensitive to the need to disseminate information on a timely basis. Information was presented at press conferences in a manner that
should have been understandable to the general public. The Site Vice President provided a credible source of information at these conferences, effectively explaining technical issues and answering questions in layman’s terms.

**Recommendations:**

None

**6.0 References**


21st Annual Report, Volume 2, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on August 4 & 5, 2010 by Robert J. Budnitz, Member and Jim E. Booker, Consultant

1.0 Summary

The results of the August 4 & 5, 2010 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 include:

1. 1R16 Outage Overview
2. Equipment Reliability Process
3. Boric Acid Corrosion Control Program
4. Post-Maintenance Testing Self-Assessment
5. Line Use of Operating Experience
6. Premier Survey Action Plan
7. 230 kV System Capability
8. DCISC Member Meeting with DCPP Management
9. Carbon Dioxide Discharge Event and Walk-Down of Main Lube Oil Room and CARDOX System
10. Quality Verification, DCPP Site Status Report & QV Activities
11. Probabilistic Risk Assessment (PRA) Overview
12. Plant Cranes Maintenance and Operations

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas
of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 1R16 Outage Overview

The DCISC Fact Finding Team met with Scott Query, Outage manager, to review the 1R16 outage activities. The DCISC last reviewed Refueling Outages at the June 9 & 10, 2009 DCISC Public Meeting (Reference 6.1).

The 1R16 Refueling Outage is scheduled to start October 3 for 29 days and 12 Hours. Mr. Query stated that 2R15 was longer than it should have been, but the outage was safe and the unit has been running very well. Planning is in better shape than it has been for the last 2-3 years. They have done better planning because of the 1200 lessons learned from the last few outages.

The major items for 1R16 are:

- Reactor Vessel Head Replacement
- POV (Panel Zero Ventilation) Panel Replacement
- SI (Safety Injection) Test Header
- Transformer Cooler Replacement
- 230 kV Reliability
- CCP 1-1 Casing Replacement
- Pz (Pressurizer) Steam Seated Safeties

The POV Panel Replacement is the critical path, not the reactor head replacement. This project will replace the existing obsolete Aux. and Fuel Handling Building HVAC control (POV Panel) systems that are installed in POV1 and POV2 in both the Unit 1 and Unit 2 control rooms with a new redundant control system. The transformer projects include removal and replacement of the transformer coolers on Main Bank Transformer B phase with super coolers, Auxiliary Transformer 12 coolers, and Start Up Transformer 11 coolers. It also includes repair of the leaking coolers on Aux. 11 Transformer.

The 1R16 Goals are:

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Aside from the replacement of the reactor head, this outage is considered normal compared to past outages. They have about 15 to 20 modifications each outage. They will do a 100% Steam Generator Tube Eddy Current testing. They will now have to do this test every third cycle, rather than each outage, because of the new Steam Generators. They have completed the outage safety review and have scheduled the pre-outage meeting for August 9 and the readiness review meeting for August 12. Mr. Query stated they should not have any manpower availability problems this outage, except for a concern about available pipe welders.

They will assemble a separate team to handle any new problems that might develop during the outage. Everyone has been asked to improve outage dose by a reduction of 12% from the goal.

**Conclusions:**

It appears that DCPP has planned 1R16 very well. This outage is considered normal compared to past outages. They stated that should not have any manpower availability problems this outage, except for a concern about available pipe welders. The POV Panel Replacement is the critical path, not the reactor head replacement. They have completed the outage safety review and have scheduled the pre-outage meeting for August 9 and the readiness review meeting for August 12. The DCISC should request a report on 1R16 at one of the future Public Meetings.

**3.2 Equipment Reliability (ER) Process**

The DCISC Fact Finding Team met with Mark Baker, Equipment Reliability Program Manager, to review the Equipment Reliability (ER) Program process. The DCISC last reviewed the ER program at the August 11 & 12, 2009 Fact finding Meeting (Reference 6.2) when it concluded that:

“DCPP’s Equipment Reliability (ER) Program (including aging management) is well-designed and implemented. A major Single Point Vulnerability (SPV) evaluation has been completed and the results are being implemented which should help reduce threats to plant performance. An industry assessment of DCPP ER made recommendations in the area of long-term planning and streamlining the budget and scheduling approval process.”

Mr. Baker stated that equipment reliability at DCPP has improved as a result of the Preventative Maintenance (PM) Program and the PM Optimization. DCPP is generally doing well in this area. The ER Program health report has improved from Yellow to White in the 2nd quarter of 2010 and should
Conclusions:

DCPP appears to be managing the Equipment Reliability (ER) Program well based on the ER Program health report improving from Yellow to White in the 2nd quarter of 2010 and the potential to return to Green in the 1st quarter of 2011. ER at DCPP has improved as a result of the Preventative Maintenance (PM) Program and the PM Optimization. The next area to be included in the ER program is critical spares and critical spare management. They have just started on the program and it will take 2 to 3 years to complete. DCISC should follow the addition of the critical spares and critical spare management to the ER program.

3.3 Boric Acid Corrosion Control Program

The DCISC Fact Finding Team met with Dave Gonzales, Supervisor In-Service-Inspection (ISI), and Chad Sorenson, ISI Engineer and back-up owner of the Boric Acid Corrosion Control (BACC) Program, to discuss the current status of the BACC Program. The DCISC last reviewed the BACC program at the August 11 & 12, 2009 Fact Finding Meeting (Reference 6.3) when it concluded that:

“DCPP continues to make improvements to its generally satisfactory Boric Acid Corrosion Control (BACC) Program. Program health is White (acceptable) with improvements being made to achieve Green. The number of Unit 1 leaks requiring maintenance has decreased with performance currently rated Green, while Unit 2 has been constant: DCPP believes Unit 2 performance will improve from Yellow to green following maintenance of leaks in Outage 2R15.”

The system program health report currently is rated White (acceptable). The system program health report states “The DCPP BACC is performing well. Early detection of boric acid (BA) leaks, thorough inspection of areas and evaluation of leakage, is occurring promptly and is documented. Program procedures are up-to-date and adequate for program implementation. Planned maintenance is being performed as scheduled, although a high number of low-level leaks persist. Although these are in general not corrosion concerns, they do not support the BACC policy of prompt action to perform repairs. No significant corrosion challenges exist at this time. Areas for program improvement include having the Backup Program Owner fully qualified with the ENGiSI7 qualification and a reduction in the backlog of low-level leaks. It is anticipated that the program can change from White to Green by the end of 2010.”

Leaks from nuclear systems containing boric acid can cause unwanted corrosion of carbon steel.
components. The industry experienced enough boric acid leakage issues prior to 1988 to cause NRC to issue Generic Letter 88-05. This prompted the first formal BACC Program at DCPP as well as at all other plants. This was followed by additional NRC bulletins, including those issued in 2003 following the Davis-Besse reactor vessel upper head corrosion event and the discovery at South Texas Project of boric acid leakage in its reactor vessel bottom head in-core instrument lines.

DCPP developed its plant leakage procedure, AD4.ID2, “Plant Leakage Evaluation” following leakage it discovered and tied it to NRC GL 88-05. It provides guidance for responses to leaks from the ECCS post-LOCA recirculation flow path outside of containment and responses to other leaks as well. Each leak is identified in a Notification and evaluated and corrected within the Corrective Action Program (CAP).

DCPP’s BACC Program procedure ER1.ID2, “Boric Acid Corrosion Control Program,” provides a comprehensive BACC Program to address boric acid corrosion concerns associated with the reactor coolant pressure boundary and other primary systems containing boric acid. The procedure addresses the following:

- Potential leak locations
- Leak identification
- Reporting of leakage
- Inspection of boric acid leaks potentially affecting Design Class 1 Components
- Boric acid evaluation of potentially degraded Design Class 1 Components
- Personnel training

Each leak is identified and tracked with a Notification and is added to the Boric Acid Leaker List Database. The list includes the leaking component, applicable Notification, system, location, leak rate, a contact, and, in most cases, a link to a photograph. Many leaks are tracked by periodic walkdowns. DCPP has recently provided more guidance to plant personnel for identifying, recording and screening BA leaks, relying less on the “skill of the identifier.”

Mr. Sorensen reported that their group performs walk-downs every 6 months for leaks and inside containment during refueling outages as early as possible in the outage. Another walk-down is performed coming out of the outage. They have not found many new leaks at the start of outages because Operations inspects for leaks during normal operations except in high radiation areas. They have established a database of current leaks after they have been fixed to be able to check for reoccurring leaks. There are too many low-level leaks for maintenance to fix soon, and it will therefore take a period of time for maintenance to fix all of them. The June 2010 walkdowns resulted in the creation and closure of a number of leak notifications with no significant changes. The number of additional items planned and scheduled is 32 for Outage 1R16 and 28 for Outage 2R16.

Mr. Gonzales reported that out of 7 employees in the ISI group, 4 employees will be at least 60
Conclusions:

DCPP continues to make improvements to its generally satisfactory Boric Acid Corrosion Control (BACC) Program as no significant corrosion challenges exist at this time. Program health is White (acceptable) with improvements being made to achieve Green by the end of 2010. Early detection of boric acid (BA) leaks, thorough inspection of areas and evaluation of leakage, is occurring promptly and is documented. The number of additional items planned and scheduled is 32 for Outage 1R16 and 28 for Outage 2R16. They are presently looking for personnel replacements for the future and need to plan for knowledge transfer because 4 of 7 employees in the In-Service-Inspection (ISI) group will be 60 years old in the next year. They will probably need to hire some experienced employees in the ISI area as it takes a while to train employees for these duties.

3.4 Post-Maintenance Testing Self-Assessment

The DCISC Fact Finding Team met with Gary Deardorff, Post Maintenance Testing (PMT) Coordinator, to review the PMT self-assessment. The DCISC has not reviewed this subject recently. Mr. Deardorff, who moved into PMT in April, 2010, reported on the results of the March 2010 self-assessment of the PMT. The root cause analysis (RCA) for the SI-2-8982A/B interlocks out of adjustment investigation identified as a prudent action to perform a self-assessment of the Post Maintenance and Post Modification Testing (PMT) processes. The self-assessment was conducted to identify any gaps in the PMT processes and provide recommendations to close these gaps. Their goal is to identify any opportunities to drive DCPP’s PMT processes to meet or exceed industry best practices.

The scope of the assessment included those departments which routinely use the PMT processes; Maintenance, Engineering and Operations. The primary focus was on how the PMT processes are managed on a daily basis. A secondary focus was on evaluating the effectiveness of the established barriers within the PMT processes. The self-assessment team evaluated the Post Maintenance Testing process (Procedure AD13.ID4) and the Post Modification Testing process (Procedure AD13.ID2).

The following information was taken from the PMT self-assessment report:

Key Findings: The process for implementing PMT activities at DCPP was found to be well defined and complies with ANSI standards, NRC Regulatory Guides and industry guidelines. However, the program cannot be described as industry leading. Compliance relies heavily on experienced personnel in key positions to ensure that PMT is performed. The self-assessment team observed a sharp decline in PMT awareness within the last five years due to the attrition of key experienced personnel. The current process as it exists will not be sustained if there is a further loss of experienced personnel in those positions. A declining awareness of the importance of PMT by plant
personnel negatively affects how DCPP applies PMT in its maintenance processes. There are significant areas where clarification and more support would enhance the process.

The self-assessment team concurs with the following previously identified recommendations:

1. Provide planners more guidance for specifying Operation Verification Testing (OVT) in maintenance orders. This addresses Gap #1
2. Revise AD13.ID4 to identify that an early review of maintenance activities for OVT will be performed by a Senior Reactor Operator (SRO). This addresses Gap #1
3. Develop or improve upon existing SAP reports to specifically support the reviews required by the PMT procedure. This addresses Gap #2
For the post modification process, the self assessment team concurs with the recommendations in the PMT Benchmarking Report.

Strengths: No strengths were observed.

Positive Findings: The corrective actions identified in the SI-2-8982A/B interlock RCA (Root Cause Analysis) have been properly implemented.

Areas For Improvement:

1. Site wide implementation of the PMT process is not being consistently applied at DCPP. Work packages are being issued without the proper OVT being specified or reviewed. In many cases, this occurs in all areas of the PMT process and is not addressed until the final milestone is approached: return to service. The PMT procedure, AD13.ID4, needs to be more specific on the roles and responsibilities of the individuals in the PMT process. The work control procedure, AD7.DC8, needs to put more emphasis on PMT. This has resulted in complacency around the implementation of the PMT process.

2. Outage-related maintenance activities are not being consistently evaluated for OVT and did not have a review process similar to the process outlined for daily maintenance activities. The PMT Deficiencies High Tier ACE identified many maintenance activities that did not have the adequate OVT specified. The uniqueness of this review clearly indicates that for outage-related activities there is no process beyond planning the OVT for reviewing and tracking OVT activities.

Gaps:

1. Planners have consistently stated that there is not enough guidance in the post maintenance procedure for specifying OVT. They state that the procedure is also very confusing and does not identify all of the possible maintenance activities. Planner performance must be improved and expectations clarified. An inquiry of other utilities indicates that at most facilities the planners are responsible for specifying OVT. The difference is that most of these facilities have robust desk guides, data bases or dedicated personnel in place to provide the planners...
with that support.

2. Most individuals ( schedulers, work week managers, engineers and operators) involved in the PMT process state that they don't have the proper tools for specifying and tracking PMT. The main tool that is currently available in SAP, the ZDCPMT (Short Cut to A Specific SAP Report) Report, is not user friendly and the individuals using it express a low level of confidence in it. This creates a lot of inefficiency in the process and could lead to a missed OVT.

3. Establish criteria and metrics for the PMT process and add the PMT process to the Plant Performance Improvement Report (PPIR). This is based on current process inconsistencies that challenge effectively managing OVT from initial scoping to tracking to return to service.

Nuclear Safety/Industrial Safety: - No nuclear safety or industrial safety issues were identified.

Organizational Effectiveness: - The gaps and recommendations of this report reference organizational factors that could impact performance.

Recommendations:

1. Revise the post maintenance testing procedure, AD13.ID4, to address the following:
   - More clearly define the roles and responsibilities of the individuals involved in the PMT process.
   - Establish a concrete set of criteria and metrics for the PMT process and provide more visibility and accountability for the process by adding these metrics to the monthly PPIR.

2. Revise the work control procedure, AD7.DC8, to more clearly describe the PMT requirements in the work control process.

3. Revise AD7.ID4, On-Line Maintenance Scheduling, to establish an interim hold point (possibly an SAP restraint) for maintenance activities such that they will not proceed beyond a specific point in the process (i.e. T-12) if OVT has not been specified. This recommendation may be removed once the organization is assured that the process is sound.

4. Communicate the importance of properly and consistently implementing the PMT process to the affected site organizations (maintenance foremen, engineering, work window managers, and SFM (shift Foreman). This recommendation has two aspects to it: First perform a Line Performance Analysis (LPA) to identify the gaps for each department. Then, comply with the results of the LPA. Training for the planners is being performed by the corrective action from the PMT Deficiency High Tier ACE.

Peer Perspective - "Diablo Canyon Self-assessment team was a very engaged and self motivated group. The team worked well across departments and listened to each other's comments and questions when identifying gaps in the Post-Maintenance and Post Modification processes. Even though a limited time was spent with the team, it was enough to see clear ownership in identifying shortfalls in the process and have confidence that quality recommendations would be presented to address the areas for improvement. The Peer Review reviewed the self-assessment report and
DCPP conducted a valuable self-assessment of the Post Maintenance Testing (PMT) program as a result of the root cause analysis (RCA) for the SI-2-8982A/B interlocks out of adjustment investigation. The PMT program cannot be described as industry leading. The self-assessment team observed a sharp decline in PMT awareness within the last five years due to the attrition of key experienced personnel. A declining awareness of the importance of PMT by plant personnel negatively affects how DCPP applies PMT into its maintenance processes. There are significant areas where clarification and more support would enhance the process. DCPP is in the process of developing action plans for the recommendations. The action plan should be complete by September 2010. They will be looking at the PMT after 1R16 and doing an effectiveness review after 2R16. A new self-assessment will be performed in about 2 or 3 years. Although the self-assessment did not find any nuclear or industrial safety issues, PMT has been around a long time, and it is reprehensible that it has gone on this long with these weaknesses. DCISC should continue to follow the action plans from the self-assessment and the schedule for completion.

Conclusions:

DCPP's screening of industry Operating Experience (OE) information appears to be continuing to function well with its current staff. The station's self-identification of its response to industry OE as a key issue at DCISC's February 10/11, 2010 Public Meeting appears to be related to the recent history of difficulty DCPP has had in addressing transformer related problems. These transformer issues are being addressed through the station's implementation of a targeted action plan during the past eight months. Nevertheless, DCPP's decision to reduce its incoming OE screening staff to
one person may lead to the same backlog problem that existed prior to 2005, which could hinder the entire OE function at the station. The DCISC will follow up on this issue to evaluate whether this cutback leads to a resumption of the problems encountered a few years ago, before the staff was augmented.”

Mr. Joyce reported that he is now the only person assigned to the OE program implementation. When he is on vacation or out of the plant, there is no one to fill in for him and the backlog will just increase and he is not too sure they can continue to effectively perform the requirements of the OE program with just one person performing the duties.

Mr. Joyce reported that he sends out a Daily Industry News Summary for information only. This includes:

- INPO Operating Experience Reports
- INPO – What’s New and Meetings
- WANO – Event and Analysis Reports
- NEI Top Industry Practices
- NRC Daily Plant Status and Events Reports

The Daily Report states that the “DCPP Operating Experience Assessment is forwarding this daily newsletter of REAL EVENTS, in as timely fashion as possible, to those in the line-of-fire. This is being done with the hope that any Just-in-Time learning opportunities may be captured. The Operating Experience (OE) will be separately screened for applicability in an SAP Notification. Note included in the Daily Report. “If you have information that would aid in the applicability determination, please HELP by stating what 'that' might be in a reply (e-Mail).”

The Daily Report is sent out to about 800 to 1,000 employees. He receives 70% to 80% feedback from Line Organization users. Mr. Joyce performs a quick screening using priority list criteria to screen out the ones not applicable to DCPP. After screening, the OEs that need an evaluation are sent to the system engineer to perform a formal evaluation. The system engineer has 14 days to either accept or reassign the OE. A total of 50 days or less is allowed for the Manager to agree with the evaluation. The total time allowed for the completed evaluation is 60 days except 90 days for an INPO Yellow SOER and 150 days for an INPO Red SOER.

The schedule is checked by sending out a reminder that the OE evaluation is due in the next 30 days and another reminder is sent out that the evaluation is due in 7 days. A notice is sent out if the evaluation is not received in 57 days. The average age for completion of the evaluation is 38 days and no evaluations are currently due and over 60 days. About 90% of OE come from INPO and the remaining 10% from other sources. Mr. Joyce is the only one at DCPP who can close out the OEs after checking to be sure the Manager has agreed with the evaluation. About 60% of OEs requiring formal evaluation do not require any action.

Mr. Joyce is trying to put together an OE review team of the Line Organizations to assist in the
screening process and evaluations. Mr. Joyce is also responsible for assuring that DCPP OEs are sent to INPO in a timely matter.

Conclusions:

It appears that the Line Organizations are using Operating Experience (OE) appropriately. DCPP’s screening of industry OE information appears to be continuing to function well. The Daily Report should be valuable information to the Line Organizations as to current operating events. DCPP’s decision to reduce its incoming OE screening staff to one person could hinder the entire OE function at the station. The DCISC will follow up on this issue to evaluate whether this cutback has an impact on DCPP use of the Operating Experience Program and also consider if this should be a DCISC concern.

3.6 Premier Survey Action Plan

The Fact Finding team met with Jacquie Hinds, Chief of Staff for Nuclear Generation, on the subject of the recent Premier Survey and the resulting action plan. This survey is conducted periodically by PG&E company-wide, meaning that it covers a far wider scope than just the Diablo Canyon Power Plant. The most recent Premier Survey was conducted in October 2009, and the analyzed responses were made available in January of this year. This time, the DCPP Operating Plan contains coverage of the results of the Survey for the first time. The survey received wide participation among the DCPP employees, with 71% participation, which is considered excellent by PG&E personnel conducting the survey.

A principal goal of the survey is to enhance company-wide communication in both directions, both from senior management to the employees and from the employees to the management. An emphasis has been placed on “CSI”, “Continuous Simplification and Innovation,” using the latest computer-based communications tools to reach everyone.

A number of lessons learned emerged from the survey, which are being incorporated into an “action plan” that is still under development. The decision was made to utilize the first-line supervisors, what Ms. Hinds called the “extended leadership team”, to help with direct communication with the employees themselves. This is seen as the principal vehicle for reaching out to the employees.

It was reported that although the Premier Survey is important, its findings do not differ significantly from the other surveys that the plant has been conducting on a regular basis, of which the most important are the Safety Culture Survey that uses the Nuclear Energy Institute’s document NEI 09-07 “Fostering a Strong Nuclear Safety Culture” and the Safety Conscious Work Environment (SCWE) Survey. The DCISC reviewed these two surveys during its Fact Finding visit in January 2010, and our report on that visit concluded that, ”It appears that the Nuclear Safety Culture Survey and the SCWE Survey are effective in terms of receiving employee comments and answers regarding DCPP safety culture and work environment. DCPP should continue conducting these surveys.” The same conclusion applies here: that these surveys are important both because of how they affect employee morale vis-à-vis management involvement with the staff and because of what they find
Conclusions:

The Premier Survey, like other employee surveys conducted on a regular basis, remains effective both because of being a communication tool between management and employees and because of its measure of employee thinking, and it should be continued. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. DCISC should review the actions taken as a result of the action plan developed to address this survey’s findings.

3.7 230 kV System Capability

The DCISC Fact Finding Team met with Gregg Reimers, Senior Consultant Engineer to discuss the status of the 230 kV System Capability and the NRC’s position. The DCISC last reviewed this issue at the February 10 & 11, 2010 Public Meeting (Reference 6.5) and the December 16 & 17, 2009 Fact Finding Meeting (Reference 6.6) when it concluded that:

“DCPP has submitted a modified position on the operability of its 230-kV offsite power source to the Nuclear Regulatory Commission for review and approval; however, the NRC did not fully agree with the position. DCPP initiated a study of the NRC’s position, the likely outcome of which is a re-analysis of the system capabilities. The DCISC should follow up on this issue.”

Mr. Reimers discussed the NRC position on the ongoing regulatory issue regarding the licensing basis of the 230 kV System, one of two required offsite power supply systems for equipment important to safety. The 230 kV System is the immediate access power supply and is designated for regulatory purposes to be DCPP’s preferred power supply. Under normal alignment, DCPP can separately supply power to each unit. Capability also exists to physically cross-tie the units such that supply from one unit can also supply the second unit. The recent issue with the NRC concerning the 230 kV System at DCPP revolved around the definition of “concurrent safe shutdown” (an accident on one unit coincident with a reactor trip on the other unit, or a reactor trip on both units).

On November 3, 2008, consistent with past practice, Unit 2 (U-2) startup transformer was removed from service for maintenance. Power was aligned to U-2 startup bus from Unit 1 (U-1) startup bus. Based on analyses demonstrating the ability to transfer loads without loading emergency diesel generators, no declaration regarding operability was made for either unit. In the late 1990’s a ‘clarifying’ change had been made to the FSAR without prior NRC approval for orderly shutdown of the second unit. This change was to control timing of bus shutdown and the license amendment request discussed this but the NRC found it not to be relevant. The NRC review concluded, based on the cross-time configuration, the evaluation for sharing a startup transformer did not model either the loading for an accident on one unit coincident with a reactor trip on the other unit, or a reactor trip on both units. Subsequently documented, DCPP received a Green status NCV. This issue represented a licensing issue only. No actual equipment deficiencies were identified and DCPP maintained it had sufficient capability.
A request for a Technical Specification (TS) interpretation was submitted to the NRC based on 230 kV operability when analyses demonstrated there is sufficient capacity to operate engineered safety functions (ESF) for a design basis accident or unit trip on one unit and orderly shutdown of the second unit, which was DCPP’s previous interpretation of its licensing position. NRC Inspection Report 2009-003 identified as an unresolved item the determination whether the preferred offsite system is sufficient to supply the engineered safety features (ESF) buses for required accidents and transients.

On December 14, 2009, the NRC rejected the position provided by PG&E and established the following conditions of system operability:

- 230 kV needs the capacity to handle: (1) a design basis accident on one unit and concurrent safe shutdown (undefined) such as a spurious ESF actuation on the remaining unit; and (2) concurrent trip of both units.
- Each unit must have offsite power supplied to the unit-specific Class 1E buses from the 230 kV System as described in the TS basis, thereby ruling out a cross tie configuration as an operable condition.

Mr. Reimers reported that DCPP will change procedures so as not to tie the station startup transformers together unless they declare the 230 kV system inoperable. They should have all documentation completed by the end of October 2010.

Conclusions:

To respond to the NRC position on the loading of the 230 kV system for an accident on one unit coincident with a reactor trip on the other unit, or a concurrent reactor trip on both units, DCPP will change procedures so as not to tie the station startup transformers together unless they declare the 230 kV inoperable. Documentation should be completed by the end of October, 2010.

3.8 DCISC Member Meeting With DCPP Management

Robert J. Budnitz, DCISC Member met with Jim Becker, Site Vice President to discuss this Fact Finding Meeting and other items of interest.

3.9 CO2 Discharge Event and Walk-Down of Main Lube oil Room and CARDOX System

The DCISC Fact Finding Team met with Mike Wright, Manager Mechanical Systems, and Dan Hromyak, Fire Protection System Engineer, to review the Root Cause Analysis Report on the Unit 1 Cardox discharge (CO2) event and to walk down the Main Lube Oil Room. The DCISC last reviewed this issue at the July 6 & 7, 2010 Fact Finding Meeting (Reference 6.7) when it concluded that:

“The station appears to have performed an accurate causal analysis of the unplanned release of carbon dioxide from the Unit 1 CARDOX System. PG&E’s and the County’s public notifications of the Alert that stemmed from this problem both contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event, while
The NRC public notification provided more accurate risk communication. The announcement of the intent to evacuate an area (Montana de Oro State Park), which was not justified for this event, could have potentially led to additional ad hoc public responses, creating negative impacts for public safety. The DCISC has previously noted the importance of risk communication during Emergency Response exercises. This actual Alert provides important lessons, particularly that events may occur that do not involve plant conditions that warrant precautionary evacuations. The DCISC should continue to follow DCPP’s response to this event.”

The unplanned release of carbon dioxide (CO2) from the Unit 1 CARDOX System was discussed in detail in the July 6 & 7, 2010 Fact Finding Report listed above. The purpose of this Fact Finding Discussion was to review the Root Cause Analysis Report of the Unit 11 Cardox Discharge and to walk down the Main Lube Oil Room where the event occurred. Mr. Wright showed the Fact Finding Team a cut-away of a pilot valve that was involved in the Unit 1 Cardox Discharge (CO2) and how the valve operates.

The following information was taken from the Root Cause Analysis Report (NCR 60026909):

On 6-23-10 during operational verification testing, following replacement of the main lube oil reservoir room (MLOR) CO2 fire suppression system valves, an uncontrolled discharge of CO2 occurred. The pilot valve (PV) being used to initiate the CO2 “puff” test did not fully return to the normal position (vented) when the operating handle was returned to the closed position. This created an unexpected continuous high vent flow from the PV, which manifested itself as a notable vibration/rattling of the faceplate and cold wind in the operator’s face.

The operator performing the test thought that he had turned the valve handle too far in the closed direction, thus causing the valve to re-open, so he moved the valve handle slightly in the open direction in an attempt to place the valve in its closed position. This movement stopped the venting. The operator and system engineer then observed CO2 flowing from under the MLOR door and realized that an uncontrolled CO2 discharge to the MLOR was occurring. The uncontrolled discharge was stopped by closing the CO2 tank master isolation valve FP-0-95. The uncontrolled discharge of CO2 lasted approximately two minutes and resulted in approximately 28% of the Cardox storage tank being discharged to the MLOR. This created an asphyxiate atmosphere in the MLOR.

In accordance with emergency plan implementing procedure Emergency Classification and Emergency Plan Activation, an Unusual Event was declared at 10:48 based on report or detection of asphyxiate that entered the Owner Controlled Area in amounts that can adversely affect normal plant operations. The event was upgraded to an Alert at 10:56 based on report or detection of asphyxiate in concentrations that may results in an atmosphere IDLH (immediate danger to life or health). Event response personnel (Fire Brigade and Operations) determined a method to ventilate the MLOR, performed the ventilation, and exited the EALs at 17:15.

The root cause of the event was determined to be knowledge based human error. A human error
investigation tool (HEIT) was performed. The HEIT determined this knowledge based human error to be an “organizationally induced error.” A knowledge based human error is defined as a “response to a totally unfamiliar situation” (no recognizable rule to the individual.) The person must rely on his/her understanding and knowledge of the system, the system’s present state, and the principles and fundamental theory related to the system. People enter a knowledge-based situation when they are uncertain. If uncertainty is high the need for information about what is being done becomes paramount. Knowledge of plant systems must be used to effectively tackle the problem-solving situation. In many cases, information sources contain conflicting data or not enough data amplifying the difficulty of problem solving. Because uncertainty is high, knowledge based tasks are usually stressful situations.

A forensic evaluation of the PV was performed and the cause of the improper shuttle movement could not be determined. The unexpected equipment response is considered a contributing cause to the event. The corrective action to prevent recurrence (CAPR) was to revise the surveillance test procedures (STP) to describe the PV operation, potential failure mechanisms, and appropriate response to these failures.”

After discussing the Root Cause Analysis Report and reviewing the valve, the Fact Finding Team was escorted into the plant by Mr. Hromyak to view the MLOR and the valve that was the cause of the event. Mr. Hromyak described the testing that was taking place when the uncontrolled discharge of CO₂ occurred.

Conclusions:

The Root Cause Analysis Report for the unplanned release of carbon dioxide (CO₂) from the Unit 1 CARDOX System was well prepared and described the event appropriately. The corrective action to prevent recurrence (CAPR) was to revise the surveillance test procedures (STP) to describe the PV operation, potential failure mechanisms, and appropriate response to these failures also appears appropriate. The walk down of the main lube oil reservoir room (MLOR) and the area where the valve was located was very informative.

3.10 Quality Verification (QV) DCPP Site Status Report & QV Activities:

The DCISC Fact Finding Team met with Dennis Peterson, Director Quality Verification (QV), to discuss QV’s recent reports and activities. The DCISC last reviewed this issue at the February 10 & 11, 2010 Public Meeting (Reference 6.5) and the June 2 & 3, 2010 Public Meeting (Reference 6.8).

As the latest copy of the QPAR was not completed, Mr. Peterson presented the Fact Finding Team with a copy of the DCPP Site Status Report. The QV Department plans to issue this report on a monthly basis. The report contains all of the issues that QV has identified and is currently following. The report lists the following:

QV Director Concerns (Concerns, insights, order of significance status)

1. CORRECTIVE ACTION PROGRAM (CAP) PERFORMANCE HAS FALTERED – A QV audit finding
revealed an adverse trend in ineffective correction actions both in station and QV identified problem areas.

2. SIGNIFICANT CROSS-CUTTING ISSUE (SCCI) –Site Leadership actions failed to avert SCCI. The RCE has determined that Leadership did not provide adequate standards in several programmatic areas, nor did they ensure sustainable programs in the areas of evaluations. Contributors include a poorly documented and maintained licensing basis, Corrective Action Program (CAP) weakness, and loss of proficiency in performing proper evaluations.

3. SECURITY PERFORMANCE – The NRC triennial force-on-force evaluated exercises resulted in one exercise being significantly challenging. Discussions continue regarding the characterization of this exercise. The Security organization is not consistently meeting QA Program requirements in the areas of alarm response, testing, procedures, documentation, use of CAP, and perimeter lighting. Security equipment deficiencies while previously identified as not being properly prioritized and repaired, have been on an improving trend. A root cause evaluation of the weakness in the implementation of DCP’s physical Security Programs is nearly complete.

QV ISSUES IN ELEVATION/ESCALATION

(Issue date-Type-Status-Functional Area –Description of Issue & Status)

1. 04/07/10 – 1st.Level Escalation – Open – Maintenance – SISI Program Timelines and Effectiveness – During the past 12 months, QV audits and assessments have indicated that SISI area owner inspections and area manager housekeeping walkdowns have not been consistently performed. Additionally, quality records of area owner inspections have not been adequately generated and maintained, and some SISI area owners and managers have not received adequate training. SISI Program weaknesses, including failure to implement plant procedures and failure to generate and maintain quality records for SISI inspections, were identified during the 2008 NRC PI&R inspection. Corrective actions to address this escalation are complete, but the extent of condition and extent of cause have not been completed. Inspections and documentation have been properly completed since escalation of this issue.

2. 03/30/10 – 1st. Level Escalation – Open – Site Services – Quality Records Management – A failure to monitor and enforce records management requirements has resulted in a continuing lack of station compliance with quality records requirements. This presents a risk of a loss of quality records and a potential for regulatory action. ACE corrective actions include clarification of the timeliness clock for maintenance records, and establishment of suitable metrics to monitor performance in this area. The extent of condition and extent of cause were not completed as part of the ACE and are being tracked on separate SAPNs. Records management issues continue to occur, and are being evaluated in light of the recent ACE corrective actions.

QV ISSUES & TRENDS (Including indications of line sensitivity or defensiveness to issues, isolation, arrogance or complacency).
1. Engineering – Design and licensing basis deficiencies continue to be identified in areas such as: the new reactor vessel heads and control-rod drive mechanism designs, emergency diesel generator air system design classification, in-core thimble eddy current evaluations, the in-service inspection of the Unit 1 containment structure, and 230 kV system interaction with the 4kV FLUR/SLUR (First Level Undervoltage Relay/Second Level Undervoltage Relay) set-points. Weaknesses exist where Engineering Programs cross-organizational boundaries, potentially as a result of an overly-narrow focus towards Engineering in procedures and guidance.

2. Fire Protection Programs – The Fire Protection programs audit revealed that the FSAR and administrative procedures are not being properly maintained with respect to the Fire Brigade and Fire Protection Programs. An audit finding was identified with respect to fire door maintenance and/or modification leaving door gaps greater than tolerance.

3. Supplemental Personnel Oversight – Weaknesses in supplemental personnel oversight have led to a string of errors during the ISFSI campaign and pre-outage work, including missed QC hold points, an incorrectly installed adapter ring, an incorrectly installed MPC lid, untimely CAP documentation, and a Raychem splice installation by unqualified personnel. A contributing factor may be that this is the first time that a major portion of the cask loading team consists of Holtec personnel.

4. Electrical Safety – The adverse trend in electrical safety practices was escalated to the Station Director on 11/05/10. The resulting action plan was incorporated into the DCPP 2010 Operating Plan and continues to be effectively implemented. A few actions in the focus area action plan are overdue and need updating or re-forecasted due dates.

5. Maintenance – Supplemental workers performed Equipment Qualified (EQ) splices without having the required qualification. An ACE is in process to address this issue. A stop work was issued to Maintenance and Strategic Projects to ensure Raychem is installed in accordance with the site specific qualification requirements until it is proven that the past practices are acceptable and fall within the established training and qualifications requirements. Maintenance has taken steps to ensure appropriately qualified site personnel for EQ splice installations.

6. Radiation Protection (RP) - RP has experienced a significant loss of personnel and may be vulnerable to human error and programmatic breakdowns depending upon how well it manages its knowledge transfer and turnover. QV has identified weak RAM (Radioactive Material Program) storage practices, including outdoor storage vulnerable to container corrosion and decay. The lack of appropriate RAM program oversight may be a contributor to this problem. RP needs a documented plan to ensure success in its plan to bring its procedures up to station standards, as weak procedures coupled with high personnel turnover may lead to serious operational errors. Radiological postings have been moved without the consent of RP, potentially representing a programmatic weakness in behaviors related to radiation posting.

7. Learning Services – A recent ACE failed to evaluate the impact on instruction provided by an unqualified instructor. Recent HU (Human Performance) errors and other challenges related to the newly installed Human-Machine Interface (HMI) screens at the Aux. Board may indicate
that training was inadequate to properly prepare operators for design change implementation. A root cause team has been formed to address weaknesses in training aspects related to newly installed designs.

Regarding staffing in the QV Department, there are 25 approved positions in the QV Department with 2 positions vacant. QV continues to try to fill the positions with personnel from other departments to capitalize on their experience at DCPP. There are possibly 2 QV individuals who might retire in the next 5 years.

**Conclusions:**

Quality Verification (QV) continues to do a good job of identifying problems and areas for improvement at DCPP. The DCPP Site Status Report identifies all QV problems at DCPP and provides DCPP Management with information about the various Departments. DCISC should continue reviewing this report at future Fact Finding Meetings.

**3.11 Probabilistic Risk Assessment (PRA) Overview**

The Fact Finding team met with Mark Sharp, Supervisor Probabilistic Risk Assessment (PRA) Group and Fire Protection Engineering, for a periodic review of the use of PRA to assist plant management in operations and safety improvement. The DCISC last reviewed the PRA program at the January, 19 & 20, 2010 Fact Finding Meeting (Reference 6.9) when it concluded that:

“*The Self-Assessment of Risk Management/Protected Equipment Results and other activities of the PRA group was very effective. The purpose of this self assessment was to align Diablo Canyon with industry best practices for performing on-line risk assessment as required by 10 CFR 50.65(a)(4). The Key Finding was that the process for assessing and managing the risk related to on-line maintenance activities at DCPP was found to be well defined and consistent with paragraph (a)(4) of the Maintenance Rule. However, the program cannot be described as industry leading. There was one Strength and Positive Findings, two Areas for Improvement/ Gaps, and three Key Recommendations and Results Expected identified.*”

Mr. Sharp reported that several new PRA initiatives are under way. The DCPP team has been working on developing a new fire PRA for some time, and the progress has reached the point where an industry peer review is appropriate. It is now planned for December 2010. The fire PRA will then be used as part of the basis for the DCPP plan to transfer how the fire-safety area is regulated from NRC's longstanding deterministic approach to the new NRC approach that follows NFPA (National Fire Protection Association) Standard 805. NFPA 805 is a performance-based approach to regulating fire safety that NRC adopted recently and made available as an option to the regulated nuclear power plants. A number of other plants have taken up the NRC’s option and are making the transition from the traditional approach to the NFPA 805 approach, although DCPP is in the first group. This is a technically challenging task for the DCPP PRA group, because the analysis is complicated and because part of the effort involves using the ASME/ANS Combined PRA Standard’s section on fire PRA methodology. Using that standard is technically complex, because it involves a number of very high expectations in terms of PRA scope and quality that are vital to achieve but
difficult to execute. Mr. Sharp reported that his group has made good progress in this area so far.

The team is also starting to work on a modern internal-flooding-PRA, again following the methods in the ASME/ANS Combined PRA Standard. This work is expected to be complete about a year hence.

In the seismic-PRA area, the DCPP plant has an old PRA dating from two decades ago that, when it was completed, had the reputation of being perhaps the finest such seismic PRA ever completed. In fact, it broke new ground in several methodology areas at that time and was used worldwide as a model for how to perform a seismic PRA. In the intervening time, it has become out of date principally because it has not been kept up to date with configuration changes at the plant; there have also been a few methodology improvements in the seismic PRA area, and also there is new seismic-hazard information now, meaning that the seismic-ground-motion input aspect of the old seismic PRA is out of date. Mr. Sharp reported that the plant hopes to start an update to their seismic PRA sometime within the year, and that it might require a year to complete thereafter.

Mr. Sharp reported that the PRA group’s staff, which had experienced a decline due to retirements and departures within the past two years, is gradually being rebuilt, with the recent bringing in of 4 new individuals, two of whom are already fully qualified -- the others are in the process of becoming qualified. In the meantime, the plant has used PRA experts from PRA contractor firms to supplement the staff.

One major area where the PRA team’s efforts are concentrated is in the NRC “Significance Determination Process” (SDP). When the DCPP experiences an operational event that exceeds a pre-defined threshold, the significance of the event is analyzed using an NRC-prescribed approach in which the PRA plays a major role in terms of determining how safety-significant the event is. Industry-wide, there is now considerable experience over the past few years with the SDP process, and the DCPP PRA team is benefiting from that experience. They have done about a half dozen SDP analyses in the last few months, and are now comfortable with being routinely relied on for that type of work.

Mr. Sharp reported that the Operations Department is now using PRA tools and insights routinely to plan operations, analyze their safety significance, and review events as they occur. This is an important advance, and is a mark of the effectiveness of the PRA group’s work.

Mr. Sharp also reported that the plant had recently been visited by PRA experts from some sister plants to provide advice on how to continue to advance toward industry-leading competence.

When DCPP performs major refueling and other outages, they have used a computerized PRA-based analysis tool called On-Line Risk Assessment – Maintenance (ORAM) for some years. This tool is extensively used industry-wide to study the safety significance of various outage configurations in which items are taken out of service for maintenance during operation. Recently, the plant began a transition to a more effective tool called “Safety Monitor”. It will be up and running by October, after which it will be used for a period in parallel with ORAM while the team gains confidence in its
use. The upcoming head-replacement and refueling outage in October 2010 (1R16) will use ORAM, but subsequent outages thereafter will be analyzed using the new tool. This switchover is a major advance in the PRA group’s capability to support outage planning and outage operations.

Conclusions:

The PRA group continues to make strides to recoup the capabilities that went into decline due to staff losses a couple of years ago. The management actions to rebuild this vital plant team are appropriate. It is clear that the progress is having an impact on plant operations and safety in a number of different areas. However, there is still more to do to rebuild the team, which remains understaffed to perform the PRA-based work it needs to do and that other sister plants do routinely. DCPP does employ PRA consultants to fill the personnel gap. This area remains a challenging one for DCPP, partly because there is a nation-wide (indeed, a world-wide) shortage of experienced PRA people at a time when the demand for such around the country is increasing everywhere. The advent of the ASME/ANS PRA methodology standards in recent years is an excellent advance, but it represents an additional challenge to DCPP in terms of meeting the highest-quality expectations that the plant aspires to. The DCISC will need to continue to monitor the plant’s progress in this area.

3.12 Plant Cranes Maintenance and Operations

The Fact Finding team met with Gregg Porter, System Engineer and Dan Hardesty, Senior Mechanical Engineer – Mechanical Systems, on the subject of the plant cranes. DCISC has not reviewed this issue at any previous Fact Finding Meeting.

They began by noting that their small group is responsible for maintaining a very large number of cranes at DCPP, ranging from the largest heavy-duty cranes that are used very seldom to a group of much smaller ones in routine use.

Mr. Porter and Mr. Hardesty reported on the schedule for their regular maintenance activities, and the fact that many of the cranes at DCPP are original equipment that was installed three or more decades ago when the plant was new. They mentioned that they have generally sought to upgrade many of these older cranes, but that their budget allocation for upgrading the cranes has fallen short of their request for the past few years.

Many of the cranes are scheduled to be upgraded in 1R17 and 2R17. Their next project will be to get approval for upgrading the intake structure cranes over the Intake Structure traveling screens.

The discussion covered the regular training that is done for both the crane operators and the riggers – the latter includes the group of staff who work with the crane operators to align, secure, and move the loads on the various cranes as part of regular crane operations. Some of the cranes have special functions that require the operators and riggers to have special qualifications. These were generally described. The Fact Finding Team’s impression was that the regular training and qualification protocols followed industry practice and are adequate for the need.
The topic of the cranes’ electrical systems was also covered. A major aspect of crane maintenance is keeping the electrical and control aspects of the cranes up to date and in good working order. The discussion described the crane group’s interaction with the electrical-maintenance group, and again the Fact Finding Team’s impression is that this part of the crane program follows industry practice and is adequate.

**Conclusions:**

Overall, the impression gained by the DCISC Fact Finding Team is that the plant crane group is doing a satisfactory job. They seemed very knowledgeable and have stayed in communication with others in the industry in similar positions, and have maintained full and adequate oversight for the many cranes now in service at DCPP. The DCISC should review this program periodically, but nothing learned during this Fact Finding meeting would make such a review of especially high priority.

**4.0 Conclusions**

4.1

It appears that DCPP has planned 1R16 very well. This outage is considered normal compared to past outages. They stated that should not have any manpower availability problems this outage, except for a concern about available pipe welders. The POV Panel Replacement is the critical path, not the reactor head replacement. They have completed the outage safety review and have scheduled the pre outage meeting for August 9 and the readiness review meeting for August 12. The DCISC should request a report on 1R16 at one of the future Public Meetings.

4.2

DCPP appears to be managing the Equipment Reliability (ER) Program well based on the ER Program health report improving from Yellow to White in the 2nd quarter of 2010 and the potential to return to Green in the 1st quarter of 2011. ER at DCPP has improved as a result of the Preventative Maintenance (PM) Program and the PM Optimization. The next area to be included in the ER program is critical spares and critical spare management. They have just started on the program and it will take 2 to 3 years to complete. DCISC should follow the addition of the critical spares and critical spare management to the ER program.

4.3

DCPP continues to make improvements to its generally satisfactory Boric Acid Corrosion Control (BACC) Program as no significant corrosion challenges exist at this time. Program health is White (acceptable) with improvements being made to achieve Green by the end of 2010. Early detection of boric acid (BA) leaks, thorough inspection of areas and evaluation of leakage, is occurring promptly and is documented. The number of additional items planned and scheduled is 32 for Outage 1R16 and 28 for Outage 2R16. They are presently looking for personnel replacements for the future and need to plan for knowledge transfer because 4 of 7 employees in the In-Service-Inspection (ISI) group the will be 60 years old in the next year. They will probably need to hire some experienced employees in the ISI area as it takes a while to train employees for these duties.
4.4

DCPP conducted a valuable self-assessment of the Post Maintenance Testing (PMT) program as a result of the root cause analysis (RCA) for the SI-2-8982A/B interlocks out of adjustment investigation. The PMT program cannot be described as industry leading. The self-assessment team observed a sharp decline in PMT awareness within the last five years due to the attrition of key experienced personnel. A declining awareness of the importance of PMT by plant personnel negatively affects how DCPP applies PMT into its maintenance processes. There are significant areas where clarification and more support would enhance the process. DCPP is in the process of developing action plans for the recommendations. The action plan should be complete by September 2010. They will be looking at the PMT after 1R16 and doing an effectiveness review after 2R16. A new self-assessment will be performed in about 2 or 3 years. Although the self-assessment did not find any nuclear or industrial safety issues, PMT has been around a long time, and it is reprehensible that it has gone on this long with these weaknesses. DCISC should continue to follow the action plans from the self-assessment and the schedule for completion.

4.5

It appears that the Line Organizations are using Operating Experience (OE) appropriately. DCPP’s screening of industry OE information appears to be continuing to function well. The Daily Report should be valuable information to the Line Organizations as to current operating events. DCPP’s decision to reduce its incoming OE screening staff to one person could hinder the entire OE function at the station. The DCISC will follow up on this issue to evaluate whether this cutback has an impact on DCPP use of the Operating Experience Program and also consider if this should be an DCISC concern.

4.6

The Premier Survey, like other employee surveys conducted on a regular basis, remains effective both because of being a communication tool between management and employees and because of its measure of employee thinking, and it should be continued. To the extent that this company-wide survey communicates with company-wide management, it can play a special role. DCISC should review the actions taken as a result of the action plan developed to address this survey’s findings.

4.7

To respond to the NRC position on the loading of the 230 kV system for an accident on one unit coincident with a reactor trip on the other unit, or a concurrent reactor trip on both units, DCPP will change procedures so as not to tie the station startup transformers together unless they declare the 230 kV inoperable. Documentation should be completed by the end of October, 2010.

4.8

NONE

4.9

The Root Cause Analysis Report for the unplanned release of carbon dioxide (CO2) from the Unit 1 CARDOX System was well prepared and described the event appropriately. The corrective action to prevent recurrence (CAPR) was to revise the surveillance test procedures (STP) to describe the
PV operation, potential failure mechanisms, and appropriate response to these failures also appears appropriate. The walk down of the main lube oil reservoir room (MLOR) and the area where the valve was located was very informative.

4.10

Quality Verification (QV) continues to do a good job of identifying problems and areas for improvement at DCPP. The DCPP Site Status Report identifies all QV problems at DCPP and provides DCPP Management with information about the various Departments. DCISC should continue reviewing this report at future Fact Finding Meetings.

4.11

The PRA group continues to make strides to recoup the capabilities that went into decline due to staff losses a couple of years ago. The management actions to rebuild this vital plant team are appropriate. It is clear that the progress is having an impact on plant operations and safety in a number of different areas. However, there is still more to do to rebuild the team, which remains understaffed to perform the PRA-based work it needs to do and that other sister plants do routinely. DCPP does employ PRA consultants to fill the personnel gap. This area remains a challenging one for DCPP, partly because there is a nation-wide (indeed, a world-wide) shortage of experienced PRA people at a time when the demand for such around the country is increasing everywhere. The advent of the ASME/ANS PRA methodology standards in recent years is an excellent advance, but it represents an additional challenge to DCPP in terms of meeting the highest-quality expectations that the plant aspires to. The DCISC will need to continue to monitor the plant’s progress in this area.

4.12

Overall, the impression gained by the DCISC Fact Finding Team is that the plant crane group is doing a satisfactory job. They seemed very knowledgeable and have stayed in communication with others in the industry in similar positions, and have maintained full and adequate oversight for the many cranes now in service at DCPP. The DCISC should review this program periodically, but nothing learned during this Fact Finding meeting would make such a review of especially high priority.

Recommendations:

None

6.0 References


6.3 “Diablo Canyon Independent Safety Committee Twentieth Annual Report on the Safety of


1.0 Summary

The results of the August 11, 2010 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 were as follows:

1. DCPP August 11, 2010 NRC-Evaluated Emergency Exercise
2. DCISC July 6-7, 2010 Review of Real DCPP June 23, 2010 Plant Alert

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 DCPP August 11, 2010 NRC-Evaluated Emergency Exercise

The DCISC Fact-finding (FF) Team met with Pete Bedesem, DCPP/DCISC Liaison, to review the exercise scenario. DCPP performs a drill or exercise each month of the year. Most are limited in scope and attendance, tailored to a specific group or function and/or meant to respond to a limited specific scenario, such as a fire, medical emergency, terrorist act, or plant equipment/system
failures. This August 11 exercise was one of the NRC’s annual evaluated exercises. The DCISC has observed prior annual evaluated DCPP exercises and other drills and has concluded that DCPP does an appropriate job of responding to each emergency from an operational perspective; however, the DCISC has had concerns and recommendations regarding DCPP’s performance in risk communication during press conferences and in news releases. Because of this, the DCISC focused on activities at the Joint Information Center during this visit.

The DCISC last reviewed a DCPP emergency exercise/drill on July 7, 2010, a practice drill for the August 11 evaluated exercise. In July the DCISC concluded:

Responses to the simulated event by Control Room personnel were methodical and effective. The entire emergency response organization was commended for both recognizing a simulated steam generator tube rupture followed quickly by a stuck open steam generator relief valve and then diagnosing that the plant had transitioned quickly from a simulated Emergency Action Level of Alert, with pre-existing failed fuel cladding, through the Site Area Emergency classification to a simulated General Emergency. PG&E and the County appeared to be consistent in recommending evacuations of Zone 1, 2, and 3 whereas the exercise scenario stipulated evacuations only for Zones 1 and 2, but sheltering for Zone 3. Media briefings in the Joint Information Center (JIC) appear to have improved substantially since the October 29, 2008 NRC-evaluated exercise and the September 2, 2009 Emergency Planning Evaluated Exercise Dress Rehearsal. Adequate time was devoted to news conferences. Personnel in the JIC were sensitive to the need to disseminate information on a timely basis. Information was presented at press conferences in a manner that should have been understandable to the general public. The Site Vice President provided a credible source of information at these conferences, effectively explaining technical issues and answering questions in layman’s terms.

The August 11 exercise proceeded through the following steps observed by the DCISC Fact-finding Team:

**Simulator (Control Room)**

1. 0800: Initial Plant Conditions: Units 1 & 2 were at 100% power. Containment Spray Pump (CSP) 1-1 was cleared for maintenance. Emergency Diesel Generator (EDG) 1-2 was 20 minutes into a post-maintenance return-to-service run.

2. 0815: Fire in the EDG 1-2 room resulted in Control Room (CR) Cardox Alarm. Fire doors did not close as designed, resulting in the fire continuing. Fire alarm in CR - Operations Shift Manager correctly declared an ALERT at 0826. Operators made a 911 call for off-site fire assistance.

3. 0845: Operations Support Center (OSC) activated.


5. 0855: Centrifugal Charging Pump (CCP) high stator temperature caused pump to trip. Operators entered appropriate procedure for CCP trip.

6. 0859: Technical Support Center (TSC) activated.
7. 0929: Command and Control of the emergency transferred from the Simulator to the TSC.

8. 0945: Offsite Emergency Operations Center (EOF) activated.

9. 10:00: Reactor Coolant Pump (RCP) 1-3 experienced a locked rotor failure that resulted in a reactor trip signal; however, the reactor did not trip. Manual actions at the reactor control console failed, power remained >5% for approximately two minutes, resulting in significant fuel damage (this started the clock for a Site Area Emergency).

10. 1002: Reactor tripped.

11. 1012: SITE AREA EMERGENCY correctly declared.

12. 1045: Reactor Coolant Pump (RCP) 1-3 weld failure resulted in a small break loss of coolant accident (SBLOCA). Containment High Range Radiation Monitors exceeded 80 R/hr (potential loss of containment, which starts the clock for a General Emergency). The DCISC Fact-finding Team went to the EOF.

13. 11:00: GENERAL EMERGENCY declared along with a plant-based Protective Action Recommendation (PAR) to evacuate Protective Area Zones (PAZs) 1 and 2.

14. 1115: A containment penetration fails due to the pressure change in containment, which created a radioactive release into the plant with the release being monitored through the Plant Vent Stack. The joint SLO County/DCPP Unified Dose Assessment Center (UDAC) was following and analyzing the radioactive release, and the Field Monitoring teams (FMTs) reported rising radiation levels in the field.

15. 1126: UDAC recommended precautionary evacuation of PAZs 4, 5, and 9.

16. 1150: San Luis Obispo (SLO) County issued a new PAR to evacuate PAZ 5. (See Attachment 1 for a map of the PAZs.)

17. 1155: UDAC recommended evacuation of PAZs 1, 2, 5, and 6. The DCISC Fact-finding Team went to the Joint Information Center (JIC).

18. 1214: SLO County (Ron Alsop, SLO Public Information Officer [PIO]) and DCPP officials (Jim Becker [Site Vice-President] and Corey Rafferty [DCPP Public Relations Manager]) conducted a news media briefing with mock news personnel. News releases were prepared and distributed by both SLO County and DCPP. (News releases were distributed as shown below, and emphasis is placed on DCPP and SLO County wording about the cause and severity of the event and any release of radioactive materials.)

19. 1345: exercise terminated.

SLO County Emergency Operations Center News Releases

For each news release listed below, the specific statements in the news release characterizing the risk posed by the alert are quoted.

#1 0934 - Alert at Diablo Canyon:
“An Alert presents no danger to public health and safety.”
#2 0954 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

“There is no threat to the public at this time. This is strictly a precautionary measure taken which may be of benefit if the emergency condition worsens.”

#3 0956 - Communication Information:

(There was no statement about the level of risk to the public or radioactive releases.)

#4 1025 - Site Area Emergency:

“A Site Area Emergency presents no danger to public health and safety. A Site Area Emergency is declared if problems at the plant caused or could lead to a release of radioactive material. If a release occurred, it would not be expected to require protective measures further than one-half mile from the plant.”

#5 1054 - Proclamation of Local Emergency:

(There was no statement about the level of risk to the public or radioactive releases.)

#6 1113 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

There is no threat to the public at this time. This is strictly a precautionary measure taken which may be of benefit if the emergency condition worsens.”

#7 1119 - General Emergency:

“A General Emergency is the most serious of the four emergency classification levels. A General Emergency is declared when abnormal plant conditions cause or might lead to a significant release of radiation to the environment. At this emergency level, protective actions are taken to protect the public health and safety. You are ordered to evacuate the following areas: PAZs 1 and 2. The ingesting of Potassium Iodide (KI) pills is not recommended at this time by the County Health Officer. If you are in close proximity to your personal supply of Potassium Iodide, we advise you to bring it with you upon evacuation.

#8 1210 - Reception and Congregate Care Centers:

(There was no statement about the level of risk to the public or radioactive releases.)

#9 1210 - Rumor Control:

“Rumors are circulating about the General Emergency declared at Diablo Canyon Power Plant (DCPP). The emergency is not related to a terrorist event, nor is the emergency the result of a bomb at the plant.”

#10 1216 - Transportation Assistance:

(There was no statement about the level of risk to the public or radioactive releases.)

#11 1244 - Emergency at Diablo Canyon – Closure of Parks and Beaches:

(There was no statement about the level of risk to the public or radioactive releases.)

#12 1320 - Rumor Control:

“Rumors are circulating about the General emergency declared at the Diablo Canyon Power Plant (DCPP). Radiation levels from the release at the plant at this time are not high enough
to result in visible symptoms or long term health effects.”

#13 1337 - Rumor Control:

“Rumors are circulating about the General Emergency declared at the Diablo Canyon Power Plant (DCPP). No evacuations have been ordered and carless collection points are not activated for residents of the City of San Luis Obispo due to the emergency at the Diablo Canyon Power Plant.”

San Luis Obispo EAS Messages (There were no statements about the level of risk to the public or radioactive releases.)

#1 0859 - Alert – Information Only
#2 1000 - Initial Protective Action Message
#3 1100 - Agricultural Information Center Opened
#4 1125 - Status of Public Schools
#5 1133 - Agricultural Protective Actions: Precautionary Hold Orders
#6 1141 - Agricultural Protective Actions: Precautionary Measures
#7 1217 - Evacuation and Information Regarding Potassium Iodide (KI)
#8 1226 - Agricultural Protective Actions: Precautionary Measures
#9 1227 - Agricultural Protective Actions: Precautionary Hold Orders
#10 1253 - Traffic Status

California Emergency Management Agency News Releases (There were no statements about the level of risk to the public or radioactive releases.)

#1 0957 – Emergency Level: Alert
#2 1030 – Emergency Level: SITE AREA EMERGENCY
#3 1110 – Emergency Level: GENERAL EMERGENCY
#4 1140 – Governor Schwarzenegger Proclaims State of Emergency in Response to General Emergency at Diablo Canyon Power Plant
#5 1330 - State Agencies Continue Response to Emergency at Diablo Canyon Nuclear Power Plant

DCPP News Releases

For each news release listed below, the specific statements in the news release characterizing the risk posed by the alert are quoted.

#1 0940 – Pacific Gas and Electric Company Declares Alert at Diablo Canyon Power Plant:
“There is no risk to the public health and safety and no release of radioactive material. The Alert was declared at 8:26 AM on August 11, 2010, because of a fire, which caused damage to Diesel Generator 1-2. The fire has been extinguished.”

#2 1035 – Pacific Gas and Electric Declares Site Area Emergency at Diablo Canyon Power Plant:

“There is no release of radioactive material to the environment from this event, as indicated by sensitive plant radiation monitors. The Site Area Emergency was declared at 10:12 AM, August 11, 2010, when an automatic and secondary reactor shutdown control system failed and reactor operators were required to manually shutdown the reactor.”

#3 1115 – Pacific Gas and Electric Company Declares General Emergency at Diablo Canyon Power Plant:

“There is no release of radioactive material to the environment from this event, as indicated by sensitive plant radiation monitors. No injuries have been reported and site evacuation has been initiated. The General Emergency was declared at 10:54 AM on August 11, 2010, because loss of two of three fission product barriers with actual or potential loss of the third barrier. Containment is the third fission product barrier and it is specifically designed to hold energy and radioactive materials if the first and second fission product barriers are lost.”

#4 1204 – More Information About the General Emergency at Pacific Gas and Electric Company’s Diablo Canyon Power Plant:

“Pacific Gas and Electric Company (PG&E) advised county, state and federal authorities of a release of radioactive material to the environment, as indicated by plant radiation monitors. PG&E emergency responders are working to determine the source of the release in order to appropriately contain it while cooling and depressurizing the Unit 1 reactor core. Non-emergency personnel are in the process of evacuating the plant site toward Avila Beach with assistance from the California Highway Patrol. No injuries have been reported. The release is a result of the loss of the third fission product barrier, the containment structure, noted in the General Emergency, which was declared at 10:54 AM on August 11, 2010.”

The DCISC Fact-finding Team found that the news releases both from SLO County and DCPP were improved from earlier observed drills and exercises. Though brief, they provided essential, publicly understandable information about the risk and release of radiation to the environment without being too technical or defensive. The news releases did not provide information on actual levels of radiation in the environment or estimates of the physical threat, which was appropriate because of the changing conditions and potentially confusing overload of information to the lay public. The (mock) media attending the press conferences asked about the magnitude and potential effects of radiation released, and a DCPP Radiation Protection Specialist provided appropriate semi-technical answers, which appeared to put things in perspective. This was in contrast to prior observed press conferences in which these answers were not provided or were too technical and detailed.

Another of the DCISC’s previous concerns/recommendations was that DCPP should be using an officer-level individual as its public spokesperson, because of this individual’s ability to explain the emergency and its effects in understandable, in-perspective terms to any public group, including the press, government officials, and individuals. DCPP utilized Jim Becker, DCPP Site Vice-President,
in this role, and it worked well. The DCISC notes that Mr. Becker has been the spokesperson in the past several practice drills.

The DCISC observed DCPP’s critique of the JIC following the exercise with all JIC participants. The critique was carried out in an orderly fashion, focusing on actions at each of the three emergency levels and radiation releases. Overall, the exercise was determined to have been successful, meeting all but one of its objectives: JIC activation was accomplished in one hour, four minutes versus the one-hour requirement. Individuals were open and helpful with their comments. The DCISC concluded that the appearance and performance at the JIC was more professional and much improved from the 2009 exercise.

3.2 DCISC July 6-7, 2010 Review of June 23, 2010 Actual Plant Alert

On July 6-7, 2010 a DCISC Fact-finding Team reviewed the June 23, 2010, 10:56 am Alert declared by PG&E due to an inadvertent discharge and unplanned release of CO2 from a gaseous fire suppression system in the Unit 1 Main Turbine Building Lube Oil Reservoir Room (Reference 6.2). This occurred during a planned maintenance activity on the fire suppression system. The CO2 contains no radioactivity beyond what would be present in the earth's atmosphere. However, high concentrations of CO2 can cause asphyxiation which could incapacitate or impede workers in the area to the point where they would need to don breathing apparatuses in order to be able to respond to any other potential, simultaneous events related to nuclear safety that might occur in the affected area. No such simultaneous nuclear safety related problems occurred; but nevertheless the event met the Nuclear Regulatory Commission’s (NRC) criteria for declaring an Alert, which led to the activation and manning of DCPP’s Technical Support Center (TSC), Emergency Operations Facility (EOF), and Joint Information Center (JIC). It also required that PG&E notify the appropriate authorities at the County, State, and Federal levels and that these governmental bodies activate their respective response centers. An Alert is the second lowest of four levels of Emergency Classification, the others being (from lowest to highest): Unusual Event, Site Area Emergency, and General Emergency.

The station appears to have performed an accurate causal analysis of the unplanned release of carbon dioxide from the Unit 1 CARDOX System. PG&E’s and the County’s public notifications of the Alert that stemmed from this problem both contained some wording that could cause the public to be unnecessarily concerned about the potential risks associated with this event, while the NRC public notification provided more accurate risk communication. The announcement of the intent to evacuate an area (Montana de Oro State Park), which was not justified for this event, could have potentially led to additional ad hoc public responses, creating negative impacts for public safety. The DCISC has previously noted the importance of risk communication during Emergency Response exercises. This actual Alert provides important lessons, particularly that events may occur that do not involve plant conditions that warrant precautionary evacuations. The DCISC should continue to follow DCPP’s response to this event.

Conclusions:

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center
performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined for timely, accurate, and understandable information release. The plant operational response to the emergency was, as in previous exercises observed by the DCISC, professional and effective.

5.0 Recommendations:

None

6.0 References


DCPP Emergency Planning Zones (Protective Action Zones [PAZs])
1.0 Summary

The results of the September 8-9, 2010 fact-finding trip to the NRC Seismic Information Workshop held in San Luis Obispo, CA are presented.

2.0 Introduction

This trip was made to attend NRC’s Seismic Information Workshop in San Luis Obispo, CA. Section 3-Discussion of this report describes the meeting.

Section 4-Conclusions highlights the conclusions of the DCISC attendees based on items reported in Section 3-Discussion.

Section 5-Recommendations presents specific recommendations by the attendees. These recommendations will be considered by the DCISC. After review and approval by the DCISC, this report, including its recommendations, will be provided to PG&E. The report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 NRC Seismic Information Workshop

The NRC Workshop Objective was to “provide a forum for members of the public to gain a basic knowledge of seismic hazard and its applications for the safety and operation of commercial nuclear plants, including specific discussions of the Diablo Canyon facility.” Further information, including attendance lists can be found on the NRC’s website (http://www.nrc.gov/public-involve/conference-symposia/seismic-info-workshop.html).

There were 122 participants registered from the public, academia, industry, government, and PG&E. There was active participation from all areas of interest during the question and answer sessions. The agenda was as follows:

1. Plate Tectonics: Emphasis on California – Ralph J. Archuleta, University of California, Santa Barbara
2. Realtime Earthquake Reporting – Doug Dreger, Berkeley
3. Impact of Earthquakes on Soils and Structures – Robb Moss, Cal Poly
The primary areas of interest to the DCISC were Items 13, “Ground Motions at DCPP” and 14, “Status of Shoreline Fault Evaluation,” because of the Shoreline Fault’s potential to exceed the current earthquake design basis (Hosgri Earthquake) for DCPP and because of its potential effect on DCPP Reactor Vessel Pressurized Thermal Shock (PTS) event frequency. The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its magnitude and effect on DCPP.

PTS is a concern for pressurized water nuclear plants due to its potential to rupture the Reactor Vessel (RV). As a nuclear plant ages, neutron irradiation hardens or embrittles the RV. Such embrittlement is not an issue under normal RV service conditions, nor are the direct stresses imparted into the RV by earthquake motion. However, if the vessel, which normally operates at approximately 600 degrees F and 2200 psi, were to experience a relatively cold-water shock from an inadvertent injection pump start at operating pressure, large, localized thermal stresses could result. If excessive embrittlement has occurred then under pressurized conditions existing small cracks in the vessel could rapidly enlarge, resulting in a vessel rupture. Such a rupture could make it difficult or impossible to cool the reactor. Nuclear plants are designed and analyzed to be able to withstand such a thermal shock without damage for their operating lives of 40 years. Because seismic events could potentially cause an inadvertent safety injection under pressurized conditions, they can contribute to the frequency of potential PTS transients.

PG&E has applied to the NRC for a 20-year extension of its operating license for a total of 60 years and is performing analyses intended to demonstrate that all safety-related plant materials, components, and structures can safely operate for that period. It is analyzing the potential effect of
the Shoreline Fault on the current seismic design basis and on PTS event frequency for the 20-year license extension. The DCISC has been reviewing these analyses as well as other similar industry analyses. The California Energy Commission (CEC) has requested that the DCISC look into the nexus between the potential effect of the Shoreline Fault and PTS for the 20-year extended operating period. The DCISC expects to have its review completed and a response back to the CEC by year-end 2010.

Norm Abrahamson, Senior Engineering Seismologist with PG&E’s Geosciences Department has been the lead investigator in analyzing the Shoreline Fault. His presentation in this Seismic Workshop described the work being done to characterize the Shoreline Fault by PG&E, the USGS, the NRC, and others. Dr. Abrahamson provided his preliminary results in the form of the following chart:

![Shoreline Fault (84th Percentile)](chart.png)

The PG&E analysis compares the existing DCPP seismic design (top curve), i.e, the Hosgri Earthquake Design Spectrum, and the three segments of the Shoreline Fault rupturing together with the Hosgri Fault (second-to-top curve), using an improved ground motion model. The lower curves show the acceleration of various combinations of the three Shoreline Fault segments rupturing with the Hosgri Fault. Though preliminary, this analysis shows that DCPP can withstand, while retaining its structural design margins, the three Shoreline Fault segments rupturing in any combination and rupturing with and without the Hosgri Fault. This is valuable input into the DCISC investigation of the CEC’s request.

The DCISC participants in the NRC Seismic Information Workshop believed the information provided was beneficial for both the public attendees and those with technical backgrounds. Most presentations began with basic descriptions and diagrams and, though many advanced to complex and highly technical forms, all were professional and understandable.

**Conclusions:**
The NRC Seismic Information Workshop appeared to have been beneficial for both public attendees and those with technical backgrounds in that it provided basic and advanced descriptions and diagrams of earthquake science, nuclear plant seismic design, faulting near DCPP, and an update on the DCPP Shoreline Fault analysis. Of particular interest to the DCISC, the preliminary results of the PG&E analysis of the Shoreline Fault rupture together with a Hosgri rupture showed that the DCPP seismic design basis remains valid.

**Recommendations:**

None

4.1

The NRC Seismic Information Workshop appeared to have been beneficial for both public attendees and those with technical backgrounds in that it provided basic and advanced descriptions and diagrams of earthquake science, nuclear plant seismic design, faulting near DCPP, and an update on the DCPP Shoreline Fault analysis. Of particular interest to the DCISC, the preliminary results of the PG&E analysis of the Shoreline Fault rupture together with a Hosgri rupture showed that the DCPP seismic design basis remained valid.

5.0 **Recommendations:**

None

6.0 **References**

21st Annual Report, Volume 2, Exhibit D.5, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on September 21-22, 2010 by Peter Lam, Member, and R. Ferman Wardell, Consultant

1.0 Summary

The results of the September 21-22, 2010 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Air Operated Valve Program Review
2. Potential Trend in Inadequate Procedures
3. Shoreline Fault Status
4. Containment System Review
5. License Renewal Status
6. Fatigue Management Rule Implementation
7. August 11, 2010 Evaluated Emergency Exercise Critique
8. Nuclear Fuel Performance
9. DCPP WANO/INPO-Type Mid-Cycle Assessment
10. Pressurized Thermal Shock and Shoreline Fault Analysis
11. Meeting with Site Vice-President

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.
Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Air Operated Valve Program Review

The DCISC Fact-finding (FF) Team met with Rick Bruns, Program Owner for the DCPP Air Operated Valve (AOV) Program to review the status of the program. The DCISC last reviewed the AOV Program in November 2008 (Reference 6.1) when it concluded the following:

The DCPP Air-Operated Valve (AOV) Program appears to be functioning satisfactorily. The program is mature and is serving its purpose of assuring that AOVs are capable of meeting their design/operating functions. The problems of several valves not meeting their acceptance are being appropriately resolved using the Corrective Action Program. The AOV Program Owner appeared to be knowledgeable and pro-active.

DCPP’s “Program for the Verification, Monitoring, and Trending of Air and Hydraulically Operated Valve Performance” is controlled by Procedure MA1.ID16, Revision 6, dated September 28, 2005. (The procedure is undergoing revision based on the 2006 DCPP AOV Program Assessment to reclassify 26 Category 1 valves [all but Pressurizer Power-Operated Relief Valves] to Category 2.) There are several other procedures for the Valve Packing Program, AOV and Associated Device Calibration, and AOV Testing Using the Crane Viper Diagnostic System.

The purpose of the program is to test and maintain AOVs to assure their air operators will be able to operate the valves as desired under expected system conditions. The program was developed in the mid-1990s as part of an industry effort in response to NRC concerns about the operability of AOVs. An industry Joint Owners’ Group (JOG) was formed in the late 1990s. The DCPP AOV Program categorizes AOVs into the following four categories:

Category 1 – safety or non-safety-related valves with an active safety function and high safety significance (58 AOVs). Examples are:

- Auxiliary Feedwater Pump Discharge Header Level Control Valves
- Steam Line Isolation Valves
- Steam Generator Atmospheric Dump Valves
- Pressurizer Power Operated Relief Valves
- Residual Heat Removal Heat Exchanger Outlets to Reactor
- Component Cooling Water (CCW) Heat Exchanger Inlet/Outlet Valves
- Emergency Diesel Generator Fuel Oil Day Tank Header Valves

Category 2 – active safety-related AOVs, which do not have high safety significance (322 AOVs).
Examples are as follows:

- Steam Generator Main Feedwater Supply Valves
- Pressurizer Spray Control Valves
- Reactor Coolant Pump Seal Outlet Valves
- Letdown Orifice Outlet Valves
- CCW Pump Recirculation Valves
- Containment Fire Water Isolation Valves
- Reactor Coolant Drain Tank Valves

**Category 3** - AOVs outside Categories 1 and 2, which affect plant, efficiency and megawatt capacity, or whose maintenance history indicates the need for increased surveillance.

**Category 4** – any remaining AOVs not included in the above three categories.

The AOV Program Team determines which AOVs are assigned to each category. For each AOV a design basis reconstitution is performed to determine operational parameters, which are used as the basis for test acceptance criteria. Additionally, valve capability and operator sizing calculations are performed to assure that the valve/operator combination is acceptable for its specific application. Baseline, periodic, and post-maintenance testing are performed on each AOV depending on its category. Records and trends are maintained for each AOV. Any problems are documented and tracked on an Action Request in the Corrective Action Program. AOVs are tested in one or more of the following ways:

- Loop Test
- External Leak Test
- Actuator Leak Test
- Stroke Time Test
- Seat Leak Test
- Diagnostic Tests (Viper)

Overall AOV Program health is White. Program health measures for the AOV Program were as follows for the four program cornerstones:

**Personnel Cornerstone**
- Green*

**Infrastructure Cornerstone**
- White due to several outstanding Notifications, strategic plan needing updating, more qualified technicians needed, and an action item greater than one year old. Actions were underway for these items.
Green health is expected in the third quarter 2010.

* The Program Owner Backup availability has become limited due to personnel resource restrictions. This puts a significant burden on the Program Owner.

Most AOVs are tested during outages. The DCISC Fact-finding Team reviewed the valve lists for testing in the Spring 2010 2R15 outage (72 valves needing testing, packing or diaphragm replacement, rebuild, and/or calibration) and the upcoming 1R16 outage (80 valves). All AOVs not meeting specifications are corrected and re-tested prior to the end of the outages. The DCISC reviewed a typical Viper Analysis and Loop Test data sheet and found it satisfactory.

DCPP performed a Quick Hit Self-Assessment in June 2010. Due to staffing/reorganizations, a Notification was written to reconcile the current state of the AOV Program with the 2006 findings/recommendations. The 2010 assessment resulted in 12 findings as follows:

- Two findings were strengths
  1. Use of a valve packing vendor
  2. Good feedback on AOV as-found condition enhances Preventive Maintenance (PM) frequency setting

- Nine findings were enhancements or gaps to excellence
  1. Differential temperature measurement is not used to select valve with possible internal leak-by
  2. Succession planning has not been developed for Valve/AOV Engineering
  3. Credit is not taken for PM work when CM work is performed.
  4. There are no assigned Maintenance AOV Owners in either I&C or Mechanical
  5. JIT Training should be reinstated for Viper testing
  6. Provide I&C Technicians training for Fisher DVC positioners
  7. Reinstatet quarterly AOV Team meetings to facilitate communication
  8. Establish AOV post-outage critique meetings
  9. Add the definition of low margin to the AOV program procedure

- One finding was an observation
1. The current back-up AOV Program Owner has limited time available

These findings were documented in the AOV Program Health Report as actions to be tracked.

**Conclusions:**

The DCPP Air Operated Valve (AOV) Program appears to be satisfactory. Valves are appropriately categorized for priority and testing and are tested on a schedule during outages. Testing has been successful. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations but did reveal some gaps to excellence and enhancements, which were documented in the Program Health Report for action and tracking. The DCISC should follow up on the AOV Program in about a year.

**Recommendations:**

None

3.2 Potential Trend in Inadequate Procedures

The DCISC Fact-finding Team met with Lance Hopson, Procedure, and Document Services Manager (and former Manager of Problem Prevention and Resolution), to discuss possible DCPP trends in inadequate procedures. This is the first DCISC review of this subject. This item was being reviewed because the DCISC had reviewed a number of event reports, cause evaluations, and NRC inspection reports which appeared to identify a number of cases where procedure inadequacy was listed as a cause of the event or problem.

DCPP has not currently identified any trends in inadequate procedures, although they have identified more problems recently with procedures because of higher standards and deeper cause evaluations. Most of these have been in Performance Improvement Rollups and meetings. DCPP will be looking at “procedure issues” as a result of these rollups. There have been no NRC trends or cross-cutting issues in procedures.

**Conclusions:**

Though the cause “inadequate procedures” appears to have been the causes of a number of events/problems and Performance Improvement Rollups have identified some “procedure issues,” DCPP has not identified “inadequate procedures” as a negative trend.

**Recommendations:**

None

3.3 Update on DCPP Shoreline Fault

The DCISC Fact-finding Team met with Norm Abrahamson, Senior Seismologist with PG&E’s Geosciences Department, to discuss the Shoreline Fault’s potential to exceed the current earthquake design basis (Hosgri Earthquake) for DCPP. The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its magnitude and effect on DCPP. The DCISC last reviewed this issue in August 2010 (Reference 6.2) when it concluded the following:
Of particular interest to the DCISC, the preliminary results of the PG&E analysis of the Shoreline Fault rupture together with a Hosgri rupture showed that the DCPP seismic design basis remained valid.

Dr. Abrahamson, the lead investigator in analyzing the Shoreline Fault, provided his preliminary results in the form of the following chart:

The PG&E analysis compares the existing DCPP seismic design (top curve), i.e, the Hosgri Earthquake Design Spectrum, and the Three segments of the Shoreline Fault rupturing together with the Hosgri Fault (second to top curve), using an improved ground motion model. The lower curves show the acceleration of various combinations of the three Shoreline Fault segments rupturing with the Hosgri Fault. Though preliminary, this analysis shows that DCPP can withstand, while retaining its structural design margins, the three Shoreline Fault segments rupturing in any combination and rupturing with and without the Hosgri Fault.

**Conclusions:**

The preliminary results of the PG&E analysis of the Shoreline Fault rupture either (1) single segment, (2) all three segments together, or (3) all three segments together combined with a Hosgri rupture showed that the DCPP seismic design basis remained valid.

**Recommendations:**

None

**3.4 DCPP Containment System Review**

The DCISC Fact-finding Team met with Kristen Murray-Zaitz, Structural System Engineer for Containment Concrete, and Jim Hill, In-service Inspection (ISI) Engineer – Containment Steel Liner,
to review the DCPP Containment System (or Structure). The DCISC was interested in the concrete and steel elements responsible for pressure containment. The DCISC periodically reviews systems, structures, and components as part of its plant reviews but has not reviewed the Containment recently.

The DCISC reviewed the Design Criteria Memoranda for the Containment Structure Exterior (CSE) (Concrete) and the Containment Structure – Steel Liner (CSL). The functions of the CSE and CSL are to protect the public and plant personnel from the uncontrolled release of radioactivity to the environment under normal and postulated accident conditions and to protect the Reactor Coolant System (RCS) from external missiles.

The CSE consists of

- A 14 ft-6 in thick, 153 ft diameter reinforced base mat
- A 3 ft-8 in thick, 140 ft inside diameter and 142 ft high reinforced concrete cylindrical wall
- A 2 ft-6 in thick, 140 ft inside diameter reinforced concrete hemispherical dome roof

The CSL consists of

- A ¼ in thick mild carbon steel plate placed on top of the CSE base mat
- A 3/8 in thick mild carbon steel plate covering the inside surface of the Containment shell
- Penetration sleeves and local reinforcement of the liner around penetration openings
- Anchorage system of the liner to concrete

The above Containment System has a design pressure of 47 psig at 271 degrees F. It is designed for the 7.5 magnitude Hosgri Earthquake acceleration spectrum peak of 0.75g. Other design loads are wind, pipe rupture, jet impingement, and missile impacts.

The Containment System is subject to the following tests/inspections:

- Visual inspection of Containment concrete surfaces as per 10CFR50, Appendix J and American Society of Mechanical Engineers (ASME) Section XI Code. This 100% inspection is performed every five years.
- Visual inspection of the steel liner plate inside the Containment as per 10CFR50, Appendix J and ASME Section XI Code. These inspections are performed every 3 1/3 years on a 10-year cycle.
- Containment Integrated Leak Rate Tests (ILRTs) as per 10CFR50, Appendix J. This test is performed every 10 years.

DCPP has procedures for each of the above tests/inspections. To date, there have been no indications or problems found in these inspections/tests. The most recent ILRTs were conducted in April 2008 during Outage 2R14 (Reference 6.3) and Outage 1R15.

The DCPP Containment contains a net free volume of 2.55 million cubic feet and has a design
pressure of 47 psig. The Containment has a Technical Specification maximum design basis leak rate of 0.1 weight %/day used for accident calculations.

The ILRT required 42 hours (vs. a projected 36 hours) and included the following steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Time Required (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressurization</td>
<td>7.5</td>
</tr>
<tr>
<td>Stabilization/Troubleshooting</td>
<td>16.08</td>
</tr>
<tr>
<td>ILRT itself</td>
<td>10.00</td>
</tr>
<tr>
<td>Verification Test</td>
<td>4.00</td>
</tr>
<tr>
<td>Depressurization delay</td>
<td>0.75</td>
</tr>
<tr>
<td>Depressurization</td>
<td>3.00</td>
</tr>
<tr>
<td>Unrestricted access restored</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Pressurization was begun at 1810 hours on April 2, 2008 at an average pressurization rate of 8 psi/hour using 17 compressors with a rated capacity of 27,500 cfm (cubic feet per minute). The test was performed at almost 46 psig (end of test) with the following results:

- Measured leak rate = 0.0132 wt.%/day (0.0144 wt.%/day at the upper 95% confidence level)
- ILRT Acceptance Criterion = 0.075 wt.%/day

The DCISC Fact-finding Team received a copy of the test report “Periodic Reactor Containment Building Integrated Leakage Rate Test Final Report,” dated April 3&4, 2008. The report was thorough and informative. The test team generated many lessons-learned to improve the Unit 1 ILRT in early 2009.

The DCPP Outage 2R14 Unit 2 Containment integrated Leak Rate Test (ILRT) was performed successfully. All test acceptance criteria were met. The measured leak rate was approximately one-sixth of the acceptance criterion.

There are currently no significant issues with the Containments. Both Containments are in Maintenance Rule (A)(2) (satisfactory) status. DCPP is monitoring some small bulges in the internal steel liner; however, these are not a problem regarding the Containment operability.

**Conclusions:**

DCPP Containment Systems are robust concrete structures with internal steel liners designed to maintain their leak tightness up to a design pressure of 47 psig and a temperature of 267 degrees F. Their function is to prevent release of radiation during normal and accident conditions and protect against external missiles. The Containments have successfully passed all periodic visual inspections and pressure tests.

**Recommendations:**
3.5 License Renewal Update

The DCISC Fact-finding Team met with Terry Grebel, License Renewal Project Manager, and Philippe Soenen, Assistant Project Manager, to review the status of DCPP License Renewal. The DCISC last reviewed License Renewal at the February 10, 2010 DCISC Public Meeting (Reference 6.4).

The Atomic Energy Act and NRC regulations limit commercial power reactor licenses to an initial period of 40 years primarily based on antitrust and economic considerations and not on technology. The current operating licenses from the NRC for DCPP Units 1 and 2 expire on November 2, 2024 and August 26, 2025, respectively. A license renewal application must be submitted at least 5 and no more than 20 years prior to the expiration of a current license. Both DCPP units have more than 20 years of operating experience and the NRC has determined this is sufficient with regard to assessing aging effects and operating experience and to evaluate the effectiveness of the Aging Management Program.

The DCPP License Renewal Application was submitted to the NRC on November 23, 2009, and on January 8, 2010, NRC staff determined that the application contained sufficient information for the NRC to formally file the application and begin technical review. The review process is a two-track process, one track consisting of the review of safety impacts in accordance with 10 CFR Part 54 and a second track consisting of review of the environmental impacts in accordance with 10 CFR Part 51. Public input is provided and hearings are scheduled concerning both tracks of this process. Significant milestones completed include the public meeting concerning environmental scoping, the Scoping and Screening Methodology Audit, and the Aging Management Program Audit.

The license renewal application process involves an Integrated Plant Assessment (IPA) safety review which includes elements of scoping, screening, aging management review, aging management programs and time-limited aging analyses activities, and the preparation of an environmental report addressing consistency issues with reference to the Coastal Zone Management Act. IPA scoping involves analysis of those safety-related plant systems, structures and components that are within the scope of license renewal; all non safety-related systems, structures and components whose failure could prevent satisfactory accomplishment of any of the safety-related features; and all systems, structures and components that demonstrate compliance with the NRC’s regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout. This analysis is also correlated with the NRC Maintenance Rule. Only passive components which are not replaced periodically and for which no aging management is required by the NRC are included, as active components and the adequacy of existing aging management programs are reviewed using other processes.

The following events/actions have occurred since the last DCISC review in February 2010:

1. The California Coastal Commission (performing the Federal Consistency Review) did not accept the DCPP submittal and has placed the submittal on hold. DCPP does not believe this
1. The CA Assembly Bill AB-1632 would have required that PG&E perform 3D seismic investigations of the Shoreline Fault as a condition of license extension; however, the Governor vetoed this bill. Notwithstanding this, the California Public Utilities Commission granted PG&E the money to perform these studies.

2. San Luis Obispo County and other interveners petitioned the NRC to delay license renewal proceedings until 2013 (completion of Shoreline Fault studies); however, this was denied.

3. NRC actions included:
   a. A two-week audit on the DCPP Aging Management Program
   b. A Regional Inspection on the DCPP Aging Management Process with emphasis on DCPP’s Operating Experience Program
   c. Many NRC Requests for Additional Information (technical questions). These are typical of the questions NRC had asked other applicants.

DCPP expects the NRC Advisory Committee on Reactor Safeguards (ACRS) Subcommittee review in February 2011 and the ACRS full committee review in June 2011. [The ACRS is independent of the NRC staff and reports directly to the Commission, which appoints its members. Advisory committees are structured to provide a forum where experts representing many technical perspectives can provide independent advice that is factored into the Commission's decision-making process. Most Committee meetings are open to the public.]

The NRC environmental review schedule has slipped because of resource issues. DCPP expects the Severe Accident Mitigation Analysis (SAMA), part of the environmental review, to be completed by NRC in February 2011. There have been four contentions submitted for the upcoming public hearings; two have been denied, and two have been referred to the NRC Commissioners for decision.

License renewal is based heavily on aging of components and structures, and the DCPP Aging Management Program is important to the success of its application. Most of its existing aging management programs have been tweaked or upgraded to be acceptable. DCPP has added new programs such as the Buried Piping Program, Buried Cable Program, Small Bore Piping Inspection Program, etc.

Conclusions:

The DCPP License Renewal review by NRC appears to be progressing as expected. DCPP is answering the many NRC requests for additional technical information, which typical of NRC license renewal reviews. There are no technical or programmatic issues with the NRC. DCPP expects to get its NRC Advisory Committee on Reactor Safeguards review in mid-2011. There are two intervenor contentions being reviewed by the NRC for the future public hearing.

Recommendations:
3.6 NRC Fatigue Management Rule Implementation at DCPP

The DCISC Fact-finding Team met with Paul Bemis, DCPP Consultant, to discuss how well DCPP has implemented the NRC Fatigue Management Rule. The DCISC last reviewed this subject in December 2009 (Reference 6.5) when it concluded the following:

DCPP appears to have properly implemented the new Nuclear Regulatory Commission rule on fatigue management with its restriction of plant work hours. The transition was well planned and well managed, and occurred with no major problems.

The new FMR Guidelines found at 10 CFR 26 Part I apply to licensees authorized to operate nuclear power reactors and are applicable to all personnel granted unescorted access to protected areas or required to physically report to onsite emergency facilities as minimum staff. Covered workers are those granted unescorted access to protected areas of the plant to perform covered work and are subject to work hour controls under the FMR. In general, covered work includes: operations, maintenance, chemistry, radiation protection, fire response, and security.

The FMR provides for a 6-week work cycle averaging 54-hours per week during non outage periods and requires that work does not exceed 16 hours in any 24-hour period; 26 hours in any 48-hour period; or 72 hours in any 7-day period. Minimum time off has been established between successive work periods of a 10-hour break, with an exception allowing an 8-hour break between successive work periods when a break of less than 10 hours is necessary to accommodate a crew’s scheduled transition between work schedules or shifts; and a 34-hour continuous break in any 9-day period.

Upon initial implementation, DCPP had three minor violations, which were corrected. During the subsequent two outages, implementation went well, except for some problems in Security in interpreting of the rule due in part to an unclear rule and industry guidance. Since then, there have no significant issues. DCPP noted that the Nuclear Energy Institute (NEI) is pushing NRC for a rewrite of the rule to solve some practical problems and make it easier to understand and implement.

Conclusions:

DCPP has satisfactorily implemented the NRC Fatigue Management Rule with only minor issues.

3.7 August 11, 2010 Emergency Exercise Critique

The DCISC Fact-finding Team met with Tracy Vardas, Emergency Planning Offsite organization Coordinator, to review the critique of the August 11, 2010 NRC-Evaluated Emergency Exercise. The DCISC observed that exercise (Reference 6.6) and had the following conclusions:

The August 11, 2010 NRC-evaluated DCPP emergency exercise Joint Information Center performance observed by the DCISC was much improved from prior exercises/drills in that news releases, press conferences, and use of the Site Vice-President as public spokesperson combined
for timely, accurate, and understandable information release. The plant operational response to the emergency was, as usual, professional and effective.

The DCPP Exercise Critique concluded that

“The ERO [Emergency Response Organization] demonstrated the ability to protect the health and safety of plant personnel and the public with implementation of the DCPP Emergency Plan and coordinated response efforts with San Luis Obispo County and the State of California. Overall station performance was determined to be SATISFACTORY. Critiques by ERO members were thorough and self-critical with a focus on the Risk Significant Planning Standards (RSPS).”

The following table shows the NRC Drill and Exercise Performance (DEP) Indicators.

<table>
<thead>
<tr>
<th>Category</th>
<th># Opportunities</th>
<th># Sat</th>
<th># Unsat</th>
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</thead>
<tbody>
<tr>
<td>Classifications</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Notifications</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Protective Action Recommendations (PARs)</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>PAR Notifications</td>
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</tr>
<tr>
<td>TOTAL</td>
<td>10</td>
<td>10</td>
<td>0</td>
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All risk significant opportunities were performed timely and accurately for a total of 10 out of 10 successful opportunities.

Other measures included:

- All Emergency Response Facilities were staffed and activated within the requirement of 60 minutes following VANS activation.
- Four of four Risk Significant Planning Standards were successfully demonstrated
- 11 of 11 Planning Standards were successfully demonstrated
- 53 of 54 overall performance objectives were successfully demonstrated
- 110 of 113 facility objectives were successfully demonstrated

The following High Level ERO Objectives were not met:

1. Prompt sounding of the Site Emergency signal was not performed to initiate assembly and accountability in that Assembly and Accountability were completed 16 minutes past the required 30-minute criterion.
2. Radiological release path was not fully assessed by Control Room (Simulator) personnel in that the crew incorrectly diagnosed radiation monitor readings. This resulted in delays in the event mitigation activities that were recommended by the Technical Support Center and Emergency Operations Center.
3. Unified Dose Assessment Center (UDAC) personnel did not properly evaluate, document, and communicate Field Monitoring Team exposures reported from the field in that dosimetry readings were not converted to Total Effective Dose Equivalent and Committed Dose Equivalent for modifying FMT deployment strategy or for consideration of additional emergency exposure controls.

These failures were documented in Notifications and entered into the DCPP Corrective Action Program. They were also included in the Lessons learned Report. There were other lessons learned added to the report to help enhance Emergency Plan implementation.

The DCISC Fact-finding Team believed the exercise critique was appropriately self-critical and comprehensive.

Conclusions:

The August 11, 2010 NRC-Evaluated Emergency Exercise was determined to be successful by DCPP in its measurements of performance in meeting objectives. The critique appeared appropriately self-critical and comprehensive. DCISC concluded, from observations of the Control Room Simulator and Joint Information Center portions of the exercise, that the exercise was successful.

Recommendations:

None

3.8 Nuclear Fuel

The DCISC Fact-finding Team met with Mark Mayer, Reactor Engineering Group Supervisor, to discuss DCPP nuclear fuel performance. The DCISC last reviewed this topic in May 2009 (Reference 6.7) when it concluded:

DCPP’s Unit 1 fuel operated as expected during Cycle 15, ending with Outage 1R15, with no leaks or other problems.

DCPP Unit 1 has run without any fuel defects since Cycle 4 and is currently in Cycle 16. Unit 2 has run without fuel defects since Cycle 14, when it had a debris-caused single rod failure. Prior to that, it had run defect-free since Cycle 11. DCPP’s fuel appears to be performing well.

There have been recent two problems regarding nuclear fuel:

- On September 3, 2010 during new fuel receipt activities, a new fuel assembly was placed in the incorrect Spent Fuel Pool location. This was due to the Senior Reactor Operator becoming distracted during the process and choosing the wrong location on the fuel move sheet. The format of the move sheet did not lend itself to the normal place keeping method of “circle slashing,” so signatures were used for place keeping. Corrective actions are being taken to prevent reoccurrence.
During Unit 2 Cycle 14, severe flux thimble wear resulted in a thimble tube leak – these are the tubes, which the In-Core Instrument System uses to measure core neutron flux spectra with movable detectors. The flux thimble damage was caused by flow induced vibrational wear. An inspection revealed damage to the instrument tube and protective grid. Four other locations were similarly affected, and these assemblies were left out of newer cores. Extended chrome-plated thimble tubes were installed in new fuel to be located in susceptible locations. Unit 1 fuel was inspected for this phenomenon, and of 112 assemblies: 88 had minor wear, 21 had moderate wear, and 3 had through-wall wear. Westinghouse (the fuel vendor) has analyzed the wear patterns and has provided guidance for inspecting, shuffling, and removing/re-using assemblies. DCPP has begun an inspection and fuel-shuffling program for this situation, collecting data to help Westinghouse resolve the problem. Other users of Westinghouse fuel have been advised and are participating in the effort.

DCPP is looking at moving from its current 19-to-21-month fuel cycles to 24-month cycles. This would permit more precision in scheduling refueling outages to target the spring and fall low demand periods more precisely. The increased cycle periods would mean higher burnups and larger diameter fuel rods containing more U-235 at the same current 5% maximum enrichment. Currently DCPP burnup is approximately 60,000 MWD/MTU (megawatt days per metric ton of uranium). The increased cycle length would mean 72,000 MWD/MTU burnup. DCPP and Westinghouse are performing analyses to determine whether it is advantageous to move to the 24-month cycle. The 24-month cycle could begin as early as 2016. The DCISC should follow this issue.

**Conclusions:**

DCPP nuclear fuel has performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely by DCPP and its fuel vendor, Westinghouse. The DCISC should follow this issue.

**Recommendations:**

None

**3.9 DCPP WANO-Type Mid-Term Assessment**

The DCISC Fact-finding Team met with Jacquie Hinds, DCPP Site Vice-President Chief of Staff, to review the DCPP WANO-Type Mid-Term Assessment. The DCISC last reviewed DCPP WANO (World Association of Nuclear Operators) matters in May 2010 (Reference 6.8).

The Institute of Nuclear Power Operations (INPO) and/or its international counterpart, WANO, both industry organizations, perform two-year evaluations of each nuclear power plant. The purpose of evaluation is to help the plant to achieve excellence evaluating the plant’s programs and practices against the best in the industry. The evaluation results in beneficial practices and Areas for
Normally each plant also performs a mid-term assessment to assess its progress in meeting the INPO evaluation recommendations and AFIs.

The DCPP mid-term assessment was performed in June 2010. The assessment team included DCPP employees and industry peers in each evaluation area. The assessment was carried out as follows:

1. Six weeks ahead of the formal assessment DCPP employees (typically Plant Improvement Coordinators or PICOs) reviewed data, performance indicators, and trends looking for gaps to success and measuring progress in resolving AFIs.
2. The PG&E Team is sequestered for a week reviewing the above results and making plans for the formal assessment.
3. “Evaluation Week” – industry peers spend a week at the plant evaluating the above information. The second week the PG&E Team and Organizational Experience peer and INPO Senior Representative prepare the assessment report.

The DCISC Fact-finding Team reviewed the assessment report. It was comprehensive, yet focused, and appropriately intrusive. The report concluded the following:

The Midcycle Assessment concluded that with certain exceptions, the station is resolving the areas for improvement identified in the 2009 WANO evaluation. Although progress has been made on these AFIs, there are additional actions required to resolve them.

DCPP created new action plans to address the findings – action was already underway for one. The completion date for all plans was set as end-of-year 2010. The Chief of Staff will make monthly progress reports to the Site VP, Project Review Meetings will be held monthly, and a quick-hit assessment will be performed in early 2011 to measure progress of these plans. The next INPO evaluation will be in August 2011.

Conclusions:

The DCPP Mid-Cycle WANO-Type Self-assessment was comprehensive, focused, and appropriately intrusive. DCPP has developed action plans for weaknesses identified with completion dates by the end of 2010. DCPP will perform a Quick Hit Assessment in early 2011 to measure action plan progress. The next INPO/WANO evaluation will be in August 2011. The DCISC should continue to closely follow these issues.

Recommendations:

None

3.10 Pressurized Thermal Shock/Shoreline Fault Update

The DCISC Fact-finding Team met with Loren Sharp, Senior Director of Engineering Services, for a high-level update on the possible nexus between the relatively new Shoreline Fault and Hosgri...
Fault and Reactor Vessel (RV) Pressurized Thermal Shock (PTS). The DCISC last reviewed this subject in March 2010 (Reference 6.9) when it concluded:

With this [March 16, 2010] meeting with DCPP the DCISC began its review of the potential nexus between the recently discovered Shoreline Seismic Fault and other seismic issues and Pressurized Thermal Reactor Vessel Shock as these relate to the DCPP application for a 20-year license extension. This was requested of the DCISC by the California Energy Commission. The investigation will continue with reviews of pertinent documents, further meetings, and DCPP presentations.

A primary area of interest to the DCISC is the combined Shoreline Fault/Hosgri Fault potential to exceed the current earthquake design basis (Hosgri Earthquake) for DCPP and its potential effect on DCPP Reactor Vessel Pressurized Thermal Shock (PTS). The Shoreline Fault was discovered in mid-2008 and is being investigated to determine its magnitude and effect on DCPP (See Section 3.3 above for an update on the Shoreline/Hosgri Fault analysis).

PTS is a concern for all nuclear plants due to its potential to rupture the Reactor Vessel. As a nuclear plant ages, neutron impingement hardens or embrittles the Reactor Vessel. If the vessel, which normally operates at approximately 600 degrees F and 2200 psi, were to experience a relatively cold-water shock from an inadvertent injection pump start at operating pressure, existing small cracks in the vessel could rapidly enlarge, resulting in a vessel rupture. Such a rupture could make it difficult to safely cool the reactor. Nuclear plants are designed and analyzed to be able to withstand such a shock without damage for their operating lives of 40 years.

PG&E has applied to the NRC for a 20-year extension of its operating license for a total of 60 years and is performing analyses to assure that all safety-related plant materials, components, and structures can safely operate for that period. It is analyzing the potential effect of the Shoreline Fault on the current seismic design basis and on PTS for the 20-year license extension. The DCISC has been reviewing these analyses as well as other similar industry analyses. The California Energy Commission (CEC) has requested that the DCISC look into the nexus between the potential effect of the Shoreline Fault and PTS for the 20-year extended operating period.

Mr. Sharp indicated that PG&E had requested that Westinghouse (the DCPP RV vendor) investigate the effect of the Shoreline/Hosgri Fault potential to adversely affect the RV PTS. Preliminary results indicated no adverse effect on PTS from the Shoreline/Hosgri Fault earthquake for the extended 20-year operating period. The DCISC Fact-finding Team requested a copy and presentation of the final results at its November 16, 2010 Public Meeting.

**Conclusions:**

DCPP has preliminary results from a Westinghouse (DCPP reactor vessel vendor) that there are no adverse effects on vessel pressurized thermal shock from the combined Shoreline/Hosgri Fault earthquake during a 20-year extended operating life. The DCISC expects the final result to be available for presentation by PG&E at its November 16, 2010 Public Meeting.

**Recommendations:**
3.11 Meeting with the DCPP Site Vice-President

Dr. Lam met with Jim Becker, DCPP Site Vice-President, to discuss items from the fact-finding meeting and other items of interest.

4.0 Conclusions

4.1

The DCPP Air Operated Valve (AOV) Program appears to be satisfactory. Valves are appropriately categorized for priority and testing and are tested on a schedule during outages. Testing has been successful. A June 2010 self-assessment identified no nuclear safety, programmatic, or regulatory violations but did reveal some gaps to excellence and enhancements, which were documented in the Program Health Report for action and tracking. The DCISC should follow up on the AOV Program in about a year.

4.2

Though the cause “inadequate procedures” appears to have been the causes of a number of events/problems and Performance Improvement Rollups have identified some “procedure issues,” DCPP has not identified “inadequate procedures” as a negative trend.

4.3

The preliminary results of the PG&E analysis of the Shoreline Fault rupture either (1) single segment, (2) all three segments together, or (3) all three segments together combined with a Hosgri rupture showed that the DCPP seismic design basis remained valid.

4.4

DCPP Containment Systems are robust concrete structures with internal steel liners designed to maintain their leak tightness up to a design pressure of 47 psig and a temperature of 267 degrees F. Their function is to prevent release of radiation during normal and accident conditions and protect against external missiles. The Containments have successfully passed all periodic visual inspections and pressure tests.

4.5

The DCPP License Renewal review by NRC appears to be progressing as expected. DCPP is answering the many NRC requests for additional technical information, which typical of NRC license renewal reviews. There are no technical or programmatic issues with the NRC. DCPP expects to get its NRC Advisory Committee on Reactor Safeguards review in mid-2011. There are two intervener contentions being reviewed by the NRC for the future public hearing.

4.6

DCPP has satisfactorily implemented the NRC Fatigue Management Rule with only minor issues.

4.7

The August 11, 2010 NRC-Evaluated Emergency Exercise was determined to be successful by DCPP
in its measurements of performance in meeting objectives. The critique appeared appropriately self-critical and comprehensive. DCISC concluded, from observations of the Control Room Simulator and Joint Information Center portions of the exercise, that the exercise was successful.

4.8

DCPP nuclear fuel has performed well, especially Unit 1 fuel, which has had 12 cycles of defect-free fuel. Unit 2 fuel is improving, having had three cycles defect-free, preceded by three clean cycles followed by a debris-caused leak. DCPP has experienced fuel assembly thimble tube wear in some instrumented assemblies due to flow-induced vibration. This is becoming an industry problem, which is being closely by DCPP and its fuel vendor, Westinghouse. The DCISC should follow this issue.

4.9

The DCPP Mid-Cycle WANO-Type Self-assessment was comprehensive, focused, and appropriately intrusive. DCPP has developed action plans for weaknesses identified with completion dates by the end of 2010. DCPP will perform a Quick Hit Assessment in early 2011 to measure action plan progress. The next INPO/WANO evaluation will be in August 2011. The DCISC should continue to closely follow these issues.

4.10

DCPP has preliminary results from a Westinghouse (DCPP reactor vessel vendor) that there are no adverse effects on vessel pressurized thermal shock from the combined Shoreline/Hosgri Fault earthquake during a 20-year extended operating life. The DCISC expects the final result to be available for presentation by PG&E at its November 16, 2010 Public Meeting.

5.0 Recommendations:

None

6.0 References


1.0 Summary

The results of the October 20-21, 2010 Fact Finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Plant Health Committee
2. Update on Potential Debris Blockage of Containment Sump
3. Reactor Vessel Head Replacement Update
5. Status of Reducing Component Mispositionings
7. Meeting with Site Vice-President
8. Potential for Pressurized Thermal Shock (PTS) and Implications for License Renewal

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.
3.0 Discussion

3.1 Plant Health Committee

The DCISC Fact Finding Team met with Karen Karner, Executive Assistant to the DCPP Station Director, to review the status of the functioning of the Plant Health Committee. The DCISC last reviewed this activity in December 2006 (Reference 6.1) when it concluded the following:

The Plant Health Committee (PHC) is part of the prescribed process to screen proposed changes to systems, structures and equipment to improve health. The process adds rigor and certainty to the way in which money is budgeted for plant improvement changes. The December 14, 2006 PHC meeting appeared to have been effectively run with good participation and questions by attendees.

Ms. Karner noted that the PHC is functioning more consistently and effectively than it had been several years ago. She cited two important factors for this improvement. The first is that the committee is now meeting with greater frequency. It now typically meets once per week whereas several years ago it had difficulty convening once per month. These more frequent regular meetings, however, are typically not held during outages. If an operational problem were to emerge in the operating unit while the other unit is in an outage, that operating problem would be treated through the Operational Decision Making process, in which an Emerging Issues Manager would be assigned to the problem. The problem would not be handled by the PHC.

The second reason cited by Ms. Karner for the committee’s increased effectiveness is that it now focuses almost entirely on system health whereas several years ago it was frequently diverted from examining the health of plant systems by discussions regarding potential costs for system improvements and the station’s budget. In those prior years the PHC possessed budget authority to approve funding up to $50,000 for individual projects. However, since the station’s Project Review Committee has primary authority for project funding, this sometimes created situations where both committees were discussing the potential costs of the same projects. Moreover, having budget authority could serve to divert the PHC’s focus more to the financial aspect of a potential project and thereby to reduce the committee’s focus on the physical impact of any system problem on the plant.

Ms. Karner also stated that the DCPP Operations Director serves as Chairman of the PHC, which provides a strong operational focus on system and program operations. Other station directors also serve on the Committee as voting members. Ms. Karner noted that the PHC reviews not only plant systems but also a number plant programs, such as:

- Margin Management
- Air Operated Valves
- Appendix R
- Check Valves
The DCISC Fact Finding Team was provided with four sets of System Health Reports that are representative of the materials reviewed by the PHC. Each set consists of the review package (i.e. the System Health Reports) for a specific PHC meeting. The four meetings reviewed by DCISC were held in March, May, June, and July of 2010. The volume and structure of the review packages are very similar. Each package pertaining to a specific system provides an overall rating for the system (Green, White, Yellow, or Red where Green is satisfactory, and Yellow and Red signify that improvement is needed). Ms. Karner noted that although both the Red and Yellow ratings indicate that improvement is needed, the distinction between the two ratings is that a Red system becomes Yellow when an Action Plan for improvement is approved. She also noted that the PHC reviews each system that is rated Red or Yellow at least every six months.

An Executive Summary in each report provides a summary of the reason for the performance rating and a summary level discussion of other issues of concern. Another section of each report provides a focused rating (Green, White, Yellow, or Red) on each of a variety of performance indicators in the following categories:

**Reliability** – Critical Component Failures, Critical Equipment Clock Resets, Unplanned Entries into Limiting Conditions for Operation, Deficiencies Resulting in Unit Capacity Reduction, Reactor Trips


**Material/Equipment Condition and Corrective Actions** – Emergent Work Orders (WO), Prompt Operability Assessments (POA), POAs awaiting Corrective Action, Aging Issues Affecting Reliability

**Operations Concerns** – Operator Workarounds/Burdens, Control Board Notifications, Operability Issues in the Past 180 Days

**Performance Monitoring** – Adverse Critical Equipment Trends, Adverse Equipment Trends

Any of the above individual performance factors that is rated Red in the report is then discussed in the body of that report to the PHC.

Another section of the report “Analysis” provides for written discussions on a number of other topics, as follows:

- Heat Exchangers
- Inservice Inspection (ISI)
- Coatings
- Large Motors
- Predictive and Preventive Maintenance
Performance Indicators

Critical Equipment Failures and Systems, Structures, and Components (SSC) in Maintenance Rule (a) (1) Status

Scheduled Major Maintenance or Modifications

System Trends and Margin to Design

Nuclear Regulatory Commission (NRC) Issues, Self Assessments, Operating Experience Assessments, and Engineering Analyses

Each report also contains an Action Plan for each system that specifies planned actions, the action's owners, due dates, tracking numbers (Notifications), the reason for each condition being addressed, and the status of actions.

Each monthly report package also contains a matrix for each unit listing each system that is rated Red or Yellow, the number of months during which the system has been rated Red or Yellow, and the expected time at which the system is expected to return to healthy status. Shown below are the most recent matrices (September 2010) for the Red/Yellow systems. All of the systems listed below were rated Yellow; none were Red.

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>System</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Condensate</td>
<td>13</td>
<td>1R16</td>
</tr>
<tr>
<td></td>
<td>Reactor Coolant</td>
<td>15</td>
<td>1R17</td>
</tr>
<tr>
<td></td>
<td>Heating, Ventilation and Air Conditioning</td>
<td>17</td>
<td>1R16</td>
</tr>
<tr>
<td></td>
<td>12kV</td>
<td>19</td>
<td>1R16</td>
</tr>
<tr>
<td></td>
<td>4kV</td>
<td>6</td>
<td>1R17</td>
</tr>
<tr>
<td></td>
<td>230 kV</td>
<td>30</td>
<td>2R16</td>
</tr>
<tr>
<td></td>
<td>500 kV</td>
<td>9</td>
<td>1R16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit 2</th>
<th>System</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Auxiliary Feedwater</td>
<td>7</td>
<td>3R16</td>
</tr>
<tr>
<td></td>
<td>Reactor Coolant</td>
<td>15</td>
<td>2R16</td>
</tr>
<tr>
<td></td>
<td>Heating, Ventilation and Air Conditioning</td>
<td>17</td>
<td>2R16</td>
</tr>
<tr>
<td></td>
<td>4kV</td>
<td>6</td>
<td>2R17</td>
</tr>
<tr>
<td></td>
<td>230V</td>
<td>29</td>
<td>2R16</td>
</tr>
</tbody>
</table>

Ms. Karner also provided the Fact Finding team with System Health matrices from other months in
2010, the earliest of which were from February 2010. The Unit 1 matrix for February listed 10 unhealthy systems, compared to seven in September. Of the 10 in February, two were Red and eight were Yellow. The Unit 2 matrix for February listed eight unhealthy systems compared to five in September. Of the eight in February, two were Red and six were Yellow.

Conclusions:

The Plant Health Committee (PHC) appears to be employing an effective method for examining the status of plant operating systems, determining system health through its use of a logical set of performance indicators, and reviewing and tracking planned actions to completion. Increasing the frequency of Committee Meetings and deleting budgetary decisions from the Committee’s responsibilities appear to have allowed the PHC to examine DCPP systems more frequently and effectively. The number and significance of unhealthy plant systems were reduced during the period between February and September of 2010. DCISC should focus future reviews on the performance of individual systems and should conduct any future reviews of PHC activities as dictated by trends in overall station performance.

3.2 Update on Potential Debris Blockage of Containment Sump

The DCISC Fact Finding Team met with Dan Brosnan, Principal Electrical Engineer, to discuss the issue of debris blockage of the containment sump strainers during a potential loss of coolant accident. DCISC last reviewed this topic in January 2009 (Reference 6.2) when it concluded the following:

The Quality Verification Assessment of DCPP’s response to NRC’s Generic Letter 2004-02 (debris blockage of Containment sumps) was thorough and comprehensive. It found some errors early in project design and testing which were resolved. The overall conclusion was that DCPP response was “thorough, comprehensive, well documented, and technically correct.” A larger issue on engineering was identified in the GL 2004-02 assessment: weaknesses in engineering products. An Apparent Cause Evaluation has been initiated which the DCISC should follow.

The issue of potential debris blockage of the containment sump during a potential loss of coolant accident (LOCA) has been the subject of extensive research by the industry and the NRC. The issue pertains to the accumulation of debris in the containment sump which could potentially block the screens to the suction lines to pumps that draw water from the sump and recirculate the coolant back to the Reactor Coolant System (RCS) and ultimately to the Reactor Vessel to keep the fuel cooled during a LOCA. This debris could be generated in sufficient quantity by the jet impingement of coolant, escaping from the RCS at high temperature and pressure, on insulated and/or painted or coated piping, structures, and equipment in the Containment Building. The release of coolant in this type of situation is called a High Energy Line Break. The generated debris could thus consist of fragmented, shredded, fibrous, and chemically decomposed insulation and/or coatings. It could also accumulate as sludge. In 1985 the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 85-22, “Potential for Loss of Post-LOCA Recirculation Capability Due to Insulation Debris Blockage.” Although the NRC’s regulatory analysis did not support imposing new sump performance requirements upon the licensees at that time, the NRC analysis found that the existing Regulatory
Guide regarding sumps for Emergency Core Cooling Systems (ECCS) should be replaced with a more comprehensive requirement to assess debris effects on a plant-specific basis.

However, during the 1990s, several plants in the United States and overseas experienced the clogging of ECCS strainers. The plants were of the Boiling Water Reactor (BWR) design. During this period, the NRC issued several generic communications requesting that BWR licensees implement appropriate procedural measures, maintenance practices, and plant modifications to minimize the potential for the clogging of ECCS suction strainers by debris accumulation following a LOCA. However, findings from research to resolve the BWR strainer clogging issue also raised questions concerning the adequacy of Pressurized Water Reactor (PWR) sump designs.

During 2000 and 2001, prior to the NRC’s issuance of any directive to pressurized water reactors, DCPP proactively enlarged its approximately 30 sump screens to improve their design and increase debris removal capacity. At that time, PWRs like DCPP normally had on the order of 100 to 200 square feet of sump screens. DCPP’s proactive modifications increased the area of its screens to about 700 square feet for Unit 1 and 750 square feet for Unit 2.

In 2004, the NRC issued Generic Letter 2004-02: Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized Water Reactors. This Generic Letter established new requirements for PWR containment recirculation sump strainers. PWRs were requested to make a conservative evaluation of their current designs and to complete by the end of 2007 any necessary analyses and modifications, including upgrading the screens and increasing their size and testing. DCPP determined that its sump strainer capability should be improved using two possible strategies: 1) reducing the amount of material that could be damaged in an accident (and thus could contribute to clogging the strainer); and 2) providing a larger strainer. Debris material could be reduced by removing, encapsulating, or replacing fibrous insulation on piping and electrical cables, by installing interceptors to capture paint chips and reflective metal piping insulation and by opening flow paths to divert debris away from the strainer. These modifications, among other things, included enlarging the available surface area of the containment sump screens to 3,500-4,000 square feet and removing and replacing vulnerable debris and insulation material from containment. In its response to the NRC’s Generic Letter, DCPP determined that it would not be possible to complete the needed modifications in both Units by the end of 2007. Thus, DCPP applied for and received NRC approval to complete the necessary modifications beyond 2007. In July 2008 DCPP submitted a response to NRC Generic Letter 2004-02, stating that DCPP had met the requirements of the Letter.

Using this material as history, the DCISC Fact Finding Team met with Dan Brosnan, Principal Electrical Engineer, in order to receive an update of DCPP status on the issue of potential containment sump blockage. Mr. Brosnan noted that DCPP has completed major plant modifications in which the average containment sump screen size is 32 times larger than the original configuration. He indicated that there are two aspects of how loose material created by a LOCA can pose a risk to the reactor core: 1) materials may clog the sump screens and restrict containment sump recirculation cooling to the fuel in the reactor vessel and 2) some materials may pass through the screens, may be pumped into the reactor vessel, and may collect on portions of
the nuclear fuel. This could lead to local heating, deterioration, and failure of fuel cladding and release of fission products to the containment building. Some insulation materials inside containment can cause the first problem, and some others in containment can cause the second problem. Both are undergoing analysis. These problems can be solved by analyzing the risks and identifying the potential effects in order to determine whether the risks are acceptable or by replacing the existing insulation or coatings with acceptable materials. The second approach has been determined to be the preferred approach.

Mr. Brosnan further noted that the above two issues of potential risk to the nuclear fuel are continuing to be analyzed within the industry in general and by DCPP in particular. For example, in December 2009, the jet testing that DCPP had performed through a contractor and had used as a basis of its earlier submittal to the NRC was found to have some uncertainty. This jet testing used a nozzle with a 3.0 inch diameter opening, and this configuration was used as basis for the accident analysis. However, a restriction that reduced the effective diameter to 2.6 inches in the supply to the nozzle has created uncertainties and an accompanying need to either reanalyze or retest. Mr. Brosnan also said that the NRC has issued a set of 14 questions in a Request for Additional Information (RAI) and that 12 of the questions pertain to jet testing. Revised testing methods are being developed and test results are expected to be available by mid-year 2011.

Mr. Brosnan noted that DCPP has developed Computer Assisted Design (CAD) models of the interior of the Containment Building (CB) that assist in identifying Zones of Influence (ZOI). These ZOIs are particular areas in which a LOCA could damage insulation and coatings. The CAD models further aid the analysis of the extent of damage that could be experienced and the potential impact the debris could have on the fuel in the Reactor Vessel (RV). This can lead to the identification of a worst case scenario from the accident analysis.

In addition, during the current Unit 1 refueling outage, 1R16, a tightly woven fiberglass insulation called Temp-Mat was discovered in a tight configuration in the space between the reactor vessel and the biological shield in the Reactor Building. This condition was analyzed by DCPP, and the potential risk to the nuclear fuel from a LOCA in this area was found to be bounded by the effects of LOCAs in other areas of the containment building (CB).

To more effectively evaluate the potential effects of debris on nuclear fuel following a LOCA, DCPP is participating in a Pressurized Water Reactor Owners Group (PWROG) Project on “Debris Testing and Zone of Influence Definition.” DCPP’s share of the cost of this project is about $400,000. This testing will continue through 2011. The test facility is expected to be accepted in December 2010. Insulation tests should be complete in April 2011. A topical report should be provided to the NRC by October 2011, and it is expected that the NRC would have a Safety Evaluation completed in December 2011. DCPP is also using a separate contractor to evaluate PWROG results and to evaluate debris originating from branch lines compared to RCS loops. Potential plant modifications resulting from these tests and analyses are expected to be installed in 2R17 and 1R18.

Mr. Brosnan noted that the NRC Commissioners met with the NRC Staff on Generic Letter 2004-02 in September 2010, just a few weeks before this Fact Finding visit. Potential letters explaining any
new requirements are expected to be issued by the NRC to utilities in November 2010.

Finally, Mr. Brosnan noted that DCPP has both the technical capability and a specific emergency procedure that enables either of its units to clear a blocked sump by forcing a backflow of water in the opposite direction, so that debris would be pushed out of the flow path of any of the blocked screens. Mr. Brosnan claimed that DCPP is unique in having this capability, which is apparently not present at any other nuclear plant. He noted, however, that the NRC has refused to allow the DCPP units to take any credit for this unique capability in its safety analyses on this issue.

Conclusions:

Extensive enlargements and modifications have been made to the containment sump screens in order to substantially reduce the risk of blocking recirculation to the Reactor Vessel during a Loss of Coolant Accident. Detailed examinations have been made of the Containment Building to identify and evaluate potential sources of debris that could be created by Loss of Coolant Accidents originating in various areas of the Containment Building. However, this problem has not been completely resolved either by DCPP or by the industry. DCISC should continue to follow this topic, and the next review should take place after the results of the Pressurized Water Reactor Owners Group Topical Report is issued in 2011.

3.3 Reactor Vessel Head Replacement Update

The DCISC Fact Finding Team met with Wayne Ginter, Strategic Projects Principal Project Manager for the DCPP Reactor Vessel Head Replacement Project. At the time of this meeting DCPP was in Day 17 of a planned 25 day refueling outage, 1R16, during which the station was in the process of replacing the Unit 1 Reactor Vessel Head and installing a new Integrated Head Assembly. The DCISC last reviewed this topic at its December 9-10, 2009 Public Meeting (Reference 6.3) during which Mr. Ginter discussed the nature of the project and the station’s performance regarding similar work that had been performed on Unit 2 during outage 2R15 in October/November 2009.

In recent years a number of nuclear plants have elected to replace the reactor vessel heads due to their susceptibility to primary water stress corrosion cracking in welds connecting components to the head. Although some plants have chosen to replace only the heads, DCPP decided to include in this project the addition of an integrated head assembly (IHA) as part of the new replacement head. The differences between DCPP’s original head configuration and the new configuration with an IHA are as follows:

- Fans and Ventilation – The original design has external ducts and fans that need to be disassembled during a refueling outage. With the new IHA all ventilation is integral; and thus no disassembly is needed.

- Missile Shield – The original design requires removal of this shield to obtain access to the Reactor Vessel Closure Head (RVCH). The new design does not.

- Tri-pod Hoist (Lift-rig) – In the current design, the lift-rig tripod cannot be left attached to the lift-rig assembly during operation. Therefore, it must be attached and then detached as part of the refueling process. This tripod is part of the new IHA and can remain in place at all times.
- **Cable Trays** – In the current design these trays are not integral to the head. In the new design the trays are integral and retractable to provide better protection and access for connection and disconnection.

- **Control Rod Drive Mechanisms (CRDM)** – In addition to some other refinements, the new design has only one threaded joint for each CRDM compared to three in the original design. This reduces the likelihood of reactor coolant leakage.

Together with the new forging of the head itself, the above enhancements are expected to lead to greater plant and personnel safety, more efficient performance of maintenance and refueling, lower radiation dose, reduced frequency of required inspections of CRDM penetration tube-welds and tube base metal (from every outage to every 10 calendar years), and decreased likelihood of reactor coolant leakage. At the same time, the combination of the new Reactor Vessel Head and its Integrated Head Assembly creates a heavier load than the prior Reactor Vessel Head. Therefore, the increased static and dynamic loads that will be imposed on both the Polar Crane and the Reactor Vessel required analysis, which was done and which found that the cranes are acceptable.

Mr. Ginter provided the DCISC an update on how the Unit 1 head replacement was progressing and how the station had been able to apply lessons learned from the Unit 2 head replacement. Many of the lessons directly affected outage length because the head replacement project is the “Critical Path” activity throughout virtually the entire time that head replacement activities are occurring. This means that if something delays the head replacement project, it also delays the entire outage. One important example is that the Containment Building polar crane is being used by the head replacement project 80 percent of the time during which this project is active in containment.

Mr. Ginter said that better coordination of human resources has been achieved compared to 2R15 while at the same time increasing the number of project workers. Three major contract groups are involved in this effort: PG&E with about 25 personnel, Barnhart with about 40, and AREVA, a French firm, with about 50. AREVA has supported other American utilities in their reactor vessel head replacements. During the current outage, the project is using a “hot turnover,” (i.e. a two hour overlap between shifts) to achieve better coordination of activities during shift transition. Improved teaming has also been achieved between the various project work groups. A teaming event for this purpose was held prior to the outage, which allowed project groups and individual team members to better understand each other’s roles. Other improvements have been achieved simply from having encountered unanticipated situations during the work on Unit 2, which have now been planned for – such as difficulties in removing some components from attachments to the old head and some interferences that were previously encountered. The cumulative effect thus far has been a savings 3 days in outage time compared to 2R15 last year. To help reduce radiation doses, DCPP also hired an ALARA (As Low As Reasonably Achievable) engineer after outage 2R15.

Mr. Ginter said that the NRC has been primarily interested in fabrication and welds, and that they have been performing surveillances on site. Their focus during this project has been on Non Destructive Examinations (NDE), welding, configuration of the head, the conduct of heavy rigging, and the licensing basis for the replacement head and integrated head assembly.
Mr. Ginter said that currently the Integrated Head Assembly is installed with all fit-ups completed. Key remaining work to be performed involves connections of electrical equipment and piping.

Conclusions:

The Unit 1 Reactor Vessel Head Replacement Project appears to be progressing smoothly during outage 1R16. Lessons learned from the Unit 2 head replacement during 2R15 have been applied and have resulted in better teamwork, improved efficiencies, and reduction in project duration thus far, while maintaining project quality.

3.4 Operations Revitalization Action Plan

The DCISC Fact Finding Team met with Jan Nimick, Manager, Nuclear Operations. Although the DCISC has not previously reviewed the subject action plan, this action plan stemmed from Operator Concerns, which were last reviewed by the DCISC in August 2009 (Reference 6.4) when it concluded the following:

*It appears that DCPP Operations management and represented operators have resolved their major concerns, grievances, and contract disputes. This has been achieved through a series of face-to-face meetings. There has been no apparent negative effect on the DCPP safety culture caused by operators’ concerns and issues.*

Nevertheless, operator concerns continued to linger and to affect the relationship between the operators and management. This resulted in the development of an Action Plan to address the lingering issues. The DCISC conducted this review to identify progress being made and to examine the extent to which this situation may be affecting plant operations.

Relevant portions of the Overview to this DCPP Operations Revitalization Plan are quoted below from the October 4, 2010 version of the Plan:

“Overview: In 2009 it was recognized that the Operation department relations between employees and management had declined. Communication, collaboration, and teamwork had suffered. An action plan was developed to focus on three broad areas that, when addressed with integrity and trust, would significantly contribute to improved employee relations and department performance. These three areas are:

1. Clarify the contract: Low mutual agreement between labor and management on the interpretation of the IBEW contract
2. Reconnect and rebuild teamwork: Inadequate lines of communication resulting in low perceived trust between management and operations employees
3. Eliminate distractions: Lingering complaints and organizational distractions contribute to current conditions of ambiguity, distrust, and poor communication”

Early in 2010, a fourth action area was added to provide a “world class working environment.”
Plan Overview also notes that: “Overall, communications, collaboration, and teamwork have improved.” and that “shift leadership has been engaging with employees to add new actions to any of the previously identified problem statements or identify new issues, develop an associated problem statement, and partner to develop meaningful action(s) to continually improve the working environment.”

One of the major influences on the relationship between operators and management was the most recent revision to the union contract. The prior contract required that longevity, rather than competence or qualifications determined who would be selected to attend senior reactor operator (SRO) license classes, and the contract specified how many operators would attend an SRO class. Management maintained that operator qualifications, not seniority should be the determining factor in selecting SRO candidates, and that class size should be flexible, rather than predetermined. The revised contract, effective January 1, 2009, incorporated management’s requests, and the contract was accepted by a vote of the operators; but some operators remained opposed to its provisions.

Mr. Nimick noted that the relationship between operators and management was driven to some extent by the above change to the union contract. However, other factors involve the need for shift managers to engage operators more routinely regarding issues of significance to them, and for information to be provided more effectively to operators on topics of interest to them. He has met with the Communications Department regarding communications tools to use in regard to interacting with workers. Supervisors have received training in communicating and maintaining relations with working level personnel.

Mr. Nimick also stated that it is not unusual for workers to receive incorrect pay, and he has been in contact with Payroll to get this situation remedied. This has been an important source of worker frustration, and it affects their relationship with management.

A review of the Operations Revitalization Plan revealed that 53 of 70 action items are complete. Six of the remaining 17 involve improving furniture, storage, and the kitchen. Those actions and the 11 others do not appear to be items that would significantly affect operator attitudes toward management.

The DCISC Fact Finding Team examined operations-related performance factors to determine any weak areas that could then be examined for ties to operator attitudes:

- Operations Section Human Performance Indicator: Both the 90-day event rate and the 12-month event rate have been Green since January 2010.
- Operator Mispositionings: 2 Level 3 and 2 Level 4 Mispositionings (January – August 2010)
- Operations Protective Tagging Index: Green for January – July 2010, Yellow for August 2010. (Note a declining trend from April thru August)
- Plant Events Caused by Operators: No Forced Losses in 2010
- Reactivity Management (Reported Quarterly in PPIR): (Unit 1- Green, January – June 2010)
Operations Crew Performance during the July 2010 Emergency Planning Drill: Satisfactory

Operations Crew Performance during the August 2010 Emergency Plan NRC-Evaluated Exercise: Plant operational response was professional and effective.

The above indicators reveal no areas of concern regarding the performance of station operators.

Conclusions:

With its Operations Revitalization Plan DCPP management has taken a considerable number of actions to address operator concerns and revitalize the relationship with station operators. Performance indicators that are influenced by the actions of station operators reveal no potential areas of concern. A slight declining trend in the Operations Protective Tagging Index from April through August 2010 may, however, be worth examining. The station and PG&E need to promptly resolve the continuing and significant problem of operators not being correctly paid.

3.5 Status of Reducing Component Mispositionings

The DCISC Fact Finding Team met with Jan Nimick, Manager, Nuclear Operations, on Day 17 of Unit 1 Refueling Outage 1R16 to discuss the station’s performance with respect to component mispositionings and actions being taken to improve performance. The DCISC last reviewed this topic in April 2010 (Reference 6.5), when it concluded the following:

Although mispositioning performance slipped during Refueling Outage 2R15, the performance trend has been positive since 2006. Planned Actions for achieving continued improvement appear appropriate. However, since this is a long-standing issue and since the next refueling outage will be another major undertaking, DCISC should perform another review in 2011, after the conclusion of Refueling Outage 1R16. Also, DCPP needs to resolve the differences between the definitions of mispositioning significance levels in the monthly performance indicator sheet and Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components.

A “Mispositioned Plant Component” is defined by Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, as follows: “Any positionable component placed or left out of the required position for existing plant conditions when the component’s required position is tracked by one or more of the following status control tools: procedures, clearances, work management process (e.g. orders), other similar authorizing documents that align or re-align components, any positionable component placed or left out of the required position or existing plant conditions due to inadequate or incorrect status control tools described above. This includes situations where a lack of process exists that should have controlled the configuration of the component.”

A tabulation of the number of mispositionings for the past five years is shown below. It should be noted that over the past few years, the station has become more conservative with regard to what constitutes a non-consequential mispositioning. This category now includes those that have minimal or no impact on the station and that were immediately identified and corrected (Level 4). It also includes those where a component mispositioning was imminent or possible, but averted.
through the use of error prevention tools (Level 5). The above two classifications have been added since 2007.

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010 (thru IR16)</th>
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<tr>
<td>Consequential</td>
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<td>Non-consequential</td>
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<td>(includes Levels 3,4,5 for 2008 and beyond)</td>
<td>32</td>
<td>21</td>
<td>48</td>
<td>35</td>
<td>19</td>
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Note: Using the less conservative definition from 2007 and earlier, the number of non-consequential mispositionings in 2009 would be 19 and the number in 2010, through the end of refueling outage 1R16, would be 9.

Mr. Nimick noted that an intensified focus has been placed on mispositioning reductions during the past 12 months, especially due to the relatively high number of mispositionings that occurred during refueling outage 2R15 in the last quarter of 2009. During the first nine months of 2009, 18 mispositionings occurred (all were non-consequential and nine were Level 3). However, 13 more non-consequential mispositionings (8 were Level 3) occurred during the 35 day refueling outage 2R15, and after that outage four more occurred prior to end of 2009.

To address these performance issues a Common Cause Evaluation was performed after 2R15 by a combined Operations and Maintenance team. It was determined that the Maintenance mispositionings were largely due to very basic and simple mistakes that could be corrected by self-verification. Maintenance corrective actions involved performing Just-In-Time/Tailboard Training just prior to the outage. The causes of mispositionings by Operations personnel were more complex and often related to weaknesses in the application of operator fundamentals when using procedures. Corrective actions to address the Operations issues involved the following:

- Reinforcing the need to identify and address procedure issues
- Performing management mandated training for operations personnel
- Reviewing tools for using procedures, changing procedures, and for maintaining status control through the use of the Electronic Shift Operations Management System (eSOMS)
- Reinforcing the use of the STAR tool (Stop, Think, Act, Review). In some of the mispositionings the “think” function had failed to slow the evolution enough to identify the potential situations where mispositionings could occur.

Prior to outage 1R16, presentations were made and discussions conducted with Operations and Maintenance personnel. The following topics were covered:

- Potential significance of mispositioned components (causing unplanned transients, complicating recovery actions after transients, causing unavailability of equipment or systems)
Impact on DCPP accident analysis

Prior significant mispositioning events at DCPP

In addition, an “observation blitz” was conducted just prior to refueling outage 1R16. Every manager in Operations performed field observations on Maintenance and Operations work activities, focusing on pre-job briefings, on adherence to the 2-minute rule (a period at the work site prior to commencement of work during which the workers are expected to view the work area and review the activities to be conducted while looking for possible situations where mispositionings could occur), and on worker adherence to the STAR rule (Stop, Think, Act, Review). Seventy observations were conducted in one week. Mr. Nimick felt that the combination of the remedial activities discussed above has had a positive impact on worker performance. At the time of DCISC’s discussion with Mr. Nimick, DCPP was in Day 17 of the planned 25 day outage, and only one mispositioning (a Level 3) had occurred during the outage. Mr. Nimick noted that special care will need to be devoted by workers as the station staff prepares to shift to readying the unit for return to power operation. He also noted that top plants in the industry incur only about 3 to 5 total mispositionings per unit per year. (Subsequent to this Fact Finding visit, DCISC was informed that DCPP incurred 5 more mispositionings during refueling outage 1R16 for a total of 6, compared to 13 mispositionings incurred during refueling outage 2R15. Three of the six were Level 3, one was Level 4, and two were Level 5. None of these mispositionings occurred during the last few days of the outage.)

Finally, the DCISC Fact Finding Team noted that differences still exist between the definitions of mispositioning significance levels in the monthly performance indicator sheet and in Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components.

Conclusions:

DCPP has devoted substantial attention and effort to reducing component mispositionings. Significant improvement was achieved during refueling outage 1R16. Inconsistencies between the definitions of mispositioning significance levels in the monthly performance indicator sheet and in Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, still need to be resolved.

3.6 Status of Performance Improvement Action Plan

The DCISC Fact Finding Team (FFT) met with Joe Ferguson, Manager of Problem Prevention and Resolution. This is DCISC’s first review of DCPP’s Performance Improvement Action Plan. Prior to arriving on-site, the team reviewed the Action Plan. The Plan’s problem statement reflected the nature of the remaining contents of the Plan in that the Plan was focused on the nature of and methods used by the station’s performance improvement activities rather than focusing on specific improvements that are needed in aspects of plant operation and performance. The Plan’s Problem Statement reads as follows:

“DCPP’s use of performance Improvement (PI) programs lags the industry with the result that performance shortfalls continue to occur and performance relative to the industry is declining.”
The Plan focuses on improving methods, techniques and tools for identifying, measuring, and assessing gaps between actual DCPP performance and desired performance. Specific methods, techniques and tools discussed in the Plan include: benchmarking, self-assessing, performance indicators, gap analysis, Corrective Action Program (CAP) procedures, Apparent Cause Evaluations (ACE), Root Cause Analyses (RCA), reviews of plant and industry operating experience, and reviews by external groups. It does not discuss specific actions that were felt to be needed to actually improve specific areas of plant performance but rather addresses the performance improvement process in general.

The objectives of the above Plan are as follows:

1. Integrate industry best practices for performance improvement processes into station core business.
2. Improve the use of industry best practices and operating experience in performance improvements and corrective action activities.
3. Strengthen the performance improvement oversight committees to reinforce the integrated use of performance improvement process to improve station performance.
4. Enhance appreciation of the value the performance improvement processes bring to employees and the station.
5. Improve employee proficiency in performance improvement activities.

The Fact Finding Team also reviewed station procedure OM15.ID5, DCPP Performance Improvement Program. This procedure basically explains various organizational tools and methods for assessing and tracking performance such as department quarterly performance improvement rollups, Performance Improvement Challenge Committee meetings, the Performance Improvement Review Board comprised of senior management, Plant Health Committee meetings, departmental Performance Improvement Integrated Matrices, and departmental Performance Improvement Coordinators.

Mr. Ferguson stated that the Performance Improvement Action Plan stemmed from the 2009 plant evaluation conducted jointly by the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Operators (WANO). He stated that another performance improvement tool is a Health Report for self-assessments – a single sheet template that a department would fill out quarterly and would be submitted to the Self Assessment Review Board.

Mr. Ferguson stated that three to four years ago his department was staffed with 22 people; two years ago it had 15, and currently there are five. During the past few months another two positions have been authorized. When the department was larger, its personnel were trained in and performed RCAs and ACEs for the station. Now those reviews are performed by personnel in the affected departments, with the potential problem that these individuals have other primary responsibilities and therefore do not necessarily have the same skills as would individuals who perform these analyses as a significant portion of their job. Currently personnel in Problem
Prevention and Resolution serve as coaches to the other departments whose personnel perform the evaluations.

Mr. Ferguson estimated that the station ideally should have about 20 personnel who are trained in and are capable of performing causal analyses. Currently there are six such individuals, two of whom are in Problem Prevention and Resolution. Further, departments have Performance Improvement Coordinators, whose focus is supposed to be on self-assessments, benchmarking, RCAs, and ACEs. However, they are devoted largely to managing the corrective action backlogs and performing other departmental duties.

The Fact Finding Team examined the most recently provided (August 2010) Plant Performance Indicator Report (PPIR) from the standpoint of highlighting potential problem areas to management’s attention. At the very beginning of the PPIR, the report highlights those Performance Indicators that have improved during the past month and those that have declined. What is not shown are those indicators that have remained in Red and/or Yellow Status from month to month. The Fact Finding Team identified the following performance indicators in that status during August:

- Unit 1 Electrical Maintenance Backlog: Red for past three Quarters
- Unit 2 Electrical Maintenance Backlog: Yellow, Red, Yellow for past 3 Quarters
- Operational Focus Index: Yellow since June
- Prompt Operability Assessments: Red since June
- Operator Burdens: Yellow since June
- RCA cycle times: Red since June
- Open Significance Level 1-3 Condition Reports: Red since June
- Operability Determinations Program Health: Yellow for 2 months
- Licensing Basis Impact Evaluations: Current- Yellow, Prior-Red, Red
- Risk Management Program Health: Yellow for 3 months

Conclusions:

The DCISC does not typically review organizational and process related areas unless considered warranted to examine aspects that could be tied to specific plant performance issues related to safety. Organizational structure and management methods are considered to be the purview of the utility. This, however, was DCISC’s first review of the Performance Improvement Action Plan, and it became apparent that the Plan is almost exclusively organizational and process-oriented in nature. Therefore, DCISC will refrain from further reviews of this Plan unless certain aspects can be clearly tied to station performance issues related to safety.

However, the DCISC recognizes through earlier Fact Finding Meetings and reports that DCPP has had difficulties with evaluating and addressing station problems, including the area of engineering evaluations. Additionally, the NRC has issued DCPP a significant cross-cutting aspect
for deficiencies in its Corrective Action Program, a major program included in DCPP’s Problem
Prevention and Resolution area. The DCPP Performance Improvement Action Plan is an
appropriate vehicle for helping to correct and improve DCPP’s performance. DCISC concludes
from this review that some causal factors related to this problem may be due to an inadequate
number of trained and qualified personnel as well as to a lack of clarity in personnel
responsibilities. DCISC also concludes from its review of the Plant Performance Indicator Report
that performance indicators that have remained Red or Yellow from month to month are not
being highlighted to the same degree as those that have improved or declined in the most current
month.

3.7 Meeting with Site Vice-President

Dr. Budnitz met with Jim Becker, DCPP Site Vice-President, to discuss items from the fact-
finding meeting and other items of interest.

3.8 Potential for Pressurized Thermal Shock (PTS) and Implications for License Renewal

The DCISC Fact Finding Team met with William Bojduj of the Reactor Engineering Group on the
issue of the threat posed by a potential Pressurized Thermal Shock (PTS) at DCPP. DCISC last
reviewed this topic in September 2010 (Reference 6.7) when it concluded:

DCPP has preliminary results from a Westinghouse (DCPP reactor vessel vendor) that there are no
adverse effects on vessel pressurized thermal shock from the combined Shoreline/Hosgri Fault
earthquake during a 20-year extended operating life. The DCISC expects the final result to be
available for presentation by PG&E at its November 16, 2010 Public Meeting.

PTS is a concern when a Reactor Vessel is pressurized during power operation and experiences an
injection of relatively cool water contacting its hot steel walls, or experiences rapid repressurization
after a depressurization event. The cool water shock or repressurization could cause small cracks to
enlarge and the vessel to rupture. This phenomenon is a concern only for vessels embrittled by
years of high-energy neutron flux. An earlier meeting with Mr. Bojduj had occurred during the
March 2010 Fact Finding meeting, and this was a brief follow-up.

The meeting began with the FF Team explaining again the specific request to the DCISC from the
California Energy Commission, related to pressurized thermal shock (PTS) over the postulated 60-
year extended period of operation, the newly discovered Shoreline Fault feature, and the nexus
between PTS and this seismic hazard. The DCISC’s also discussed its plan to do a broader evaluation
of safety issues related to the license renewal application and life extension. Specifically, the
purpose of the meeting was for the DCISC team to discuss with Mr. Bojduj their work to date on the
technical issues related to PTS, and to assure that the information being relied upon was complete
and up-to-date. The DCISC team also explained the interim conclusions that were emerging from
the DCISC’s studies, and to ascertain whether any of the information being relied on was
incomplete or incorrect.

Based on the discussions with Mr. Bojduj, the DCISC team believes that it has not overlooked any
technical information that might be needed to support its own review, nor has it somehow
misunderstood any of the principal conclusions that the DCPP group has arrived at in support of its
license-extension application to the NRC. Apparently, there are no misunderstandings, nor is there
any information that the DCISC team is not already aware of.

Mr. Bojduj clarified one additional important point that had been unclear. Every operating reactor
uses a set of small metallic specimens (so-called coupons) placed inside the vessel, that can be
removed periodically for examination, to study how radiation damage affects the metal in the
vessel itself. These metallic coupons are made from the exact same material as the vessel itself. The
DCISC was concerned that perhaps the plant does not have enough coupons to provide high
assurance about vessel radiation damage for use over an extended operating life. However, Mr.
Bojduj explained that the DCPP plant possesses enough metallic coupons, either in the reactor itself
or now in the spent-fuel pool, to support the plant’s need to understand potential radiation
damage to the reactor vessel out for the full 60-year proposed lifetime of the plant if NRC grants a
license extension.

Specifically, Mr. Bojduj stated that the irradiation experience from the coupons they already have
in-hand at DCPP goes out in some cases to the equivalent fluence of 55 or so EFPY (effective full
power years), close to what they need for a 60-year operating lifetime. The coupons with the
highest neutron fluence exposures get to 55 EFPY by having been placed in a higher neutron flux
field inside the reactor core than the fluence that the vessel walls have experienced. If these
coupons have valid exposures, the DCPP plant already has close to enough irradiation experience
with the coupons in-hand to support their need out to 60 years with 20 more years of irradiation
available, as necessary, if the license extension is granted.

Conclusions:

DCPP has a sufficient number of reactor vessel surveillance coupons to support the station’s
monitoring of the effects of neutron radiation on the reactor vessels of Units 1 and 2 throughout
the full 60-year proposed lifetime of the plant. The DCISC Fact Finding Team’s conversation with
Mr. Bojduj verified DCISC’s understanding of DCPP’s principal conclusions in support of the
utility’s life-extension application to the NRC for both units. From the conversation, DCISC also
believes that it has not overlooked any existing technical information needed to support its own
review of the effects of pressurized thermal shock coupled with seismic effects upon the reactor
vessels during the full 60-year proposed lifetime of the plant. Further, DCISC recognizes that
analyses of seismic effects of the Shoreline Fault are not fully complete at this time, though
PG&E’s initial conclusion indicates that its effects are within the current seismic capability of the
plant.

4.0 Conclusions

4.1

The Plant Health Committee (PHC) appears to be employing an effective method for examining
the status of plant operating systems, determining system health through its use of a logical set of
performance indicators, and reviewing and tracking planned actions to completion. Increasing the

frequency of Committee Meetings and deleting budgetary decisions from the Committee's responsibilities appear to have allowed the PHC to examine DCPP systems more frequently and effectively. The number and significance of unhealthy plant systems were reduced during the period between February and September of 2010. DCISC should focus future reviews on the performance of individual systems and should conduct any future reviews of PHC activities as dictated by trends in overall station performance.

4.2

Extensive enlargements and modifications have been made to the containment sump screens in order to substantially reduce the risk of blocking recirculation to the Reactor Vessel during a Loss of Coolant Accident. Detailed examinations have been made of the Containment Building to identify and evaluate potential sources of debris that could be created by Loss of Coolant Accidents originating in various areas of the Containment Building. However, this problem has not been completely resolved either by DCPP or by the industry. DCISC should continue to follow this topic, and the next review should take place after the results of the Pressurized Water Reactor Owners Group Topical Report is issued in 2011.

4.3

The Unit 1 Reactor Vessel Head Replacement Project appears to be progressing smoothly during outage 1R16. Lessons learned from the Unit 2 head replacement during 2R15 have been applied and have resulted in better teamwork, improved efficiencies, and reduction in project duration thus far, while maintaining project quality.

4.4

With its Operations Revitalization Plan, DCPP management has taken a considerable number of actions to address operator concerns and revitalize the relationship with station operators. Performance indicators that are influenced by the actions of station operators reveal no potential areas of concern. A slight declining trend in the Operations Protective Tagging Index from April through August 2010 may, however, be worth examining. The station and PG&E need to promptly resolve the continuing and significant problem of operators not being correctly paid.

4.5

DCPP has devoted substantial attention and effort to reducing component mispositionings. Significant improvement was achieved during refueling outage 1R16. Inconsistencies between the definitions of mispositioning significance levels in the monthly performance indicator sheet and in Procedure OP1.ID6, Definition and Measurement of Mispositioned Plant Components, still need to be resolved.

4.6

The DCISC does not typically review organizational and process related areas unless considered warranted to examine aspects that could be tied to specific plant performance issues related to safety. Organizational structure and management methods are considered to be the purview of the utility. This, however, was DCISC’s first review of the Performance Improvement Action Plan, and it became apparent that the Plan is almost exclusively organizational and process-oriented in nature. Therefore, DCISC will refrain from further reviews of this Plan unless certain aspects can
be clearly tied to station performance issues related to safety.

However, the DCISC recognizes through earlier Fact Finding Meetings and reports that DCPP has had difficulties with evaluating and addressing station problems, including the area of engineering evaluations. Additionally, the NRC has issued DCPP a significant cross-cutting aspect for deficiencies in its Corrective Action Program, a major program included in DCPP’s Problem Prevention and Resolution area. The DCPP Performance Improvement Action Plan is an appropriate vehicle for helping to correct and improve DCPP’s performance. DCISC concludes from this review that some causal factors related to this problem may be due to an inadequate number of trained and qualified personnel as well as a lack of clarity in personnel responsibilities. DCISC also concludes from its review of the Plant Performance Indicator Report that performance indicators that have remained Red or Yellow from month to month are not being highlighted to the same degree as those that have improved or declined in the most current month.

4.7

DCPP appears to have a sufficient number of reactor vessel surveillance coupons to support the station’s monitoring of the effects of neutron radiation on the reactor vessels of Units 1 and 2 throughout the full 60-year proposed lifetime of the plant. The DCISC Fact Finding Team’s conversation with Mr. Bojduj verified DCISC’s understanding of DCPP’s principal conclusions in support of the utility’s life-extension application to the NRC for both units. From the conversation, DCISC also believes that it has not overlooked any existing technical information needed to support its own review of the effects of pressurized thermal shock coupled with seismic effects upon the reactor vessels during the full 60-year proposed lifetime of the plant. Further, DCISC recognizes that analyses of seismic effects of the Shoreline Fault are not fully complete at this time, though PG&E’s initial conclusion indicates that its effects are within the current seismic capability of the plant.

5.0 Recommendations:

None

6.0 References


November 17, 2010, Volume II, Exhibit B.3, Section XVIII, “Replacement of Unit-2 Reactor Head during 2R15”


1.0 Summary

The results of the December 15-16, 2010 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. EPA Closed Cooling
2. Plant Health Committee (PHC) Meeting
3. Environmental Qualification Program (EQP)
4. Software Quality Assurance (SQA)
5. Human Performance (HP) Program
6. Licensing Basis Verification Program (LBVP)
7. Corrective Action Program (CAP)
8. Used Fuel Storage Program (UFSP)
9. DCISC Member Meeting with Site Vice-President
10. DCPP Safety/Security Interface
11. Outage 1R16 Radiation Protection (RP) Performance
12. DCPP Open Items
13. DCPP Open House

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at
future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 EPA Closed Cooling

The DCISC Fact-finding (FF) Team met Brian Cunningham, Supervisor of Environmental Programs, to review the proposed Environmental Protection Agency (EPA) Closed Cooling Regulation and the potential impacts that the implementation of closed cooling could have on plant operational safety. This is the first DCISC review of this subject.

The Federal Clean Water Act Section 316(b) is implemented through National Pollutant Discharge Elimination System (NPDES) permits, issued pursuant to Clean Water Act Section 402, which authorizes the point source discharge of pollutants to navigable waters. The California State Water Resources Control Board is designated as the state water pollution control agency for all purposes stated in the Clean Water Act. The State Water Board and Regional Water Quality Control Boards are authorized to issue NPDES permits to point source dischargers in CA.

Ongoing development of Federal Clean Water Act Section 316(b) Regulations regarding aquatic organism impingement and entrainment and a California Specific Policy for 316(b) rule implementation may require all coastal power plants, including existing plants like DCPP, to reduce marine impingement and entrainment levels utilizing the “best technology available” (BTA), meaning closed-cycle cooling systems (i.e., cooling towers). DCPP employed a consultant, Enercon, to study the scope, site feasibility, potential plant effects, projected costs, and a conceptual implementation schedule with retrofitting a closed-cycle cooling system at DCPP. The report (Reference 6.1) was published in March 2009 and was submitted to the applicable CA jurisdictions.

The State Water Board is requesting that Southern California Edison (SCE) and PG&E conduct special studies to investigate alternatives for their nuclear power plants to meet the BTA requirements. The studies are to be conducted by an independent third party selected by the State Water Board, be ready by October 1, 2011, undergo a stakeholder and public review, and be completed by October 1, 2013. The Board will then decide what requirements apply to CA’s two nuclear plants.

The DCISC was interested in the effects of cooling towers on plant safety. The March 2009 DCPP feasibility report addressed several potential safety impacts.

This study concluded the following:
Likely insurmountable permitting obstacles
- Substantial engineering challenges
- Significant adverse environmental impacts
- Costs exceeding $4 billion
- Uncertainty regarding post-retrofit operating capacity factors

The report further concluded that plant downtime, reduction of average net electrical output, and potential for reduced capacity factors would together cause a significant loss in generation.

Enercon determined that mechanical draft cooling towers using seawater makeup are the only potential option for closed cooling. They concluded that the only viable mechanical cooling towers would be nonplume-abated rectangular bank units because of tower size and the site topographical constraints. The towers would have to be located just south of the Training and Maintenance Training Buildings along the shore on what is now parking, equipment laydown, and warehouse space. The net loss in electrical output was calculated to be approximately 28 MW (e) per unit, including lost generation due to loss of efficiency and to additional electrical loads for the cooling tower systems. New Condenser Cooling Water piping would use the existing Intake Structure. The safety-related Auxiliary Saltwater System would remain directly cooled by ocean water. The existing condensers would have to be replaced with stronger ones due to higher operating pressures with a closed cooling system.

Current requirements indicate an in-service date for the cooling towers of 2024. Construction was estimated to take approximately 3-3/4 years. The plant would have to be shut down for at least 17 months during construction.

Nuclear safety concerns identified included:

- Increased flood risk to safety-related systems from cooling tower water – Failure of the existing Condenser Cooling Water System has been analyzed for flooding impact on safety-related equipment located in the Turbine Building and reported in the Final Safety Analysis Report (FSAR). Because of the low system pressure and gravity draining of water to the ocean, current flooding risk is low. The proposed cooling tower design would increase that risk due to higher water pressure and the height of water in the towers above key turbine building equipment.

- Increase in plant trips due to salt deposition – The use of salt-water cooling towers would result in very large increases in salt aerosol deposition outside and inside the plant, due to the much larger carryover associated with cooling towers compared to the natural mechanisms (wind interaction with ocean waves) that result in salt aerosol deposition. There would be a significant salt deposition on the 500- and 230-kV power lines (and associated switching equipment) leaving the plant, thus increasing the potential for loss of offsite power, resulting in plant trips. The plant design basis calls for a 50% load reduction without turbine or reactor trip following loss of offsite power (both 500 kV breakers open); however, the 500 kV system
would be powering the cooling tower fans, resulting in loss of tower cooling. This would cause loss of condenser vacuum and subsequent turbine and reactor trip. Though this is an analyzed condition, its higher frequency potential is adverse to plant safety. Enercon predicts about 7500 pounds of salt to be released annually into the atmosphere from the towers.

- Salt deposition with accelerated aging of plant equipment – Large increases in salt deposition would have the effect of increasing corrosion, required maintenance, and frequency of failure of exposed plant equipment (e.g., Emergency Diesel Generators) with their open ventilation intakes.

- Interruption of the safety-related Auxiliary Saltwater (ASW) System during construction – The massive and complex construction in the vicinity of the ASW System would increase the probability of its interruption of cooling water to safety-related equipment during operation (safety-related Component Cooling Water heat loads), shutdown (Spent Fuel Pool Cooling heat loads), and accident conditions (Ultimate Heat Sink).

- Rerouting of existing NRC-approved Independent Spent Fuel Storage Installation (ISFSI) haul road – The ISFSI FSAR describes the design of the route for moving spent fuel casks from the plant up to the ISFSI, and this has been approved by the NRC. The road is limited to an 8.5% maximum slope, supports the heavy loads from the dry cask transporter, avoids landslide-prone areas, and withstands the effects of a Hosgri Fault earthquake (without a loaded dry cask transporter tipping over). Finding an acceptable new route and obtaining NRC approval would be difficult.

- Landslide potential – Relocation of the ISFSI haul road and the location of the cooling towers and their auxiliaries would need to be located to avoid active landslide areas.

- Increased risk of interruption to the Fire Protection System during construction – The plant and NRC would have concerns with the possibility of any compromises to the Fire Protection System, such as accidental damage to the yard fire loop which would be vulnerable during the extensive excavation required for the cooling towers and underground tunnel and piping construction.

- Security concerns related to the opening of the Protected Area boundaries during construction – The massive excavations and disruptions of normal site boundaries, large numbers of construction personnel, and numerous equipment crossings of Protected Area boundaries are potential threats to plant security.

Though these threats to plant nuclear safety from cooling towers are not certain and not problems perhaps until 2024, the DCISC is concerned about the potential reduction in plant operational safety. Additionally, the DCISC is concerned that (1) the large increases in salt aerosol deposition from cooling towers could cause reliability problems for equipment inside the plant, including the plant ventilation equipment, (2) the rearrangement and greatly increased congestion on the plant site due to the large space requirements of cooling towers could negatively impact plant emergency response, and (3) there will be a substantial learning curve associated with the transition to closed cooling that will result in increased plant trips during the learning period and reduced plant safety.
Conclusions:

Though not required until 2024, and still pending additional CA State Water Board applicability studies due in late 2013, the use of closed-cycle mechanical draft cooling towers with saltwater make-up at DCPP will have significant adverse impacts on plant operation, reliability and efficiency, as well as increased nuclear safety risk. A plant retrofit to use closed, salt-water cooling will have clearly negative impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. These negative safety impacts would likely exceed those associated with the major 9/11 security system upgrades that the DCISC has also monitored. While DCPP should of course make every effort to minimize negative safety impacts, as they have with security upgrades, the benefits of the security upgrades are obvious and clearly balance the impacts on plant safety (such as reduced access for emergency response). It appears to be more questionable that cooling tower retrofits would be justified in balance with the resulting plant safety reduction, because the cooling tower retrofits are apparently required due to a prescriptive EPA “best available technology” requirement rather than a performance-based approach to minimize and mitigate direct-cooling environmental impacts. The DCISC should continue to follow the developments at DCPP on cooling towers.

Recommendations:

None

3.2 Plant Health Committee (PHC) Meeting

The DCISC Fact-finding Team attended the December 15, 2010 DCPP Plant Health Committee (PHC) meeting. The DCISC last attended a PHC meeting on October 20, 2010 (Reference 6.2) when it concluded the following:

The Plant Health Committee (PHC) appears to be employing an effective method for examining the status of plant operating systems, determining system health through its use of a logical set of performance indicators, and reviewing and tracking planned actions to completion. Increasing the frequency of Committee Meetings and deleting budgetary decisions from the Committee’s responsibilities appear to have allowed the PHC to examine DCPP systems more frequently and effectively. The number and significance of unhealthy plant systems were reduced during the period between February and September of 2010. DCISC should focus future reviews on the performance of individual systems and should conduct any future reviews of PHC activities as dictated by trends in overall station performance.

Governed by DCPP Procedure OM4.ID16, “Plant Health Committee,” the PHC is a management team responsible for the following:

- Continual review of system and program health issues
- Routinely monitoring the status of plant health issues on the plant health issues list for action status and completion
- Routinely monitoring the status of the system health tactical list
Review and approval of action plans to address plant health issues that originated from system health reports, maintenance rule, operator workarounds, program health reports, emergent issues, and others deemed important to monitor

Review and monitor plant health issue plans that are presented to the PHC

Membership and expected attendance is as follows:

- Plant Health Committee Chairman and Facilitator (currently Jim Welsch, Operations Services Director)
- Project Engineering Manager
- Operations Director
- Engineering Director or Senior Director
- Maintenance Director
- Outage Management Director
- Reliability Engineering Supervisor
- Administrative Support Person

Others are invited to the meetings as necessary.

Plant health issues that require PHC review include:

- Issues that result in a red or yellow (unacceptable health) system health color (review at least every 6 months)
- Programs that are rated red or yellow health color (review at least every 6 months)
- Equipment performance issues that result in a red or yellow component health color
- Issues that result in a Maintenance Rule (a)(1) system
- Chronic system, program, or component health problems
- Issues that require special management attention or extensive resources to address
- High Critical (1A) PM deferral requests and appeals

The PHC procedure appeared appropriate. The PHC uses a Plant Health Issue Plan Data Base (active issues are contained in the Plant Health Issues List) to collect, rank, score, prioritize, and status plant health issues. The Committee assures there are effective action plans to address health issues (to return to white or green health status) and monitors the plans/schedules until completion. The action plans are included in the appropriate section of the system, program, or component health reports. These reports were described in the October 20-21, 2010 Fact-finding Report (Reference 6.3) and will not be repeated here.

The PHC functions with improved effectiveness compared to two years ago. It meets with greater
frequency than before, i.e., typically once per week whereas previously even monthly meetings were difficult to arrange. The PHC does not typically meet during outages. The main improvement is that the PHC now focuses almost exclusively on plant, system, program, and equipment health, whereas before it was distracted with costs of system improvements and plant budgets. Now, the DCPP Project Review Committee addresses those financial items.

The agenda for the December 15 meeting was as follows:

1. Safety Message – be aware of potential holiday distractions on work being performed.

2. Work Control Status Update – a “tactical list” of work control item issues was discussed. These included:
   a. Replacement of Fire Protection computer
   b. Failure analysis of failed Auxiliary Feedwater valve actuator
   c. Restore in-core thermocouples
   d. Saltwater System – intake readiness and spare parts
   e. Auxiliary Saltwater System pump vibration
   f. Various HVAC fan problems
   g. Plant Process Computer – address emerging issues
   h. 125 VDC System – battery failure analysis and resolution
   i. 230 kV System – implement 230 kV Reliability Project
   j. Improve Intake Structure Material Condition

3. Performance Monitoring Equipment (PME) Health Report – Health: Red due to discovery by QA audit of program neglect because of prior downgrading of the program to a “process” which did not have the same rigor as a program. PME was re-established to “program” status, a new Program Owner was assigned, and the following actions proposed to achieve Green health by the end of 2012:
   a. Engineering review of the PME Master List
   b. Performance of ~150 uncertainty calculations
   c. Updating the PME Master List
   d. Revising end use calibration procedures as needed

   All calibrations and tests performed while the program was “Red” were verified to be valid or re-tests performed. The QA audit looked at extent of condition and found no problems.

4. Main Feedwater System Health Review – Health: Green for Unit 1 and White for Unit 2 (the System Engineer voluntarily “forced” the health rating to White due to non-conservative flow readings in the Control Room). There was a 4-6 MW loss on Unit 1 due to flow measurement problems, but that has now been corrected.
5. Plant System Health Performance Indicators: Unit 1 has two red systems (AFW and 125VDC) and two Yellow ones (4kV and 230 kV). Unit 2 has four Yellow systems (ASW, HVAC, 4kV, and 230 kV).

These systems should be returned to healthy status in the next refueling outages for each unit. This is an improvement over the numbers of Red or Yellow systems in the past, a sign that the PHC is effective.

Conclusions:

The December 15, 2010 DCPP Plant Health Committee (PHC) meeting was well run, focused on system and program health improvement, and garnered good participation from attendees. The Committee's emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It is apparent that the PHC has increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which has resulted in improvement in system health measures.

Recommendations:

None

3.3 Environmental Qualification Program (EQP)

The DCISC Fact-finding Team met Alan Barta, EQ Program Coordinator, and Paul Johnson, Assistant Program Coordinator, to review the EQ Program. The DCISC last reviewed DCPP EQ in December 2008 (Reference 6.4) when it concluded the following:

The DCPP Environmental Qualification (EQ) Program has continued to make progress in addressing weaknesses. Corrective actions are essentially complete, almost all EQ files have been reviewed, and the program appears healthy. Equipment replacements have been identified as a result of the Steam Generator (SG) replacements because of changed postulated accident temperature profiles. DCISC should review the EQ program as it is transferred from PIMS to NEXIS and the completion of all files being reviewed and updated.

The DCPP EQP is controlled by Procedure CF3.ID3, “Environmental Qualification (EQ) Program,” which implements Title 10 of the U.S. Code of Federal Regulations, Part 50.49 (10CFR50.49). This requires the generation and maintenance of evidence to ensure that electric equipment important to safety will operate when required to meet system performance requirements. This mostly includes electric equipment located in harsh environments such as high temperature, high radiation, water spray, steam, etc. conditions, especially following postulated accidents. The procedure specifies the design bases for environmental conditions in various locations of the plant, the EQ Masterlist, applicable departmental procedures, deficiency identification and resolution, documentation requirements, and records retention. The procedure lists responsibilities for Engineering, Operations, Maintenance, Procurement, Learning Services, and Quality Verification personnel for their parts of the program.
The EQ Procedure includes the following:

- Personnel qualification
- EQ Masterlist Maintenance
- EQ file preparation, revision and retention
- Procurement and shelf life requirements
- Maintenance and surveillance of EQ equipment
- EQ deficiencies and EQ discrepancies
- Condition monitoring and self-assessment
- Assessment of industry operating experience

The procedure appeared satisfactory to the DCISC Fact-finding Team.

Personnel qualifications and personnel certification are specified in Program Guide ENGNTS12, “Engineering Personnel Training Program – Perform EQ Related Engineering Activities.” The guide includes all aspects of EQ, e.g., EQP scope, EQ Masterlist, requirements for various equipment, vendor qualification, EQ-related calculations, and EQ files. The guide appeared satisfactory.

Though the program has no health report, DCPP considers the EQP to be in Green (excellent) health currently and long-term.

DCPP performed a self-assessment of EQ for the period June 2006 through the end of 2009. The report was issued on July 1, 2010. The purpose was to assess the overall health of the EQP, report the results of EQ equipment condition monitoring, and identify any trends, issues, or industry concerns that could adversely impact the DCPP EQP. One additional assessment area was the move of EQ data and files from the original Plant Information Management System (PIMS) to the new SAP-based Nuclear Excellence Information System (NEXIS). The assessment was comprehensive and thorough. The report contained the following conclusions/issues:

- The EQP and documentation comply with 10CFR50.49
- There were no identified adverse trends in the qualification or maintenance of EQ equipment
- The current SAP or NEXIS EQ data/files are correct and all installed EQ equipment is properly documented
- EQ-trained Engineering personnel have reduced to three due to staff reduction and reassignments, and there are an additional five qualified in other areas. Training has been performed to qualify 3-4 additional personnel.
- The DCPP plant life extension project has required a review of all EQ equipment to extend their qualified lives from 40 to 60 years. Most of this has been performed in conjunction with the Steam Generator Replacement Project, and the remainder were identified in the report, along with scope, schedule and cost estimates.
The Containment Fan Cooler Unit (CFCU) motors have an EQ-qualified life of 169 years; however, the mechanical condition of the motors is poor, which means the motors are good for 2-3 more years. Replacement motors require 1-2 years to design, build, and qualify. This procurement needs approval and funding.

NRC performed a Life Extension Audit on EQ earlier in 2010, and there were no concerns or follow-up questions. As part of its proposed life extension, DCPP's review of EQ files to determine the impact of the extended 60-year life revealed the following:

- The required EQ maintenance for items with a 40-year life needing maintenance or replacement during the original 40 years is in place.
- Additional work needs to be completed for items with a qualified life between 40 and 60 years to extend the qualification or replace the items.
- The qualification for the 40-to-60 year items should be able to be extended if properly identified and the actual known environmental conditions are applied.
- The 40-to-60 years items were put into six categories as follows:
  1. Items already qualified for 60 years with specified normal maintenance
  2. Items with a replacement schedule supporting 60-year qualification
  3. Items qualified for 40 years which can be extended based on actual known operating temperatures
  4. A specific case involving Grayboot connectors which, similar to Item 3 above, are temperature sensitive
  5. Items which are radiation-only qualified which can be extended by assuring the integrated accident and normal radiation doses are acceptable
  6. Items which need new maintenance or replacement schedules to meet the 60-year life

Conclusions:
The DCPP Environmental Qualification Program (EQP) for safety-related electrical equipment appeared sound. The plant considered the EQP to be in Green (excellent) health. A self-assessment found the EQP to be effective in meeting the regulatory requirements of 10CFR50.49. The EQP Coordinators are experienced and knowledgeable in the program requirements and features. The EQP appears to be in a good position to assure applicable DCPP equipment is compliant with the 20-year plant life extension.

Recommendations:
None

3.4 Software Quality Assurance (SQA)
The DCISC Fact-finding Team met with Sandra Harris, Digital Systems Engineer in the DCPP Digital Systems Instrumentation and Controls Group, for an update on DCPP Software Quality
Assurance (SQA). The DCISC last reviewed SQA in September 2006 (Reference 6.5) when it concluded:

The Quality Verification audit of the DCPP Software Quality Assurance (SQA) Program concluded that the program was satisfactory overall. There were two Areas for Improvement regarding two outdated plans and some minor issues. These items are being tracked on Action Requests. The audit appeared thorough, and the SQA Program appeared sound.

SQA is a DCPP program intended to provide uniform requirements for preparing and maintaining computer software, applications and systems that are used to produce or manipulate data used directly in the design, analysis, and operation of plant structures, systems and components. The program is controlled by a plant procedure. The program applies to computer systems that are under complete plant control as well as those that are proprietary and maintained by vendors who are themselves required to have similar SQA Programs. There is a separate DCPP program for other business-related software.

Procedure CF2.ID9, “Software Quality Assurance for Software Development” controls the DCPP SQA Program. The SQAP applies to the development of all new software applications (quality and non-quality related) that affect power plant operation such as

- Plant Process Monitoring (scan, log, and alarm)
- Plant Process Control
- Other applications related to power plant performance

Developed software applications and revisions to existing plant applications are controlled by their individual approved SQA Plans.

The development process follows the steps in the following chart:
Significant steps in this process are the Functional and Software Requirements Specifications, Software Verification, Validation, and Installation Tests, Software Configuration Management Plan, and Software Quality Assurance Plan. The last two documents are the controlling documents for maintaining configuration and making any changes to the developed software. The important software development steps are subject to independent validation and verification.

DCPP reactor and other system controls do not connect to the outside “computer world” directly to prevent unwanted attacks or challenges. Plant computers, which do connect outside, employ multiple software firewalls and hardware “data diodes” to prevent incoming problems. System software is pre-tested via factory acceptance tests (FATs) and/or site acceptance tests (SATs) on isolated development computers before being installed in a system computer.

As shown the process is completed with the development of a SQA Plan for the particular application. In the form of a procedure, a SQA Plan’s purpose is to provide requirements and guidelines for the design, development, modification, and documentation of the application software. It provides for the overall responsibilities, definition of terms, and general instructions for developing and maintaining the application. Specific details for implementing SQA and Configuration Management (CM) are addressed. The DCISC Fact-finding Team reviewed the SQA Plan for the Reactor Vessel Level Indication System (RVLIS) which was classified as a Class A computer system and runs on a PC platform. RVLIS is a system, which measures water level in the reactor vessel following accidents, which affect that water level.

The Plan consisted of the following:

- **Scope**
- Definitions for the RVLIS the application software consists of
Current Value Table
Timer
Data Acquisition
Calculator
Human Machine Interface
Watchdog

RVLIS hardware components were described as:

- RVLIS computer is a Pentium 166Mz computer based on the CompactPCI 3U form factor
- CompactPCI Power Supply
- Signal conditioning and I/O hardware
- Network interface card
- 24VDC power supply for DP transmitter excitation and use for controlling annunciation relays
- Flat touch screen monitor
- Cooling fan assembly

Responsibilities – for RVLIS:

- The RVLIS System Coordinator (SC) is responsible for RVLIS software development and maintenance. The SC is the individual who coordinates activities related to the procurement, development, maintenance, and operation of the RVLIS System.

Instructions

- Software Life Cycle
- Documentation
- Configuration Management
- Problem Identification
- Media Control
- Disaster recovery

Records

References

The RVLIS SQA Plan was comprehensive, prescriptive, and appeared to be an effective method to control software changes and configuration management. For software changes, a Software Change Package (SCP) is required to be initiated by the SC responsible for the modification. The SCP details the requirements, specifications, design description, testing, installation, etc.
DCPP has added Cyber Security and Digital Technology requirements to its computer/software controls. The DCISC should review these topics during 2011.

Conclusions:

DCPP’s Software Quality Assurance Program appears to be comprehensive and well designed to assure computer software is developed, maintained, operated, and changed in an appropriately controlled fashion.

Recommendations:

None

3.5 Human Performance

The DCISC Fact-finding Team met with John Hart, Supervisor of Human Performance (HP) and Industrial Safety, for an update on DCPP’s HP Program and performance. Mr. Hart reports directly to Ken Peters, DCPP Station Director, a high reporting level, which indicates the importance DCPP places on both HP and industrial safety. The DCISC last reviewed HP in December 2009 (Reference 6.6) when it concluded:

At the plant level DCPP Human Performance (HP) has been steady at a good level within its goal. The goal has a built-in continuous improvement factor which is positive. There has been effective HP performance during recent outages, resulting in no HP events significant enough to cause a clock reset. There are challenges in Maintenance work control quality and rework which the DCISC should follow.

DCPP’s Human Performance Program (HPP) is controlled by Procedure OM15.ID1, “Human Performance Program.” The stated purpose of the program is to “… improve performance by reducing the frequency and severity of events …” using “… error prevention techniques as appropriate for the task.” The procedure outlines program definitions; management and personnel responsibilities; and processes and criteria for identifying and processing Department-Level Event-free Days events and Site Event-free events and the associated clock resets. In general, all individuals performing work at DCPP are responsible for:

- Performing activities within established procedures, standards, and guidelines
- Demonstrating and promoting the use of error prevention tools
- Identifying via the Corrective Action Program (CAP) conditions, which may contribute or cause HP errors.

Error prevention tools (e.g., three-way communication, independent verification, phonetic alphabet, etc.) are taught in various “just-in-time” training tool kits, emphasized by management, and displayed prominently throughout the plant and on reminder cards required to be carried by all. The Fact-finding Team reviewed the Three-Way Communication Training Tool Kit and found it to be
well designed. It included a student workbook, Maintenance Site-Level Event Awareness Bulletin, two-minute rule activity, student feedback form, and outline of an in-class activity of determining a battery voltage using three-way communication.

The following chart depicts overall plant human error performance through October 2010, the latest data available at the time of the fact-finding meeting.

The error rate (numbers of Department Error events per 10,000 work-hours) increased slightly from August to October 2010; however, the overall trend is downward (good) and the current rate (0.192) is below the plant goal of 0.22. It is interesting and challenging that the plant goal is revised downward at a rate of 10% of the 12-month average rate. Overall plant performance is good based on no HP clock resets in 529 days. DCPP has a running “clock” which measures how long the plant has operated without a serious human error event. A “clock reset” is the result of a significant human error which causes a plant “clock” to stop and begin again at zero.

At the department level:

- Chemistry had been above goal (Red) until October when it achieved Green performance. Chemistry recorded one department level event in September and none in October. The October level was 0.479, above the goal of 0.400. Chemistry expects to achieve Green in January 2011.

- Operations committed four events in September and five during Outage 1R16 in October. This puts them slightly above goal (0.493 vs. 0.474). The outage events included a missed fire door rove, unsafe work practice, missed containment penetration room continuous fire watch, danger tag hung on wrong component, and a temperature limit missed.

- Engineering’s error rate is commendably low at 0.035 vs. a goal of 0.2.

- Maintenance recorded one department level event in September and 11 during Outage 1R16 in
October; however, their performance (0.203) remains well below the goal (0.300). The 1R16 events were an instrument valve left open, air valve found closed, flow control valve found backseated, work beyond the scope of a work order, unauthorized employee in vital area (2 events), visitor escort violation, unsecure door (2 events), and damage to company vehicle. The following chart shows the comparison of departmental events for Outages 2R15 and 1R16.

The primary reasons for higher error rates during the outage were reported to be time pressure, more people working, and less frequent (i.e., less familiar) activities being performed. DCPP began to look more closely at the severity level of HP events in Outage 1R16. This will mean revising event trends and processes, which the department PICOs (Performance Improvement Coordinators) are developing. The DCISC should review these new severity-based trends near the middle of 2011.

DCPP is planning to augment its pre-outage personnel safety and human performance training for both plant personnel and supplemental personnel. There will be “new to nuclear,” “experienced worker,” and “supervisor” modules. The DCISC has attended DCPP pre-outage training and found it well done. The DCISC should consider attending the new training in March or April.

**Conclusions:**

DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset. Most departments are within their goals with one, Operations, slightly higher.

**Recommendations:**

None

### 3.6 Licensing Basis Verification Project
The DCISC Fact-finding Team met with Eric Nelson, Project Manager for the DCPP Licensing Basis Verification Project (LBVP) to review the project. The purpose of the LBVP is to perform an objective evaluation to determine if the DCPP licensing basis has been adequately maintained and to correct any identified deficiencies. The term “licensing basis” refers to any commitments made to NRC on which their approval of the license to operate is based. This is the first DCISC review of this project.

Since completion of the original Final Safety Analysis Report (FSAR), a number of changes to DCPP licensing and design bases have been made. DCPP had determined that some of these changes were inaccurate, inconsistent, inadequately evaluated (with the 10CFR50.59 process), or based on incorrect interpretations of NRC requirements. Based on this, DCPP management authorized the LBVP. The DCISC has reviewed many of these discrepancies and agrees that a broad study be undertaken to evaluate the problem and correct any deficiencies.

The LBVP is designed to perform a review an evaluation of licensing, design, and analysis changes from the original FSAR to the present.

**Project Overview**

- Identify, consolidate, and reconcile any inconsistencies in the DCPP Current Licensing Basis (CLB)
- Perform a review modeled after the Component Design Basis Reviews (CDBRs) for eight risk-significant systems after the corresponding system licensing basis is verified
- Reconcile any inconsistencies in the CLB searchable document databases
- Enhance the full-text search capabilities for the CLB searchable databases
- Validate the implementation of the FSAR into plant documents (e.g., operating and surveillance procedures)

**Project Scope**

- Phase I (95% complete)
  - Reviewed and evaluated the Component Cooling water (CCW) and Auxiliary Feed water (AFW) Systems
  - Reviewed CLB databases and identified specific improvements, and defined the desired capabilities of an improved full-search text tool.
  - Performed the following:
    - Reviewed the balance of the SER, SSERs, License Amendment Safety Evaluations, and all incoming/outgoing NRC correspondence, etc. for the CCW and AFW Systems.
    - Identified and reviewed all 10CFR50.59 Evaluations and the 10CFR50.59 Screens for calculations, STPS, EOPS, DCMs, TS Bases, ECOs, and modifications for the CCW and
Provided a preliminary report to PG&E management of the Phase I findings and recommendations on September 17, 2010.

The DCISC Fact-finding Team reviewed the Phase I Summary Report and determined that it was thorough and intrusive. The report concluded that “... facility, procedure, and analysis changes appear to have been accurately and correctly documented on a 10CFR50.59 Screen and Evaluation, when applicable.” Two issues, elimination of the gross failed fuel detector and certain changes in FSAR Update Appendix 3.1A. Other inconsistencies were found between Technical Specification Bases and the FSAR Update and Design Criteria Memoranda. These will be reconciled in Phase II.

- Phase II (In Progress)
  - Implement Phase I recommendations and any outstanding actions from Phase I
  - Review and evaluate remaining portions of the FSAR
  - Licensing review for the 230 kV System was begun in August 2010
  - Perform reviews modeled after Component Design Basis Reviews (using NRC Inspection Procedure 71111.21 as a guide) on eight Risk-Significant Systems, after the corresponding system licensing review is complete. The systems are CCW, 230 kV, 500 kV, EDGs, AFW, SSPS, RHR, and ASW.
  - Correct identified inconsistencies in the CLB Document Databases

The LBVP milestones are as follows:

- September 17, 2010 – preliminary report provided to management of the Phase I Findings and Recommendations
- August 2010 – Initiate Phase II (began 230 kV licensing review)
- March 2011 – Complete CCW CDBR
- March 2011 – complete enhancements of the CLB Electronic Databases and Full-Text Search Tool goes into production
- December 2014 – complete LBVP

The LBVP will be carried out on a project basis with a dedicated Project Manager and some DCPP personnel, but with most work being done by contractors, including Shaw/Stone and Webster and Westinghouse, the Nuclear Steam Supply System supplier, all of whom are experienced in LBVP. The LBVP will utilize a Review Board, which consists of several Senior Consultants with previous NRC licensing, inspection, or enforcement experience and/or mechanical/electrical engineers with previous nuclear plant licensing, design, or operations experience. They will periodically review and comment on final system evaluations and the Phase I Summary Report prepared by the Technical Support Team and LBVP Project Management. They will work with Project Management to develop Phase I lessons learned and recommendations for Phase II performance, which will be included in...
the Phase I Summary Report. The Review board will be regularly convened to review potential licensing basis issues and determine if further action is needed. They will review all final evaluation reports performed in Phase II.

Conclusions:

The DCISC Fact-finding Team believes the DCPP Licensing Basis Verification Project (LBVP) is warranted based on past license basis problems, which both DCPP and NRC have identified. The nearly completed initial Phase I work has provided a good foundation for moving forward with Phase II, the main project initiative. DCPP has established a strong project team and process for the LBVP. The DCISC should follow up periodically to review the project until its completion in 2014.

3.7 Corrective Action Program (CAP)

The DCISC Fact-finding Team met with Terry Garrity, CAP Manager, for an update of the CAP. Ms. Garrity reports to the Site Services Director through the Manager, Problem Prevention and Resolution. The DCISC last reviewed the DCPP CAP in March 2010 (Reference 6.7) when it concluded the following:

The two self-assessments of the DCPP Corrective Action Program (CAP) appeared to have been performed satisfactorily. Both found the CAP acceptable overall and identified several gaps to excellence, along with recommendations to close the gaps. DCPP will perform effectiveness evaluations which the DCISC should review when complete.

The CAP Index, an overall measure of plant CAP health has declined from White (acceptable) to Yellow (not acceptable) in the last month as shown in the chart below. The main causes were due to a high average age of Root Cause Analyses (RCAs), failed RCA evaluations, high Apparent Cause Evaluation (ACE) evaluation times, and a high number of open Condition Reports.

Ms. Garrity expects the CAP Index to be Green in the first quarter of 2011.

In 2008 DCPP received four NRC Green Findings with the cross-cutting theme involving the lack of thoroughness of problem evaluations. DCPP performed a Root Cause Evaluation (RCE) focused on inadequate thoroughness of engineering evaluations and established a controlled process for better documenting engineering evaluations as corrective action to prevent recurrence (CAPR). This evaluation thoroughness cross-cutting theme continued throughout 2009 with six additional Green Findings, and in March 2010 NRC determined that a DCPP a Substantive Cross-Cutting Issue (SCCI) existed in the area of Problem Identification and Resolution (PI&R) related to the thoroughness of problem evaluations.

DCPP initiated another RCA (Order 60024480, Operation 60) “Adverse Trend in Thoroughness of Problem Evaluation.” The DCISC Fact-finding Team obtained and reviewed the RCA. The RCA was impressive in its depth, scope, extent, and straightforwardness. The DCISC concluded that the evaluation was extensive and thorough in that the Root Cause Team reviewed 14 evaluations that had been identified as lacking thoroughness, interviewed 23 personnel from director level through individual contributor level, assessed the existing training and indoctrination to perform evaluations, and identified the extent to which plant personnel understood what a good evaluation looked like. The RCT used three investigation methodologies:

- Kepner-Tregoe, which permits a rigorously structured examination of possible causes, probable causes, and true causes
- WANO Cause Code Chart, which permits, via a Pareto chart, the identification of the “significant few” versus the “trivial many” causal factors
- Stream Analysis, which permits the evaluation of the interrelationship between organizational factors and individual behaviors

Review of the 14 deficient evaluations led the RCT to conclude the following key factors contributing to the deficiencies:

- Assumptions not validated
- Narrow focus of RCAs (misalignment between the cause and the problem statement)
- Narrow focus of corresponding corrective actions (e.g., reliance on training per se as a corrective action)
- Poor understanding of plant design and licensing bases (see Section 3.6, Licensing Basis Verification Project)
- CAP not entered when deficiencies were identified

Additionally, reviewing five of the 14 evaluations using the Kepner-Tregoe methodology, the RCT identified these underlying reasons for inadequacy of evaluations:

- Mind set/mental model (past bad behaviors were considered adequate)
- Incorrect interpretation of design and licensing bases requirements
Inadequate independent technical review (time pressure)

- Focus on process rather than on the issue

The RCA presented a timeline of related events beginning in March 2004 leading up to the March 2010 SCCI. Using the timeline, the RCT concluded that there had been warning signs concerning the quality of DCPP evaluation, but no effective measures were established to address the issue, and DCPP was not keeping up with industry standards. Based on this timeline and succession of related problems, the RCA identified the following root and contributory causes:

Root Cause:

The root cause of evaluations lacking appropriate depth and extent was the Extended Leadership Team (supervisors and above) had neither provided adequate standards, nor effectively demonstrated or reinforced behaviors, nor established sustainable programs in the area of evaluations.

Contributory Causes

1. The licensing bases were not well documented nor easily retrievable
2. Weaknesses in causal evaluations prevented earlier resolution of the SCCI
3. Loss of proficiency in performing evaluations contributed to less than adequate evaluations

Recommended Corrective Actions to Prevent Recurrence:

1. Establish generic governance for evaluation programs in order to establish the right standards
2. Train Program Sponsors (Director level) and Program Owners (Manager level) on the structure of an effective Program Governance
3. Execute a Program Implementation Matrix to ensure evaluation programs incorporate the essential elements for their sustainability

DCPP combined these recommendations and the WANO CAP Areas for Improvement from its most recent evaluation into a comprehensive “2010-2011 Operating Plan – Performance Improvement Focus Area Integrated Action Plan.” The Plan recognizes that “DCPP’s use of Performance Improvement (PI) Programs lags the industry with the result that performance shortfalls continue to occur and performance relative to the industry is not improving.” This is an extensive, far-reaching initiative involving not just evaluation thoroughness but the following PI areas:

- Leadership
- Corrective Action Plan
- Self-assessments and Benchmarking
- Operating Experience
The Plan appears to “leave no stone unturned.” It is assessing and questioning DCPP’s programs and processes in the following specific PIP/CAP areas:

- Corrective Action Review Board (CARB)
- Management Review Committee (MRC)
- What effective use of Causal Analysis (ACEs, RCAs, etc.) looks like
- Management involvement and critical review of their respective PIP products
- Performance Improvement Coordinator (PICO) oversight and involvement
- Augmented Self-assessments (SAs) including a Self-Assessment Review Board (SARB) and regular SA Program Health Reports from each functional organization.
- Effectiveness reviews of INPO Significant Operating Event Reports (SOERs)

DCPP completed a comprehensive performance improvement benchmarking visit to Byron Nuclear Station in August 2010. INPO performed a Performance Improvement Assist Visit at DCPP in August 2010. Results from these activities have been factored into the Plan.

Except for the problems with the thoroughness of evaluations, the DCPP CAP works well overall. DCPP high-level CAP measures, the CAP Index and Department Indices, include the following:

<table>
<thead>
<tr>
<th>Measure/Metric</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition Report* Initiation Rate</td>
<td>10</td>
</tr>
<tr>
<td>RCA Quality</td>
<td>13</td>
</tr>
<tr>
<td>RCA Cycle Time</td>
<td>5</td>
</tr>
<tr>
<td>SL1 (Level 1 CRs) Extensions</td>
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</tr>
<tr>
<td>SL1 Average Age</td>
<td>8</td>
</tr>
<tr>
<td>CAPR Effectiveness</td>
<td>10</td>
</tr>
<tr>
<td>ACE Quality</td>
<td>10</td>
</tr>
<tr>
<td>ACE Cycle Time</td>
<td>5</td>
</tr>
<tr>
<td>SL2 Extensions</td>
<td>5</td>
</tr>
<tr>
<td>SL2 Average Age</td>
<td>8</td>
</tr>
<tr>
<td>SL3 Average Age</td>
<td>2.5</td>
</tr>
<tr>
<td>No. of Open SL1-3 CRs</td>
<td>8</td>
</tr>
<tr>
<td>CR Closure Accuracy</td>
<td>8</td>
</tr>
</tbody>
</table>

* (CR = SAP Notification)

CAP Index Ratings through October 2010 (the latest period available at the time of the fact-finding
To the DCISC Fact-finding Team the most significant CAP measure is the CAPR (Corrective Action to Prevent Recurrence), which is indicative of how well the problems were identified and resolved to prevent them from happening again. This is defined as the number of unsatisfactory effectiveness evaluations for three months running. The ratings are: Green = 0, White = 1, Yellow = 2, Red ≥ 2. In theory, this could be the single most effective measure of a CAP; however, in practice.

From previous reviews, the DCISC understands that CAP effectiveness is gauged by four evaluations/measures as follows:

1. Timely completion of Effectiveness Evaluations (EEs) (proactive)
2. NCR & QE CAPRs are evaluated as effective or ineffective (proactive) in Effectiveness Evaluations
3. Cause analysis identifies ineffective CAPRs as determined by the CAP Supervisor (reactive)
4. CAP Supervisor subjective evaluation (reactive)

Following determination and implementation of corrective action (CA) to prevent recurrence (CAPR) for ACEs and RCAs, the line organization performs an EE of the cause evaluations. The process is controlled by an “Effectiveness Evaluation Guideline” included in the CAP procedures. The guideline appeared to be well-written and easy to understand and follow.

The DCISC Fact-finding Team reviewed CA Effectiveness Evaluations for five problems. Once the format and language were understood, the EEs appeared to be well-thought-out, well-prepared and fact-based. In all cases the CAs were determined to have been effective. Some went beyond minimum requirements in that in two cases additional actions were recommended, and in another more time was needed to accumulate additional operational data. The evaluations followed the guideline described above and appeared to thoroughly assess the effectiveness of corrective action.

One question that arose is “what happens following the Effectiveness Evaluation, i.e., how are similar or related events/problems which occur later factored in?” As with Licensee Event Reports (LERs), PG&E reviews RCAs and ACEs for past related/similar industry and DCPP events to

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Plant overall</td>
<td>Yellow</td>
</tr>
<tr>
<td>Engineering</td>
<td>Green</td>
</tr>
<tr>
<td>Learning Services</td>
<td>Yellow</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Green</td>
</tr>
<tr>
<td>Operations</td>
<td>Green</td>
</tr>
<tr>
<td>Outage Management</td>
<td>Green</td>
</tr>
<tr>
<td>Projects</td>
<td>Green</td>
</tr>
<tr>
<td>Site Services</td>
<td>White</td>
</tr>
</tbody>
</table>
determine if CAs had been effective or ineffective. If so, this information is input into the effectiveness ratings as part of the cause analysis described above.

In October 2010 the Quality Verification (QV) Department performed an assessment of the CAP for the period January – October 2010. The assessment concluded that implementation of the CAP is effective, except that problems previously identified by QV in the evaluation area have not been resolved. The assessment noted that in response to a June 2010 QV Audit Finding for the plant’s inability to identify and implement sustainable corrective actions for conditions adverse to quality, DCPP had established a qualification and training program for CARB Members, ACE performers and approvers, root cause analysts and team leaders.

**Conclusions:**

DCPP’s Corrective Action Program (CAP) appears to be generally effective overall; however, there is a major deficiency in the thoroughness of problem evaluations such as Apparent Cause Evaluations (ACEs), Root Cause Analyses (RCAs), Licensing Basis Impact Evaluations (LBIEs), etc. This has been a continuing problem since NRC identified its original Substantive Cross-cutting Issue in 2004, culminating with NRC again identifying a Substantive Cross-cutting Issue in 2010. In response, DCPP performed an extensive RCA, which concluded that, despite multiple warnings and corrective attempts over the years, management has not provided adequate standards, nor effectively demonstrated or reinforced behaviors, nor established sustainable programs in the area of evaluations. DCPP has crafted a comprehensive Performance Improvement Focus Area Integrated Action Plan to address these and other deficiencies and gaps and has begun its implementation. The DCISC should follow DCPP’s progress and success in implementing the Plan, specifically with respect to problem evaluation adequacy.

**Recommendations:**

None

### 3.8 Used Fuel Storage Program (UFSP)

The DCISC Fact-finding Team met with Rich Hagler, Project Engineer for the DCPP Used Fuel Storage Project or Independent Spent Fuel Storage Installation (ISFSI), for an update on the program. The DCISC last reviewed this item at the June 2010 DCISC Public Meeting (Reference 6.8) when an ISFSI video was shown to the Committee, its consultants and Legal Counsel and to members of the audience. The video documented the process of loading spent fuel assemblies into the multi-purpose canister (MPC), transporting it up the hill, loading the MPC into the over-pack, and setting and bolting the over-pack on to the ISFSI pad. The video was also shown on live-streaming video for viewing at home by those accessing the Committee's public on internet streaming or through the Committee's website.

The ISFSI was operational in Spring 2009, and the first eight-cask Unit 1 (256 fuel assemblies) fuel loading and storage campaign was completed in August 2009 and the second eight-cask Unit 2 (256 fuel assemblies) campaign in July 2010. The campaigns took about six days per cask on a six-day, 24-hour schedule. Radiation doses were as expected, and there were no reportable or disabling
injuries, three human performance events (Unit 2 only), and no personnel contaminations. Cask radiation doses ranged from 399 mRem initially to a low of 122 mRem. DCPP performs ISFSI cask external visual inspections on daily, monthly, quarterly, and annual bases.

The DCPP ISFSI is licensed through 2024, and the NRC is looking at a 20-year extension to match that proposed for the plant itself. A license extension project will likely begin in 2012. Surry Nuclear Power Station has received NRC’s approval for a 20-year dry cask storage license extension.

There are currently 12 casks in fabrication for receipt in 2011. DCPP has not published the schedule for the next campaigns.

Conclusions:

DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations.

Recommendations:

None

3.9 DCISC Member Meeting with DCPP Site Vice-President

DCISC Member Dr. Per Peterson met with DCPP Site Vice-President, Jim Becker, to discuss topics from this fact-finding meeting and other subjects of interest.

3.10 DCPP Safety/Security Interface Program

The DCISC Fact-finding Team met with Mike Priebe, Director of Security, and Bob Zimkowski, Security Manager, to discuss DCPP’s Safety/Security Interface Program. This is the first DCISC review of this Program, although the DCISC has reviewed the impacts of security changes on plant safety. The safety/security interface, rather than security itself, is the thrust of DCISC scope regarding plant security, so this program is of particular interest to the Committee. The most recent review was in January 2008 (Reference 6.9) when it concluded the following:

DCPP Security appears to have implemented all to-date NRC requirements, orders and regulations effectively. The DCISC should plan to review the implementation of the new DCPP Extensive Damage Management Guidelines and observe a Force-on-Force drill in 2008.

In March 2010 the NRC published its regulation 10CFR73.58, “Safety/Security Interface Requirements for Nuclear Power Reactors,” which stated:

a. Each operating nuclear power reactor licensee with a license issued under part 50 or 52 of this chapter shall comply with the requirements of this section.

b. The licensee shall assess and manage the potential for adverse effects on safety and security, including the site emergency plan, before implementing changes to plant configurations,
c. The scope of changes to be assessed and managed must include planned and emergent activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation).

d. Where potential conflicts are identified, the licensee shall communicate them to appropriate licensee personnel and take compensatory and/or mitigative actions to maintain safety and security under applicable Commission regulations, requirements, and license conditions.

To provide guidance on implementation NRC issued Regulatory Guide (RG) 5.74, “Managing the Safety/Security Interface,” dated June 2009, stating, “This guide describes a method that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for licensees to assess and manage changes to safety and security activities so as to prevent or mitigate potential adverse effects that could negatively impact either plant safety or security.” DCPP performed a plant-wide review of procedures and processes to identify any gaps that existed to meet the RG requirements. There were 33 procedures changed to either remove the gaps or enhance the procedure in meeting the RG.

The DCISC Fact-finding Team received and reviewed the DCPP Procedure OM11.ID7, “Safety/Security Interface Program,” dated November 1, 2010. The procedure identifies management controls and processes used to establish and maintain an effective interface between nuclear safety and site security. The procedure instructs Design Engineering, Projects, and Security to involve all others in any modifications or changes to the plant physical configuration and procedures. The procedure includes a detailed and comprehensive checklist for each proposed modification or procedure that has potential security or safety impacts.

The procedure addresses the following:

- Plant Modifications
- Procedure Changes and Emergency Plan Changes
- Emergent Operational Conditions and Maintenance Activities
- Changes to Security Plans
- Safety/Security Programmatic Reviews

The DCISC Fact-finding Team determined that the procedure was satisfactory in controlling the safety/security interface at DCPP.

The DCISC Fact-finding Team also discussed a negative interaction between security and safety that occurred during the recent plant alert on June 23, 2010 that resulted from a CARDOX release. During this alert, off-site fire personnel and their equipment were delayed in passing through security screening. The FF team learned that the reason for the delay was that the Alert had been ended at the time that the off-site fire personnel arrived, and thus the plant could not use expedited vehicle
screening methods that they would have if the Alert had still been in effect. While the safety significance of the security delay was very small because the Alert had ended, the off-site personnel were concerned because the delay affected their ability to return promptly to their stations if they had been called to respond to a fire. This Alert served as a learning experience, and the plant has addressed these issues in their procedures to prevent a reoccurrence.

Conclusions:

DCPP has developed a satisfactory procedure and process for controlling the safety/security interface in accordance with recent NRC regulations. The DCISC should follow up in mid-2011 to review the plant’s implementation. The recent plant Alert provided an opportunity to test the capability of the security system to screen incoming off-site fire personnel and equipment. Lessons were learned that have resulted in changes to screening procedures.

Recommendations:

None

3.11 Outage 1R16 Radiation Protection (RP) Performance

The DCISC Fact-finding Team met with Donnie Shipley, ALARA Supervisor, for a review of the Radiation Protection Group’s performance during the 1R16 Refueling Outage. The DCISC last reviewed outage results at the November 2010 DCISC Public Meeting (Reference 6.10).

DCPP Outage 1R16 was a successful outage based on the plant’s collective radiation dose as shown below. Also shown at the Radiation Protection Group’s performance results

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Radiation Dose (Person-Rem)</td>
<td>126</td>
<td>118.8</td>
</tr>
<tr>
<td>RP Disabling Injuries</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Recordable Injuries</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Human Performance Clock Reset</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP FME Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Security Loggable Events</td>
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<td>0</td>
</tr>
<tr>
<td>RP Personnel Contaminations</td>
<td>≤33</td>
<td>14</td>
</tr>
<tr>
<td>RP Radiation Boundary Events</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RP Loss of Control of Radioactive Materials</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

DCPP Unit 1 Cycle 16 is 88 Rem, and Unit 2 is 65 Rem. DCPP projects the 2R16 cycle dose will be 92 Rem, which is 61.3 annualized, and the 1R17 cycle dose to be 96 Rem, which is 64.0 annualized. DCPP RP is working to improve these standings.

RP’s scope of work in Outage 1R16 consisted of the following implementation items of the RP Program:
The major RP lessons learned included:

- Improve on RP technician outage hiring/staffing processes
- Cask rigging/transport for changing Letdown Filters during Shutdown Mode Transition
- SFP source term reduction with portable demineralizer
- Cavity water level optimization to reduce dose rates from upper and lower internals
- RAM storage and disposal of legacy RAM
- Improve status control of scaffold requests

The next refueling outage will be 2R16. The radiological risks/exposures identified are:

- CET replacement – a new procedure for DCPP with significant radiological risk. It involves modifications on the new reactor head and two sets of cavity drains, head moves, and cavity decontaminations.
- Thimble Tube Replacement – significant radiological risk involving eight thimble tubes being partially withdrawn and trimmed
- IPTE Lower Internals Removal – significant radiological risk
- Containment Insulation Debris Mitigation – scope needs clarity

Conclusions:
The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem and in meeting its own outage goals. This, however, places DCPP in the industry fourth quartile, a position RP is working to improve. RP is taking a forward-looking approach to the next sets of outages to keep lowering the exposures. The DCISC should continue to monitor DCPP’s progress in radiation protection.

**Recommendations:**

None

**3.12 DCPP Open Items**

The DCISC Fact-finding Team met with Pete Bedesem, DCPP Liaison to DCISC, to review the status of the open items assigned to DCPP:

**Conclusions:**

DCPP has provided all but two of its seven open items for which it owes information to the DCISC. The two remaining open items are being processed by DCPP.

**Recommendations:**

None

**3.13 DCPP Open Items**

DCISC Consultant Wardell attended the December 16, 2010 DCPP Open House held at the PG&E Community Center (visitors’ center). The center is the location where the DCISC begins its public tours with a brief overview of the Committee and plant. PG&E has renovated the center with new exhibits on DCPP and nuclear power since the last DCISC public meeting in November 2010. In addition to the permanent plant exhibits, PG&E had exhibits on spent fuel storage, plant security, radiation protection, and earthquakes each manned by PG&E experts in those fields and with information brochures for the public. The event was well attended by the public. The PG&E personnel were knowledgeable and understandable.

**Conclusions:**

The December 16, 2010 DCPP Public Open House was well planned and executed by PG&E. The exhibits and information tables were effectively manned by subject experts. The event was well attended by the public.

**Recommendations:**

None

**4.0 Conclusions**

4.1
Though not required until 2024, and still pending additional CA State Water Board applicability studies due in late 2013, the use of closed-cycle mechanical draft cooling towers with saltwater make-up at DCPP will have significant adverse impacts on plant operation, reliability and efficiency, as well as increased nuclear safety risk. A plant retrofit to use closed, salt-water cooling will have clearly negative impacts on plant safety. A range of adverse nuclear safety impacts is known qualitatively at this time and is of concern to the DCISC. These negative safety impacts would likely exceed those associated with the major 9/11 security system upgrades that the DCISC has also monitored. While DCPP should of course make every effort to minimize negative safety impacts, as they have with security upgrades, the benefits of the security upgrades are obvious and clearly balance the impacts on plant safety (such as reduced access for emergency response). It appears to be more questionable that cooling tower retrofits would be justified in balance with the resulting plant safety reduction, because the cooling tower retrofits are apparently required due to a prescriptive EPA “best available technology” requirement rather than a performance-based approach to minimize and mitigate direct-cooling environmental impacts. The DCISC should continue to follow the developments at DCPP on cooling towers.

4.2

The December 15, 2010 DCPP Plant Health Committee (PHC) meeting was well run, focused on system and program health improvement, and garnered good participation from attendees. The Committee’s emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It is apparent that the PHC has increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which has resulted in improvement in system health measures.

4.3

The DCPP Environmental Qualification Program (EQP) for safety-related electrical equipment appeared sound. The plant considered the EQP to be in Green (excellent) health. A self-assessment found the EQP to be effective in meeting the regulatory requirements of 10CFR50.49. The EQP Coordinators are experienced and knowledgeable in the program requirements and features. The EQP appears to be in a good position to assure applicable DCPP equipment is compliant with the 20-year plant life extension.

4.4

DCPP’s Software Quality Assurance Program appears to be comprehensive and well designed to assure computer software is developed, maintained, operated, and changed in an appropriately controlled fashion.

4.5

DCPP human performance (HP) is good and improving overall with plant-wide performance better than a progressively tightening goal and over 529 days without a clock reset. Most departments are within their goals with one, Operations, slightly higher.

4.6

The DCISC Fact-finding Team believes the DCPP Licensing Basis Verification Project (LBVP) is warranted based on past license basis problems, which both DCPP and NRC have identified. The
nearly completed initial Phase I work has provided a good foundation for moving forward with Phase II, the main project initiative. DCPP has established a strong project team and process for the LBVP. The DCISC should follow up periodically to review the project until its completion in 2014.

4.7

DCPP’s Corrective Action Program (CAP) appears to be generally effective overall; however, there is a major deficiency in the thoroughness of problem evaluations such as Apparent Cause Evaluations (ACEs), Root Cause Analyses (RCAs), Licensing Basis Impact Evaluations (LBIEs), etc. This has been a continuing problem since NRC identified its original Substantive Cross-cutting Issue in 2004, culminating with NRC again identifying a Substantive Cross-cutting Issue in 2010. In response, DCPP performed an extensive RCA, which concluded that, despite multiple warnings and corrective attempts over the years, management has not provided adequate standards, nor effectively demonstrated or reinforced behaviors, nor established sustainable programs in the area of evaluations. DCPP has crafted a comprehensive Performance Improvement Focus Area Integrated Action Plan to address these and other deficiencies and gaps and has begun its implementation. The DCISC should follow DCPP’s progress and success in implementing the Plan, specifically with respect to problem evaluation adequacy.

4.8

DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations.

4.9

DCPP has developed a satisfactory procedure and process for controlling the safety/security interface in accordance with recent NRC regulations. The DCISC should follow up in mid-2011 to review the plant’s implementation. The recent plant Alert provided an opportunity to test the capability of the security system to screen incoming off-site fire personnel and equipment. Lessons were learned that have resulted in changes to screening procedures.

4.10

The DCPP Radiation Protection (RP) Group performed successfully in Outage 1R16 in working to keep the plant Collective Radiation Exposure of 118.8 Person-Rem below the plant goal of 126 Person-Rem and in meeting its own outage goals. This, however, places DCPP in the industry fourth quartile, a position RP is working to improve. RP is taking a forward-looking approach to the next sets of outages to keep lowering the exposures. The DCISC should continue to monitor DCPP’s progress in radiation protection.

4.11

DCPP has provided all but two of its seven open items for which it owes information to the DCISC. The two remaining open items are being processed by DCPP.

4.12

The December 16, 2010 DCPP Public Open House was well planned and executed by PG&E. The
exhibits and information tables were effectively manned by subject experts. The event was well attended by the public.

5.0 Recommendations:

None

6.0 References


6.3 Ibid.


1.0 Summary

The results of the January 25-26, 2011 Fact Finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Chemistry Program
2. DCPP Conversion to National Fire Protection Association Standard NFPA 805
3. Margin Management
4. Emergency Planning Dose Assessment Program
5. July 2010 DCPP Self-Assessment of Maintenance and Technical Training
6. Operator Burdens
7. Responses to Recent Industry Operating Experience
8. Discussion with NRC Senior Resident Inspector
9. Review of STARS Activities in 2010
10. Meeting with DCPP Senior Management

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-
finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 Chemistry Program

The DCISC Fact Finding Team met with Brad Hinds, Chemistry and Environmental Operating Manager, and Dan Stermer, Shift Manager, to review the status of the station’s actions to address difficulties in controlling sulfates and iron in the feedwater systems. This is the DCISC’s first review focusing exclusively on these specific chemistry parameters.

The feedwater system returns condensed steam to the steam generators which heat the feedwater back into steam which spins the turbine generators and is then condensed back into water, which is then again pumped back to the steam generators. The significance of having iron corrosion products in the feedwater is that these solid corrosion products accumulate inside the steam generators and will, over time, reduce the heat transfer capability of the new steam generators. Mr. Hinds noted that the improved design of the new steam generators reduces the impact of accumulated iron compared to the impact on the old steam generators, but that the issue still needs to be addressed. He noted that addressing the issue, in part, entails minimizing the corrosion products entering the system not only during operation but also during shutdown conditions. Strategies are also needed to mitigate feedwater iron after plant transients. Mr. Hinds provided the DCISC Fact Finding team with a detailed action plan to address the above issues. Many of the actions involved operational strategies to limit the amount of iron entering the feedwater system during various operating conditions and power levels, as well as during shutdown conditions. These actions were complete in 2009.

Nevertheless, no matter how small the content of iron in the feedwater, the iron still accumulates over time in the steam generators. This accumulation can be periodically reduced by opening a valve in the lower portion of the steam generator and blowing down this water containing iron and other impurities into a drain tank. However, the DCPP blowdowns have typically been no more than 5 percent efficient in reducing steam generator iron content. Through participation with other industry stations on this issue, DCPP has learned that the addition of a chemical, polyacrylic acid, to the feedwater downstream of the final stage of feedwater heating will draw more iron into suspension and lead to greater efficiency of the steam generator blowdowns. Some other plants have experienced their blowdown efficiencies for iron increase to about 50 percent. DCPP has added testing the effect of this chemical dispersant to its action plan, and completion is expected in the first quarter of 2011. DCPP is also considering bypassing the full flow polishers as an additional remedy for this issue, but there is a tradeoff regarding this potential action because the plant uses saltwater from the Pacific Ocean as cooling water in its main condenser. As such, any tiny leakage in the main condenser allows corrosive salt water to enter the condensate and feed systems. Having the full flow polishers in place allows the plant to remove the corrosive components of salt water and, therefore, to operate with tiny condenser leaks.
The second issue of having a higher level of sulfates than desired in Unit 1 feedwater was traced to the effluent of the above-mentioned polishers when the problem emerged in the second quarter of 2009. The polishers were determined to be the source of the sulfates, which can contribute to corrosion in the steam generators. This issue is complicated by the fact that bypassing the polishers to eliminate the sulfate intrusion would also eliminate the capability of removing any main condenser leakage of corrosive salt water from the water being fed to the steam generators. DCPP also has had an extensive action plan to address this sulfate problem in Unit 1. Alternative polisher resin is currently being tested in one of the Unit 1 polisher beds, and current performance has been good. Final results are expected by the end of the second quarter of 2011.

Conclusions:

The potential system leakage problems that could result from the iron and sulfate levels in DCPP’s feedwater systems appear to present more of an operational reliability issue than a nuclear safety issue. DCPP has been implementing extensive action plans to address both issues. The DCISC does not need to examine this issue further from a nuclear safety perspective in any near-term future Fact Finding trips, but should consider occasionally (no more than annually) requesting DCPP to include a brief status on this topic as part of its regular update on Operational Status at future Public Meetings.

3.2 DCPP Conversion to National Fire Protection Association Standard NFPA 805

The DCISC Fact Finding Team met with David Hampshire, Program Owner for Fire Protection and Appendix R, Safe Shutdown, and Dan Hromyak, Fire Protection System Engineer. The DCISC last reviewed this topic as one portion of its review of the Probabilistic Risk Assessment (PRA) Group at the August 2010 Fact Finding Meeting (Reference 6.1). None of the Conclusions of that review specifically addressed the Fire Protection Program. However, the review noted that a new Fire PRA was being developed that would be used as a part of the basis of DCPP’s plan to change how the fire-safety function is regulated from the NRC’s longstanding deterministic approach to a new risk informed and performance based approach that is based on the National Fire Protection Association (NFPA) Standard 805. The review also noted that this conversion is a technically challenging activity due to its complexity and because part of the effort involves using the ASME/ANS Combined PRA Standard’s section on fire PRA methodology. DCISC last reviewed the Fire Protection Program as a stand-alone topic at the September, 2009 Fact Finding meeting (Reference 6.2) when it concluded the following:

DCPP has continued repairs to the Fire Protection (FP) System that have been needed for a long time. The System Health Report for both units is still Yellow (unacceptable) due to the CO2 suppression system being in Maintenance Rule a(1) status. The overall FP system continues to be operable and in compliance with NRC regulations. The FP system should be returned to White (satisfactory) by June, 2010. It may be very difficult to get to Green status because of aging problems throughout the FP piping and systems. The replacement of 600 feet of the 4 inch carbon steel pipe header between units was approved for budget, but the System Engineer must provide more justification to the Project Review Committee prior to approval. The DCISC has closely followed the FP system’s health and should continue to do so.
In DCPP’s January 2011 Plant Performance Indicator Report the Infrastructure Cornerstone of the Appendix R Fire Protection Program was rated Red (Deficient). This pertains to the shutdown analysis that is being revised to meet NFPA 805 standards which, through risk and performance based analyses, will examine how changes to the various configurations of plant structures, systems, and components will affect the ability to place and maintain the plant in a safe shutdown condition. Mr. Hampshire said this entails an examination of plant vulnerabilities on a room-by-room, area by area basis. Moreover, NFPA requirements apply during all plant operation modes.

The NFPA 805 standard was approved as an American National Standard in February 2001, and in 2004 the NRC incorporated the standard in its regulations. In doing so the NRC has allowed licensees to voluntarily adopt this standard for their fire protection programs or remain committed to current regulation. Most plants have volunteered to adopt the new standard. This involves performing engineering analyses that may include engineering evaluations, probabilistic safety assessments, and fire modeling calculations. Licensees must also evaluate changes to determine whether defense-in-depth and safety margins are maintained. For the resulting fire protection program, licensees must document the results of analyses, ensure the quality of the analyses, and maintain configuration control of the resulting plant design and operation.

Two plants became pilot plants for the submittal of their NFPA 805 analyses and documentation, and their Licensing Amendment Requests (LAR) were approved by the NRC in June 2010 and January 2011 respectively. Mr. Hampshire noted that DCPP has committed to submitting its LAR to the NRC in June 2011, but this may be a challenge.

**Conclusions:**

Conversion to National Fire Protection Association Standard NFPA 805 is an immense, complex, analytical effort requiring specialized skills and knowledge in Probabilistic Risk Assessment, fire protection systems, and the operation of plant safety systems. DCPP appears to be adequately implementing this program; hence, the DCISC should defer further review of this matter until after the station receives NRC approval of its License Amendment Request. Then the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.

### 3.3 Margin Management

The DCISC Fact Finding Team met with Lee Goyette, Principal Mechanical Engineer. The DCISC last reviewed this topic in March 2010, (Reference 6.34), when it concluded the following:

*The upgraded DCPP Margin Management Program (MMP) appeared to be designed well with all of the appropriate attributes, responsibilities and controls. The Program Owner was knowledgeable about margin management in a generic sense as well as about the DCPP MMP itself. The DCISC Fact-finding Team concluded that MMP implementation was progressing well, though not close to being fully completed (<70% by MMP measures). The DCISC should review the MMP implementation again in about six months.*
Margin is defined as the conservatism included in the design and operating practice of any structure, system, or component (SSC). It is a basic principle of plant design and operation. The amount of margin is expressed by the conservatism (i.e., safety factor, design factor, buffer, or cushion) included in the design and analysis of every plant SSC in order to accommodate normal wear and aging of equipment and materials, instrument drift, variations in material properties, differences in maintenance practices, uncertainties in analytic methods, etc. The purpose of DCPP’s Margin Management Program is to ensure that each SSC is managed with knowledge of margin concepts, such that design and operational margin is not unknowingly diminished over time.

DCPP states that effective margin management relies mainly on the following programs:

- Configuration Management
- Design Control
- Modification Control
- Materials Control
- Setpoint Control
- Nuclear Oversight Program
- Corrective Action Program
- Operations Management

The DCPP System/Component Engineers (SCEs) are responsible for the following:

- Assessing design and operating margin impacts from design changes
- Assessing design margin impacts from calculations
- Identifying low margin SSCs (Structures, Systems, and Components)
- Presenting low margin (Red and Yellow) SSC to the Margin Management Committee
- Entering low margin SSC into the Corrective Action Program
- Developing plans to recover margin when necessary

The SCEs are responsible for documenting the current margin for their assigned SSCs on the “Operating and Design Margin Issue Score Sheet” in accordance with a prescribed process and documented in the plant margin reference database. The following documents and resources are used to assess margin:

- Final Safety Analysis Report Update
- Design Criteria Memoranda
- NRC Reactor Oversight Program
- Equipment Control Guidelines
Technical Specifications

- Engineering Codes and Standards
- Setpoint Documents
- Calculations: (Electrical Load, Seismic and Floor Loading, Fire Loading, Design and Engineering)

The Margin Management Committee (MMC) meets regularly (at least quarterly) and is responsible for reviewing the low margin SSCs, prioritizing based on significance, recommending a course of action to resolve low margin issues, and maintaining the Margin Concerns List. The MMC also reviews Margin Management Program (MMP) metrics that are prepared and maintained by the MMP Owner. Mr. Goyette stated that the MMC is composed of a broad representation of engineering and operations personnel in order to bring appropriate perspectives to the issues that are reviewed and discussed by the Committee. Mr. Goyette further stated that each member of the DCPP engineering staff has received training in margin management and that system and component engineers have also received additional training.

Operators are expected to know the DCPP operating margin (operating point to operating point) for systems and equipment under their responsibility. Operators maintain operating margins so that they do not exceed the operating limits specified in Technical Specifications, Equipment Control Guidelines, Operating Procedures, and Surveillance Tests. Mr. Goyette noted that operators have also received training in margin concepts and management.

Mr. Goyette provided the DCISC Fact Finding Team with a listing of top margin issues including issue owners, a summary of actions needed, and specific completion horizons approved by the Margin Management Committee. He stated that the Margin Management Program is providing a benefit of being able to examine the required performance of SSCs from a broader perspective than solely what has been written into design capabilities or Technical Specifications. As an example, he cited emergency lighting duration, where the current system capability from an engineering standpoint meets Technical Specifications. However, operators have noted that the physical capability of the system in some circumstances does not provide adequate duration time for them to perform some of their required tasks when having to rely on emergency lighting, although it meets plant Technical Specifications. Therefore, from an operational perspective the system does not have adequate margin, and actions needed to be taken.

DCPP MMP metrics as provided in the January 4, 2011 Margin Management Program Report and in the agenda for the January 5, 2011 Margin Management Committee meeting are as follows:

Overall Program
- White (healthy, but not all aspects are green)

Program Personnel
- White (new program owner and back-up)

Program Infrastructure
White (procedure revision pending)

Program Implementation

Green (no noted implementation problems)

Plant SSC

Green (no open or active margin Prompt Operability Assessments)

Conclusions:

DCPP’s Margin Management Program appears to be functional and healthy. Appropriate personnel have been trained. Margin issues have been identified and prioritized. Responsibilities, actions, and completion dates/horizons have been established for identified issues. The Margin Management Committee appears to be serving as a vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts. The DCISC should defer further review until after the next two DCPP refueling outages unless dictated by station performance issues.

3.4 Emergency Planning Dose Assessment Program

The DCISC Fact Finding Team met with Mike Ginn, Emergency Planning (EP) Department Manager, and Randy Wright, Project Manager for the Meteorological Information and Dose Assessment System (MIDAS) and the Sonic Detection and Ranging System (SODAR) to discuss the status of actions related to completing the upgrades to the EP Dose Assessment Program. The purpose of the upgrade is to enhance the capability of PG&E and the County for making appropriate Protective Action recommendations and decisions. Such decisions relate to the need to evacuate or recommend sheltering for the population in various geographic sectors in the vicinity of DCPP in the event of an unplanned radiological release from the site. The DCISC last reviewed this topic during its Public Meeting on June 3, 2010 (Reference 6.4). At that time Mr. Ginn reported that, in December 2009, DCPP had reached agreement with the County staff including the County Office of Emergency Services (OES) and the Air Pollution Control District (APCD) to proceed with the following actions:

1. Upgrade the dose assessment program to add the capability for meteorological inputs (wind speed and direction) from multiple offsite meteorological towers, and agree upon the number of tower locations

2. Complete the Pressurized Ion Chamber (PIC) equipment upgrade (PICs measure radiation levels)

3. Review and install upper air meteorological SODAR equipment (These instruments measure the movement of upper air in order to better determine the movement or dispersion of a plume throughout the area.)

At the June 2010 Public Meeting, Mr. Ginn also noted that PG&E was scheduled to meet with the County in the near term for technical review of the following items:

4. Dose assessment software validation plan and schedule for software and equipment
The forecast completion date for the above improvements was June 2011.

During this current January 2011 Fact Finding trip Mr. Ginn updated the DCISC Team on progress to date and the schedule for completing any items still in progress (Items below are numbered in the same topical configuration as Items 1 – 4 listed above.) Overall, Mr. Ginn stated that all work is still expected to be completed as scheduled by June 2011.

1. Seven offsite meteorological towers will be used, the original six plus an additional seventh tower. All towers are now in place. The wind speed and direction data from all towers will serve as multiple inputs to the upgraded dose assessment system. The detectors have been replaced with new ones. Also, DCPP will continue to have a primary tower and a backup tower on site.

2. Thirteen PICs are now in fixed locations in the local area (compared to the original twelve) to measure radiation dose and feed the individual data from each location into the dose assessment system. PIC upgrades were completed in 2010.

3. The system now has three SODAR installations, the original one on site at DCPP, plus two more in the surrounding area. All three installations are upgraded.

4. Dose assessment software is being upgraded, including the capability of receiving and processing multiple inputs. Testing is scheduled for completion in February 2011.

Mr. Ginn noted that the system exceeds regulatory requirements and, doing so, provides additional assurances for public health and safety. He also noted that training is scheduled to be provided to appropriate personnel after the improvements are installed and tested.

Conclusions:

Significant enhancements and expansions are nearing completion on DCPP emergency dose assessment systems, which exceed regulatory requirements and increase the level of protection for the public in the event of an unplanned radiological release. Expected completion of these activities is June 2011. The DCISC should consider including this topic as a DCPP presentation in one of the upcoming Public Meetings in 2011 to obtain closure on this longstanding issue that is important to public health and safety. Afterwards, any further DCISC Fact Finding reviews of this topic should be dictated by future potential DCPP performance issues in emergency preparedness.

3.5 July 2010 Self-Assessment of Maintenance and Technical Training

The DCISC Fact Finding Team met with David Burns, Manager of Technical Training. The DCISC last reviewed this topic in April 2010 (Reference 6.5), when it concluded:

*Learning Services appears to be effective in sustaining the improvements it has made in the use of DCPP's Corrective Action Program. Subsequent DCISC review of this topic should be dictated by*
any emerging negative trends in Learning Services’ monthly CAP Index or the results of station performance reviews.

During the period July 5 through July 16, 2010, DCPP conducted a self-assessment of its Engineering, Maintenance, Radiation Protection, and Chemistry Training Programs. The team consisted of DCPP personnel from all of the above departments, including Mechanical, Electrical, and Instrumentation Maintenance, plus several personnel from Training, and was augmented by nine industry personnel from other nuclear plants. This review compared DCPP performance to industry best practices rather than to minimum standards. No formal “deficiencies” were identified, but rather six “gaps” were classified as “negative comments.” One positive comment and three enhancement opportunities were also identified, but will not be discussed in this report. An Apparent Cause Evaluation (ACE) or Root Cause Evaluation (RCE) was then developed for each of the six negative comments. The following discussion contains a summary of those negative comments, applicable ACEs/RCEs, and DCPP’s actions to address each issue.

1. Regarding the qualification of supplemental workers, some procedural guidance was not clear and some supplemental workers and station supervisors were not aware of qualification requirements for tasks that were being performed. It was determined that the supplemental worker qualification program was not in alignment with DCPP’s site qualification problem. This was a station-identified weakness rather than one identified by a peer reviewer from another plant. Accordingly, an RCE was performed. Corrective actions involved procedurally bringing the programs into alignment. This is complete. Actions also focused on the fact that the DCPP line organization needs to “own” the qualifications for performing all site work. This involves ensuring that contracts and procedural guidance are clear, and ensuring that such ownership also translates down to the worker level where workers know enough, as an additional level of assurance, to ask if they need to be qualified for particular work they will be performing. This will be completed by June 2011.

2. Regarding the development of training to address performance issues, there were instances where the specific performance weaknesses were not clearly identified prior to the development of training and other instances where the effectiveness of training was not evaluated by clearly evaluating worker performance after the training. It was determined that the Training Decision Process in this area was disjointed and appeared in multiple procedures and guidance documents. The corrective actions are to streamline the process into one procedure and update instructor training to support the new Training Decision Process. This is scheduled to be completed in February 2011.

3. This issue is related to the first issue and focuses on the fact that personnel have performed work without the proper qualifications. The self-assessment team’s review of documentation for activities occurring between August 2007 and August 2010 revealed 68 such instances. None were consequential. The vast majority did not pertain to work that was performed on a plant system. One activity did involve work on an Environmentally Qualified Raychem splice on the Steam Generator Replacement Project. Some of the issues pertained to instructors not having sufficient qualifications for topics they were teaching and to task performance evaluators not possessing qualifications for the activities they were evaluating. Actions were
developed to address these various situations, and only one is currently outstanding: to train supplemental supervisors regarding requirements and responsibilities pertaining to this issue. This will be completed by June 2011.

4. The self-assessment team noted that some Engineering Support Personnel (ESP) Work Group Specific Training (WGST) was bypassing established training processes. The bypassing allowed training to be performed and documented without following a process of analyzing, designing, developing, and implementing the training and without evaluating the training’s effectiveness. The list of subjects to be trained that are documented on the WGST form are assumed to have followed this process, but in fact, many had not. This WGST process is unique in DCPP to ESP; and apparently, it is unique within the nuclear utility industry. Corrective actions included having periodic and documented reviews and discussions of the functioning of the engineering WGST by the DCPP Curriculum Review Committee. Training procedures will also be revised to reflect the expected approach to using WGST. These are expected to be reviewed for completion during February 2011.

5. On-the-Job Training (OJT) and Task Performance Evaluations (TPE) were not being conducted in accordance with station standards, and implementation was not consistent with industry best practices. This negative comment was based on evidence TPE evaluators sometimes overlooked or missed mistakes being made by workers who should have failed at least portions or aspects of the work for which they were being evaluated. In some cases the TPE evaluators were the same individuals who prepared them to do the work. One of the reasons for these evaluator weaknesses was that they and their trainers failed to use guidelines as procedurally directed. Corrective actions include developing a communications plan by the end of February 2011 and revising appropriate procedures and other relevant documents by the end of the first quarter of 2011.

6. The station oversight organization that is responsible for auditing and reviewing station processes and performance had not provided a high level of intrusiveness and critical analysis of station training performance. This included a limited number of documented observations of training. It also included the tendency to assess training results based on examining data rather than directly observing activities. An underlying and contributing cause of this issue was a personnel vacancy in the Quality Verification Department, which is planned to be filled during the first quarter of 2011. Another corrective action was to provide appropriate training to auditors, which has been completed.

Conclusions:

The DCISC Fact Finding Team acknowledges that the July 2010 DCPP self-assessment of Technical and Engineering Training Programs and the accompanying Negative Comments were based upon comparisons to industry best practices rather than to minimum acceptable performance. Nevertheless, the DCISC Fact Finding Team concludes that the Negative Comments individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs. Although the stated remedial actions appear to be appropriate, the DCISC should review the station’s follow-up activities to this self-assessment and their results prior to the end of 2011.
3.6 Operator Burdens

The DCISC Fact Finding Team met with Mr. Jan Nimick, Operations Manager, to discuss the status of Operator Burdens. The DCISC last reviewed this topic in July 2010 (Reference 6.6) as one component of its review of Operational Focus, when it concluded:

DCPP’s approach to improving the Operational Focus of the station is well structured and appears to be resulting in steady improvement. The Operational Focus Action Plan, which is nearing full implementation, directly addresses the areas for improvement that are identified in DCPP’s PPIR. Station performance, as measured by the composite indicators of Operational Focus and Work Management Focus, have improved noticeably in the past 9 months. Any future follow-up by the DCISC should be based on any observed negative trends in station performance.

The DCISC Fact-finding Team conducted a review of various station monthly Plant Performance Indicator Reports (PPIR) from May 2010 into January 2011. This review revealed that the number of Operator Burdens had risen from a low of two (Green) in May to a high of 6 (Yellow) in September and then declined to 2 in January 2011. The station’s performance ratings for Operator Burdens are as follows: Green: 0 – 3, Yellow: 4 – 9, Red: ≥10

Mr. Nimick noted that Operator Burdens are defined as undesirable conditions/impediments that cause operators to perform otherwise unnecessary work during normal plant operation. He added that Operator Workarounds are similar to Operator Burdens but they create otherwise unnecessary work for operators when responding to abnormal operating conditions or emergencies.

(The DCISC Fact Finding team also conducted a review of weekly Operator Workarounds from mid-May 2010 through the remainder of that year. DCISC notes that 28 of the 34 weekly values of Operator Workarounds were zero. A high of one Operator Workaround appeared during two weeks in May, two weeks in June 2010, one week in October, and one week in November. The station’s rating system for Operator Workarounds is as follows: Green = 0, Yellow = 1, Red ≥ 2)

Mr. Nimick noted that a Daily Review Team meets to assign the priority of maintenance items. The team consists of a Senior Reactor Operator from Operations, an individual from Work Control, and an Operations Support Team member from Maintenance. He noted, however, that the station was able to reduce the number of Operator Burdens by convening an additional weekly meeting of the Daily Work Control Manager, a station Maintenance Manager, and himself to review outstanding Operator Burdens and to convey priorities to the Daily Review team. This additional management involvement directly led to the reduction in Operator Burdens. Mr. Nimick noted that several years ago the station experienced a similar issue with the number of plant Control Board deficiencies in the Main Control Room. He said that the same management oversight process was implemented, which led to a similar decrease in Control Board deficiencies.

Conclusions:

The involvement of appropriate DCPP managers in resolving the increasing trend in Operator Burdens is an excellent example of how effective management oversight can resolve station
problems. Further review of Operator Burdens by the DCISC is not recommended unless dictated by a sustained decreasing performance trend in this indicator.

### 3.7 Responses to Industry Operating Experience

The DCISC Fact Finding Team met with Ken Johnston, Operations Performance Manager. This is the DCISC’s first review of this topic, although topics related to this one have been under review by the DCISC since its inception. All plants in the nuclear industry have programs established to enable them to learn from the operating experience of other plants in the industry. Mr. Johnston provided the Fact Finding Team with information describing various mechanisms used by DCPP to benefit from industry operating experience. These include:

- Examining plant procedures and for any areas needing possible adjustment
- Examining the formal methods by which procedures are used
- Examining activities and techniques such as pre-job briefings, supervisory oversight, and human performance enhancements
- Conducting management, supervisory, and work group discussions on issues, activities, and processes
- Conducting integrated management systems reviews
- Conducting causal analyses
- Examining station drawings and design information
- Examining training content and processes
- Benchmarking DCPP processes and activities against other plants
- Conducting self-assessments, including the use of peer reviewers from other plants where appropriate
- Developing or enhancing assessment tools and processes
- Developing or enhancing job familiarization guides
- Observing station activities routinely, periodically, and as needed on a case basis
- Performing periodic internal audits

These same tools and mechanisms can also be applied to a review of problems/events that are internal to DCPP.

**Conclusions:**

The station employs an extensive array of tools and methods for examining the applicability of industry events to DCPP. Further review of this topic by the DCISC should be conducted on a case basis in which DCPP experiences a significant event similar to one experienced earlier by another plant.

### 3.8 Meet with Nuclear Regulatory Commission (NRC) Senior Resident Inspector
The DCISC Fact Finding Team met with Dr. Michael Peck, NRC Senior Resident Inspector at DCPP and Mr. Jonathan Braisted, NRC Resident Inspector. Mr. Peter Bedesem, Technical Assistant to the DCPP Site Services Director, was also present. Discussion focused on seismic design licensing bases involving the Hosgri Earthquake, the Operating Basis Earthquake (OBE), and the Safe Shutdown Earthquake (SSE). Their respective damping functions, as they are related to the station’s seismic design and licensing documents, were also reviewed. Discussion also extended to the potential influence of the Shoreline Fault on the station’s current licensing basis and on DCCP’s application to the NRC for an extension to its operating license.

3.9 Review of STARS Activities in 2010

The DCISC Fact-finding Team met with Andy Kulikowski, Project Manager, for an update on the Strategic Teaming and Resource Sharing (STARS) association of nuclear plants, of which DCPP is a member plant. The DCISC last reviewed this topic in September 2009 (Reference 6.7) when it concluded the following:

**DCPP’s involvement in the Strategic Teaming and Resource Sharing (STARS) alliance with six other nuclear plants continues to bring benefits economically, through technical resolution of safety and plant problems, and in dealing with the Nuclear Regulatory Commission on generic industry safety issues. They are also active in bringing the STARS plants’ positions on industry issues to NEI (Nuclear Energy Institute) and INPO (Institute of Nuclear Power Operations).**

STARS is an association of the following seven nuclear plants from seven different companies:

1. Callaway
2. Comanche Peak
3. Diablo Canyon
4. Palo Verde
5. South Texas
6. Wolf Creek
7. San Onofre

The association was formed “to capitalize on the collective abilities of the seven companies to support each other’s efforts in achieving and maintaining operational excellence...”

The primary focus of the alliance for 2010 was to identify and pursue initiatives and projects that would “assist station efforts in achieving operational excellence.” This was to be accomplished by making heavy use of the leadership and experience of the Engineering and Site Vice Presidents and focus on the following areas:

- Training excellence
- Corrective Action Program improvement
Collaborative improvement opportunities identified by performance measures analysis
Operational excellence
Improvement in equipment reliability
Leveraging the experience and insights of INPO loanees
Expanded strategic industry leadership

The STARS Governance Structure is important to its functioning and effectiveness. The Steering Committee is composed of the Chief Nuclear Officers of the seven member nuclear utilities or operating companies. Functioning under the oversight of the Steering Committee are a team of Site Vice Presidents, one from each STARS member, a similar team of Engineering Vice Presidents/Senior Managers, and a Management Council headed by an Executive Director who is a full-time STARS employee. Mr. Kulikowski has been DCPP’s representative on this Council. The Council works to establish priorities and to define areas for collaboration among the member utilities. STARS also has two other full-time employees focusing on Plant Aging Management and Regulatory Affairs. Group support is enhanced by sharing information at the various group meetings that are held throughout the year.

Mr. Kulikowski noted that one important area in which STARS has supported DCPP, as well as other STARS members, has been with respect to cross-cutting issues, i.e. broad issues such as problem identification and resolution, safety conscious work environment, human performance, and decision making that can be related to problems in a number of different technical or operational areas. To address this issue, peer reviewers from a number of STARS members assisted DCPP in evaluating actions taken to address some of these cross-cutting issues during the third quarter of 2010. The same peer review group provided assistance regarding the DCPP Corrective Action Program, the Licensing Basis Verification Project, and self-assessments.

Another area in which the STARS plants collaborate with each other and with other nuclear industry corporations and consortiums is through the sharing of performance data on a wide variety of performance indicators. With respect to overall performance during the first three quarters of 2010, as reflected by composite indicators, the STARS plants were slightly above both the industry average and the median. Based on these same overall composite indicators for 2010, DCPP was in the top 3 STARS plants, well above the industry average and median, and slightly below the overall performance indicator averages of the top two nuclear operating companies in the country.

Conclusions:

During 2010 DCPP received important support from the STARS association of nuclear plants in a number of important areas such as cross-cutting issues, corrective action, self-assessment, and licensing basis verification. DCPP’s overall composite performance indicator for the first three quarters of 2010 compared favorably within the STARS group and within the nuclear industry as a whole. DCISC’s next review of DCPP’s participation in STARS need not be until about two years hence.
3.10 Meeting with DCPP Senior Management

Dr. Peter Lam met with Mr. Ken Peters, Senior Director, Engineering Services, to discuss topics pertaining to this Fact Finding visit and other topics of mutual interest.

4.0 Conclusions

4.1

The potential system leakage problems that could result from the iron and sulfate levels in DCPP’s feedwater systems appear to present more of an operational reliability issue than a nuclear safety issue. DCPP has been implementing extensive action plans to address both issues. The DCISC does not need to examine this issue further from a nuclear safety perspective in any near-term future Fact Finding trips, but should occasionally (no more than annually) consider requesting DCPP to include a brief status on this topic as part of its regular update on Operational Status at future Public Meetings.

4.2

Conversion to National Fire Protection Association Standard NFPA 805 is an immense, complex, analytical effort requiring specialized skills and knowledge in Probabilistic Risk Assessment, fire protection systems, and the operation of plant safety systems. DCPP appears to be adequately implementing this program; hence, the DCISC should defer further review of this matter until after the station receives NRC approval of its License Amendment Request. Then the DCISC should focus its fire protection reviews on any future plant vulnerabilities that may be identified by the implementation of this program and its methodologies.

4.3

DCPP’s Margin Management Program appears to be functional and healthy. Appropriate personnel have been trained. Margin issues have been identified and prioritized. Responsibilities, actions, and completion dates/horizons have been established for identified issues. The Margin Management Committee appears to be serving as a vehicle, not only for reviewing margin issues, but also for reinforcing margin concepts. The DCISC should defer further review until after the next two DCPP refueling outages unless dictated by station performance issues.

4.4

Significant enhancements and expansions are nearing completion on DCPP emergency dose assessment systems, which exceed regulatory requirements and increase the level of protection for the public in the event of an unplanned radiological release. Expected completion of these activities is June 2011. The DCISC should consider including this topic as a DCPP presentation in one of the upcoming Public Meetings in 2011 to obtain closure on this longstanding issue that is important to public health and safety. Afterwards, any further DCISC Fact Finding reviews of this topic should be dictated by future potential DCPP performance issues in emergency preparedness.

4.5

The DCISC Fact Finding Team acknowledges that the July 2010 DCPP self-assessment of Technical
and Engineering Training Programs and the accompanying Negative Comments were based upon comparisons to industry best practices rather than to minimum acceptable performance. Nevertheless, the DCISC Fact Finding Team concludes that the Negative Comments individually and collectively reflect a lack of rigor in some aspects of DCPP Technical and Engineering Training Programs. Although the stated remedial actions appear to be appropriate, the DCISC should review the station's follow-up activities to this self-assessment and their results prior to the end of 2011.

4.6

The involvement of appropriate DCPP managers in resolving the increasing trend in Operator Burdens is an excellent example of how effective management oversight can resolve station problems. Further review of Operator Burdens by the DCISC is not recommended unless dictated by a sustained decreasing performance trend in this indicator.

4.7

The station employs an extensive array of tools and methods for examining the applicability of industry events to DCPP. Further review of this topic by the DCISC should be conducted on a case basis in which DCPP experiences a significant event similar to one experienced earlier by another plant.

4.8

During 2010 DCPP received important support from the STARS association of nuclear plants in a number of important areas such as cross-cutting issues, corrective action, self-assessment, and licensing basis verification. DCPP’s overall composite performance indicator for the first three quarters of 2010 compared favorably within the STARS group and within the nuclear industry as a whole. DCISC’s next review of DCPP’s participation in STARS need not be until about two years hence.

5.0 Recommendations:

None

6.0 References


1.0 Summary

The results of the February 28 – March 1, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. Reactor Coolant Pumps
2. Employee Concerns Program Visibility Initiative
3. Digital Control Systems
4. System Engineering Program
5. License Renewal Update
6. Foreign Material Exclusion Program
7. Engineering Evaluation Rigor Improvement Action Plan
8. Bob Budnitz Meet with Jim Becker, Site Vice-President
9. Outage Safety Plan for Outage 2R16

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team's suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval...
3.0 Discussion

3.1 Reactor Coolant Pumps

The DCISC Fact-finding Team met with Corie Colburn, Senior Component Engineer for Mechanical Rotating Equipment, to discuss the DCPP Reactor Coolant Pumps (RCPs). This is the first specific DCISC review of DCPP RCPs.

There are four Westinghouse-provided electric-motor-driven RCPs for each nuclear unit, one for each Reactor Coolant System (RCS) primary flow loop. All eight RCPs are identical with their electric motors being unit-specific. The RCP electric motors are rated at ZZZ horsepower and operate at 480 Volts AC. The RCP pressure boundary is considered safety-related and is designed for seismic forces. Pump function is not safety-related, though it is important for assurance of reliable plant operation. If RCP operation is interrupted, the Reactor Protection System will shut down the reactor because of cessation of cooling water flow. Cooling flow is provided by natural circulation of reactor coolant around the RCS with heat rejection to the Steam Generators, which are in turn cooled by Auxiliary Feedwater. The only significant accident scenarios for RCPs are a locked rotor event or a failure of one of the pump seals, both of which are analyzed in the Final Safety Analysis Report (FSAR).

Each pump has three shaft seals. Seal water is injected at a nominal nine gpm into the No. 3 Seal with six gpm injected into the RCS and leak off of three gpm from the Number 1 and 2 seals. Seal water is important for cooling and leakage control to assure proper pump operation. Pump seals are given a general, non-intrusive inspection each year (8,760 operational hours) and a boroscope inspection of the pump rotor from inside every 10 years (87,600 operational hours). Pump seals are inspected with a boroscope typically every six years (52,560 operating hours), unless there are problems. Seals are being replaced on a three-cycle frequency. Because of the presence of Foreign Material, i.e., contamination, following the Steam Generator replacements, three Unit 1 RCP seals were replaced. This is considered typical practice.

In March 2010 a trouble-shooting team determined that RCP 1-4 Seal No. 2 leak-off was causing excessive RCS leakage. The seal leakage had increased several times due to several “thermal shock” events. Entering Refueling Outage 1R16 and with RCP 1-1 exhibiting excessive seal leakage, DCPP decided to inspect all RCP 1-1 and 1-4 seals. The RCP 1-4 inspections showed excessive or uneven wear on all three seals along with metallic debris. RCP 1-1 seals showed excessive wear and metallic debris. RCP 1-3 was also inspected and showed debris and abnormal wear. RCP 1-2 was left alone because its seals were operating normally and it has exhibited stable leak-off. The metallic debris was identified as coming from prior work performed on the seal injection line.

There were 14 corrective actions, which fell into the following categories:

1. Increase component inspections when work is performed upstream of the seal injection lines
2. Expand Foreign Material Exclusion (FME) high-risk zones to areas encompassing seal injection lines
3. Augment flush procedures following physical work on seal injection lines
4. Increase preventive maintenance (PM) on seal line components
5. Perform a Seal Improvement Performance Plan to evaluate overall system, chemistry, and operating practices.
6. Develop controls to assure only correct materials are used in replacement parts

These corrective actions have been completed. DCPP believes the FME problems will be found on all RCP seals and is applying the corrective to all RCPs for both units. The DCISC FF Team believed these corrective actions were appropriate.

RCP motors have generally been trouble-free. They are inspected regularly and re-built on-site over a ten-year schedule. Beginning December 2009, there have been multiple instances of TCP motor bearing temperatures spiking high and immediately returning to normal. These instances are being tracked in the Corrective Action Program to determine the cause of the spikes and to ascertain the need for any corrective actions.

RCS system health was Yellow (unacceptable) for Third Quarter 2010, improved to White (acceptable) at the end of 2010. These ratings were due to other than RCP problems.

Conclusions:

DCPP Reactor Coolant Pumps (RCPs) have performed well without significant problems. The RCP seals, which are sensitive to debris and thermal transients, are receiving proper attention in the form of periodic inspections, flushing of upstream seal water injection lines, and regular replacements.

Recommendations:

None

3.2 Employee Concerns Program (ECP) Visibility Initiative

The DCISC Fact-finding Team met with Rick Burnside, ECP Manager, and Russell Glines, ECP Investigator, to discuss results of the July 2010 NRC Problem Identification and Resolution (PI&R) inspection (Reference 6.1) pertaining to the DCPP ECP. The DCISC last reviewed the DCPP ECP at the DCISC February 10-11, 2010 Public Meeting (Reference 6.2) and the January 19-20, 2010 Fact-finding Meeting (Reference 6.3) when it concluded the following:

*It appears that the Nuclear Safety Culture Survey and the Safety Conscious Work Environment (SCWE) Survey are effective in terms of receiving employee comments and answers regarding DCPP safety culture and work environment. DCPP should continue conducting these Nuclear Safety Culture and SCWE surveys. DCPP is in the process of conducting a 100% safety culture survey of all employees using the Nuclear Energy Institute (NEI) 09-07 report, “Fostering a Strong Nuclear*
DCPP received a large number of Employee Concerns in 2008 and 2009 compared to years past. DCPP believes the NRC received the large number of allegations in 2008 and 2009 because there was an unusually long Steam Generator replacement outage in each of 2008 and 2009 with its associated unusually high work load and numbers of contractors. Given the trend in the number of allegations received by the NRC, the DCISC should continue to review the Employee Concerns Program at future Fact Finding Meetings.

The NRC PI&R inspection report determined that improvements could be made to enhance the visibility and use of the DCPP ECP. This was documented in a Notification and entered into the Corrective Action Program (CAP). From this, an action plan to promote the ECP was initiated. The action plan has the following six actions:

1. Move the Generic Employee Training (GET) ECP presentation into Current Issues (CI). The ECP Group is developing stand-alone safety culture and ECP training to include a requirement to take the training on a recurring frequency.

2. Place ECP posters with pictures of ECP Group personnel in various plant locations. These posters have already been placed throughout the plant. ECP and the DCPP Communications Department have developed an ECP communications plan. The first action has been completed – publication in the plant newsletter, “News You Can Use” on February 14, 2011.

3. Promote ECP at various plant venues. The ECP Group continues to work with individual work groups to identify venues for ECP communications.

4. Develop and deliver ECP communications.

5. ECP promotional items.

6. Consider anonymous Notification capability. This is to be incorporated following Outage 1R16.

Conclusions:

The action plan to increase visibility of the DCPP Employee Concerns Program appears to be appropriate.

Recommendations:

None

3.3 Digital Control Systems

The DCISC Fact-finding Team met with Scott Patterson, Instrumentation and Controls (I&C) Obsolescence Program Manager, for an update on DCPP’s use of digital controls. The DCISC last reviewed this subject at its October 24-25, 2007 Public Meeting (Reference 6.4) and its August 21-22, 2007 Fact-finding Meeting (Reference 6.5) when it concluded:

The DCPP Instrument and Control Long-Term Obsolescence Program was impressively conceived and implemented. The program appeared effective, and the Program Manager was
knowledgeable and enthusiastic.

The discussion consisted of two parts: (1) DCPP I&C Obsolescence Management Program and (2) the Process Protection Systems (PPS) Replacement Project.

**DCPP I&C Obsolescence Management Program**

In the 1999 – 2000 timeframe DCPP began studying I&C obsolescence issues based on lessons-learned from replacements of components originally installed in the 1980s when the plant was built. Many components were no longer being manufactured or supported by the original vendors. The study resulted in an I&C Long-Term Strategic Plan with the following attributes:

- Treat I&C projects as a program to provide a proactive method for addressing obsolescence and aging issues with I&C equipment
- Prioritize system replacement based on an objective evaluation
- Use multiple projects which are individually funded
- The program is reviewed each year

The Long-Term I&C Strategy specified the use of a common upgradeable vendor platform for upgrades. The platform is based on a Triple-Modular Redundant Fault-Tolerant system with vendors having a wide customer base and proven customer support. Two platforms were specified: (1) triple-redundant Triconex system for safety-related and critical systems and (2) non-redundant but highly reliable Allen-Bradley components for the remaining systems. The formal I&C Obsolescence Management Program (OMP) was established in 2006.

Projects completed using the program include the following:

- Main Turbine Control System
- Feedwater Control System (Reference 6.6)
- Transient Monitoring System
- Moisture Separator Reheater Controller
- Reactor Make-up System
- Main Turbine Vibration
- Feedwater pump Vibration Monitoring
- Plant Process Computer
- Auxiliary and Fuel Building Ventilation Control
- Containment Hydrogen Monitors

Upcoming Projects starting in 2011 include:
- Main Generator Voltage Regulator
- Diesel Generator Control System
- Main Feed Regulating Valve Digital Positioners
- Control Rod Logic Cabinet
- Plant Vent Radiation Monitors

Though there have been challenges, overall the changes from analog to digital controls have been successful. DCPP has determined it best to perform programming of digital equipment itself, utilizing its Software Quality Assurance Program (SQAP), which the DCISC reviewed and found satisfactory in its December 10-11, 2010 Fact-finding Meeting (Reference 6.7).

**Process Protection System Replacement Project (PPSRP)**

The original Westinghouse 7100 analog protection sets were replaced in outages 1R6 and 2R6 with the existing Eagle 21 Process Protection System (PPS). The DCPP digital Eagle 21 PPS monitors plant parameters, compares them against setpoints, which if exceeded, provides signals to the Solid State Protection System (SSPS). The SSPS, in turn, evaluates the signals through coincident logic and performs Reactor Trip System (RTS) and Engineered Safety Features Actuation System (ESFAS) command functions to mitigate an event that may be in progress.

The PPSRP will replace the existing digital Eagle 21 Process Protection System with a software-based Triconex TRICON platform for the primary PPS functions and incorporate a logic-based Westinghouse/CS Innovations Advanced Logic System for functions, which require built-in diversity. The PPRP is scheduled to be implemented during outages 1R18 and 2R18 in February 2014 and September 2014, respectively.

The proposed PPS addresses current NRC regulations and guidance regarding Diversity and Defense-in-Depth. It will implement automatic protective functions in a logic-based system with built-in diversity that addresses software Common Cause Failure (CCF). DCPP plans to submit its PPSRP License Amendment Request (LAR) to the NRC in July 2011 and receive approval in 18 months, permitting installation in 2014. DCPP has already submitted its Defense-in-Depth and Diversity Evaluation to NRC. The LAR will include the following:

- Application-System Architecture
- Hardware Development Process
- Software Architecture
- Software Development Process
- System Qualifications
- Diversity and Defense-in-Depth
- Communications
System, Hardware, Software, and Methodology Modifications


IEEE 7-4.3.2 “Standard Criteria for Digital Computers in Safety Systems of Nuclear Generating Stations” Compliance

Technical Specifications

Secure Environment

PPSRP suppliers must develop their hardware and software with an approved 10CFR50, Appendix B Quality Assurance Program, including an acceptable Validation and Verification Program. All systems developed or modified must be adequately tested before delivery. Pre-installation testing is performed by personnel familiar with the system but independent of the developers.

Digital reactor protection systems are relatively new for nuclear plants and the NRC. One plant, Oconee Nuclear Station (a Babcock & Wilcox PWR design), has NRC approval and will install its RPPS in Spring 2011.

Conclusions:

The DCPP I&C Obsolescence Management Program, which replaces obsolescent analog process control and/or monitoring systems with digital systems is impressive in its design, implementation, and accomplishments to date. One significant part of this program is the replacement of the Eagle 21 Reactor Process Protection System, the primary system used to monitor process variables and take actions to trip the Reactor and actuate Engineered Safety Features, as needed. This project is undergoing NRC review, and DCPP expects to complete installation in 2014. The DCISC should continue to monitor this project.

Recommendations:

None

3.4 Transformer Leaks

The DCISC Fact-finding Team met with Joe Goryance, Electrical Supervisor in the Instrumentation & Control and Electrical (ICE) Systems Department, for an update on transformer leaks. The DCISC last reviewed transformer leaks at its November 2010 Public Meeting (Reference 6.8), August 2009 Fact-finding Meeting (Reference 6.9) and April 2010 Fact-finding Meeting (Reference 6.10), when it concluded the following:

DCPP identified the apparent cause of its adverse trend in transformer oil leaks as being ineffective preventive maintenance program implementation. This was due to the low priority given to transformer coatings preventive maintenance, which resulted in corrosion and leaks primarily in tube and fin oil radiators. In the future transformer coatings maintenance will receive higher priority. DCPP decided that all other remaining transformer leak maintenance will be corrective. Although not proactive, this practice appears acceptable if leaks are identified and repaired in a timely manner and if leaks remain small and non-safety significant. The DCISC should monitor DCPP transformer leaks.
DCPP has become more deliberate, aggressive, and organized in its approach to solving the station’s longstanding problems pertaining to the reliability of large power transformers and to the accompanying effect on the safety of station personnel. Unless dictated by station events, the DCISC should perform its next periodic progress review after the next refueling outage, 1R16.

DCPP wrote an Apparent Cause Evaluation (ACE) on its leaking transformers because of an apparent adverse trend of oil leaks, the earliest being identified in 1999. More than 50 oil leak issues were listed in the applicable Corrective Action Program (CAP) Notification. The earliest of these events were considered to be of a minor nature; however, some had progressed to the point of being significant.

Recent significant leaks, which potentially affected plant operation, included the following:

- In April 2009 an extensive leak of Cooler 4 on Unit 2 C-Phase Main Bank Transformer required cooler isolation and removal from service to reduce the leak rate and allow the transformer to remain in service.
- In February 2009 following Outage 1R15, Auxiliary Transformer 1-1 developed a flange leak severe enough to warrant draining the oil to replace the gasket.
- In September 2008 prior to its relocation from the spare position in Outage 2T15, Unit 2 C-Phase Main Bank Transformer required replacement of two radiators (coolers) because of severe leaks.
- In March 2008 Start-up Transformer 1-1 developed a leak that required development of a Prompt Operability Assessment (POA) and isolation of its leaking cooler.

An analysis of leaks from 2000 – 2009 concluded the following breakdown:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>34.0%</td>
<td>Flange or gasket leaks</td>
</tr>
<tr>
<td>23.4%</td>
<td>Corrosion-based leaks</td>
</tr>
<tr>
<td>23.4%</td>
<td>Leaking valves</td>
</tr>
<tr>
<td>19.2%</td>
<td>Penetration, weld or other minor leaks (leak is not hitting the ground)</td>
</tr>
</tbody>
</table>

DCPP reported that maintenance and leak repair methods have been generally effective in addressing all but the severe corrosion-based leaks. These leaks, caused by tube or fin corrosion, have outpaced coatings maintenance schedules. The flat plate radiators have sharp edges, which do not hold paint as well as flatter-edged surfaces. This leads to faster corrosion and leakage on the edges. Numerous transformer radiators are being replaced in the next two upcoming outages.

DCPP identified the apparent cause of these leaks as ineffective preventive maintenance (PM) program implementation for transformer coatings. The corrective action is to increase the priority and frequency of transformer coating preventive maintenance. The ACE also noted that DCPP does not have a PM program for transformer valves and flange gaskets. The current PM for transformers
includes thermography, oil testing and analysis, electrical testing, engineering and operations walkdowns, bushing cleaning, device testing and calibrations, and load tap changer maintenance. All remaining maintenance activities are corrective. DCPP performed an extent-of-condition review of active oil leaks and determined that no additional actions beyond the CAP Notifications and normal repairs are necessary. Although not pro-active in preventing non-corrosion-based leaks, this practice appears acceptable if leaks are identified and repaired in a timely manner and if leaks remain small and non-safety significant.

DCPP transformer leakage correction is part of its Long-term Transformer Plan. In Refueling Outage 1R16 DCPP replaced radiators in Start-up Transformer 1-1 and Auxiliary Transformer 1-2. Work on Auxiliary Transformer 1-1 was rescheduled. In Outage 2R7 DCPP will replace radiators on Start-up Transformer 2-1. The problem with the radiators was corrosion caused by salt-water mist from the ocean. The replacement radiators are made from painted galvanized metal. Depending on the specific leak, DCPP uses three stages of repair:

1. Plant Maintenance employing epoxy sealant or paint
2. PG&E Substation Maintenance
3. Outside vendor using specialized clamps and injected epoxy

DCPP believes its transformer leaks are under control.

Regarding DCPP’s overall transformer actions, DCPP is moving one GE and one Elin transformer to group them together by unit and manufacturer (GE on Unit 2 and Elin on Unit 1). A specification for bids for personnel protective walls for the main transformers has been sent out with plans to install the walls in outages 2R17 or 1R18.

Conclusions:

It appears DCPP has taken a pro-active approach to its transformer leaks and has them under control.

Recommendations:

None

3.5 System Engineering Program

The DCISC Fact-finding Team met with Mike Wright, Mechanical Engineering Manager, and Ryan West, I&C/Electrical Engineering Manager, to discuss DCPP System Engineering and system health. The DCISC last reviewed system engineering and system health in January 2009 (Reference 6.11), when it concluded the following:

The DCPP System Engineering Program (SEP), found satisfactory by the DCISC in 2005, was determined by DCPP in early 2008 to be ineffectively implemented with respect to correcting system health problems. The Program was revised to center its focus on system health and
strengthen System Engineers’ ability to correct system health problems. The revision appears promising, and the DCISC should closely monitor system health to ascertain its effectiveness.

The four levels of system health are as follows:

Healthy

- Green indicates the system has minor or no performance issues.
- White indicates all actions to correct major performance/health issues complete, or interim corrective actions are in place, and performance is trending towards a goal or target.

Unhealthy

- Yellow indicates the system has major performance/health issues with interim and/or final corrective actions scheduled for implementation.
- Red indicates the system has major performance/health issues and actions are being developed, but not approved by the PHC.

The Fact-finding Team reviewed the current system health, which was as shown in the following table:

Unit 1

<table>
<thead>
<tr>
<th>System</th>
<th>Health Color</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy</th>
<th>Actions for Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Feedwater</td>
<td>Yellow</td>
<td>4</td>
<td>3/11</td>
<td>ACE for Failed Valve Actuator</td>
</tr>
<tr>
<td>Emergency Diesel Generator</td>
<td>Yellow</td>
<td>2</td>
<td>2/12</td>
<td>Increased Load Margin and Repair Banjo Bolts</td>
</tr>
<tr>
<td>HVAC</td>
<td>Yellow</td>
<td>2</td>
<td>3/11</td>
<td>Evaluate ABVs Flows: CFCU Reverse Rotation; CFCU Breaker Tripping; Replace ASW Pump Room Fan; and Remove Dumper Panel SPV</td>
</tr>
<tr>
<td>4kV</td>
<td>Yellow</td>
<td>11</td>
<td>1R17</td>
<td></td>
</tr>
<tr>
<td>480V</td>
<td>Red</td>
<td>1</td>
<td>TBD</td>
<td>Replace Relays Susceptible to EMI</td>
</tr>
<tr>
<td>125VDC</td>
<td>Yellow</td>
<td>5</td>
<td>3/11</td>
<td>ACE for Failed Battery Cell</td>
</tr>
<tr>
<td>230 kV</td>
<td>Yellow</td>
<td>35</td>
<td>2R16</td>
<td>Implement Reliability Project</td>
</tr>
</tbody>
</table>

Unit 2
<table>
<thead>
<tr>
<th>System</th>
<th>Health Color</th>
<th>Months Unhealthy</th>
<th>Expected Return to Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraction System</td>
<td>Yellow</td>
<td>1</td>
<td>3/11</td>
</tr>
<tr>
<td>Auxiliary Salt Feedwater</td>
<td>Yellow</td>
<td>12</td>
<td>2R16</td>
</tr>
<tr>
<td>Emergency Diesel Generator</td>
<td>Yellow</td>
<td>2</td>
<td>2/12</td>
</tr>
<tr>
<td>HVAC</td>
<td>Yellow</td>
<td>22</td>
<td>2R16</td>
</tr>
<tr>
<td>4kV</td>
<td>Yellow</td>
<td>11</td>
<td>2R17</td>
</tr>
<tr>
<td>480V</td>
<td>Red</td>
<td>1</td>
<td>TBD</td>
</tr>
<tr>
<td>230 kV</td>
<td>Yellow</td>
<td>34</td>
<td>2R16</td>
</tr>
</tbody>
</table>

Actions and dates were identified to return these systems to healthy as shown. The DCISC observed a Plant Health Committee (PHC) meeting in December 2010 (Reference 6.12) when it concluded, as follows, that DCPP system health is improving:

*The December 15, 2010 DCPP Plant Health Committee (PHC) meeting was well run, focused on system and program health improvement, and garnered good participation from attendees. The Committee’s emphasis was on assuring action plans were being implemented to achieve acceptable plant health. It is apparent that the PHC has increased its effectiveness by more closely focusing on the health of plant systems, components, and programs than previously done, which has resulted in improvement in system health measures.*

This is substantiated with the following chart showing the trend of unhealthy systems.
The Fact-finding Team reviewed the current DCPP System Engineering Program (SEP) Procedure (Procedure TS5.ID1). Significant improvements had been made in 2009. The improvements centered on system engineers and their supervision focusing more time on system health, performing more robust system walk-downs, having more reviews of health with supervision, higher expectations for system health cards, and more emphasis on system health by the Plant Health Committee.

DCPP system engineers are responsible for the following:

- Support Operations and Maintenance
- Resolution of System Problems
- Design Change Process Project Team Member
- Perform Routine Technical Reviews and Evaluations
- System Health Reporting
- Support of the Plant Health Process*
- System Performance Monitoring
- System Testing (test lead or test performer)
- System Design and Licensing Basis Owner
- Operating Experience Reviews

* Improvements in this process to achieve a better focus on system health combined with a similar focus in the System Engineering Program have good potential for maintaining DCPP systems healthy.

The Fact-finding Team reviewed the system health reports in their new format for the following systems:

- Condensate
- 480-Volt Vital & Non-vital Power
- Radiation Monitoring
- HVAC

These health reports contain the following information:

- Scorecard
  - Executive Summary
  - Scores (includes points for each of the following items)
    - Reliability
    - Maintenance
Material/Equipment Condition and Corrective Actions
Operations Concerns
Performance Monitoring
Design
  - Score Override Justification
  - Indicator Description
  - Indicator Override Justification

- Indicator Comments (e.g., critical component failures, aging issues, adverse trends, design deficiencies, etc.)
- Action Plan (to return to healthy status – see below)

Operating Experience
Predictive Parameters
Contacts
Analysis

The Action Plans include the reason for the problem condition, owner, CAP Notification number, tracking number, action type, status, due date, responsible individual, last updated date, whether required for healthy, and whether in Top 10 plant action items. The Fact-finding Team believed the new style system health reports to be effective in capturing the important aspects of system health and the actions and dates for a return to healthy.

Conclusions:

Improvements in the System Engineering Program combined with those in the Plant Health Committee process to achieve a better focus on system health have good potential for maintaining DCPP systems healthy. DCPP system health has improved since these changes were made.

Recommendations:

None

3.6 License Renewal Update

The DCISC Fact-finding Team met with Loren Sharp, Senior Director of Engineering; Terry Grebel, License Renewal Project Manager; and Kristy Dennision, Enercon Engineer, for an update on DCPP License Renewal. The DCISC last reviewed license renewal in September 2010 (Reference 6.13), when it concluded the following:

The DCPP License Renewal review by NRC appears to be progressing as expected. DCPP is answering the many NRC requests for additional technical information, which are typical of NRC
license renewal reviews. There are no technical or programmatic issues with the NRC. DCPP
expects to get its NRC Advisory Committee on Reactor Safeguards review in mid-2011. There are
two intervener contentions being reviewed by the NRC for the future public hearing.

The DCPP License Renewal Application was submitted to the NRC on November 23, 2009, and on
January 8, 2010, NRC staff determined that the application contained sufficient information for the
NRC to formally file the application and begin technical review. The review process is a two-track
process, one track consisting of the review of safety impacts in accordance with 10 CFR Part 54 and
a second track consisting of review of the environmental impacts in accordance with 10 CFR Part 51.
Public input is provided and hearings are scheduled concerning both tracks of this process.

The license renewal application process involves an Integrated Plant Assessment (IPA) safety
review, which includes elements of scoping, screening, aging management review, aging
management programs, and time-limited aging analyses activities, and the preparation of an
environmental report addressing consistency issues with reference to the Coastal Zone
Management Act. IPA scoping involves analysis of those safety-related plant systems, structures
and components that are within the scope of license renewal; all non safety-related systems,
structures and components whose failure could prevent satisfactory accomplishment of any of the
safety-related features; and all systems, structures and components that demonstrate compliance
with NRC regulations for fire protection, environmental qualification, pressurized thermal shock,
anticipated transients without scram, and station blackout. This analysis is also correlated with the
NRC Maintenance Rule. Only passive components which are not replaced periodically and for which
no aging management is required by the NRC are included, because active components and the
adequacy of existing aging management programs are reviewed using other processes.

The NRC Advisory Committee on Reactor Safeguards (ACRS) Subcommittee review meeting for the
DCPP license-renewal application was on February 9, 2010. This followed completion of the draft
NRC Safety Evaluation Report. DCPP presented and answered ACRS questions on the following
items:

- Site and Station Description
- Plant History and Major Improvements
- License Renewal Application Review
- Open (and Confirmatory) Items Review
  - Flux Thimble Tube Inspection Program
  - Flaw Growth Evaluation for Residual Heat Removal
  - Scoping and Screening
    - Turbine Building HVAC issues
    - Water line isolation procedures
    - Emergency Diesel Generator Air Start line code break location
- Buried Piping and Tanks Inspection Program
- Time Limited Aging Analysis (TLAA) Identification
- Metal Fatigue

DCPP is working with NRC Staff to resolve the above open items.

NRC presented the following:

- NRC Safety Evaluation Report overview
- Scoping and Screening Results
- Onsite Inspection Results
- Aging Management Review
- Time Limited Aging Analysis

Though the NRC safety review is concluding, the NRC environmental review schedule has slipped, and the California Coastal Commission review is under way. The history and schedule are shown below.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Schedule Date</th>
<th>Actual Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive license renewal application (LRA)</td>
<td>11/24/09</td>
<td>11/24/09</td>
</tr>
<tr>
<td>Publish Federal Register Notice (FRN) - LRA availability</td>
<td>12/11/09</td>
<td>12/11/09</td>
</tr>
<tr>
<td>Publish FRN - acceptance and opportunity for hearing</td>
<td>01/21/10</td>
<td>01/21/10</td>
</tr>
<tr>
<td>Publish FRN - environmental scoping meeting</td>
<td>01/21/10</td>
<td>01/27/10</td>
</tr>
<tr>
<td>Audit – Environmental</td>
<td>04/19/10</td>
<td>04/19/10</td>
</tr>
<tr>
<td>Public Meeting - License Renewal Overview</td>
<td>02/09/10</td>
<td>02/09/10</td>
</tr>
<tr>
<td>Public Meeting – Environmental Scoping</td>
<td>03/03/10</td>
<td>03/03/10</td>
</tr>
<tr>
<td>Deadline for filing hearing requests and petitions for intervention</td>
<td>03/22/10</td>
<td>03/22/10</td>
</tr>
<tr>
<td>Environmental scoping period ends</td>
<td>04/12/10</td>
<td>04/12/10</td>
</tr>
<tr>
<td>Audit – Scoping &amp; Screening Audit Methodology</td>
<td>03/15/10</td>
<td>03/15/10</td>
</tr>
<tr>
<td>Audit – Aging Management Programs</td>
<td>04/12/10</td>
<td>04/12/10</td>
</tr>
<tr>
<td>Issue safety evaluation report (SER) with open items</td>
<td>12/10/10</td>
<td>01/10/11</td>
</tr>
<tr>
<td>Advisory Committee on Reactor Safeguards (ACRS) Subcommittee meeting</td>
<td>02/2011</td>
<td>02/09/11</td>
</tr>
<tr>
<td>Issue final SER</td>
<td>05/23/11</td>
<td></td>
</tr>
<tr>
<td>Issue draft supplemental environmental impact statement (SEIS)</td>
<td>05/2011</td>
<td></td>
</tr>
<tr>
<td>Publish EPA FRN - draft SEIS available for comments</td>
<td>05/2011</td>
<td></td>
</tr>
</tbody>
</table>
The following contentions by the San Luis Obispo Mothers for Peace (SLOMFP) have been accepted by the NRC for the upcoming hearing:

Contention TC-1

The applicant, Pacific Gas & Electric Company (PG&E), has failed to satisfy 10C.F.R. § 54.29’s requirement to demonstrate a reasonable assurance that it can and will “manage the effects of aging” in accordance with the current licensing basis. PG&E has failed to show how it will address and rectify an ongoing adverse trend with respect to recognition, understanding, and management of the Diablo Canyon Nuclear Power Plant’s design/licensing basis which undermines PG&E’s ability to demonstrate that it will adequately manage aging in accordance with this same licensing basis as required by 10 C.F.R. § 54.29.

Contention EC-1

PG&E’s Severe Accident Mitigation Alternatives ("SAMA") analysis fails to satisfy 40 C.F.R. § 1502.22 because it fails to consider information regarding the Shoreline fault that is necessary for an understanding of seismic risks to the Diablo Canyon nuclear power plant. Further, that omission is not justified by PG&E because it has failed to demonstrate that the information is too costly to obtain. As a result of the foregoing failures, PG&E’s SAMA analysis does not satisfy the requirements of the National Environmental Policy Act ("NEPA") for consideration of alternatives or NRC implementing regulation 10 C.F.R. §§51.53(c)(3)(ii)(L).

Contention EC-2

PG&E’s Environmental Report is inadequate to satisfy NEPA because it does not address the airborne environmental impacts of a spent fuel pool accident caused by an earthquake adversely affecting DCNPP.

Contention EC-4

The Environmental Report fails to satisfy the National Environmental Policy Act (NEPA) because it does not discuss the cost-effectiveness of measures to mitigate the environmental impacts of an attack on the Diablo Canyon reactor during the license renewal term.

Note: On April 10, 2011, following the Fact-finding meeting, PG&E submitted a request to the NRC to defer its review of the DCPP license renewal until certain seismic reviews are completed in 2015.

Conclusions:
The DCPP License Renewal proceeding continues to progress with NRC’s draft Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There are several open technical issues with the NRC, but these are being resolved, meaning that the technical portion of the application is being completed. The NRC has admitted four contentions by intervener San Luis Obispo Mothers for Peace. At the time of the Fact-finding meeting, it appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on schedule and the contentions were to be satisfactorily settled in the hearings; however, following the Fact-finding meeting, on April 10, 2011, PG&E submitted a request to the NRC to defer its review of the DCPP license renewal until certain seismic reviews are completed in 2015.

3.7 Foreign Material Exclusion (FME) Program

The DCISC Fact-finding Team met with Michael Gibbons, Mechanical Maintenance Manager and Acting Maintenance Services Manager (FME Program Manager); Rich Harvey, Outage Services Manager; and Craig Stolz, FME Program Manager, for an update on DCPP’s FME Program. The DCISC last reviewed FME at its June 13-14, 2007 Public Meeting (Reference 6.14) and its April 18-19, 2007 Fact-finding Meeting (Reference 6.15), when it concluded the following:

It appears that DCPP is taking appropriate actions to improve the Foreign Material Exclusion (FME) Program. Major changes will be made to the FME procedure after 1R14 and before 2R14 in Feb. 2008. Ms. Albin, the new FME Coordinator from outside DCPP, brings FME experience to DCPP. DCISC should review the FME program in the 4th quarter of 2007 after their procedure revision, assessment, Outage 1R14 results, and before Outage 2R14.

The objective of the FME program is to prevent the introduction of foreign material into plant systems or components. An FME program goal is to provide a focus on a preventive attitude among workers. This means workers should think through the activities they will perform in an FME area and take precautions to prevent introducing foreign material into plant equipment and systems.

DCPP had preventable FME events during Outage 1R16 and performed an Apparent Cause Evaluation (ACE) to identify causes and actions for improvement.

Outage 2R15 and 1R16 objectives were as follows:

<table>
<thead>
<tr>
<th>FME Category</th>
<th>1R16 Actual (Goal)</th>
<th>2R15 Actual (Goal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threats/Vulnerabilities</td>
<td>9(6)</td>
<td>9(0)</td>
</tr>
<tr>
<td>Conditions</td>
<td>25(15)</td>
<td>22(0)</td>
</tr>
</tbody>
</table>

Of the total number of FME events identified in 1R16, ten events were preventable human performance errors in Maintenance (4), Radiation Protection (1), and Construction Services (5). Five of the ten were classified as FME Threats/Vulnerabilities, which could have had significant consequences or cause equipment damage if not detected. These five Threats/Vulnerabilities were 50% caused by in-house workers and 50% by supplemental workers.
The ACE described 46 Corrective Action Program (CAP) Notifications documenting FME events during 1R16 and compared these to FME events in Outage 2R15. These were very low-level incidents but were of concern to the plant. Of these 46:

- System coatings degradation inside Containment - 8
- Reactor Coolant Pump seals* – 7
- Loose debris in Steam Generator secondary sides – 5

* A separate ACE was performed for RCP seals. See Section 3.1 above.

Two apparent causes were identified:

1. Organizational Weakness – awareness and FME prevention practices while working near or within FME areas have not been employed by supplemental and inhouse personnel.
2. Organizational Weakness – human performance tools for assisting workers preparing and performing work in high-risk areas are lacking.

Corrective actions include industry benchmarking to adopt good practices leading to reduced FME incidents and tightening up and better publicizing DCPP FME. DCPP FME is currently a Maintenance Department program but will become an official plant-wide “program” in mid-2011, which will raise its importance, visibility, and control. DCPP is updating its Job Hazards Analyses to include FME. There will be written outage FME plans beginning with Outage 2R16 in May 2011. DCPP is planning a post-Outage 2R16 FME self-assessment.

The DCISC Fact-finding Team reviewed the plant FME procedure (Reference 6.16) and concluded that it was appropriate to control FME effectively, if implemented properly. The procedure contains the following:

- Scope and Responsibilities
- FME Levels and Controls
- Maintaining Standard and High Risk FME Areas
- Special Controls
- FME Boundaries and Barriers
- Material Accountability Controls
- FME Integrity
- Inspections
- Reactor Cavity and Spent Fuel Pool FME Plans, Maps, and Signage
- Material Accountability and Personnel Entry Logs
- Outage and Non-Outage Walk-down Procedures and Reconciliations
Record-keeping

FME Program Health is shown in the following chart:

As shown in the chart, FME Program Health is Red (unhealthy) based on a rolling 6-month average of FME incidents. An improving trend exists (97+ scores for November, December, January and February as compared to the October 1R16 Outage score of -10), and DCPP expects program health to return to Green (healthy) in April 2011, barring no new events.

Conclusions:

DCPP’s Foreign Material Exclusion (FME) Program has shown degraded performance in the last two outages (2R15 and 1R16) but an improving trend since 1R16 in October 2010. DCPP is making improvements in the program to better address outage and non-outage FME performance. These improvements appear satisfactory, and the DCISC should continue to monitor DCPP’s FME performance.

Recommendations:

None

3.8 Engineering Evaluation Rigor Improvement Action Plan

The DCISC Fact-finding Team met with Susan Westcott, Director of Engineering, and Pat Nugent, Manager Technical Support Engineering, to review the status of DCPP’s Engineering Evaluation Rigor Improvement Action Plan. The DCISC last reviewed this item at the DCISC June 2-3, 2010 Public Meeting (Reference 6.17) when DCPP reported the following:

The latest [January 9, 2009] Quality Performance Assessment Report (QPAR) identified technical evaluation quality as a continuing challenge for DCPP. Training was conducted in 2009 on Licensing Basis Impact Evaluation (LBIE) process and quality evaluation and the issuance of a new procedure has resulted in increased quality of technical evaluations. A new challenge has been identified associated with the LBIE process and licensing basis documentation. In 2010, LBIE training and increased awareness of licensing basis issues, as well as on issues related to reliance on past assessments and evaluations were implemented as corrective actions including review by Engineering management. To improve performance additional oversight is being provided over the 10 CFR 50.59 process, which is a change process to the facility’s license. The QPAR also
identified a lack of effectiveness in implementation of the PME Program.

In the August 11-12, 2009 Fact-finding Meeting (Reference 6.18) the DCISC concluded:

DCPP appears to have properly addressed the problem of inadequate technical evaluations related to its licensing and design bases; however, results are yet to be achieved, and the DCISC should monitor the effectiveness of corrective action.

NRC identified a significant cross-cutting aspect in its 2009 End-of-Cycle Letter of March 2010 for the lack of thoroughness in engineering evaluations in the P.1.c cross-cutting area described as follows:

The NRC staff has identified a substantive crosscutting issue in the area of problem identification and resolution associated with the thoroughness of problem evaluation. The staff first identified this item in the 2008 annual assessment letter, dated March 4, 2009. This theme continued through the 2009 mid-cycle assessment as discussed in our September 1, 2009 letter. The staff has concluded that this theme continued again through the current 12-month assessment period with six Green findings documented with this crosscutting aspect. Recent examples include: the failure to perform an adequate evaluation for damping values for the Unit 2 replacement reactor vessel head; the failure to identify and correct a degraded fire door latching mechanism; and an inadequate evaluation of operator actions related to the steam generator tube rupture accident analysis. While you have implemented a range of substantial corrective actions to address the crosscutting theme, these actions have yet to prove effective in mitigating the continuing trend. It is not apparent that you have fully evaluated the depth and breadth of the issue to ensure the effectiveness of your corrective actions. The NRC has concluded that you should assess why your past corrective actions have not been effective in mitigating the trend and make adjustments as appropriate to ensure that you achieve results in correcting the trend. We will monitor your progress in addressing this crosscutting issue through baseline inspections, including semi-annual trend reviews and the biennial problem identification and resolution team inspection. The substantive cross-cutting issue will remain open until we determine that corrective actions have resulted in sustained improved performance as demonstrated by no safety significant findings and a reduction in the number of findings with the same causal factor, specifically focusing on the most recent 6-month period reviewed in the assessment period.”

As of the date of this Fact-finding meeting (March 1, 2011), the NRC identified significant cross-cutting aspect was still outstanding.

Since the above reviews were released, DCPP has developed a formal “Evaluation Thoroughness Action Plan”. The plan is designed for DCPP engineering personnel to “…perform rigorous evaluations using industry leading programs to analyze and resolve problems. “ These programs will be periodically assessed and updates using industry best practice. The Plan contains the following strategies:

- Implement the Licensing Basis Verification Program (LBVP)
Utilize the LVBP to broaden and retain licensing and design basis knowledge.

Complete the 230 kV licensing basis review.

Use training where appropriate to improve performance.

Reinforce the behaviors required to implement evaluation programs effectively and efficiently such as regularly referencing the applicable standards when using evaluations.

Performance will be measured with the following:

- No significant events, human performance clock resets, reportable events, or lost generation due to an incomplete or inappropriate evaluation.

- Corrective Action Program (CAP) trend data indicate improvements relative to evaluation thoroughness.

- A self-assessment conducted in late 2010 concludes performance is improving.

- ≤ 3 NRC Non-cited Violations (NCVs) per year with a P.1.c* cross-cutting aspect for performance after July 1, 2010.

- No NRC greater-than-Green NCVs/findings with a P.1.c* aspect.

- Improving trends in indicators that monitor aspects of safety culture.

* The licensee thoroughly evaluates problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and Issue reportability conditions adverse to quality. This also includes, for significant problems, conducting effectiveness reviews of corrective actions to ensure that the problems are resolved.

The Fact-finding Team requested the above self-assessment for review; however, it had been improperly performed, was not complete as of this meeting date, and a definitive completion date was not provided. This is a concern to the DCISC because this was to have been the first significant measure of a significant problem at DCPP. The DCISC should recommend that this self-assessment be promptly completed.

The Action Plan consisted of the following Objectives, each with multiple action items:

1. Communicate the urgent need for change throughout the Station and align the leadership team. (All eight actions have been completed.)

2. Develop and communicate a clear vision and strategy relative to evaluation thoroughness and leadership program governance and oversight. (All four actions have been completed.)

3. Engage the workforce for broad-based action to resolve the issue(s) associated with thoroughness evaluations and other potential cross-cutting issues. (All seven actions have been completed.)

4. Create short-term actions to provide interim improvements for program gaps identified. (All
five actions have been completed. Except the Licensing Verification Project, a long-term project.)

5. Monitor performance and provide feedback to fully ingrain the new methods and standards of performance into the way the Station does business. (All 13 actions have been completed.)

6. Leverage LVBP [Licensing Basis Verification Project] to improve evaluation thoroughness and knowledge transfer. (All 11 actions are “on track” for completion on schedule before the end of 2011.)

7. Utilize the systematic approach to training to identify gaps and leverage training to improve evaluation thoroughness. (All eight actions are “on track” for scheduled completion or have been completed.)

8. Effectively identify non-conformances and ensure appropriate and thorough evaluations. (All four actions are “on track” for scheduled completion.)

9. Monitor performance and provide feedback to fully ingrain the new methods and standards of performance into the way the Station does business. (All 13 actions are in progress.)

This Action Plan appears comprehensive and complete, and it contains appropriate measures of performance to gauge whether improvement is being achieved. The DCISC should periodically monitor the performance measures and assessments. Applicable assessments are as follows:

- The self-assessment (reported above as late.)
- NRC’s 95-002 inspection (DCPP expects to complete its analysis of this inspection by the end of April 2011.)
- Quick hit self-assessment of evaluation thoroughness for high-priority programs using INPO 10-005 performed 1/2011. (Expected completion June 30, 2011.)
- Independent safety culture assessment using NRC definition of safety culture aspects.
- Review INPO Evaluation & Assistance (E&A) results for elements of problem identification thoroughness and identify additional gaps.
- Implement actions from DCPP configuration management self-assessment. Develop necessary improvement actions, with emphasis on process to maintain fidelity between the plant, procedures, and UFSAR.

Conclusions:

DCPP has responded aggressively to the significant performance gaps identified in its engineering evaluation thoroughness and rigor. DCPP has developed a detailed, comprehensive Evaluation Thoroughness Action Plan. The Plan should be effective if implemented well; however, DCPP has not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010. The DCISC should closely monitor the actions and performance measures in the Plan.

Recommendations:
The DCISC recommends that DCPP initiate and promptly complete its first self-assessment of the significant gap in engineering evaluation thoroughness, which was to have been completed by the end of 2010.

**Basis for Recommendation:**

The gap in engineering evaluation thoroughness at DCPP is a significant problem. It was recognized as such by DCPP Quality Verification in early 2009, by INPO in mid-2009, and by NRC in late 2009. DCPP has since performed an effective cause analysis and developed a comprehensive action plan to correct the problem; however, the first significant measure of corrective action effectiveness was to have been a self-assessment completed in 2010; however, this was apparently improperly performed and thus not useful as originally intended. The DCISC believes this self-assessment would have provided a substantially useful measure of progress and should be given high priority.

**3.9 DCISC Member Meeting with DCPP Site Vice-President**

DCISC Member Dr. Robert Budnitz met with DCPP Site Vice-President, Jim Becker, to discuss topics from this Fact-finding meeting and other subjects of interest.

**3.10 Outage Safety Plan for Outage 2R16**

The DCISC Fact-finding Team met with David Williams, Senior Reactor Operator and Operations Shift Foreman, to review the outage safety plan for Outage 2R16. The DCISC last reviewed an outage safety plan at its October 7-8, 2008 Public Meeting (Reference 6.19).

The purpose of the Outage Safety Plan is to provide information on outage safety requirements and highlight risk areas to plant staff. In order to assess outage safety impact, referral to the Outage Safety Plan and Outage Safety Schedule is to be made prior to making major schedule changes. The intent of the Outage Safety Plan is to provide a concise document to use in evaluating plant conditions during Modes 5 & 6 and Defueled to ensure the key safety functions are satisfied, while maintaining consistency with the Technical Specifications and Equipment Control Guidelines.

DCPP’s outage safety program is designed around three major concepts:

1. Prevention of any accident-initiating event.
2. Mitigation of an accident before it potentially progresses to core damage.
3. Control of radioactive material if a core damage accident should occur.

The Outage Safety Plan is based on the following:

- NUMARC 91-06, “Guidelines for Industry Actions to Assess Shutdown Management,” which is the basis for the Key Safety Functions contained in the DCPP plant procedure’s specific equipment requirements.
- DCPP Procedure “Containment Closure,” which defines the plant conditions requiring Containment integrity, or closure capability to help control radioactive material, if core
damage occurs.


The outage safety plan provides background information for the logic contained in the outage safety checklists. The checklists provide the logic used to develop the outage safety schedule. The schedule and checklists ensure that the equipment and plant conditions assumed in the shutdown abnormal procedures are met. These procedures contain guidance for providing passive core cooling and key system restoration.

Outage safety planning is based upon the assumption of a worst-case event, which is a loss of all AC power.

ORAM-Sentinel, a probabilistic risk analysis tool, was used to analyze the risk of boiling and core damage risk while fuel is in the reactor vessel based upon the outage schedule information. The boiling and core damage risk profiles are shown below.
The Outage Safety Plan identifies all “infrequently performed tests or evolutions.” For Outage 2R16, these are the following:

- Initial draindown from 25% Pressurizer level to 112 feet (entering lowered inventory)
- Midloop and vacuum refill
- 230 kV Startup Power Reliability upgrades will require two site 230 kV Startup Power outages, which will affect Unit 1.
- STP M-15, which is a potential loss of core cooling and electrical. It stops Residual Heat Removal, de-energizes Emergency Diesel Generators, and isolates Component Cooling Water to the Spent Fuel Pool.
- STP M-13F, G & H series testing while in Modes 5 & 6. With the core reloaded, there is greater risk to shutdown equipment while performing these vital bus automatic transfer tests.
- Reactor/Plant Startup – this is the first reactor startup on a new core after major maintenance and modifications to several plant systems.

Additionally, there are several modifications for which contingencies are planned because of the potential for loss of some phases of electric power. These are:

- Vital Battery 21 & SD21 Breaker Replacement
- Core Exit Thermocouple Replacement
- Backup Spent Fuel Pool Cooling is available if needed

As noted above, outage safety planning is based upon the assumption of a worst-case event, which is loss of all AC power. Backup decay heat removal capability is maintained during most of the outage by ensuring that if RHR or SFP cooling is lost, the natural physical laws will work to maintain passive cooling. When passive decay heat cooling is not available, a “High Risk Evolution” transition period is entered. The bulk of the Outage Safety Plan discusses what passive cooling is available.
Conclusions:

The DCPP Outage 2R16 Outage Safety Plan is a comprehensive and detailed document describing the schedule and steps in the outage, which are identified as high risks of core boiling or damage as a result of losing electric power and/or cooling to the reactor core and Spent Fuel Pool and what backup systems are available. The emphasis is on prevention of incidents, mitigation of accidents and control of radioactive material. The 2R16 Outage Safety Plan appears well designed to achieve outage safety.

Recommendations:

None

4.0 Conclusions

4.1

DCPP Reactor Coolant Pumps (RCPs) have performed well without significant problems. The RCP seals, which are sensitive to debris and thermal transients, are receiving proper attention in the form of periodic inspections, flushing of upstream seal water injection lines, and regular replacements.

4.2

The action plan to increase visibility of the DCPP Employee Concerns Program appears to be appropriate.

4.3

The DCPP I&C Obsolescence Management Program, which replaces obsolescent analog process control and/or monitoring systems with digital systems is impressive in its design, implementation, and accomplishments to date. One significant part of this program is the replacement of the Eagle 21 Reactor Process Protection System, the primary system used to monitor process variables and take actions to trip the Reactor and actuate Engineered Safety Features, as needed. This project is undergoing NRC review, and DCPP expects to complete installation in 2014. The DCISC should continue to monitor this project.

4.4

It appears DCPP has taken a pro-active approach to its transformer leaks and has them under control.

4.5

Improvements in the System Engineering Program combined with those in the Plant Health
Committee process to achieve a better focus on system health have good potential for maintaining DCPP systems healthy. DCPP system health has improved since these changes were made.

4.6

The DCPP License Renewal proceeding continues to progress with NRC’s draft Safety Evaluation Report (SER) having been released and the Advisory Committee on Reactor Safeguards (ACRS) Sub-Committee meeting completed. There are several open technical issues with the NRC, but these are being resolved, meaning that the technical portion of the application is being completed. The NRC has admitted four contentions by intervener San Luis Obispo Mothers for Peace. At the time of the Fact-finding meeting, it appeared that the license extension could be issued in early 2012, if the environmental review were to proceed on-schedule and the contentions were to be satisfactorily settled in the hearings; however, following the Fact-finding meeting, on April 10, 2011, PG&E submitted a request to the NRC to defer its review of the DCPP license renewal until certain seismic reviews are completed in 2015.

4.7

DCPP’s Foreign Material Exclusion (FME) Program has shown degraded performance in the last two outages (2R15 and 1R16) but an improving trend since 1R16 in October 2010. DCPP is making improvements in the program to better address outage and non-outage FME performance. These improvements appear satisfactory, and the DCISC should continue to monitor DCPP’s FME performance.

4.8

DCPP has responded aggressively to the significant performance gaps identified in its engineering evaluation thoroughness and rigor. DCPP has developed a detailed, comprehensive Evaluation Thoroughness Action Plan. The Plan should be effective if implemented well; however, DCPP has not satisfactorily completed its first significant measure of corrective action: a self-assessment to have been performed in 2010. The DCISC should closely monitor the actions and performance measures in the Plan.

4.9

The DCPP Outage 2R16 Outage Safety Plan is a comprehensive and detailed document describing the schedule and steps in the outage, which are identified as high risks of core boiling or damage as a result of losing electric power and/or cooling to the reactor core and Spent Fuel Pool and what backup systems are available. The emphasis is on prevention of incidents, mitigation of accidents and control of radioactive material. The 2R16 Outage Safety Plan appears well designed to achieve outage safety.

5.0 Recommendations

5.1

The DCISC recommends that DCPP initiate and promptly complete its first self-assessment of the significant gap in engineering evaluation thoroughness, which was to have been completed by the end of 2010. (Section 3.8)
6.0 References

6.1 NRC Inspection Report


6.3 Ibid., Exhibit D.6, Section 3.1, “Review of the DCPP Employee Concerns Program.”


6.5 Ibid., Exhibit D.2, Section 3.4, “Instrumentation & Control (I&C) Long-Term Obsolescence Program.”


6.8 Ibid., Exhibit B.3, “Transformer Update.”


6.10 Ibid., Exhibit D.8, Section 3.5, “Status of Transformers and Associated Equipment and Components.”


6.13 Ibid., Exhibit D.5, Section 3.5, “License Renewal.”

6.15 Ibid., Exhibit D.8, Section 3.1, “Foreign Material Exclusion Program.”


1.0 Summary

The results of the April 19-20, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subject addressed and summarized in Section 3 was as follows:

1. On-line Maintenance
2. Meet with the NRC Senior Resident Inspector
3. Union/Operator Concern
4. Residual Heat Removal System Check Valve Maintenance and Testing
5. Cyber Security
6. DC Power System
7. DCPP Response to Fukushima Event
8. 2010 & 2011 DCPP Operating Plans
9. INPO Update
10. Spent Fuel Pool Inventory
11. Peter Lam Meet with Jim Becker

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.
Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.

3.0 Discussion

3.1 On-Line Maintenance

The DCISC Fact-finding Team (FFT) met with Tony Chitwood, Operations Daily Planning Manager, for an update on DCPP’s On-Line Maintenance (OLM) Program. The DCISC last reviewed OLM in a September 2008 fact-finding meeting, when it concluded the following:

The procedure-controlled DCPP On-Line Maintenance Risk Management process appears satisfactory for controlling and minimizing plant risk (of core damage) when components are removed from service for maintenance during power operation. Special emphasis is required for plant trip risks. DCPP has appropriately revised its risk model to reflect the industry model which provides a more realistic, less conservative profile for equipment out-of-service for on-line maintenance.

DCPP, like many nuclear power plants, uses on-line maintenance (OLM) to help reduce the maintenance burden during refueling outages and to maintain high reliability of safety related equipment between outages. OLM requires equipment to be temporarily taken out of service which could reduce the safety of the plant if the equipment was needed to maintain the unit on-line (avoid a plant trip) or to prevent or mitigate an accident. OLM risk management for Operating Modes 1-4 is governed by DCPP Procedure AD7.DC6, “On-Line Maintenance Risk Management.” The DCPP reviewed the latest version of this procedure and concluded it was appropriate for effectively controlling OLM.

DCPP’s use of OLM has remained consistent over the past decade, but it is generally less than most other domestic nuclear plants. It typically performs more maintenance during refueling outages than most plants. The DCISC FFT considers this neither positive nor negative.

DCPP’s OLM has been upgraded from procedure-level to a formal station program. This gives it more visibility, scrutiny, and formal control.

DCPP minimizes the risk of performing on-line maintenance by:

- Performing only those preventive and corrective maintenance items on-line required to maintain the reliability of the structure, system, or component (SSC)
- Minimizing the cumulative unavailability of safety-related and risk-significant SSCs by limiting the number of at-power maintenance outage windows
- Minimizing the number of SSCs out-of-service (OOS) at the same time
- Minimizing the risk of initiating plant transients/trips that could challenge safety systems by
implementing compensatory measures

- Avoiding higher risk combinations of OOS SSCs using Probabilistic Risk Assessment (PRA) techniques
- Maintaining “defense-in-depth” by avoiding combinations of OOS SSCs that are related to similar safety related functions or that affect multiple safety functions

DCPP requires that at no time shall any SSCs out-of-service duration exceed one-half of the Technical Specification Allowable Outage Time (AOT). For most components this is 36 hours (one-half of 72 hours AOT).

When Maintenance proposes OLM, Operations performs a “train level” review and tracks what components are planned to be OOS for that train of components or system. The Shift Foreman first checks the equipment line-up against Technical Specification requirements. Then, the semi-quantitative risk is determined by the Shift Foreman using the ORAM (Outage Risk Assessment Maintenance) tool. ORAM is a PRA-based model which determines the relative risk based on the number and function of equipment OOS. The result of the ORAM determination is a color (Green, Yellow, Orange, and Red [in increasing amounts of risk]) signifying the level of risk of Core Damage Frequency (CDF) applied as follows:

- **Green** is acceptable without further action, although compensatory actions may be prudent.
- **Yellow**, considered “moderate degradation,” is acceptable with the Shift Foreman’s approval and with additional compensatory actions such as tailboards (pre-job briefs), protection of redundant equipment, etc.
- **Orange** risk condition, “significant degradation,” requires Operations Manager approval, a documented basis for approval, compensatory measures such as additional protection of redundant equipment, and documentation in an Action Request.
- **Red** risk condition, “severe degradation,” is not normally allowed; however, it is permitted with prior Plant Staff Review Committee (PSRC) approval, control of the activities by Procedure OP1. ID4, “Conduct of Infrequently Performed Tests or Evolutions,” and documentation of the Red configuration in an Action Request.

For situations where the equipment OOS is not included in ORAM, the PRA Group is to be contacted for a custom risk analysis.

Special emphasis is placed on trip risks – both planned and emergent. Compensatory measures and Operations Manager approval are required. Further, consideration must be given to trip mitigation functions provided by redundant offsite power (both 230 kV and 500 kV), Emergency Diesel Generators, Auxiliary Feedwater System trains, and Auxiliary Saltwater System trains. An industry analysis showed that a significant fraction of maintenance activities involving electrical transients (e.g., relay testing), Feedwater System transients, and transfer of trip circuit power supplies have caused reactor trips. These activities are considered top maintenance trip risks and treated accordingly.
Risk analysis is the basis for assuring nuclear safety for OLM operations, and DCPP is making improvements in this area. DCPP currently uses ORAM-Sentinel, a PC-based program, to predict the risk of taking trains/components out of service for maintenance while at operation. The “qualitative” assessment has been removed from ORAM, leaving a more “quantitative” approach. Also, because ORAM is no longer supported by its vendor or industry, DCPP is moving to Safety Monitor, which will be implemented in the 4th Quarter 2011. Training for this change will begin following the 2R16 Refueling Outage. In addition to the formal risk analysis, DCPP is beginning to use a “what if” approach to OLM risk, similar to that used at the Callaway plant. DCPP currently performs risk assessments at the train level and is moving to a more component-level basis with Safety Monitor.

DCPP has no routine procedures, which would take it into the “Yellow” risk level; however, if other configurations lead to Yellow, they are reviewed by a Risk Challenge Board, whereas before this review was performed by the Senior Reactor Operator.

The DCPP FFT reviewed a request, identified in a Notification, to the PRA Group to perform a risk analysis for replacing a valve in the Service Air System, which required isolation of PAC-8 and PAC-9 [will identify later], and crosstie instrument air and service air. The resultant analysis considered a variety of plant configurations involving normal and emergency electric power, Containment functionability, Auxiliary Saltwater (ultimate heat sink) availability, and Emergency Diesel Generator status. The result to maintain a Green risk was a limitation on the number of hours at this plant configuration. The analysis was satisfactory.

Conclusions:

The DCPP On-Line Maintenance (OLM) Program, considered satisfactory in past DCISC reviews, has been improved by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level. DCPP OLM procedures appear satisfactory.

Recommendations:

None

3.2 Meet with NRC Senior Resident Inspector

The DCISC Fact-finding Team met with Michael Peck, NRC Senior Resident Inspector (SRI); Jeff Miller, NRC Region IV Branch Chief; Kirsten Dennison, NRC Intern; and Pete Bedesem, DCPP Liaison to DCISC; to discuss DCPP regulatory matters. The DCISC last met with the Senior Resident Inspector in January 2011 (Reference 6.1), for a discussion on the DCPP seismic design licensing basis and the potential influence of the recently discovered Shoreline Fault. Dr. Peck had identified an Unresolved Item (URI) questioning whether the current seismic design with respect to the Hosgri Fault is within the current design basis and acceptable ground accelerations. This was being reviewed by NRC’s Office of Nuclear Reactor Regulation (NRR) at NRC Headquarters.

NRC had no comment on the Japanese Fukushima event, except to say that the SRI was in the process of reviewing DCPP’s procedures and equipment designed to cope with severe accidents.
and beyond-design-basis events. The review was initiated by NRC Temporary Instruction 2515-183, “Follow Up to the Fukushima Daiichi Nuclear Station Fuel Damage Event.” His conclusions were planned to be documented in a stand-alone inspection report to be released in mid-May 2011.

Dr. Peck provided the status of NRC’s open item on the DCPP design basis for the 230 kV offsite power system, an item the DCISC has been following. At question is whether the system has enough emergency power capacity to support shutdown of both units simultaneously. This is being reviewed by NRC NRR. The NRC conclusions are expected to be reported in the first quarter integrated inspection report.

Regarding the NRC-identified Substantive Cross-Cutting Issue in the area of Problem Identification and Resolution (PI&R), NRC is awaiting the March 2011 DCPP safety culture review results at which time NRC will perform a re-inspection of DCPP’s Corrective Action Program (CAP).

### 3.3 Union/Operator Concern

**Discussion with DCPP Management**

The DCISC Fact-finding Team met Jan Nimick, Director of Operations Services, to review a union concern brought to the attention of the DCISC from a union steward. In addition to discussing the concern with Operations management, the DCISC FFT reviewed this concern with the affected employee and the union steward during this fact-finding meeting. This is the first DCISC review of this item.

Mr. Nimick outlined the events leading up to this discussion as follows:

1. The employee, an experienced, good-performing, non-licensed 63-year old operator, twice violated personnel safety procedures by intentionally twice throwing a wrench to another employee inside Containment rather than using a ladder to hand the tool to him. The wrench was not caught and fell downward to the floor.

2. The employee admitted his actions and bad judgment and was disciplined by given a disciplinary leave (day off with pay) to consider whether he wanted to remain employed by following the safety procedures. He did so and returned to his position but under a year’s disciplinary status.

3. The employee had requested admittance to licensed operator class prior to the event; however, because he was in the discipline program, management considered him not eligible for the class and denied the request. Admittance to the class was considered a promotion by management, and promotions were not permitted under the union contract while being under discipline. Management believed this was in accordance with the union contract. These actions were reviewed and approved/agreed to by the Site Vice-President and the Nuclear Safety Oversight Committee (NSOC) The operator had been to licensed operator class several years prior, but dropped out before finishing.

4. The union submitted a grievance, and the disagreement was going through the grievance
5. A petition signed by about 30% of the operators disagreed with management actions, which the petitioners considered to be “unethical and immoral” and not in compliance with the contract.

The union steward forwarded to the DCISC the petition, along with the DCPP procedure “Dropped Object Prevention” and DCPP “Disciplinary Review Guidelines.” He asked the Committee to review as it saw appropriate. Because the Committee’s scope is limited to reviewing DCPP “operational safety,” the DCPP FFT reviewed it on that basis rather than a disciplinary or union issue.

Mr. Nimick believed this was not an operational safety issue.

Discussion with the Affected Employee

The FFT met with the affected employee. He had not seen the February 9, 2011 petition signed by his fellow operators. He indicated a desire to attend licensed operator training and explained the management decision. When asked by the FFT, he had no operational safety concerns.

Discussion with the Union Steward

The Union Steward was a licensed operator and work control leader with 23 years experience at DCPP. He expressed a need for Operations personnel and management to work together as a team but expressed concerns about a lack of trust in management based on the above-described situation. He believed operators couldn't bring problems to management and expect decisions and actions. He stated specifically that management did not follow the process for disciplinary action because it didn’t give the employee the required 15-day period in which to have his say with management in order to argue for his participation in the licensed operator class. The union steward did not have any operational safety concerns, but was concerned about morale.

Conclusions:

The DCPP Fact-finding Team (FFT) reviewed a concern brought to it by a union steward regarding disciplinary action taken against an employee who violated the personnel safety program. The disciplinary action included denial of participation in a licensed operator class. After separate discussions with management, the affected employee, and the union steward, the FFT concluded that the situation did not represent an operational safety concern.

Recommendations:

None

3.4 Residual Heat Removal System Check Valve Maintenance and Testing

The DCISC Fact-finding Team met with John Rhodes, Residual Heat Removal (RHR) System Engineer, to discuss maintenance and testing of RHR check valves associated with the RHR Pumps. The reason for this item was the potential for debris from the Containment sump to cause the process at the time of this meeting.
valves to not function properly. This is the first DCISC review of this subject.

Mr. Rhodes briefly described the RHR System, identifying the various check valves of interest to the DCISC. There are six check valves of interest to the DCISC as follows:

1. Two RHR Pump Check Valves (one per train): Valves 8730 A & B
2. Two RHR to Hot Leg Check Valves (one per train): Valves 8740 A & B
3. Two RHR Heat Exchanger Discharge Check Valves (one per train): Valves 8742 A & B

These valves are of the following types:

- Valves 8730 A & B are Aloyco Swing check Valves
- Valves 8740 A & B are Darling Swing Check Valves
- Valves 8742 A & B are Anchor/Darling Tilt Disc Check Valves

The DCISC FFT reviewed the following DCPP procedures related to check valve maintenance and testing:

- Procedure MA1.ID6: Check Valve Maintenance, Testing, and Inspection Program
- Procedure MP M 51.14: Generic Check Valve Inspection
- Procedure STP V-4A: Functional Test of RHR Check Valves
- Procedure STP V-4B: Functional Test of ECCS Check Valves RHR-8730A/B and RHR-8742A/B During Cold Shutdown Conditions
- Procedure STP V-4D2: Stroke Test of RHR Pump Discharge Check Valves RHR-8730A and RHR08730B
- Procedure STP V-18C: Full Stroke Test of RHR Hot Leg Injection Valves RHR-8740A and RHR-8740B
- Procedure STP V-SE: Emergency Core Cooling System Hot Leg Check Valve Leak Test in Mode 5
- Aloyoco Check Valve Manual
- Procedure STP P=RHR-11: Routine Surveillance Test of RHR Pump 1-1
- Procedure STP P-RHR-PS: Pre-service Testing of Residual Heat Removal Pumps

RHR valves are inspected/tested with the following frequencies:

<table>
<thead>
<tr>
<th>Valve</th>
<th>Test or Inspection</th>
<th>When Tested/Inspected</th>
</tr>
</thead>
<tbody>
<tr>
<td>8730A &amp; B</td>
<td>Functional Test</td>
<td>Each Refueling Outage</td>
</tr>
</tbody>
</table>

8730A & B  Stroke Test  “ “ “
8730A & B  Inspection  Varies*

<table>
<thead>
<tr>
<th>8742A &amp; B</th>
<th>Functional Test</th>
<th>Each Refueling Outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>8742A &amp; B</td>
<td>Stroke Test</td>
<td>“ “ “</td>
</tr>
<tr>
<td>8742A &amp; B</td>
<td>Inspection</td>
<td>Varies*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8740A &amp; B</th>
<th>Functional Test</th>
<th>Each Refueling Outage if disassembled due to unacceptable non-intrusive test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>8740A &amp; B</td>
<td>Stroke Test</td>
<td>Same as above</td>
</tr>
<tr>
<td>8740A &amp; B</td>
<td>Inspection</td>
<td>Varies*</td>
</tr>
</tbody>
</table>

* Inspection schedules depend on a number of factors, such as Operating Experience reports, routinely scheduled disassembly, valve open for routine or corrective maintenance, determinations by the program owner or component engineer, etc.

Test criteria are specified measured flows indicating the check valves are opening fully. Stroke tests measurement criteria are an acceptable differential pressure across the valve under back-flow conditions.

Inspection of check valves is normally accomplished by removing the valve bonnet and visually inspecting the internals as well as moving the disk or flapper. Both the “as found” and “as left” condition of the valve are documented.

At ten-year intervals, these valves are disassembled and inspected, adjusted, and/or repaired as necessary under the ASME In-Service Inspection Program. There have been no substantive problems with these check valves.

Conclusions:

It appears that the DCPP Residual Heat Removal Check Valve Inspection and Testing Program is appropriate to assure the check valves remain functional and meet their design and operating requirements.

3.5 Cyber Security

Note: Because of the sensitivity of this subject, i.e., security-related, the following is only a general description of DCPP Cyber Security.

The DCISC Fact-finding Team met with Stan Ketelsen, Manager of Strategic Projects, and George Hough, Program Manager for DCPP Cyber Security, to review DCPP’s Cyber Security Program. This is the first DCISC review of this program.
Because of the potential for a cyber attack on a U.S. nuclear power plant, the NRC issued 10CFR73.54, “Protection of Digital Computer and Communication Systems and Networks,” in March 2009 to establish cybersecurity requirements for the following plant functions:

- Safety and important to safety functions
- Security Systems
- Emergency Preparedness Functions
- Support systems

This typically includes all systems that use plant data, including Protection Systems, Safety Systems, Non-safety Systems, Physical Access Control System, and systems unrelated to plant data, such as personnel work scheduling and timekeeping, inventory control. The regulation addresses interconnections among digital systems, including pathways for errors and malfeasance, interactions between digital systems and the plant, including new kinds of failures and spurious actuations not addressed in traditional safety analyses.


DCPP is integrating cyber security into all aspects of the plant, e.g.:

- Operations
- Maintenance
- Engineering
- Supply Chain
- Individual Users
- Training
- Information Systems
- Security
- Emergency Planning
- Quality Verification

DCPP submitted its Cyber Security Plan and implementation schedule to NRC in a License Amendment Request (LAR) on April 4, 2011. Two projects have been initiated to implement the plan: 1. Cyber Security Program Implementation and 2. Plan Data Network Isolation. Cyber Security implementation is to have performed the following by end-of-year 2012:

- Assemble Cyber Security Assessment Team and perform walkdowns and tabletop discussions
Identify critical systems and critical digital assets
Isolate the plant data network
Control portable media devices
Include Cyber Security tampering in security records
Implement Cyber Security controls on selected critical digital assets

DCPP expects to have fully implemented its Cyber Security Program, including plan modifications, maintenance and operations procedure changes and plant training by December 31, 2015.

Conclusions:
DCPP appears to have an effective program plan and project team to design and implement its Cyber Security Program as required in NRC regulations. The DCISC should follow this effort periodically.

Recommendations:
None

3.6 DC Power System

The DCISC Fact-finding Team met with Rudy Ortega, Senior Advising Engineer and DC Power System Engineer, to review the DCPP DC Power System. This is the first DCISC review of this system.

The battery-powered DCPP DC Power System (DCPS) is a 125 and 150 Volt Direct Current (VDC) system designed to provide power for operation and control of equipment during all modes of plant operation. The batteries are kept charged with dedicated battery chargers. The DCPS consists of two subsystems, which are isolated from each other:

1. Vital 125 VDC
2. Non-vital 125/150 VDC

The Vital DCPS schematic is shown below.
The Vital DCPS is redundant with three separate trains, i.e., a single active or passive failure will not prevent the system from performing its safety functions. Though physically separate, the trains can be manually cross connected. The redundancy permits a single train to be out of service for a predetermined length of time to perform periodic inspection, maintenance, and testing of major components. The system is capable of providing emergency DC power from the vital batteries for a minimum of two hours during a design basis accident coincident with a loss of battery chargers. It can perform its function during the following events:

- Loss of main generator
- Loss of off-site power
- Degraded off-site power
- Loss of battery chargers
- Loss or start failure of Emergency Diesel Generators

The Vital DCPS is designed to operate before, during, and after a Design Earthquake, Double Design Earthquake, or a Hosgri Earthquake. It can be operated from either the Main Control Room or the Hot Shutdown Panel.

Each unit has 180 DCPS batteries, which are designed for a 20-year life. Since beginning operation, DCPP has had only three battery cell failures (low voltage situations). Analyses showed these were isolated failures. New batteries are qualification tested prior to installation for thermal aging, discharge capability, shaking for seismic loads.

The System Engineer performs his walkdowns quarterly and documents the results on a standard inspection form. There are periodic (weekly, monthly and refueling outage) maintenance inspections consisting of visual inspections, voltage measurements, temperature measurements, electrolyte level, and specific gravity measurements.

The DCISC FFT reviewed the DCPS Health Reports with the System Engineer. Unit 1 was in Yellow
status, operable but unacceptable, for the following reasons:

1. Battery 1-1, Cell 14 had degraded voltage, requiring it to be bypassed. This reduced the number of cells from 60 to 59, which reduced operating margin, resulting in a Red status. Replacing the battery brought health to Yellow, and will return to White (acceptable) health upon completion of an Apparent Cause Analysis.

2. Vital 125 VDC panel molded case circuit breakers have an industry history of unreliability and are being replaced. The system will return to Green health upon completion of replacements in Outage 1R19 (November 2015).

Unit 2 was in White (Acceptable) health status due to the unreliability of the molded case circuit breakers as described above for Unit 1. The system will return to Green health when the breakers are all replaced in Outage 2R19 in March 2016.

The DCISC FFT accompanied the System Engineer on a tour of the major DCPS components in Units 1. This included each of the three trains of the Unit 1 Vital Batteries and Racks, Battery Chargers, Switchgear, Vital Inverters and one train of Non-Vital Batteries and Chargers. The tour included the bypassed battery cell described above. All components appeared to be in good condition and properly secured and connected. General condition of the areas of the plant was good.

Conclusions:

The 125-Volt DCPP Direct Current Power Systems (DCPS) appeared to be appropriately designed and installed for their normal and emergency functions. System Health was Yellow (unacceptable but operable) for Unit 1 and White (acceptable) for Unit 2 with plans to return to Green health. The System Engineer appeared to be knowledgeable of and pro-active for his system.

3.7 DCPP Response to Japanese Fukushima Event

The DCISC Fact-finding Team met with Jacquie Hinds, Chief of Staff to the Site Vice-President, and Terry Grebel, Project Manager for DCPP License Extension, to discuss DCPP’s initial review of design-basis events and severe accident management, as affected by the Fukushima event. This is the first DCISC review of this subject.

Years ago DCPP (along with rest of the U.S. nuclear industry) developed and provided to NRC descriptions of procedures and equipment to be used for severe accidents and security events, which were beyond the original plant design basis. The request was intended to ascertain the plant’s readiness to respond to severe events such as happened at the Fukushima nuclear plant following an earthquake and tsunami, which were larger than expected. DCPP reviewed its procedures and equipment status and reported back a general state of readiness with some exceptions, which needed correction. The plant issued Corrective Action Program Notifications to initiate and track corrective actions.

As reported above in Section 3.2, Meeting with the NRC Senior Resident Inspector, a similar review was being performed by the NRC. The NRC report was expected to be released at the end of April.
In addition to the above, DCPP expected additional requests on Spent Fuel Pool Loss of Cooling, Station Blackout, and Emergency Planning, all as related to the Fukushima event.

Conclusions:

DCPP’s preliminary review of severe accidents and to beyond-design-basis events, as related to the Japanese Fukushima event, appeared satisfactory, though there were some corrections to be made. NRC’s initial review is expected at the end of April 2011. DCPP expects additional reviews and responses to be conducted.

Recommendations:

None

3.8 DCPP 2011 Operating Plan Results and the 2012 Operating Plan

The DCISC Fact-finding Team met with Jacquie Hinds, Chief of Staff to the Site Vice-President, to review the results of DCPP’s 2011 Operating Plan and to review the 2012 Plan. The DCISC last reviewed this subject in March 2010, when it concluded the following:

*DCPP’s annual Operating Plans contain high-level plant-wide focus areas and performance goals which are taken down to each level of the organization and ultimately into each employee’s performance plan, along with other specific workgroup measures. The plans, focus areas, and goals appeared satisfactory for management use to outline expectations, obtain alignment, and measure results.*

Year-end results for the 2010 Operating Plan were as follows (excluding financial data):

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>2010 Goal</th>
<th>2010 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. OSHA Recordable Rate</td>
<td>≤ 0.45</td>
<td>0.23</td>
</tr>
<tr>
<td>2. Collective Radiation Exposure (person-Rem)</td>
<td>≤ 136</td>
<td>131.3</td>
</tr>
<tr>
<td>3. Operational Focus Index</td>
<td>≤ 0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>4. NRC PIs and Findings</td>
<td>All green &amp; no cross-cutting issues</td>
<td>One cross-cutting issue</td>
</tr>
<tr>
<td>5. Corrective Action Program Index</td>
<td>≥ 90</td>
<td>82</td>
</tr>
<tr>
<td>6. Significant HU Rate</td>
<td>≤ 0.22</td>
<td>0.181</td>
</tr>
<tr>
<td>7. Outage Duration (days)</td>
<td>≤ 34</td>
<td>41.8</td>
</tr>
<tr>
<td>8. Environmental Index</td>
<td>≥ 90</td>
<td>93.8</td>
</tr>
</tbody>
</table>

2010 results were mixed, including those related to operational safety of interest to the DCISC (operational focus, NRC PIs and findings, Corrective Action Program, and Significant HU rate).
The DCPP 2011 Operating Plan contains measures and goals as follows (except for financial measures):

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>2011 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. OSHA Recordable Rate</td>
<td>≤ 0.165</td>
</tr>
<tr>
<td>2. Collective Radiation Exposure (person-Rem)</td>
<td>≤ 85</td>
</tr>
<tr>
<td>3. Operational Focus Index</td>
<td>≤ 0.71</td>
</tr>
<tr>
<td>4. NRC PIs and Findings</td>
<td>All green &amp; no cross-cutting issues</td>
</tr>
<tr>
<td>5. Corrective Action Program Index</td>
<td>≥ 90</td>
</tr>
<tr>
<td>6. Station Clock Reset</td>
<td>≤ 0.007</td>
</tr>
<tr>
<td>7. Outage Duration (days)</td>
<td>≤ 33</td>
</tr>
<tr>
<td>8. Environmental Index</td>
<td>≥ 90</td>
</tr>
</tbody>
</table>

These goals represent a significant increase in performance in most measures, needed for DCPP to become the “leading nuclear power plant in the country,” PG&E stated vision. Many of the measures above, like in 2010, are related to plant safety. This is meaningful to the DCISC whose charter is to review DCPP “operational safety.” The DCISC is pleased to see DCPP’s written commitment to nuclear safety: “…the overriding priority of safety above all other operational goals and objectives.”

Conclusions:

DCPP achieved mixed results meeting its goals in the 2010 Operating Plan, including those measures relating to “operational safety,” which the DCISC monitors. The DCISC acknowledges PG&E’s written and in-practice commitment to safety and notes a significant increase in the performance goals for 2011. The DCISC will continue to monitor DCPP performance with respect to these goals.

Recommendations:

None

3.9 DCPP INPO Update

The DCISC FFT met with Jacquie Hinds, Chief of Staff to the Site Vice-President, to review the status of Institute of Nuclear Power Operations (INPO) activities. The DCISC last reviewed INPO status in September 2010 (Reference 6.2), when it concluded the following:

The DCPP Mid-Cycle WANO-Type Self-assessment was comprehensive, focused, and appropriately intrusive. The assessment identified four existing Areas for Improvement (AFIs) remaining open, four new AFIs, and one WANO AFI open with vulnerability (awaiting results). Two themes appeared: weak management oversight and ineffective change management. DCPP has developed action plans for these weaknesses with completion dates by the end of 2010. DCPP will perform a Quick Hit Assessment in early 2011 to measure action plan progress. The next INPO/WANO evaluation will be in August 2011. The DCISC should continue to closely follow these issues.
The next INPO evaluation of DCPP is scheduled to take place the weeks of August 22 and 29 2011. INPO sent representatives to DCPP during the last refueling outage for an outage planning and implementation review, which will be input into the August evaluation. Teams observed the unit shutdown, maintenance, radiation protection practices, and startup chemistry. In July 2011 INPO will observe operating crew training on the DCPP simulator. Evaluation results are expected the first week of October. DCPP has been tracked actions on both the 2009 INPO evaluation Areas for Improvement (AFIs) and its own mid-cycle assessment AFIs to have them completed with some run time well in advance of the August evaluation.

Conclusions:

DCPP is preparing for its August 2011 INPO evaluation visit by pursuing corrective actions on previously-identified Areas for Improvement (AFIs), providing information to INPO, and meeting with INPO personnel. DCPP actions appear appropriate.

3.10 Spent Fuel Pool Inventory

The DCISC Fact-finding Team met with Jearl Strickland, Project Manager for DCPP’s Independent Spent Fuel Storage Installation (ISFSI) to review DCPP’s plans for moving spent fuel from the pools. The DCISC last reviewed this topic in December 2010 (Reference 6.3), when it concluded the following:

DCPP has successfully completed construction of its Independent Spent Fuel Storage Installation (ISFSI) and completed two major loading campaigns of 16 casks for a total of 512 spent fuel assemblies. The campaigns have all gone according to plans and expectations.

Though the next fuel transfer/loading campaign has been delayed to January/February 2012, DCPP is moving ahead with its transference of spent fuel from the pool to the ISFSI in the following ways:

- Submitting a License Amendment Request (LAR) to NRC to be able to put spent fuel greater than five years old and early Westinghouse fuel in the ISFSI
- Ordering 22 additional casks (compared to the 22 casks now in place)
- Constructing three more ISFSI pads (for 60 casks) by 2013

DCPP experience has been to move one cask per week to the ISFSI with a practical limit of 10 per campaign. At the end of 60 years operation, both the Spent Fuel Pool (with current racking) and ISFSI will be full.

Dr. Lam asked about the California Energy Commission 2008 recommendation that DCPP move spent fuel from the Spent Fuel Pool to the ISFSI on an expedited basis, and return the spent fuel pools to open racking arrangements. DCPP indicated that it believed it has provided a reply to the California Energy Commission, some time ago, by describing the practical limits about what DCPP could accomplish. It has been moving spent fuel at what it believes within the practical limits considering the spent fuel minimum age requirement, the requirement to mix old and newer fuel in
the cask, and how fast it can acquire and install the spent fuel casks.

**Conclusions:**

DCPP is proceeding with the continued movement of spent fuel from its Spent Fuel Pool to the Independent Spent Fuel Storage Installation (ISFSI). It is ordering additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full.

**Recommendations:**

None

**3.11 DCISC Member Peter Lam Meet with Jim Becker, DCPP Site Vice-President**

DCISC Member Dr. Peter Lam met with DCPP Site Vice-President, Jim Becker, to discuss selected topics from this fact-finding meeting and other subjects of mutual interest.

**4.0 Conclusions**

**4.1**

The DCPP On-Line Maintenance (OLM) Program, considered satisfactory in past DCISC reviews, has been improved by adopting better risk analysis procedures and tools and by upgrading OLM to the station program level. DCPP OLM procedures appear satisfactory.

**4.2**

The DCPP Fact-finding Team (FFT) reviewed a concern brought to it by a union steward regarding disciplinary action taken against an employee who violated the personnel safety program. The disciplinary action included denial of participation in a licensed operator class. After separate discussions with management, the affected employee, and the union steward, the FFT concluded that the situation did not represent an operational safety concern.

**4.3**

It appears that the DCPP Residual Heat Removal Check Valve Inspection and Testing Program is appropriate to assure the check valves remain functional and meet their design and operating requirements.

**4.4**

DCPP appears to have an effective program plan and project team to design and implement its Cyber Security Program as required in NRC regulations. The DCISC should follow this effort periodically.

**4.5**

The 125-Volt DCPP Direct Current Power Systems (DCPS) appeared to be appropriately designed and installed for their normal and emergency functions. System Health was Yellow (unacceptable but operable) for Unit 1 and White (acceptable) for Unit 2 with plans to return to Green health. The System Engineer appeared to be knowledgeable of and pro-active for his system.
4.6
DCPP’s preliminary review of severe accidents and to beyond-design-basis events, as related to the Japanese Fukushima event, appeared satisfactory, though there were some corrections to be made. NRC’s initial review is expected at the end of April 2011. DCPP expects additional reviews and responses to be conducted.

4.7
DCPP achieved mixed results meeting its goals in the 2010 Operating Plan, including those measures relating to “operational safety,” which the DCISC monitors. The DCISC acknowledges PG&E’s written and in-practice commitment to safety and notes a significant increase in the performance goals for 2011. The DCISC will continue to monitor DCPP performance with respect to these goals.

4.8
The DCPP Outage 2R16 Outage Safety Plan is a comprehensive and detailed document describing the schedule and steps in the outage, which are identified as high risks of core boiling or damage as a result of losing electric power and/or cooling to the reactor core and Spent Fuel Pool and what backup systems are available. The emphasis is on prevention of incidents, mitigation of accidents and control of radioactive material. The 2R16 Outage Safety Plan appeared well designed to achieve outage safety.

4.9
DCPP is proceeding with the continued movement of spent fuel from its Spent Fuel Pool to the Independent Spent Fuel Storage Installation (ISFSI). It is ordering additional casks and planning to construct more concrete pads to accommodate additional spent fuel at the ISFSI. At the end of 60 years plant life both the Spent Fuel Pool and the ISFSI will be full.

5.0 Recommendations:
None

6.0 References

6.2 Ibid., Exhibit D.5, Section 3.9, “DCPP WANO/INPO Mid-Cycle Assessment.”
6.3 Ibid., Exhibit D.7, Section 3.8, “DCPP Used Fuel Storage Program (UFSP).”
21st Annual Report, Volume 2, Exhibit D.11, Report on Fact-finding Meeting by Diablo Canyon Independent Safety Committee (DCISC) at Diablo Canyon Power Plant (DCPP) on May 24-25, 2011 by Per F. Peterson, Member, and David C. Linnen, Consultant

1.0 Summary

The results of the May 24-25, 2011 fact-finding trip to the Diablo Canyon Power Plant in Avila Beach, CA are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Auxiliary Saltwater System Review
2. Auxiliary Building Control Board Replacement Project
3. Unexpected Control Rod Movement
4. Seismic Bracing of Tall Furniture
5. Spent Fuel Pool System Review
6. Seismically Induced Systems Interaction (SISI) Housekeeping Program
7. Tour of Unit 2 Containment Building and Other Selected Areas
8. Per Peterson Meeting with Ken Peters, Vice President, Engineering & Projects

2.0 Introduction

This fact-finding trip to the DCPP was made to evaluate specific safety matters for the DCISC. The objective of the evaluation was to determine if PG&E’s performance is appropriate and whether any areas revealed observations which are important enough to warrant further review, follow-up, or presentation at a Public Meeting. These safety matters include follow-up and/or continuing review efforts by the Committee, as well as those identified as a result of reviews of various safety-related documents.

Section 4 – Conclusions highlights the conclusions of the Fact-finding Team based on items reported in Section 3 – Discussion. These highlights also include the team’s suggested follow-up items for the DCISC, such as scheduling future Fact-finding meetings on the topic, presentations at future public meetings, and requests for future updates or information from DCPP on specific areas of interest, etc.

Section 5 – Recommendations lists specific recommendations to PG&E proposed by the Fact-finding Team. These recommendations will be considered by the DCISC. After review and approval by the DCISC, the Fact-finding Report, including its recommendations, is provided to PG&E. The Fact-finding Report will also appear in the DCISC Annual Report.
3.0 Discussion

3.1 Auxiliary Salt Water System Review

The DCISC Fact-finding Team met with Joe Anastasio, Auxiliary Salt Water (ASW) System Engineer. DCISC last reviewed the ASW System at the September 2005 Fact-finding meeting (Reference 6.1) when it concluded the following:

The Auxiliary Saltwater (ASW) System, a safety-related heat removal system, appears to be in satisfactory health, and the two imminent issues of pump vibration and piping flange leak are being handled satisfactorily; however, there are longer-term issues with valve elastomer lining degradation and piping and valve corrosion for which funding has been denied once. The DCISC should follow activities of the new Plant Health System and Committee process for determining funding to see if these ASW issues are funded.

The ASW system plays an important role as the primary safety-related heat sink for the plant. The review of this ASW system in this Fact Finding is timely, because several nuclear plants in Japan experienced a protracted, multi-day loss of their ASW systems due to damage and debris clogging from the tsunami that occurred on March 11. Given the high elevation of most of the plant at DCPP (85 feet or more above sea level), the ASW system is the only one at DCPP that could credibly be damaged by a beyond-design-basis tsunami.

Abbreviated System Description: The following design information was extracted from the 28-page Design Criteria Memorandum, (DCM) S-17B Appendix A for the ASW System: The ASW System is a safety-related, Design Class 1 System. It provides the necessary heat sink and is required for the safe shutdown of the reactor. Specifically, the system in each unit provides cooling water from the Pacific Ocean (the ultimate heat sink) to the Component Cooling Water (CCW) heat exchangers, through which CCW is pumped and, in turn, serves to remove heat from various plant systems. In the event of an accident involving a significant loss of reactor coolant, the ASW System is relied upon to function so that the CCW System can cool the water, which, in turn, cools the nuclear fuel in the reactor. There are two ASW pumps for each Unit, and each pump can supply cooling water through each of two redundant trains to either of the two CCW heat exchangers for each unit. For each unit, one ASW pump is running and the other is in standby. In addition, an ASW cross tie exists between Units 1 and 2 so that the ASW standby pump from one unit can supply ocean water to either CCW heat exchanger of the other unit. This cross tie is modeled in the Probabilistic Risk Assessment (PRA) for DCPP.

The ASW pumps in each unit are electric motor driven 100 percent capacity pumps and are powered from separate electrical buses. In the case of a loss of offsite power, the pump motors are powered by electricity supplied by emergency diesel generators. The pumps are physically located in the intake structure. Each pump is located in a separate watertight compartment with drainage to prevent motor damage as a result of flooding. Backflow check valves were placed in each compartment drain to prevent flooding in the compartment from external sources. The water level in the compartments is monitored and an alarm is provided in the control room to alert the
operators of increasing level.

The ASW system takes suction from the intake structure, which opens to a small cove in the Pacific Ocean formed by two breakwaters. These breakwaters are constructed of concrete tri-bars with additional reinforcing concrete. The breakwaters are designed to protect the intake structure from the turbulence of the ocean. The intake structure is configured to provide one inlet to each unit for the ASW System.

Bar racks are installed at the inlets to the intake structure to keep large debris out of the system. The sea water then passes through a non-safety related ASW System traveling screen. One traveling screen filters the sea water for two ASW pump suction bays. The traveling screen keeps smaller debris and sea life from entering the ASW suction bays. Each unit has two ASW pump suction bays (one per pump), which are provided with motor operated gates. The gates are locally operated from the intake structure with indication on the ASW panel in the control room. These gates are secured open during system operation and closed as required for maintenance.

Additional piping flowpaths exist between the forebays of the station’s Circulating Water System (CWS), which provides cooling water to the station’s Main Condensers, and the ASW System forebays. These flowpaths can provide a saltwater supply to the ASW System from the CWS if a problem occurs with the normal ASW saltwater supply. The four valves in these flowpaths are closed during normal operation.

Mr. Anastasio indicated that the System Health of each Unit’s ASW System is Green (Healthy). He indicated that ASW Pump 2-1 had experienced some vibration during operation prior to Refueling Outage 2R16, for which the Unit 2 ASW System was rated Yellow (Needs Improvement). He said that both the pump and motor for each ASW pump are replaced every 5 years. This was done for ASW Pump 2-1 during outage 2R15. About six months after that outage, increased vibration was noted on that pump, which was monitored throughout the remainder of that fuel cycle. Although pump maintenance and alignment were performed during a Maintenance Outage Window in the week of April 12, 2010, the vibration was reduced, but the problem was not completely fixed. Therefore, ASW Pump 2-1 was then replaced during the current outage 2R16, and it is now operating well. A new motor for ASW Pump 2-2 will be installed during outage 2R17. Mr. Anastasio also noted that the motor for ASW Pump 2-2 was replaced during outage 2R16, and it is also operating well.

The only other system health issues that appear in the System Health Reports are as follows:

Unit 1: A design analysis is requested for the ASW discharge vent lines, which are made of poly vinyl chloride (PVC) and provide a vacuum relief function for the Class I ASW discharge lines. The preliminary evaluation indicates that it will be more appropriate from a code perspective to replace the vent lines with Class I vent lines.

Unit 2: Gate covers for the ASW gates SW-2-8 and 2-9 have an aging issue in that they leak water at high tide due to degradation of the frames supporting the gate covers. Their replacement would
require extraordinary effort of building a cofferdam and draining both ASW bays. The issue is being addressed as part of ongoing concrete repairs to the intake structure.

The DCISC Fact-finding Team also reviewed NRC Inspection Reports during the past 12 months for items pertaining to DCPP's ASW System. The following issues were documented in the NRC's Integrated Inspection Report dated November 1, 2010 for the period June 27, 2010 through September 25, 2010:

- The NRC noted that on April 5, 2010, station work control personnel requested that plant operators simultaneously remove ASW Pump 2-2 and CCW Heat Exchanger 2-2 from service for two scheduled maintenance activities. Plant operators then identified that the combination of the ASW pump and CCW heat exchanger out of service at the same time would result in an elevated maintenance risk (Yellow). The NRC determined that DCPP unnecessarily placed the plant in this elevated maintenance risk status because the two work activities could have and should have been performed in series rather than simultaneously. Moreover, DCPP had previously analyzed this specific situation and had specified that the activities should be performed in series. Further specified was that Operations Manager's approval was required prior to entering elevated risk. However, on April 5, 2010, the Operations Manager was unavailable and the individual in the acting role was unaware of the past problem related to the specific sequence of these two maintenance activities. This NRC finding was “Green” and noted as being of “very low safety significance.”

- The NRC also identified a second “Green non-cited violation,” also of “very low safety significance.” This pertained to the fact that, on July 22, 2010, the NRC noted that isolation valves on a common cross-tie line connecting both ASW trains were open, and that piping downstream of this isolation valve was of a different design Code Class than the upstream piping. Therefore, the isolation valves should have been shut.

- The third “Green non-cited violation” of “very low safety significance” pertained to an ASW isolation valve which had been improperly left open between two different classifications of piping in the ASW vent piping. The valve should have been shut.

Additionally, the NRC has begun an examination of all U.S. nuclear plants with respect to lessons learned from the events that have been unfolding at Japan's Fukushima Nuclear Station stemming from a disastrous tsunami and a series of major earthquakes that occurred in March 2011. As a part of the DCPP response to the NRC order on extreme external events, Section B.5.b, methods to connect portable pumps to supply salt water from the intake cove, and inject it into the ASW supply lines, had been developed. These procedures are being reviewed, and may be updated further. The DCISC notes that the capacity to use portable pumping equipment and hoses to provide salt-water injection into the ASW system could be valuable under beyond design basis events. As more is learned about the sequence, magnitude, significance, and causes of the cascading conditions at Fukushima, the NRC and the entire domestic U.S. nuclear industry will be able to delve with increasing focus and depth into the implications pertaining to U.S. plants.

Conclusions:
The Auxiliary Saltwater (ASW) System, a safety-related system, appears healthy. The few current system health issues do not appear to be hindrances to system operation. A recent problem regarding pump vibration appeared to be examined and treated methodically and effectively. DCPP experienced a few problems during the past year regarding ASW design and configuration documentation and control. DCPP is currently reviewing its B.5.b procedures to use portable pumps and hoses to provide salt-water injection into the ASW system. This capability to use portable injection pumps provides an important element of defense-in-depth for beyond design basis events that might disable the ASW system, including tsunamis.

3.2 Auxiliary Building Control Board Replacement Project

The DCISC Fact-finding Team met with Scott Patterson, Instrumentation and Controls (I&C) Obsolescence Program Manager, for a briefing of the status of the Auxiliary Control Board Replacement Project. This is the DCISC’s first review of this specific project, which represents a segment of a much larger program (i.e. the DCPP I&C Obsolescence Management Program) involving the upgrading of multiple DCPP control systems to digital control. The DCISC last reviewed this overall program in March 2011 (Reference 6.2) when it concluded the following:

The DCPP I&C Obsolescence Management Program, which replaces obsolescent analog process control and/or monitoring systems with digital systems is impressive in its design, implementation, and accomplishments to date. One significant part of this program is the replacement of the Eagle 21 Reactor Process Protection System, the primary system used to monitor process variables and take actions to trip the Reactor and actuate Engineered Safety Features, as needed. This project is undergoing NRC review, and DCPP expects to complete installation in 2014. The DCISC should continue to monitor this project.

The Auxiliary Building Control Board (ABCB) Replacement Project pertains to the following systems that are monitored and controlled at the ABCB:

- Chemical and Volume Control (including Boric Acid)
- Liquid Radwaste
- Gaseous Radwaste

Obsolescence of the components in prior control and monitoring systems is a driving force in this replacement project. Many of the panel instruments and controllers are air operated and no longer available. Also, since the existing system is pneumatic, tubing and control elements are susceptible to leaks, and therefore decrease reliability. In addition, from a human factors standpoint the existing panel configurations and indications have been poorly located, and board modifications over the years have been installed without focusing on human factors. Original controls and related indications are not always adjacent, and in some cases the indications are located remotely in the field. As earlier additions and modifications were made over time, some components were installed for systems that were never made functional.

Therefore, the project is dedicated to replacing the existing fluidic logic air system with
components that have electronic inputs and outputs. The project involves replacing existing Auxiliary Control Board components such as alarm panels, fluidic logic components, pneumatic valve position indication, pump status indicators, hand controls, paper chart recorders and analog process indications with a Data Acquisition and Control system (DACS). An Operator Interface allows for control of Auxiliary Board Systems and provides Screen Displays for indications, alarms, and system status. The data acquired is made available to the Plant Data Network (PDN).

This replacement/upgrade project is being integrated completely in-house, which provides a mechanism for frequent communications from Operations, and for scheduling and implementing changes to systems that are used very frequently. The project is being performed in distinct phases, as listed below, and the first three these have been completed:

- **Phase 1** – Infrastructure to support the project. This included Operator Interface Stations, an Engineering Work Station, Printer, PDN connection, two redundant 480/120 VAC transformers, and other support components, servers, wiring, and miscellaneous item.
- **Phase 2** – Replacement of all components associated with the Gaseous Radwaste Panel, installation of a Redundant Controller Chassis and Remote Input/Output Chassis in the 73 foot level Data Acquisition Panel and established the infrastructure within that panel.
- **Phase 3** – Replacement of components associated with the Liquid Radwaste Panel and instrumentation and controls associated with the Demineralizer Regenerative Receiver.
- **Phase 4** – Replacement of components associated with the Chemical and Volume Control Panels and the Boric Acid Recovery Panels. DCPP is currently engaged in this phase.

The final Phase will provide for the installation of the Remote Input/Output Chassis intended to provide for the ability to replace obsolete sensors and components associated with Auxiliary Board controls and to facilitate remote maintenance activities.

Enhancements that will be derived from these modifications include:

- Status and Warning Indications for Operators.
- Enhanced visual aids for operators through a mimic bus of the selected system, where appropriate. Menu Bars/Buttons allow switching between various screens.
- The ability to remove individual components from service and provide the operator with a screen indication of the status.
- Trends of real and historical data to be available locally. Printouts to be available at a local printer.
- Screen display of all alarms along with the ability to acknowledge alarms. Print capability of the Alarm window at a local printer.
- Status reports available on components, alarms, modes of operation, and requested functions.
Mr. Patterson escorted the DCISC Fact-finding Team to the facility in which his group connects and tests components associated with the project. He again emphasized the importance and benefit of performing these modifications in-house by being able to provide input and feedback to operations and receive the same from them. The personnel in the assembly and test facility also discussed the magnitude of the procedures and documentation that have been generated in support of this activity. The work that is being conducted is impressive. This effort is being conducted in Room 206 of Building 102.

One aspect of Room 206 in Building 102 that needs improvement is in attention to the impact of an earthquake on personnel safety and on the materials and components associated with this project. Several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were free-standing in the middle of the room.

On Day 2 of the fact-finding trip, the DCISC Fact-finding Team visited the Control Room for the ABCB in the Auxiliary Building. The need for this upgrade was apparent from the ad hoc layout of the original indicators and controls throughout the room.

Conclusions:

The purpose, structure, and organization of the Auxiliary Control Board Replacement Project appeared to be sound, and the project appeared to be progressing well. The condition in Room 206 of Building 102 needs to be improved from the standpoint of bracing tall shelving units, stands, bookcases, and the like for personnel safety in the event of an earthquake and to protect materials associated with this project. Since this project is one of a number of station projects involving the installation of digital controls, the DCISC should consider combining future status reviews of this project with the periodic reviews of the other projects having the same general objective. Also, the DCISC should consider obtaining future input from the Operations Department with regard to how well this effort has been meeting Operations’ needs.

3.3 Unexpected Control Rod Movement

The DCISC met with Bob Washington, Instrument and Control (I&C) Engineering Supervisor and Mike Sullivan, Rod Control System Engineer. This is the DCISC’s first review of this topic.

Control rods are used to (1) start up and (2) shut down the reactor and also (3) to control the water temperature of the reactor coolant during power operation. This third purpose can be fulfilled with the rods in manual control or automatic control. When in automatic, the Rod Control System positions the control rods in response to input signals it receives regarding actual average coolant temperature and a Reference Temperature, which is the desired temperature for the current power level. The Reference Temperature is derived from Turbine First Stage Impulse Pressure, which is representative of turbine power.

This DCISC review was prompted by Corrective Action Program (CAP) Notification 50352578, dated October 19, 2010, followed by CAP Order 60029789. The event which these documents discuss and a summary of DCPP’s subsequent efforts are as follows:
On October 19-20, 2010 Unit 2 Control Rods slowly stepped in 3 ½ steps for no apparent reason. There was no work going on that could have affected rod control, and no one was working in the cable spreading room of either unit. The rods were placed in, and kept in, manual and returned to their desired locations. Initial troubleshooting and analysis led to the proposition that the problem was not caused by plant conditions or input problems, but rather appeared to be due to equipment problems. Further evaluation was determined to be needed.

October 20 - October 21 Static voltage measurements were taken and evaluated on Hagan modules associated with the Rod Speed and Direction circuitry. The entire control loop was verified against the requirements of the calibration procedures and the scaling calculations. From these measurements and based on the amount of rod movement, it was determined that the most likely cause of the rod motion was a degrading module or modules. A search was made of industry operating experience as well as DCPP’s own operating experience. These searches revealed that there have been rod movements due to failed Hagan modules. However, the degraded module (if there was one) could not be determined by the static voltages.

October 23 – October 27 A temporary modification (TMOD) was installed on the Rod Speed and Direction Circuitry. Through a detailed and thorough examination of the circuitry at various points in the system and during a series of manual, as well as occasional automatic, “triggers” to the circuitry, the trouble shooting team was able to evaluate subsequent data as it emerged. This analysis suggested that the spurious signal or “demand” for rod motion was initiated within the NIS portion of the Rod Speed and Direction circuitry.

October 28 – November 16 It was further determined that data collection point locations in this circuit would need to be further changed in order to determine whether the problem lay in the circuitry or with the inputs. After the data collection points were changed, the results of further testing indicated that the problem did not lie with the inputs to that segment of circuitry, but rather within the circuitry itself.

November 16 As a result, five suspect modules were removed and replaced. No abnormal circuit traces were noted. The circuit appeared to be responding normally.

November 23 A manual trigger was initiated, and the circuit seemed to be responding normally.

November 24 – December 8 Unit 2 reactor power was reduced to 50% during this period, which limited the sensitivity of the instruments due to the reduced gain on the NIS portion of the circuit.

November 27 An unexplained “rods in” signal was captured. This indicated that the faulty module(s) had not been identified, but pointed at another part of the system. It appeared that several modules spiked including the bistable that would cause rods to insert. Monitoring continued to try to further support this determination.

January 12, 2011 – Replaced three more modules (Rod Insert Control and Rod Insert Speed Control). The circuit was then allowed to run in manual (while still being monitored by the TMOD recorder).
from January 13 until January 18. During this time there were no triggered events, indicating that the circuit was operating as expected. Another set of recorder traces was taken and compared to the data of January 13 as further assurance that the circuit was performing as expected. In response to recommendations from Instrument and Control/Electrical (ICE) Management and Instrument and Control (I&C) Maintenance, the circuit was returned to Automatic by Operations.

Conclusions:

DCPP personnel involved in the unexpected control rod movement event carefully constructed and implemented a detailed and deliberate troubleshooting process, including the use of DCPP and industry operating experience, which led to the elimination of the problem module while Operations maintained deliberate control of the Unit 2 control rods.

3.4 Seismic Bracing of Tall Furniture

The DCISC Fact-finding Team met with Vic Prater, Facilities Maintenance Supervisor, for a briefing of the status of the station's progress regarding the seismic bracing of tall furniture. Mr. Prater reports to the station's Construction/Facilities Maintenance Manager, who is the station's Owner of this program. The DCISC last reviewed this topic in July 2010 (Reference 6.3) when it concluded the following:

DCPP has begun to more aggressively address the need for seismic bracing of tall furniture. The Construction/Facilities Maintenance Manager has been assigned overall responsibility for this program. A draft procedure has been prepared that defines the criteria for bracing and restraining tall furniture. The DCISC should continue to monitor station progress on this issue, and should walk down areas such as the Training Building and Control Room during a future plant inspection to verify implementation of bracing systems.

Mr. Prater reported that the first floor of the Administration Building has been remodeled and that the furniture is in conformance with seismic requirements. He also said that the building's sixth floor was scheduled to be completed in the next few months, and that the second, third, and fifth floors are yet to be scheduled. The Fact-finding Team commented that not much progress appears to have been made during the past year, which Mr. Prater acknowledged. Also noted was that some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were free-standing and away from the walls of the room. Also, one desk had a large number of heavy boxes stored at a high elevation above the desk. (Refer to Section 3.2 of this report.) Mr. Prater noted that these configurations likely do not meet fire standards as well.

On the second day of this visit and during a tour of various areas of DCPP, the Fact-finding Team noted that the file cabinets in the Shift Manager's office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would...
pin operators against the table and potentially cause serious injuries. (Refer to Section 3.7 of this report.)

As discussed later in this report, DCPP has a Seismically Induced System Interaction (SISI) housekeeping program, which has been very effective in teaching plant operators and maintenance staff to think of potential seismic hazards to safety-related systems when they set down temporary equipment and tools in the plant, and to exclude equipment and tools from some areas. The DCISC is troubled that these plant staff apparently do not apply these same principles and questioning attitude when they observe seismic hazards in office spaces such as boxes located at high elevations above desks that could fall and injure personnel during an earthquake.

**Conclusion:**

Little progress appears to have made during the past year regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to an emergency in the event of an earthquake. In addition, the acceptance of existing conditions can create an underlying belief by employees that earthquakes will not occur in this geographic area that is prone to earthquakes. The accident at Fukushima reinforces the importance of taking seismic safety for personnel seriously, because it is critical that plant personnel be available to respond after an earthquake occurs and not be injured or diverted to perform first aid. The DCISC should review the status of this issue no later than in the first quarter of 2012.

**Recommendation:**

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety.

**Basis for Recommendation:**

Not much progress in seismically securing heavy furniture appears to have been made during the past year. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk. The file cabinets in the Shift Manager's office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

**3.5 Spent Fuel Pool System Review**

The DCISC Fact-finding Team met with Greg Porter, System Engineer for the Spent Fuel Pool
The DCPP Spent Fuel Cooling System is in good health and is operating well. The only current issues pertain to backup cooling and the heat exchanger inspection. DCPP plans to complete actions for these two items in 2010. The System Engineer appeared knowledgeable and proactive about his system.

The safety-related purposes of the SFP Cooling System are as follows:

- To maintain a water inventory in the SFP sufficient to keep the spent fuel immersed at all times.
- To provide reactivity control (borated water) for mitigation of a postulated misplaced fuel assembly.
- To provide a water inventory in the SFP to mitigate radiological consequences that could stem from design basis fuel handling accident.
- To provide reactivity control (borated water) for storage of spent fuel assemblies.

The SFP Cooling System also provides a highly reliable system to transfer decay heat from the SFP to the Component Cooling Water (CCW) System via the SFP heater exchanger. In addition, it maintains a water inventory in the SFP to provide radiation shielding for long-term storage of fuel assemblies in the SFP. It also purifies and demineralizes SFP water to maintain SFP water quality.

Each of the two operating Units at DCPP has its own Spent Fuel Pool (SFP) and SFP cooling system. Each SFP is an interim storage facility for fuel assemblies that have completed their useful cycles of producing power, hence the term “spent” fuel. However, even when the spent fuel assembly is removed from the reactor, it does keep producing heat due to radioactive decay which diminishes over time. When a spent fuel assembly’s heat production diminishes to an acceptable level, the assembly is then individually transferred from the pool, along with 31 other spent fuel assemblies, into a dry storage cask. This cask, containing the 32 spent fuel assemblies, is then transported to a secure dry storage area located on a hill above DCPP where the cask is bolted firmly to a strong, solid concrete and steel pad for dry storage. The Spent Fuel Pool is also the storage facility for new fuel assemblies that have been delivered to the plant prior to loading them into the reactor during a refueling outage.

Since the fuel assemblies in the SFP continue to produce heat, it is important to keep the water in the pools cooled. Also, since different assemblies are producing heat at different rates it is important to maintain knowledge and control of where each fuel assembly is located in order to avoid creating hot spots in the pool.

Each pool has two 100 percent capacity pumps provided with Class 1E electric power and one 100 percent capacity heat exchanger that is cooled by the Component Cooling Water (CCW). The SFP is designed with proper depth to provide a minimum of 23 feet elevation over the tops of the spent
fuel assemblies. Each SPF has instruments that use floats to provide a high-level and low-level alarm locally and in the Control Room. Although the actual level in each SFP can be checked locally by observing level as marked on the wall of the pool, during normal operation there is no remote wide-range level indication that could be used to determine the pool water inventory from outside the fuel handling building. During outages a mounted camera is focused on the level-marking strip in the pool so that it can be read from the Control Room. Annunciators in the Control Room provide the following alarms, as described in Annunciator Response Procedure AP PK 11-04: (these levels listed below represent elevations above the tops of the fuel assemblies in the SPF)

- Low Level 24 feet 2 inches (This is also the lowest level that can be detected by the instrument)
- High Level 25 feet 10 inches (This is also the highest level that can be detected by the instrument)
- High Temp 125 degrees
- Hi Rate of Temp Change 2 degrees/hour when > 80 degrees

The normal SPF water level is maintained at 24 feet 6 inches.

The lack of a wide-range level measurement for the pool, which could for example be provided by a bubbler tube immersed to the bottom of the pool, that would provide indication outside the fuel handling area, proved to be a major problem in the management of the nuclear accident, which occurred in Fukushima. While access to the SFP at DCPP is much easier than for the high-elevation pools in the boiling water reactors at Fukushima, the potential benefits of adding a permanently installed wide-level measurement instrument to the DCPP pools merits investigation.

Leakage from the SFP can also be determined locally. It is a manual function by which leak chase isolation valves are opened and sampled for water if present. The leak chases are located between the steel liner of the pools and the concrete pool structure, and collect any water that leaks through the liner. The locations of these isolation valves are such that gravity causes any leakage to be collected in each chase in which the water flows to the isolation valves. No remote detection capability exists. Therefore, in the event of a loss of coolant or the development of a large or moderate leak path while the SFP is unattended, the decreasing SFP level would not be noticed until the Low Level Annunciator activates in the Control Room. During the earthquake in Japan, large waves of water were observed to be sloshing out of at least one of the SFPs, to a level over the handrail surrounding the pool. If an earthquake were to affect DCPP, a similar loss of coolant might occur in the SFP.

The above issue was discussed by the DCISC Fact-finding Team while on site. The Team also noted that DCPP’s Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. But since it is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm,
the Fact-finding Team recommended that DCPP’s Post Earthquake Response Procedure be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory. DCPP responded while the Team was onsite by issuing Notification 50403433 to address this issue.

The Fact-finding Team visited the Unit 2 SFP. Conditions in the SFP area appeared orderly.

The Fact-finding Team also reviewed a number of reports issued during the past 12 months that contained information associated with the SFPs and their contents, as follows:

- **Corrective Action Program (CAP) Order: 60025368 dated 5/11/10:** During the relocation of fuel assemblies within the Unit 2 SFP, five fuel assemblies that had cooled for less than one year were left in the Unit 2 SFP in locations that did not meet SFP decay heat loading requirements. The station received a Non-cited Violation from the Nuclear Regulatory Commission (NRC) for the incident. As a result of this situation, in addition to other actions, the governing procedure and checklist guidance were strengthened with regard to reviewing SFP decay heat loading requirements when preparing fuel assembly move sheets.

- **CAP Order: 60026843, dated 2/11/11:** On September 3, 2010 one of four new fuel assemblies was placed in the wrong location by the new fuel receipt team. Corrective action was to strengthen the applicable new fuel movement procedures and fuel move tracking sheets.

- **On February 10, 2011 the Unit 2 SFP Pit Pump was found not to be running. The station performed a detailed, exhaustive examination leading not only to the physical direct cause of the problem but also to identification of the limitations of certain testing processes involving breaker external thermography in detecting deteriorating conditions that can only be detected internally through disassembly. The result was that the breaker was replaced and the appropriate procedure was amended to include a step to verify vendor specific requirements that necessitate verifying the integrity of internal connections.**

- **Operational Decision Making (ODM) Report Dated February 24, 2011:** On February 23, 2011 a Component Cooling Water (CCW) leak of about 0.5 gpm was created while beginning the process of removing and replacing Unit 2 SPF heat exchanger fasteners that secure the tube bundle to the heat exchanger vessel. The leak developed during the removal of the first fastener, which was immediately reinstalled and torqued to stop the leakage.

The SPF Cooling System health is Green (excellent) overall for each Unit. The heat exchanger for each Unit was Eddy Current Tested and visually inspected during refueling outages 1R16 and 2R16. No leaks were noted in either heat exchanger and both were determined to be in very good condition. The most recent measured leak rate out of one of the SPFs was ¼ to ½ liter per week, and the leakage out of the other pool was zero.

Since each Spent Fuel Pool has only one heat exchanger, the need for a second “back-up heat” exchanger for each pool has been examined. However, rather than purchasing and installing two
additional heat exchangers, DCPP has purchased and maintains one portable system consisting of hoses and three pumps. In situations where the cooling system for one of the SFPs becomes disabled, the portable system is set up to transfer the cooler water from the SFP with the operational cooling system into the second SFP, whose cooling system is inoperable, and then to recirculate water from the second SFP back to the SFP with the operational cooling system. In effect, each SFP cooling system can now serve as a backup for the other. It has been demonstrated that this portable system can be made operational within the minimum time to boil time frame for a Spent Fuel Pool, which would occur when the pool contains a fully and recently offloaded reactor core.

Finally, and as described above, two issues were identified in DCISC’s May 2010 Fact-finding visit: the need for backup cooling for each of the SFP heat exchangers since no backup existed up to that time, and the need to inspect the two heat exchangers once the backup systems were provided and operational. These activities were completed during refueling outages 1R16 and 2R16.

Conclusion:

Both Spent Fuel Pools and support systems appear to be in good condition. The system engineer continues to be knowledgeable and proactive. The two open issues noted during DCISC’s previous Fact-finding Visit, i.e. backup cooling for each pool and the need to inspect the heat exchangers, have been adequately addressed by DCPP. Based on several problems during the past year involving the incorrect placement of fuel assemblies in the SPFs, the DCISC should consider reviewing this process and DCPP’s evaluations and corrective actions resulting from the two problems identified in this report.

Recommendation:

DCPP’s Post Earthquake Response Procedure should be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should also consider providing permanently installed, remote wide-range SPF level monitoring capability.

Basis for Recommendation:

DCPP’s Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. It is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.

3.6 Seismically Induced Systems Interaction (SISI) Housekeeping Program

The DCISC Fact-finding Team met with Craig Stolz, Work Week Manager in the Outage
Management Department. The DCISC last reviewed this topic in July 2010 (Reference 6.5) when it concluded the following:

DCPP’s seismic risk puts the station in a unique position in the industry and dictates a level of rigor in the station’s seismic housekeeping program that exceeds what would be expected of other nuclear plants. For a number of years the station’s seismic housekeeping program has not met that higher standard. In recent months DCPP has been more rigorous in structuring and implementing the seismic housekeeping program, and performance appears to be improving. The DCISC should continue to monitor station efforts as implementation of this program continues. This should include a review of SISI training of appropriate station personnel.

This issue pertains to the damage that uncontrolled tools, equipment, components, and other items can inflict on plant systems in the event of an earthquake. During the time period of the DCISC’s last review of this topic, DCPP had been increasing its focus and efforts, but the performance of the overall program in the months prior to DCISC’s last review had been rated as Yellow (needs improvement) or White (some aspects can be improved). “Owners” had been assigned for performing periodic inspections of specific areas of the plant, but had sometimes not met those expectations. The station’s Quality Verification Department had identified this performance issue as a “Key Station Gap” during early 2010.

Mr. Stolz reported that efforts last year to place more emphasis on this program had been yielding positive results. The DCISC Fact-finding Team examined various DCPP performance reports since the last review of this topic, and noted the following results:

- As early as the third quarter of 2010, the Quality Verification Department’s “Quality Performance Assessment Report” for the period: April 17, 2010 through August 5, 2010 concluded the following regarding DCPP’s improved performance in this Program:
  - “Seismically Induced System Interactions (SISI) Housekeeping inspections were not consistently being performed and documented. Corrective actions are complete. QV observations continue to indicate SISI Housekeeping performance is satisfactory and sustainable. This is validated through performance indicators for SISI Program Health.”
- The Plant Performance Indicator Reports from late 2010 to early 2011 show that performance in this area improved from White to Green.
- Performance for the each of the three months prior to this Fact-finding trip is rated as Green in the station’s Plant Performance Indicator Reports, and the six-month rolling average was also rated as Green in the most recent report.
- During the DCISC Fact-finding Team’s tour of various areas of the plant, they noted the many areas that had signs posted identifying the Area Managers who are responsible for the Seismic Housekeeping Inspections. Conditions in the plant appeared clean and orderly, especially for being in a refueling outage (see Agenda Item 7 to this report.)

Mr. Stolz stated that an area of increased emphasis will be the training of new Area Managers with regard to Seismically Induced System Interactions, the inspection process, and their responsibilities.
He noted that tailboard training is performed on this subject and that it is also covered in Computer Based Training.

Conclusions:

Performance appears to have improved considerably in the area of DCPP’s Seismically Induced Systems Interaction Housekeeping Program since the DCISC Fact-finding Team’s last review of this topic in July 2010. Recognizing that increased effort and attention to detail on this issue will be needed as a result of the accidents at Fukushima, the DCISC should review this topic on a periodic basis through Fact-finding trips and/or through DCPP presentations at Public Meetings.

3.7 Tour of Unit 2 Containment Building and Other Selected Areas

The DCISC Fact-finding Team’s tour of the Unit 2 Containment Building, the Unit 2 Spent Fuel Pool, and portions of the Auxiliary Building leading to and including the Auxiliary Building Control Board station was conducted by Jared Felice, Radiation Protection Supervisor. The Fact-finding Team was then escorted by Pete Bedesem, Nuclear Engineering Supervisor, to the area of the Unit 2 Turbine Building containing the relief valve on the Feedwater Heater 2-1A whose leakage had led to a manual trip of Unit 2’s reactor. DCISC’s last tour during a refueling outage was conducted in March 2009 (Reference 6.6) when it concluded the following:

DCPP appeared to be making good progress in completing 1R15 safely and on schedule. The condition of the plant appeared good even with all of the work being performed. DCISC should continue plant tours during outages to observe work being performed. The committee should also follow the determination activities associated with transformer bushing deterioration.

While traversing the Unit 2 Turbine Deck on the way to Access Control the Fact-finding Team noted that work appeared to be nearly complete on that level, and the turbine had been placed on the turning gear. Conditions were neat and orderly. Although the team did not approach closely to Unit 2’s operating turbines, no steam leaks were visible on the upper level. During the dress out process of donning protective clothing and activating dosimetry, in Access Control, Mr. Felice provided clear instructions to the Fact-finding Team, while demonstrating the proper methods and also coaching team members as needed. Mr. Felice behaved in the same clear, supportive manner as the Fact-finding Team members later exited the Controlled Area after touring Unit 2 Containment. A number of other DCPP employees were in the same area as the Fact-finding Team was preparing to exit the Controlled Area, and these employees also provided helpful guidance.

The Fact-finding Team entered Unit 2 Containment at the 140 foot (upper level). The Reactor Vessel was completely refueled for the next operating cycle; the new Reactor Vessel Closure Head (RVCH) with its Integrated Head Assembly (IHA) was on its storage pad, which was very conveniently located for transporting the Head to the Reactor Vessel; the Refueling Cavity was full of water; and the Equipment Hatch was open. The 140 foot level, and all other levels and areas of the Containment Building were neat and orderly (except near the Equipment Hatch where work was clearly going on). Radiation levels in all areas toured by the Fact-finding Team were extremely low; the highest observed during the tour were 3 to 5 mRem/hour. Mr. Felice noted that radiation levels
have been lowered by reducing the radioactivity of the reactor coolant. The visible aspects of the new RVCH and its IHA clearly demonstrated how this new structure leads to improvements in radiation exposure, industrial safety, and efficiency during refueling. Examples include having cables, cabling connections, and insulation permanently mounted on the structure rather than having to remove and reinstall them every refueling outage.

As the Fact-finding Team was escorted on the 115 foot and 90 foot levels of Containment, Mr. Felice pointed out numerous Posted Areas where radiation levels were higher than average. Even though these areas had very low radiation levels themselves (many had levels of 1 to 3 mRem per hour), Mr. Felice directed the Fact-finding Team to areas of even lower dose rates when the group stopped periodically to discuss its observations.

The Fact-finding Team stopped on the 90 foot level to examine the series of screens that had been installed to prevent debris intrusion into the Containment Sump in the event of a Loss of Coolant Accident that could require the initiation of cold leg recirculation. The system of screens was very extensive and appeared to be very robust. The Fact-finding Team also noted what appeared to be a lack of fibrous insulation in the Containment Building. Mr. Felice was familiar with this issue and noted that DCPP has been engaged in a large effort to replace Calcium Silicate insulation with non-fibrous insulation.

After touring the Unit 2 Containment Building for about an hour, the Fact-finding Team was processed out of the Radiation Controlled Area through Access Control. Readings on the dosimeters of each team member (and Mr. Felice as well) were 0.2 mRem.

The Fact-finding Team then visited the enclosure (Control Room) for the Auxiliary Building Control Board inside the Auxiliary Building. The scattered ad hoc layout of the various, outdated control and indicating systems that had been installed over the years provided ample justification for the Replacement Project (refer to Agenda Item 2 in this report). Conditions in the Auxiliary Building during the Fact-finding Team's tour to and from the Auxiliary Building Control Board were orderly.

Escorting duties were then transferred to Mr. Bedesem, who escorted the Fact-finding Team to the location in the Unit 2 Turbine Building of the 2-1A Feedwater Heater Relief Valve. Leakage of this valve’s gasket during the previous operating cycle had sprayed onto the control panel for Main Feedwater Pump 2-1 causing that pump to trip, which in turn necessitated a Manual Reactor Trip. The control panel was estimated to be about 10 feet from the leaking valve, which suggests that considerable spray must have been occurring. The conditions in the area were clean and orderly at the time of the Fact-finding Team’s visit. Several DCPP personnel who have been associated with the analysis of this event were present at the site and showed the Team a photo of the failed pins in the control panel that were affected by the spray from the leaking gasket. The Root Cause Evaluation for this event had not been completed, which resulted in the need for the DCISC to postpone its review of this event to another Fact-finding Trip.

Throughout the tour the Fact-finding Team observed numerous posted signs, each identifying the DCPP Area Owner for the Seismically Induced Systems Interaction Program.
Conclusions:

Shutdown radiation levels in the Unit 2 Containment Building were very low and areas with higher radiation levels were clearly posted. The DCPP escort was highly oriented toward minimizing radiation exposure to levels to be As Low as Reasonably Achievable. The DCPP escort, as well as other DCPP personnel in Access Control, provided clear, helpful instructions and support to the Fact-finding Team while processing in and out of the Controlled Area. Conditions in the plant throughout the tour were clean and orderly, especially for during a refueling outage.

3.8 Per Peterson Meeting with Ken Peters, Vice President, Engineering & Projects

Dr. Per Peterson met with Mr. Ken Peters, Vice President, Engineering & Projects, to discuss topics pertaining to this Fact Finding visit and other topics of mutual interest.

4.0 Conclusions

4.1

The Auxiliary Saltwater (ASW) System, a safety-related system, appears healthy. The few current system health issues do not appear to be hindrances to system operation. A recent problem regarding pump vibration appeared to be examined and treated methodically and effectively. DCPP experienced a few problems during the past year regarding ASW design and configuration documentation and control. DCPP is currently reviewing its B.5.b procedures to use portable pumps and hoses to provide salt water injection into the ASW system. This capability to use portable injection pumps provides an important element of defense-in-depth for beyond design basis events that might disable the ASW system, including tsunamis.

4.2

The purpose, structure, and organization of the Auxiliary Control Board Replacement Project appeared to be sound, and the project appeared to be progressing well. The condition in Room 206 of Building 102 needs to be improved from the standpoint of bracing tall shelving units, stands, bookcases, and the like for personnel safety in the event of an earthquake and to protect materials associated with this project. Since this project is one of a number of station projects involving the installation of digital controls, the DCISC should consider combining future status reviews of this project with the periodic reviews of the other projects having the same general objective. Also, the DCISC should consider obtaining future input from the Operations Department with regard to how well this effort has been meeting Operations’ needs.

4.3

DCPP personnel involved in the unexpected control rod movement event carefully constructed and implemented a detailed and deliberate troubleshooting process, including the use of DCPP and industry operating experience, which led to the elimination of the problem module while Operations maintained deliberate control of the Unit 2 control rods.

4.4

Little progress appears to have made during the past year regarding protecting personnel in office spaces from moving objects that could cause personnel injury and/or impede response to
an emergency in the event of an earthquake. In addition, the acceptance of existing conditions can create an underlying belief by employees that earthquakes will not occur in this geographic area that is prone to earthquakes. The accident at Fukushima reinforces the importance of taking seismic safety for personnel seriously, because it is critical that plant personnel be available to respond after an earthquake occurs and not be injured or diverted to perform first aid. The DCISC should review the status of this issue no later than in the first quarter of 2012.

4.5

Both Spent Fuel Pools and support systems appear to be in good condition. The system engineer continues to be knowledgeable and proactive. The two open issues noted during DCISC’s previous Fact-finding Visit, i.e. backup cooling for each pool and the need to inspect the heat exchangers, have been adequately addressed by DCPP. Based on several problems during the past year involving the incorrect placement of fuel assemblies in the SPF’s, the DCISC should consider reviewing this process and DCPP’s evaluations and corrective actions resulting from the two problems identified in this report.

4.6

Performance appears to have improved considerably in the area of DCPP’s Seismically Induced Systems Interaction Housekeeping Program since the DCISC Fact-finding Team’s last review of this topic in July 2010. Recognizing that increased effort and attention to detail on this issue will be needed as a result of the accidents at Fukushima, the DCISC should review this topic on a periodic basis through Fact-finding trips and/or through DCPP presentations at Public Meetings.

4.7

Shutdown radiation levels in the Unit 2 Containment Building were very low and areas with higher radiation levels were clearly posted. The DCPP escort was highly oriented toward minimizing radiation exposure to levels to be As Low as Reasonably Achievable. The DCPP escort, as well as other DCPP personnel in Access Control, provided clear, helpful instructions and support to the Fact-finding Team while processing in and out of the Controlled Area. Conditions in the plant throughout the tour were clean and orderly, especially for during a refueling outage.

5.0 Recommendations

5.1

DCPP needs to develop and implement a schedule for taking the necessary actions to brace furniture appropriately throughout the station, and to better educate plant staff about seismic hazards and seismic safety. (Section 3.4)

Basis for Recommendation:

Not much progress in seismically securing heavy furniture appears to have been made during the past year. Some aspects of the design and testing room for the Auxiliary Building Control Board Replacement Project, Room 206 in Building 102, need to be more in keeping with seismic standards. Specifically, several tall shelving units containing boxes were not braced to the wall and other tall stands/bookcases were freestanding and away from the walls of the room. One desk had a large number of heavy boxes stored at a high elevation above the desk.
The file cabinets in the Shift Manager's office, which had been noted not to have been braced during the May 2010 Fact-finding Visit, were still in the same condition. While these file cabinets may not be tall enough to formally require seismic bracing, they are very heavy and are located a few feet from a large table, so if they were to fall over during an earthquake they would pin operators against the table and potentially cause serious injuries.

5.2

DCPP's Post Earthquake Response Procedure should be expanded to require examination of SFP levels after an earthquake and sampling locally for indications of possible SFP liner leakage. DCPP should also consider providing permanently installed, remote wide-range SPF level monitoring capability. (Section 3.5)

Basis for Recommendation:

DCPP’s Post Earthquake Response Procedure, CP M-4, does not require a visual inspection of SFP level as a post earthquake response action. Significant inventory loss from the pool would result in a low-level alarm, and the response procedure for the alarm would prompt an inspection. It is possible that an earthquake could not only cause a decrease in SFP level and create a leak in the SFP liner but could also disable the instrument that activates the SFP Low Level Alarm. Sampling for liner leakage would help verify the integrity of the pool, and thus allow plant personnel to focus subsequent efforts on responding to other effects of the earthquake without concern about potential losses of pool inventory.

6.0 References


November 9, 2009, Volume II, Exhibit D.8, Section 3.1, “Plant Tour During the 1R15 Outage.”
### TELEPHONE - CORRESPONDENCE LOG

The log is intended to provide a memorandum of contacts initiated by individual members of the public, citizen or public-interest groups, or similar organizations with the Committee members, consultants or staff.

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<th>STATUS</th>
<th>COMMENTS/INFORMATION</th>
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<td>01/31/2011</td>
<td>William &amp; Jennifer Presley</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Cathy Hunter</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
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<tr>
<td>01/31/2011</td>
<td>William Dolan</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
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<tr>
<td>01/31/2011</td>
<td>Susan Frank</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>William &amp; Shirley Sheehy</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Dwight &amp; Linda Wood</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Darrell Cooper</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Sandra McKee</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Kenneth Thompson</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
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<td>Date</td>
<td>Name</td>
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<tr>
<td>01/31/2011</td>
<td>Larry &amp; Kathleen Harlan</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Jackie &amp; Jeanette Krone</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Michael Zoidak</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Philip &amp; Sieglinda Tate</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Gary Beall</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Denis &amp; Judy Gendron</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Eugene &amp; Cheryl Garnsey</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Kenneth &amp; Donna Kalkowski</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>Valerie Baboza</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>01/31/2011</td>
<td>John Bird</td>
<td>Complete</td>
<td>Re: DCISC February 15 public tour of DCPP; confirmed.</td>
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<td>Date</td>
<td>Name</td>
<td>Complete</td>
<td>Details</td>
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<tr>
<td>03/10/2011</td>
<td>Neal O’Hagan</td>
<td></td>
<td>Email from IBEW Shop Steward with petition re unethical treatment of nuclear operator; 03/12/11 acknowledgement sent regarding review for operational safety concerns; 03/14/11 further reply send with confidentiality advice; 03/28/11 email from Mr. O’Hagan with signed Advisement of Identity Protection policy 03/28/11 acknowledgement sent by email; April 19-20, 2011, during fact-finding visit (PL &amp; RFW) met with Mr. O’Hagan and the nuclear operator, no operational safety concerns raised or identified.</td>
</tr>
<tr>
<td>03/15/2011</td>
<td>M. Muckenfuss</td>
<td></td>
<td>Inquiry regarding nuclear fuel storage; 03/16/11 email reply sent with Sec. 4.19 of 20th A/Rptr re ISFSI and reference to website video re used spent fuel storage video on DCISC website</td>
</tr>
<tr>
<td>03/17/2011</td>
<td>June Cochran</td>
<td></td>
<td>Request to use power point slides from DCISC public meetings; 03/18/11 email reply sent.</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Email Address</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>03/23/11</td>
<td>Jeff Brody</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>Email inquiry stemming from ECCS inoperable valve issue and role of DCISC; 03/24/11 email acknowledgement sent; 03/29/11 email reply provided.</td>
<td></td>
</tr>
<tr>
<td>03/29/11</td>
<td>James Bigelow</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>Email received from retired DCPP employee with concern regarding affect of tsunami surge on ASW System pump ventilation system and ability of ASW to pump saltwater post tsunami event; 03/29/11 acknowledgement sent; 04/06/11 request to refer concern to DCPP/ECP and copy of DCISC Policy 7 re Identify Protection provided; 04/06/11 copy received of email from Mr. Bigelow to DCPP’s Rick Burnside; 04/07/11 copy of email from Rick Burnside with copy of Notification 50387645 to evaluate issues raised by Mr. Bigelow.</td>
<td></td>
</tr>
<tr>
<td>04/01/11</td>
<td>Peter O’Driscoll</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>Email received re lessons for DCPP from March 11, 2011 Fukushima incident and questioning seismic adequacy of DCPP; 04/06/11 acknowledgement and reply provided and references to PG&amp;E and to the DCISC websites provided.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Complete</td>
<td>Details</td>
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</tr>
<tr>
<td>04/10/2011</td>
<td>June Cochran</td>
<td></td>
<td>Email request for date of DCISC June 2011 public meeting; 04/11/11 reply provided with dates.</td>
</tr>
<tr>
<td>04/13/2011</td>
<td>Wayne Montgomery</td>
<td></td>
<td>and email received with information from Cal Poly Engineering Librarian re Reference Dept. collection related to DCPP construction, licensing and operation for the period 1967-2000.</td>
</tr>
<tr>
<td>04/18/2011</td>
<td>David Perlman</td>
<td></td>
<td>Inquiry from reporter for SF Chronicle re &quot;studies studies&quot; referenced in Fukushima posting on DCISC website and NRC direction re U.S. nuclear plans post Fukushima</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>04/19/11 Consultant RFW contacted Mr. Perlman and provided copy of 4/10/11 DCPP letter to NRC deferring license extension review.</td>
</tr>
<tr>
<td>05/19/2011</td>
<td>Patrick [no last name given]</td>
<td></td>
<td>Email inquiry from Univ. Nevada student re entry level position; 05/26/11 reply sent with reference to DCPP.</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Status</td>
<td>Notes</td>
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<td>------------</td>
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</tr>
<tr>
<td>05/22/2011</td>
<td>Neal O’Hagan</td>
<td></td>
<td>Email from IBEW Shop Steward inquiring re date of next DCISC public meeting with Notification 50400820 re time pressure; 5/23/11 email from RFW with date of public meeting and request for attachment. 05/23/11 email from Mr. O’Hagan with above-referenced attachment 05/23/11 correspondence provided to members &amp; consultants by RFW 05/23/11 email from Mr. O’Hagan with email exchange re DCPP shift manager’s behavioral interaction with Control Room operator; 05/24/11 further correspondence provided by RFW to members and consultants</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Shannon Fox</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Monica Bristow</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Stephanie Neubauer</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Gregory &amp; Susan Davis</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Status</td>
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<tr>
<td>06/06/2011</td>
<td>Kip Carpenter</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Joseph Ryan</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Charles Roche</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Donald &amp; Beverly Baltz</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>David &amp; Lynda Nath</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Donald, Matthew &amp; Michael Perry</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Matt McClish</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Karisha Dearing</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Ananda Padavalas</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
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<tr>
<td>06/06/2011</td>
<td>Suneetha Guddanti</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Donald Smith</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Lester Goldfisher</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Sandy Peterson</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>George Stephens</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Ben Sportsman</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
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<tr>
<td>Date</td>
<td>Name</td>
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<tr>
<td>06/06/2011</td>
<td>Darol Jr. &amp; Ruth Ruffner 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Thomas Hunter 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
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<tr>
<td>06/06/2011</td>
<td>Kenneth Wilson 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Andrew &amp; Jesse Bloom 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Norbert Werner 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
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<td>06/06/2011</td>
<td>John Girard 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Jordana Stack 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Kevin Ames 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Ralph Herman Jr. 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Jim &amp; Deborah Whitson 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Phil, Kathleen &amp; Leilani Ketz 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Duke Johnson 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
<tr>
<td>06/06/2011</td>
<td>Doug Widney 📞</td>
<td>Complete</td>
<td>Re: DCISC June 22 public tour of DCPP; confirmed.</td>
</tr>
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</table>
DCISC Correspondence
Jane –

The Committee is preparing responses to several inquiries made by several members of Mothers for Peace during past DCISC public meetings. Specifically, responses to inquiries made by Ms. Linda Seeley, Ms. Laura Cooper (via Ms. June Cochran) and Ms. June Cochran will be provided.

My purpose in contacting you is to request, if possible, contact information for these individuals; postal addresses and/or email contact information would be appreciated. I have an email contact for Ms. Cochran at but nothing for Ms. Seeley or Ms. Cooper.

Thank you in advance for any assistance you can provide,

Regards,

Bob Rathie
DCISC
1-800-439-4688
Ms. Cochran -

Attached per your request please find a pdf file with the presentations from the June 2-3 DCISC public meeting. Please be advised the presentation on the review of the Performance improvement Action Plans (the last presentation on the attached file) was moved from its originally scheduled presentation time on June 3 to the evening of June 2, following Mr. Hopson's the report on the activities of PG&E's Nuclear Safety Oversight Committee.

Concerning another matter, the Committee is preparing its responses to several of your inquiries made during past DCISC public meetings, including the questions you posed on behalf of Ms. Laura Cooper at the June 2009 public meeting. Would your preference be to receive the Committee's response by email at this address or by regular mail (or both)? If you would like to receive a response by mail, please provide an address for mailing. We are also seeking contact information for Ms. Linda Seeley of MFP for the same purpose. I sent an email yesterday concerning this matter to Ms. Swanson but have not yet received a reply. Any help you might be willing and able to provide would be appreciated.

Regards,

Bob Rathie
DCISC

-----Original Message-----
From: June Cochran
Sent: Tuesday, June 08, 2010 9:41 PM
To: attys mail
Subject: DCISC Binder - June 2010

Dear Mr. Rathie,

Since I could not attend the last DCISC meeting because I was working in Stockton, I would appreciate it if you could send me the binder by email as you did on one similar occasion. Thank you,

June Cochran
Ms. June Cochran
Arroyo Grande, California 93420-5301


Dear Ms. Cochran:

The Committee appreciates your interest in its activities and taking the time to attend its public meetings to raise concerns and ask questions of the Committee members. In the process of reviewing some of our past public meeting minutes we realized that we had not completely answered your questions and are providing those answers now. Concerning the questions you posed to the DCISC during the afternoon session of the public meeting on June 9, 2009, on behalf of Ms. Laura Cooper, the Committee’s responses follow, with excerpts from the Minutes of that meeting shown in italicized text:

“Ms. Cochran stated she was asked to raise concerns on behalf of Ms. Laura Cooper, a resident of San Luis Obispo, concerning [1] the cost to PG&E to replace each concrete, nuclear fuel dry storage cask every forty years; [2] how many such casks will eventually be on-site at Diablo Canyon Power Plant (DCPP) over the lifetime of the plant; and [3] how much money has PG&E set aside for cask replacement for the period their contents will remain radioactive. Ms. Cochran stated Ms. Cooper also wanted to know which agency is ultimately responsible for protecting the public from nuclear waste, which was answered earlier by Dr. Budnitz, and what happens to the waste if PG&E goes out of business or goes bankrupt. Ms. Cochran provided a copy of Ms. Cooper’s questions to the Committee. Dr. Peterson stated the DCISC would provide a more detailed response, however, he observed it is quite likely the lifetime of the dry storage casks, given their construction and passive characteristics will be greater than forty years and the license for their use or reuse could be extended. Dr. Peterson further commented PG&E is not financially responsible for the cost of dry cask storage, as the federal government is in default with regard to its contractual commitment to accept spent nuclear fuel and the full cost of dry cask storage, including replacing the casks as necessary, is a federal, and therefore a taxpayer, liability. He stated in the future there is likely to be a commission formed to review U.S. nuclear waste policy.”
1. The replacement cost for a storage cask itself is currently approximately $1 million in today’s dollars.

“[Dr. Peterson] observed it is quite likely the lifetime of the dry storage casks, given their construction and passive characteristics will be greater than forty years and the license for their use or reuse could be extended.” [Minutes of June 2009 DCISC Public Meeting]

2. DCPP has plans for 138 casks to be stored at the ISFSI for an assumed 60-year operating period.

3. “Dr. Peterson further commented PG&E is not financially responsible for the cost of dry cask storage, as the federal government is in default with regard to its contractual commitment to accept spent nuclear fuel and the full cost of dry cask storage, including replacing the casks as necessary, is a federal, and therefore a taxpayer, liability.” [Minutes of June 2009 DCISC Public Meeting]

The DCISC’s interest in dry cask storage is that of safety, rather than financial or economic impacts, thus it is not known how much PG&E has set aside; however, it is known that PG&E contributes $0.001 per kilowatt-hour to the national nuclear waste fund.

Concerning the questions you posed to the DCISC during the afternoon session of the June 10, 2009, public meeting, the Committee’s responses follow, with excerpts from the Minutes of that meeting again shown in italicized text:

“Ms. Cochran remarked PG&E made profits of $517,000,000 for the fourth quarter of 2008, and paid $8,700,000, as of March 2009, to its Chief Executive Officer, Mr. Peter Darbee. She stated she was disturbed by Mr. Kmitzley comments that money is tight at PG&E and that expenses need to be cut at DCPP. Mr. Cochran stated she had received information that DCPP employs only half of the number of engineers employed by the San Onofre Nuclear Generating Station and that PG&E expends a thousand hours in overtime and [1] questioned whether that information was accurate. She stated more overtime hours equate to more fatigue for the fewer numbers of engineers. She observed this appears to be a significant disparity and she asked [2] how many engineers are employed at DCPP? Ms. Cochran [3] questioned whether short term incentives in place or proposed, which could comprise 10-12% of an employee’s compensation package and would be tied to safety performance, would have a detrimental effect on employees reporting safety concerns as to do so might significantly impact them financially. Ms. Cochran [4] queried whether the Committee could ensure PG&E included the participation of actual media personnel during the next emergency exercise? She questioned [5] what progress, if any, has been made concerning the lack of rigor identified in engineering with reference to the containment sump blockage issue?”
1. The DCISC does not have information on the number of engineers employed at San Onofre Nuclear Generating Station.

2. Diablo Canyon currently has 152 positions for engineers who perform engineering work. There are many other personnel with engineering degrees in other functions at DCPP, such as Operations and Maintenance.

3. Employees have both nuclear and personnel safety goals, among many others, in their normal performance expectations and incentive pay. The DCISC has reviewed these expectations and how they are applied and regularly reviews safety reportability, and does not believe they have a detrimental effect on employees’ reporting safety concerns. Further, the impact of this one aspect of normal or incentive pay would be much less than 10%.

4. The DCISC cannot ensure that PG&E includes the participation of actual media personnel during the next emergency exercise; however, the DCISC has made that recommendation to PG&E. DCPP reports that media representatives have been invited to participate in their emergency exercises but, to date, have not done so. The DCISC did observe one exercise in which Cal Poly journalism students assumed the role of the news media and participated in the exercise.

5. The DCISC has spent considerable effort on studying the containment sump blockage issue over the past few years. DCPP has taken corrective actions to address the lack of rigor identified in engineering with reference to the containment sump blockage issue. In addition, an Operations Awareness Bulletin was issued to discuss the event and all maintenance activities performed during outage 2R15 were reviewed to verify that post maintenance testing had been appropriately identified. The DCISC has recently reviewed the DCPP activities performed during 1R15.

Concerning the question you posed to the DCISC during the afternoon session of the February 11, 2010, public meeting, with excerpts from the Minutes of that meeting again shown in italicized text:

“She [Ms. Cochran] inquired whether Mr. Sharp’s presentation indicated that dry cask fuel storage activities would be postponed until 2011 and no casks would be filled in 2010? Mr. Sharp replied and stated that nothing was delayed as far as delivery of spent fuel to dry cask storage and the deferral was only with regard to when PG&E would pay its vendor. Dr. Budnitz promised to provide an answer to Ms. Cochran’s question concerning the cost of a single cask.” [Minutes of February 2010 DCISC Public Meeting]
1. The replacement cost for a single storage cask is currently approximately $1 million in today’s dollars.

Thank you for your interest in the Committee and its activities. Please be so kind as to provide the enclosed copy of this letter to Ms. Cooper. I hope you both find the foregoing answers to be responsive to your inquiries.

Very truly yours,

[Signature]

Robert J. Budnitz
DCISC Chair

cc: Ms. Laura Cooper

emc: DCISC Members Drs. Peterson & Lam
     DCISC Technical Consultants
June 28, 2010

Ms. Linda Seeley
San Luis Obispo, California 93405-1055

Re: Response to inquiries made at the DCISC’s February 12, 2009, public meeting.

Dear Ms. Seeley:

The Committee appreciates your interest in its activities and taking the time to attend its public meetings to raise concerns and ask questions of the Committee members. In the process of reviewing some of our past public meeting minutes we realized that we had not completely answered your questions and are providing those answers now. Concerning the questions you posed to the DCISC during the afternoon session of the public meeting on February 12, 2009, the Committee’s responses follow, with excerpts from the Minutes of the meeting shown in italicized text:

“Ms. Linda Seeley of San Luis Obispo was recognized to address remarks to the Committee. Ms. Seeley requested answers to four questions: (1) how many tons of highly radioactive waste are now on-site at the Diablo Canyon Power Plant (DCPP); (2) how many tons of low level radioactive waste are now on-site at DCPP; (3) concerning deficiencies discussed in Mr. Petersen’s presentation concerning design engineering products, are these products tested; and (4) concerning the period of transfer to spent fuel to dry cask storage, will the plant actually be locked down for the 80 days it is projected to take to fill eight storage containers and what measures are being take to ensure there is no interference by terrorists during that period?”

1. There are approximately 2,000 metric tons of high-level radioactive waste in the form of spent nuclear fuel and approximately 10.5 metric tons of resins and filters currently on-site at DCPP.
2. Low level radioactive waste is routinely shipped offsite to a licensed burial facility, so, except for the following, there are no accumulations on-site. Currently, there are eight old steam generators (360,000 pounds each) and one old reactor vessel head (360,000 pounds), all declared low level waste, stored on-site. These components will eventually be decontaminated and declared as non-radioactive waste to be sold or recycled.

3. “Dr. Peterson commented that engineering product design testing was reviewed during the Committee’s review of the DCPP Commercial Grade Testing Program during a fact-finding visit. He reported tests are performed, by the vendor if qualified by DCPP, on all elements of a product to ensure the product can perform its safety-related function. Mr. Conway stated, concerning deficiencies in engineering products, post modification testing is performed as required and often times deficiencies are discovered before equipment is returned to service.” [Minutes of February 2009 DCISC Public Meeting.]

4. “[Dr. Peterson] stated the reference to a ‘lock down’ during transfer of spent fuel to dry storage was in reference to the transporter vehicle being locked down during cask transfer operations.” [Minutes of February 2009 DCISC Public Meeting]

The plant is not locked down for the time it takes to transfer spent fuel to dry cask storage; however, selected areas of the plant yard, parking lots, and roads are temporarily roped off to permit unencumbered access for the transfer vehicle. Plant security is on full alert at all times both at the plant proper and at the Independent Spent Fuel Storage Installation (ISFSI). The DCPP Security Plan (which is classified) provides for the protection of the spent nuclear fuel during the movement from the power plant to the ISFSI. Additional measures, security officers, and surveillances are employed during the spent fuel transfers.

Thank you for your interest in the Committee and its activities. I hope you find the foregoing answers to be responsive to your inquiries.

Very truly yours,

Robert J. Budnitz
DCISC Chair

RJB/rr

emc: DCISC Members Drs. Peterson & Lam
DCISC Technical Consultants
FYI – received yesterday from Jane Swanson from MFP.

Bob R

From: Jane Swanson
Sent: Wednesday, June 30, 2010 9:23 AM
Subject: FEDERAL COURT SCHEDULES MOTHERS FOR PEACE

San Luis Obispo Mothers for Peace
P.O. Box 3608
San Luis Obispo, CA 93403
www.mothersforpeace.org

NEWS RELEASE

For Immediate Release Contacts: Jane Swanson
June 30, 2010

Ninth Circuit Oral Argument set for November 4

The Ninth Circuit Oral Argument has been set for November 4, 2010 at 2pm. It will take place in San Francisco, Courtroom 1, 95 7th Street.

Like the 2006 ruling in favor of San Luis Obispo Mothers for Peace (SLOMFP), the outcome of this case involving the dry cask storage facility at Diablo Canyon Nuclear Plant has the potential to affect policy for all 104 nuclear facilities in the nation. If Mothers for Peace is successful, the case will set a major new precedent for government accountability with respect to security-related decision-making in the post- 9/11 era.

SLOMFP’s objectives are twofold:

- to force the NRC to prepare an Environmental Impact Statement that thoroughly analyzes the potential environmental effects of attack on the dry cask storage facility;

G.2-10
• to restore an appropriate balance between the influence of the nuclear industry and the public over the NRC.

After the 9/11 attacks, the increased level of secrecy at the NRC tilted the playing field even more dramatically in favor of the industry, which now has virtually unlimited access to sensitive information while the public has been completely shut out. We believe that our lawsuit could give members of the public a powerful new tool in making the government accountable for its decisions regarding security by allowing access to classified and other sensitive security information in closed hearings. (A closed hearing allows only attorneys and expert witnesses with appropriate security clearances to attend. SLOMFP attorney, Diane Curran, has the necessary clearances.)

More information about SLOMFP's lawsuit in the Ninth Circuit of the U. S. Court of Appeals is available at http://mothersforpeace.org/20090211nrc

Jane Swanson
Mr. Hennen –

The only version of the Diablo Canyon SG replacement video for which the Committee has received permission from PG&E to disseminate on our website is the version posted on www.dcsic.org. We don’t have an uncut version. However, the version on the website has been cleared for public use and may be shown at your group meeting.

Thanks for your inquiry and my apologies for the delay in replying.

Robert Rathie
DCISC

From: Hennen, James W
Sent: Friday, August 20, 2010 12:30 PM
To: dcsafety@dcisc.org
Subject: Steam Generator Replacement Video

Good afternoon,

My name is Jimmy Hennen and I am Vice-President of the Westinghouse Electric Charlotte office chapter of the North American Young Generation in Nuclear. I came across the steam generator replacement videos on your website and was wondering if you had an uncut version I could show at our next group meeting (with your permission of course). Thank you very much for your help.

-Jimmy

Jimmy Hennen
Engineer
Nuclear Services

Westinghouse Electric Company
3545 Whitehall Park Drive, Suite 300
Charlotte, NC 28273, USA
Phone: +1 (704) 697-6233
Mobile: +1 (423) 718-8749

Home Page: www.westinghousenuclear.com
October 22, 2010

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. Grace Guanlao
Advertising Department

Re: Diablo Canyon Independent Safety Committee: Public Tour Display Ad

Dear Grace:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two column wide ad in your edition on Sunday, October 31, 2010. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure
DIABLO CANYON POWER PLANT PUBLIC TOUR
WITH THE MEMBERS OF THE
DIABLO CANYON INDEPENDENT
SAFETY COMMITTEE

At 8:00 A.M. on the morning of Wednesday, November 17, 2010, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis.

Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee’s toll-free number
1-800-439-4688
on Monday, November 1, 2010
Between the hours of 9:00 A.M. - Noon and 1:00 P.M. - 5:00 P.M.

Please place your call no earlier than 9:00 A.M. & prior to 5:00 P.M.
Please be patient as call volume is expected to be very heavy.
Email reservations cannot be accepted
nor will requests for reservations left with anyone other than Committee staff
answering the telephone at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on November 17th, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:00 A.M. Information concerning the agenda for DCISC public meetings on November 17-18, 2010, will be available on the Committee’s homepage at www.dcisc.org or by contacting the office of the Committee’s Legal Counsel at the Committee’s toll-free telephone number.

Dated: October 31, 2010,
November 2, 2010

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir or Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Sunday, November 7, 2010. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on November 17, 2010, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on November 17th, the DCISC may convene an informal power point presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Community Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on November 17-18, 2010, at the Avila Lighthouse Suites, Point San Luis Conference Center, located at the northwest corner of First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session - (11/17/2010) - 1:30 P.M.** Opening comments and remarks; receive public comments and communications to the Committee, approve minutes of June 2-3, 2010, public meeting; discussion of administrative matters, including review and approval of the DCISC 20th Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2009 - June 30, 2010; an update on financial matters and activities during 2010 and 2011; review of the Open Items List; a Resolution of Appreciation and Commendation to Committee Consultant Mr. Jim E. Booker; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

2. **Evening Session - (11/17/2010) - 5:15 P.M.** Committee member comments; receive public comments and communications to the Committee; report on and discussion of DCISC's Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent NRC Notices of Violation, Licensee Event Reports, NRC Notices of Violations and NRC Performance Indicators; and the recent activities of PG&E’s Nuclear Safety Oversight Committee.

3. **Morning Session - (11/18/2010) - 8:00 A.M.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an update on pressurized thermal shock evaluation, seismic interactions and design life; the status of DCPP’s focus area on problem evaluation thoroughness; an overview of the Site Services organization; the results of the sixteenth refueling outage for Unit 1 (1R16); and approval of the DCISC’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP.

4. **Afternoon Session - (11/18/2010) - 12:45 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the status of DCPP’s focus area on station transformers; results of steam generator tube testing during 1R16; and the activities of the Emergency Response Organization during 2010; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Monday, November 15, 2010, at the Reference Department of the Cal Poly Library in San Luis Obispo. **For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.**

Dated: November 7, 2010.

G.2-16
PRESS RELEASE:

PUBLIC MEETING
OF THE
DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

WHO: The Members of the Independent Safety Committee:
Robert J. Budnitz
Peter Lam
Per F. Peterson

WHAT: An opportunity for the public to observe and receive information concerning the activities of the Independent Safety Committee including recent fact-finding visits and informational presentations concerning safety-related issues at Diablo Canyon:

➤ Committee Business Session - Wednesday afternoon
   Approval of DCISC's 20th Annual Report
➤ Plant Performance, Events and Operational Status
➤ Update on Pressurized Thermal Shock Evaluation,
   Seismic Interaction and Design Life
➤ Status of Focus Area on Problem Evaluation Thoroughness
➤ Overview of the Site Services Organization
➤ Results of the Sixteenth Refueling Outage for Unit 1 (1R16)
➤ Approval of the DCISC's Report on its Evaluation of Pressurized Thermal Shock and Seismic Interactions at Diablo Canyon
➤ Status of Focus Area on Station Transformers
➤ Results of Steam Generator Tube Testing During 1R16
➤ Activities of the Emergency Response Organization in 2010

WHERE: Avila Lighthouse Suites - Point San Luis Conference Center
Northwest corner of First & San Francisco Streets, Avila Beach, CA

WHEN: Wednesday and Thursday
November 17th & 18th

TIMES: 1:30 p.m. - 5:00 p.m. (Wednesday, November 17th)
5:15 p.m. to approx. 7:15 p.m. (Wednesday, November 17th)
8:00 a.m. to 11:30 a.m. (Thursday, November 18th)
12:45 p.m. to approx. 3:15 p.m. (Thursday, November 18th)

FOR FURTHER INFORMATION:

Including more information on these and other topics to be reviewed by the Independent Safety Committee or the specific days and times for particular presentations
Contact 1-800-439-4688
or review the meeting agenda online at www.dcisc.org

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.
November 5, 2010

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Mr. Charles Gernecser.

Re: Diablo Canyon Independent Safety Committee: Display Ad

Dear Mr. Gernecser:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, November 11, 2010, which we understand will be available in the local area through Wednesday, November 17. The same format and style as used for our past advertising publications in the New Times should be used for the November 2010 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
WEDNESDAY AFTERNOON,
NOVEMBER 17TH 1:30 P.M.
Introductions, public comments and communications to the Committee, Committee business session including approval of the Committee’s 20th Annual Report on the Safety of Diablo Canyon Operations, discussion of Committee activities and plans during 2010 and 2011, and reports on fact finding visits by members and consultants.

WEDNESDAY EVENING,
NOVEMBER 17TH 5:15 P.M.
Public comments and communications to the Committee members; report on and discussion of the DCISC’s Report on Evaluation of Pressurized Thermal Shock and Seismic Interactions at Diablo Canyon; informational presentations by PG&E officials on topics requested by the Committee including Plant events, operational status and performance indicators, review of licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators; and review of the recent activities of PG&E’s Nuclear Safety Oversight Committee.

THURSDAY MORNING,
NOVEMBER 18TH 8:00 A.M.
Introductions, public comments and communications to the Committee, and further informational presentations by PG&E including an update on Pressurized Thermal Shock Evaluation, Seismic Interactions and Design Life, the status of Diablo Canyon’s focus area on Problem Evaluation Thoroughness, an overview of the Site Services organization, and the results of the sixteenth refueling outage for Unit 1 (1R16); and approval of the DCISC’s Report on Evaluation of Pressurized Thermal Shock and Seismic Interactions at Diablo Canyon.

THURSDAY AFTERNOON,
NOVEMBER 18TH 12:45 P.M.
Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials including on the status of Diablo Canyon’s focus area on station transformers, the results of steam generator tube testing during 1R16, the activities of the Emergency response Organization during 2010; and wrap-up discussion by Committee members.

Please plan to attend!
For further information call 1-800-439-4688 or visit the Committee’s website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library’s Reference Department and the Agenda is available on the DCISC’s website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.slo-span.org and after a meeting in archived format, indexed to the meeting’s agenda, or by following links on the Committee’s website.
November 9, 2010

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee: Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, November 14, and Wednesday, November 17, 2010. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the November 17-18, 2010, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact our office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
November 9, 2010

TIMES-PRESS-RECORDER
Post Office Box 460
Arroyo Grande, California  93421-0460

Attention: Advertising Department

Re: Diablo Canyon Independent Safety Committee: Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Friday, November 12 and Wednesday, November 17, 2010. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When:

Wednesday Afternoon, November 17th
1:30 P.M.

Introductions, public comments and communications
to the Committee, Committee business session.

Wednesday Evening, November 17th
5:15 P.M.

Public comments and communications to the Committee members
and informational presentations by PG&E officials on
Plant events and operational status and specific safety and
Plant operational topics requested by the Committee.

Thursday Morning, November 18th
8:00 A.M.

Introductions, public comments and communications
to the Committee, and informational presentations by
PG&E concerning Plant operations requested by the Committee.

Thursday Afternoon, November 18th
12:45 P.M.

Introductions, public comments and communications to
Committee members, further informational presentations by
PG&E officials on Plant operational topics requested by the
Committee and concluding remarks by the members.

Where:

Avila Lighthouse Suites
Point San Luis Conference Center
Northwest corner of First and
San Francisco Streets
Avila Beach, California

Please plan to attend! For further information
call 1-800-439-4688 or visit the Committee’s
website at www.dcis.org.

A copy of the meeting Agenda packet may be
reviewed at the Cal Poly Library's Reference Department
and the Agenda is available on the DCISC's website.

The Committee's policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.
November 11, 2010

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Cathy Matthews
Re: Diablo Canyon Independent Safety Committee; Agenda Packet

Dear Ms. Matthews:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in Avila Beach on November 17th and 18th 2010. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. Jim E. Booker
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
Mr. William Conway
California Energy Commission
(c/o Ms. Barbara Byron)
The Attorney General
(c/o Susan Durbin, Esq.)
Governor's Office

Mr. John S. Keenan - PG&E/SF
Mr. John T. Conway - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mrs. Adriana Hartwig - PG&E/DCPP
Mr. Truman Burns - CPUC / ORA
Mr. Robert Kinosian - CPUC / ORA
Ms. Maria Salinas - CPUC
Barbara –

This will confirm that at its public meeting on November 17-18, 2010, the members of the Diablo Canyon Independent Safety Committee discussed but deferred final approval of their report to the CEC on Evaluation of Pressurized Thermal Shock and Seismic Interactions for a 20-Year License Extension at the Diablo Canyon Nuclear Plant. The report is now scheduled to be on the agenda for approval at the next public meeting of the DCISC to be held on February 15-16, 2011, at the Embassy Suites in San Luis Obispo.

The Committee made some revisions to the version of the draft report provided earlier and a copy of the revised draft, in clean and mark-up versions, is attached to this email for review by the CEC. It would be appreciated if the CEC comments on the report, if any, could be received by the Committee (by email if possible) on or before, Friday, January 15, to give time for their consideration by the members prior to the February 2011 public meeting. The revised draft of the report will also be available on the Committee’s website (www.dcisc.org).

Hope all is well with you and wishing you a joyous holiday season,

Bob Rathie
DCISC
1-800-439-4688
December 7, 2010

Mr. John T. Conway  
Senior Vice President, Energy Supply  
and Chief Nuclear Officer  
Pacific Gas & Electric Company  
P.O. Box 3  
Mail Code 104/6/601  
Avila Beach, California 93424  

Re:  DCISC Twentieth Annual Report on  
Safety of Diablo Canyon Operations  
July 1, 2009 - June 30, 2010.

Dear Mr. Conway:

At its November 17, 2010, meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. Pursuant to the Restated Charter for the Committee approved by CPUC Decision 07-00-028, the report is hereby submitted to PG&E for its review and written response within forty-five days.

Upon receipt of the PG&E response, that response shall become a part of the DCISC report and we then submit the complete report to the CPUC, the Governor, the Attorney General and the CEC, as provided by the Restated Charter.

If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

[Signature]
Robert R. Wellington  
DCISC Legal Counsel

RRW:rwr  
Enclosure  
cc (w/o encl.) DCISC Members  
Mr. James R. Becker - Site Vice President & Station Director  
Jennifer K. Post, Esq. - PG&E Law Department  
Mr. Peter Bedesem - Technical Asst. to the Site Services Director
Jane -

I have attached a copy of the vu-graphs which were used at the November 17-18, 2010, public meeting of the DCISC.

The transcript of the meeting is not yet complete. However, by clicking on the "Meeting Videos" hyperlink on the DCISC's homepage (www.dcisc.org) you should be directed to the website for AGP Video (www.slospan.org). The link should bring you directly to the list of archived videos of the Committee's public meetings. You then click on a meeting date and a copy of the agenda, indexed to the presentations, for that meeting is accessed. You can then pick any presentation or just start from the beginning and listen to the entire session/meeting.

If you have problems, try accessing www.slospan.org directly. The DCISC archive is included under the "SLO County Meetings" link (you have to scroll down to find it).

I just tried it both ways on my system and both worked fine for me.

Let me know if you need anything further in response to your request.

Regards,

Bob Rathie
DCISC

-----Original Message-----
From: Swanson Lucy Jane
Sent: Wednesday, January 12, 2011 10:39 AM
To: dcsafety@dcisc.org
Subject: request for help navigating DCISC website

I am looking on DCISC website for a detailed record of the Nov. 17 - 18 meeting in Avila Beach. I usually attend these meetings and pick up a binder with the slides reproduced. But I was unable to do so for the Nov 17-18 meetings.

These are the documents I am hoping you can direct me to on the DCISC website:

1. the binder contents including the slides for the Nov. 17-18, 2010 meeting
2. preferably a transcript of the discussion for that meeting; if that is not available, a video-recording or access to the webstream of the meetings.

I found the listings of video-recordings on the website, but when I clicked on same I got no result. I'm sure the problem is that I am limited in my understanding of how to best use your website. Thank you for any help you can give me.

Jane Swanson
January 25, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. Grace Guanlao
Advertising Department

Re: Diablo Canyon Independent Safety Committee: Public Tour Display Ad

Dear Grace:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two column wide ad in your edition on Sunday, January 30, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure
DCISC

From: DCISC [info@dcisc.org]  
Sent: Tuesday, January 25, 2011 10:12 AM  
To: 'Guanlao, Grace - SLO'  
Cc: 'info@dcisc.org'  
Subject: Tour Display ad for Publication on 1/30/2011  
Attachments: tour ad-text only.doc; Tour ad with text box.pdf

The Tribune  
3825 South Higuera  
Post Office Box 112  
1321 Johnson Avenue  
San Luis Obispo, California 93406-0112

Attention: Ms. Grace Guanlao  
Advertising Department

Re: Diablo Canyon Independent Safety Committee; Public Tour Display Ad

Dear Grace:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon Independent Safety Committee. I have attached a “text only” version (in Word) as well as an attachment showing how the ad should appear in a text box (in pdf). Please provide a proof for review and approval prior to publication.

Would you please confirm receipt of this email and publication of the enclosed as a two column wide ad in your edition on Sunday, January 30, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert W. Rathie  
DCISC Asst. Legal Counsel  
(1-800) 439-4688

RRW:rr  
attachments
DIABLO CANYON
POWER PLANT PUBLIC TOUR
WITH THE MEMBERS OF THE
DIABLO CANYON INDEPENDENT
SAFETY COMMITTEE

At 8:00 A.M. on the morning of Tuesday, February 15, 2011, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis.

Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee’s toll-free number
1-800-439-4688
on Monday, January 31, 2011
Between the hours of 9:00 A.M. - Noon
and 2:00 P.M. - 5:00 P.M.
Please place your call no earlier than 9:00 A.M.
& prior to 5:00 P.M.
Please be patient as call volume is expected
to be very heavy
Email reservations cannot be accepted
nor will requests for reservations left with anyone
other than Committee staff answering the telephone
at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on February 15th, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:00 A.M.
Information concerning the agenda for DCISC public meetings on February 15-16, 2011, will be available on the Committee’s homepage at www.dcisc.org or by contacting the office of the Committee’s Legal Counsel at the Committee’s
toll-free telephone number.

Dated: January 30, 2011.
February 1, 2011

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir of Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Saturday, February 5, 2011. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on February 15, 2011, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on February 15th, the DCISC may convene an informal power point presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Community Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on February 15-16, 2011, at the Embassy Suites, Conference Facility, located at 333 Madonna Road, San Luis Obispo, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Afternoon Session - (02/15/2011) - 1:30 P.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of November 17-18, 2010, public meeting; discussion of administrative matters, including review of PG&E's response to the DCISC 20th Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations for the period July 1, 2009 - June 30, 2010; review and approval of the DCISC's Evaluation of Pressurized Thermal Shock and Seismic Interactions at DCPP; an update on financial matters, consultant compensation and activities during 2011; review of the Open Items List; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; and review of Committee correspondence and documents received.

2. **Evening Session - (02/15/2011) - 5:30 P.M.** Committee member comments; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including review of plant events, operational status and station performance indicators; recent NRC Notices of Violation, Licensee Event Reports, NRC Notices of Violations and NRC Performance Indicators; and the recent activities of PG&E's Nuclear Safety Oversight Committee.

3. **Morning Session - (02/16/2011) - 8:00 A.M.** Comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including an overview of the Site Services organization; an overview of the Performance Improvement Review Board; the results of the July 2010 Self-Assessment of Training; and the status and plans for the Probabilistic Risk Assessment (PRA) Group.

4. **Afternoon Session - (02/16/2011) - 1:00 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including the Quality Verification organization's perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification's top concerns; and the impacts of elimination of once-through cooling; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Friday, February 11, 2011, at the Reference Department of the Cal Poly Library in San Luis Obispo. For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda on line by visiting the Committee's website at www.dcisc.org.

Dated: February 5, 2011.
PRESS RELEASE:

PUBLIC MEETING
OF THE
DIABLO CANYON
INDEPENDENT SAFETY COMMITTEE

WHO: The Members of the Independent Safety Committee:
Robert J. Budnitz
Peter Lam
Per F. Peterson

WHAT: An opportunity for the public to observe and receive information concerning the activities of the Independent Safety Committee including recent fact-finding visits and informational presentations concerning safety-related issues at Diablo Canyon:

- Committee Business Session - Tuesday afternoon
- Plant Performance, Events and Operational Status
- Overview of the Site Services Organization
- Overview of the Performance Improvement Review Board
- Results of July 2010 Self-Assessment of Training
- Status of Plans for the Probabilistic Risk Assessment Group
- Quality Verification Organization’s Perspective on Plant Performance, Including the Quality Performance Assessment Report and Quality Verification’s Top Concerns
- Impacts of the Elimination of Once-Through Cooling

WHERE: Embassy Suites Conference Facility
333 Madonna Road, San Luis Obispo, CA

WHEN: Tuesday and Wednesday
February 15th & 16th

TIMES: 1:30 p.m. - 5:00 p.m. (Tuesday, February 15th)
5:30 p.m. to approx. 7:15 p.m. (Tuesday, February 15th)
8:00 a.m. to Noon (Wednesday, February 16th)
1:00 p.m. to approx. 3:15 p.m. (Wednesday, February 16th)

FOR FURTHER INFORMATION:

Including more information on these and other topics to be reviewed by the Independent Safety Committee or the specific days and times for particular presentations

Contact 1-800-439-4688

or review the meeting agenda online at
www.dcisc.org

The Committee’s policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

G.2-32
February 4, 2011

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Mr. Bob Rucker.

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Mr. Rucker:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, February 10, 2011, which we understand will be available in the local area through Wednesday, February 16. The same format and style as used for our past advertising publications in the New Times should be used for the February 2011 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Diablo Canyon
INDEPENDENT SAFETY COMMITTEE (DCISC)

TUESDAY AFTERNOON,
FEBRUARY 16TH 1:30 P.M.
Introductions, public comments and communications to the Committee, Committee business session including review of PG&E’s response to the Committee’s 20th Annual Report on the Safety of Diablo Canyon Operations, approval of the DCISC’s Report on Evaluation of Pressurized Thermal Shock and Seismic Interactions at Diablo Canyon, discussion of Committee activities and plans during 2011, and reports on fact-finding visits by members and consultants.

TUESDAY EVENING,
FEBRUARY 16TH 5:30 P.M.
Public comments and communications to the Committee members; informational presentations by PG&E officials on topics requested by the Committee including plant events, operational status and performance indicators; review of licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators; and review of the recent activities of PG&E’s Nuclear Safety Oversight Committee.

WEDNESDAY MORNING,
FEBRUARY 16TH 8:00 A.M.
Introductions, public comments and communications to the Committee, and further informational presentations by PG&E including an overview of the Site Services organization, an overview of the Performance Improvement Review Board, the results of the July 2010 self-assessment of training; and the status and plans for the Probabilistic Risk Assessment group.

WEDNESDAY AFTERNOON,
FEBRUARY 16TH 1:00 P.M.
Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials including the Quality Verification organization’s perspective on plant performance including the Quality Performance Assessment Report and Quality Verification’s top concerns, and the impacts of elimination of once-through cooling; and wrap-up discussion by Committee members.

Please plan to attend!
For further information call 1-800-439-4688 or visit the Committee’s website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library’s Reference Department and the Agenda is available online on the DCISC’s website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.slo-span.org and after a meeting in archived format, indexed to the meeting’s agenda, or by following links on the Committee’s website.
February 4, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee: Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, February 13, and Tuesday, February 15, 2011. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the February 15-16, 2011, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact our office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

Enclosure
DCISC
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS
ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-928-5657

February 4, 2011

TIMES-PRESS-RECORDE
Post Office Box 460
Arroyo Grande, California 93421-0460

Attention: Advertising Department

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Friday, February 11 and Wednesday, February 16, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rt
Enclosure
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When:

Tuesday Afternoon, February 15th
1:30 P.M.

Introductions, public comments and communications
to the Committee, Committee business session.

Tuesday Evening, February 15th
5:30 P.M.

Public comments and communications to the Committee members
and informational presentations by PG&E officials on
Plant events and operational status and specific safety and
Plant operational topics requested by the Committee.

Wednesday Morning, February 16th
8:00 A.M.

Introductions, public comments and communications
to the Committee, and informational presentations by
PG&E concerning Plant operations requested by the Committee.

Wednesday Afternoon, February 16th
1:00 P.M.

Introductions, public comments and communications to
Committee members, further informational presentations by
PG&E officials on Plant operational topics requested by the
Committee and concluding remarks by the members.

Where:
Embassy Suites Conference Facility
333 Madonna Road
San Luis Obispo, California

Please plan to attend! For further information
call 1-800-439-4688 or visit the Committee’s
website at www.dcisc.org.

A copy of the meeting Agenda packet may be
reviewed at the Cal Poly Library’s Reference Department
and the Agenda is available on the DCISC's website.

The Committee’s policy is to schedule its public meetings in locations that are accessible to
people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible
facility and devices for attendees who may be hearing impaired are available.
February 10, 2011

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Cathy Matthews
Re: Diablo Canyon Independent Safety Committee; Agenda Packet.

Dear Ms. Matthews:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in San Luis Obispo on February 15-16 2011. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
Mr. William Conway
California Energy Commission
(c/o Ms. Barbara Byron)
The Attorney General
(c/o Susan Durbin, Esq.)
Governor’s Office

Mr. John S. Keenan - PG&E/SF
Mr. John T. Conway - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mrs. Adriana Hartwig - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mr. Robert Kinosian - CPUC
Mr. Truman Burns - CPUC
Ms. Maria Salinas - CPUC

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
857 CASS STREET • SUITE D • MONTEREY • CA • 93940
TELEPHONE [800] 439-4688/[831] 647-1044 • FAXSIMILE [831] 373 7106 • INFO@DCISC.ORG

G.2-38
February 28, 2011

Hon. James D. Boyd
California Energy Commission
Vice Chair and Associate Member
2009 Integrated Energy Policy Report Committee
1516 Ninth Street, MS-34
Sacramento, California 95814-5512

Re: Diablo Canyon Independent Safety Committee’s Evaluation of Pressurized Thermal Shock and Seismic Interactions at Diablo Canyon Nuclear Power Plant.

Dear Commissioner Boyd:

The Energy Commission in its 2009 Integrated Energy Policy Report, Final Committee Report, made a recommendation that the Diablo Canyon Independent Safety Committee evaluate reactor pressure vessel integrity at Diablo Canyon for a proposed 20-year license extension and recommend mitigation plans, if needed. The Committee’s review was to consider the reactor vessel surveillance reports for Diablo Canyon in context of any changes to the predicted seismic hazard at the site.

Following the Committee’s receipt of the Energy Commission’s recommendation, individual Committee members met on several occasions with Pacific Gas & Electric Company’s representatives during several fact-finding visits to Diablo Canyon and to Pacific Gas & Electric Company’s San Francisco offices. Committee members also attended the Nuclear Regulatory Commission’s Seismic Information Workshop held on September 8-9, 2010, and the PG&E public meeting held on January 19, 2011, both of which were held in San Luis Obispo. The three members of the Committee discussed this matter during their public meetings held in February, June and November 2010 and the Committee received a presentation from PG&E on the topic during its public meeting on November 18, 2010.

The Committee’s Report in response to the Commission’s recommendation made in the 2009 Integrated Energy Policy Report was unanimously approved by the membership at the Committee’s public meeting held on February 15, 2011, and is enclosed with this letter. The Report represents the collective concurrence of all three members of this Committee concerning their evaluation of pressurized thermal shock and seismic interactions at Diablo Canyon.
Because additional information concerning seismic conditions related to the Shoreline Fault feature is still being gathered and further analyses of those data are yet to be developed, it is possible that the Committee may, after review of the additional data, modify its evaluation. In continuing to fulfill its charge from the California Public Utilities Commission to review Diablo Canyon operations for purposes of assessing the safety of operations and suggesting any recommendations for safe operations, the Committee commits to keeping the Energy Commission, the Governor, the Attorney General and the Public Utilities Commission fully informed, in a timely manner, concerning information received which may require modification of the information, analyses or conclusions set forth in the Report.

On behalf of myself and the other members of the Diablo Canyon Independent Safety Committee, please accept our thanks for this opportunity to contribute to the Energy Commission’s continuing assessment of these important issues and their potential to affect the future of nuclear power generation in California.

Very truly yours,

Robert J. Budnitz
Chair

Enclosure

RJB:rwr

cc:
Hon. Robert B. Weisenmiller, PhD., Chair, California Energy Commission
Hon. Jeffrey D. Byron, Commissioner and Presiding Member, 2009 Integrated Energy Policy Report Committee
Hon. Edmund G. Brown, Jr., Governor, State of California
Hon. Kamala Harris., Attorney General, State of California
Hon. Michael R. Peevey, President, California Public Utilities Commission
Dr. Michael Peck, NRC Senior Resident Inspector - Diablo Canyon
Ms. Barbara Byron, Senior Nuclear Policy Advisor, California Energy Commission
Mr. John T. Conway, Senior Vice President-Energy Supply & Chief Nuclear Officer, PG&E
Mr. James R. Becker, Diablo Canyon Site Vice President, PG&E
March 1, 2011

The California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94104

Attention: Mr. Paul Clanon, Executive Director


Dear Mr. Clanon:

Enclosed please find a copy of the two volumes which comprise the "Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 - June 30, 2010," which was adopted at the sixty-first public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in Avila Beach on November 17, 2010.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E's written response as part of the report. We then file our report with your office as well as with the California Energy Commission, the Governor and the Attorney General. This Report is also made available to the public on the DCISC's website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter,

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl: Larry Chaset, Esq. - CPUC/LEGAL
Mr. Massis Galestan - CPUC/ENERGY
Ms. Maria Salinas - CPUC/ENERGY

cc w/encl: Mr. Truman Burns - CPUC/DRA
Mr. Peter Bedesem - PG&E/DCPP
DCISC Members
March 1, 2011

Office of the Governor
State of California
State Capitol Building
Suite 1173
Sacramento, California 95814


Dear Sir or Madam:

Enclosed please find a copy of the two volumes which comprise the "Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 - June 30, 2010," which was adopted at the sixty-first public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in Avila Beach on November 17, 2010.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E's written response as part of the report. We then file the report with your office as well as with the CPUC, the Office of the Attorney General and the California Energy Commission. This Report is also made available to the public on the DCISC website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have been concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: DCISC Members
w/encl.: Mr. Peter Bedesem - PG&E/DCPP
March 1, 2011

Office of the Attorney General
State of California
California Department of Justice
1300 "I" Street
Sacramento, California 95814

Attn: Senior Assistant Attorney General - Natural Resources Section.


Dear Senior Assistant Attorney General:

Enclosed please find a copy of the two volumes which comprise the "Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 - June 30, 2010," which was adopted at the sixty-first public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in Avila Beach on November 17, 2010.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E's written response as part of the report. We then file the report with your office as well as with the CPUC, the Governor and the California Energy Commission. This Report is also made available to the public on the DCISC's website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc w/o encl.: Deputy Attorney General Susan L. Durbin
DCISC Members
cc w/encl.: Mr. Peter Bedesam - PG&E/DCPP

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON • 857 CASS STREET • SUITE D • MONTEREY • CA • 93940
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373-7106 • dcisafety@dcisc.org
March 1, 2011

Hon. Robert B. Weisenmiller, PhD.
Chair
California Energy Commission
1516 Ninth Street, MS-33
Sacramento, California 95814

Attention: Commission Supervising Librarian


Dear Chair Weisenmiller:

Enclosed please find a copy of the two volumes which comprise the "Twentieth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2009 - June 30, 2010" which was adopted at the sixty-first public meeting of the Diablo Canyon Independent Safety Committee ("DCISC") held in Avila Beach on November 17, 2010.

As required, the DCISC first submits a copy of its report to PG&E, and then includes PG&E’s written response as part of the report. We then file the report with your office as well as with the CPUC, the Governor and the Attorney General. This Report is also made available to the public on the DCISC website.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports.

Thank you for your attention to this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel
March 1, 2011

Mr. John T. Conway  
Senior Vice President - Energy Supply  
& Chief Nuclear Officer  
Pacific Gas and Electric Company  
Diablo Canyon Power Plant  
P.O. Box 56  
Avila Beach, California 93424  

Re: DCISC Twentieth Annual Report on  
Safety of Diablo Canyon Operations  
July 1, 2009 - June 30, 2010  

Dear Mr. Conway:

At its November 17, 2010, meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its “Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010.” We enclose a completed report with PG&E’s comments incorporated therein for your information and files.

If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington  
DCISC Legal Counsel  

RRW:rr  
Enclosure  
cc w/o encl.: DCISC Members  
  William V. Manheim, Esq., PG&E Law Dept.  
  Jennifer K. Post, Esq., PG&E Law Dept.  
  Mr. Brian K. Cherry, PG&E Vice President Regulatory Relations  
cc w.encl.: Mr. Peter Bedesem, PG&E/DCPP  

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON • 857 CASS STREET • SUITE D • MONTEREY • CA • 93940  
TELEPHONE [800] 439-4688/[831] 647-1044 • FAXSIMILE [831] 373-7106 • dcsafety@dcisc.org
March 1, 2011

R.E. Kennedy Library
Reference Department Desk
Cal Polytechnic State University
San Luis Obispo, California 93407

Attention: Librarian

Re: Diablo Canyon Independent Safety Committee; Twentieth Annual Report

Dear Librarian:


Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
emc w/o encl to:
Dr. Robert J. Budnitz
Dr. Per Peterson
Dr. Peter Lam
Mr. William F. Conway
Mr. David C. Linnen
Martin A. Mattes, Esq.
cc w/encl. Mr. R. Ferman Wardell P.E.
Mr. Muckenfuss:


Concerning storage and movement of fuel in the spent fuel pools and the ISFSI, I would also direct your attention to the video, produced by PG&E, which is available on the Committee’s homepage on the website at www.dcisc.org

A link to the NRC’s website is provided below for a description of spent fuel pools and their function. There are two spent fuel pools in use at Diablo Canyon.

http://www.nrc.gov/waste/spent-fuel-storage/pools.html

The DCISC members are following events in Japan closely, as is the entire community of reactor safety experts in U.S. However, the information available to us now is not reliable enough to enable us to form any firm views as to the effects, if any, on the Diablo Canyon Power Plant or on any of the other nuclear power plants in the U.S. We do not believe that there will be any immediate effects, no matter how the troubles at the nuclear power plants in Japan evolve in time. Whether any "lessons learned" from these events will affect our long-term views about DCPP safety remains to be determined as we all learn more about the specific technical details."

I hope you find this information responsive to your inquiry and thank you for contacting the DCISC.

Regards,

Robert Rathie
DCISC Asst. Legal Counsel
1-800-439-4688
dcsafety@dcisc.org
The vu-graphs used in the power point presentations at the DCISC public meetings are public records. As such, your use of those materials does not require permission from the DCISC.

Regards,

Robert Rathie
DCISC
1-800-439-4688

-----Original Message-----
From: June Cochran
Sent: Thursday, March 17, 2011 5:29 PM
To: attys mail
Subject: DCISC Binders

Dear Mr. Rathie,
I would like to obtain permission to use slides from the DCISC binders in power point presentations for audiences and public access television. Can you give me permission to do so? My thinking is that these are now public documents.
Thank you,
June Cochran
Your email concerning this issue has been provided to the DCISC members and technical consultants for their review and consideration. Should you wish to receive this response other than by reply email, please provide any additional address information.

As the primary responsibility for safety at Diablo Canyon lies with the NRC and PG&E, the Committee supports and encourages the use of their existing programs, such as the Employee Concerns Program, to address safety concerns.

The petition attached to your email to dcsafety@dcisc.org also listed PG&E’s corporate leadership and its compliance and ethics group, as well as the Diablo Canyon Nuclear Safety Oversight Committee, as additional addressees. If the petition has been provided to PG&E as addressed, obviously the Committee cannot offer you confidentiality concerning that communication. Your email did not mention or request further confidentiality and your email was sent from a pge.com address; however, in accordance with Committee Policy No. 7 please find attached a copy of the DCISC’s policy concerning Identity Protection. After you have the opportunity to review the policy, it would be appreciated if you would sign the Advisement of Identity Protection on the last page and return the last two pages to:

DCISC, Office of the Legal Counsel, 857 Cass Street, Ste. D., Monterey, CA 93940.

In the alternative, you may choose to simply scan the signed Advisement and email it to this office at dcsafety@dcisc.org.

Thank you for contacting the DCISC with your concern. After you have reviewed this email, please do not hesitate to contact the undersigned, or Robert Rathie of this office, should you wish to provide further information or have any questions about the Committee’s response or this acknowledgment. Please feel free to telephone this office with any information or questions, should you not wish to reply to this email.

Rob Wellington
DCISC Legal Counsel
1-800-439-4688
831-373-8733 (fax)"

From: attys mail [mailto:attys@wellingtonlaw.com]
Sent: Saturday, March 12, 2011 8:19 AM
To: ‘O’hagan, Neal’
Cc: ‘DCISC’
Subject: RE: Diablo Canyon Operation’s Department personnel Issue

Dear Mr. O’Hagan,

The Diablo Canyon Independent Safety Committee acknowledges receipt of your email and its attachment. Our Committee’s charter is to review the safety of operations at the Diablo Canyon Power Plant and to report
on that issue to the citizens and elected officials of California. With that charter in mind, we do not get involved in personnel or union issues per se, unless and to the extent that they may affect operational safety. Our Committee will evaluate whether there are important operational-safety concerns associated with the issue your email has raised through our normal process, namely through fact-finding visits to the plant (presently scheduled for April 19-20), through reading documents that we have access to, including those provided to us by the plant and the NRC, and through our Public Meeting format if appropriate.

If you believe that any further information could be useful to us, please send it to us through one of the Committee's normal channels. (The email you sent us is one such effective way to reach our Committee, but we have others too, as described in our web site, <www.dcisc.org>.)

Sincerely

Robert J. Budnitz
DCISC Chair

From: O'hagan, Neal
Sent: Thursday, March 10, 2011 6:17 PM
To: dcsafety@dcisc.org
Subject: Diablo Canyon Operation's Department personnel Issue

Gentlemen, I find myself in the position of making you aware of an issue here at Diablo Canyon. Find attached a petition outlining the problem. A large number of union operation's staff agree with the statements in the document as evidenced by their signature.

We look forward to evidence of actions you feel are appropriate to address the matter.

On behalf of the members,

Neal O'Hagan
IBEW Steward
WCL Operations 23 years <<20110310181207.pdf>>
February 9, 2011

To: PG&E Corporate Leadership  
    DCPP Nuclear Safety Oversight Committee  
    Diablo Canyon Independent Safety Committee  
    PG&E Corporate Compliance and Ethics group


Re: Unethical Treatment of Nuclear Operator Carl Bockhahn

We the following Operations Department personnel, express our concerns collectively regarding the apparent unethical and immoral treatment of Carl Bockhahn, a 63 year old employee with decades of faithful service to the company.

Actions taken by the DCPP Senior Leadership Team and Operations Department management appear to not be in compliance with the requirements of the IBEW 1245 Labor Agreement or PG&E Corporate policies and procedures regarding work at the facility or administration of discipline. (Documents enclosed and highlighted)

We believe that Operations Management and Human Resources, aware of the critical errors associated with the administration of the discipline program are intentionally continuing to manipulate the process and deny Carl his contractual rights to attend class in an immoral and unethical manner.

Signed

DCPP Operations Personnel

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<tr>
<th>Name</th>
<th>Signature</th>
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<td>Racette</td>
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<td>Konidio</td>
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<td>O'Hagan</td>
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<td>Ray Katz</td>
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<td>Jeremy T. Winn</td>
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<td>Reddick</td>
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Per Telecom/Konidio

Per Ray Katz

Mare Yanagita

Jay W. Whitten

Jackson
B. Allen
S. Vogt
B. Thomas
C. Weir
H. Darrington
G. Gurney
P. Blumberg
Todd M. Kett
M. Anderson
Marc Alain
Sparks
Leader
K. Anderson
J. French
M. D. Winn
D. Savard
R. James
C. T. Good
Gentlemen, I was reviewing this email tonight and see that I missed an action requested in the March 14 reply. I will scan and email the attachment as requested.

I look forward to speaking with you on this matter.

Neal O'Hagan
Operations

Your email concerning this issue has been provided to the DCISC members and technical consultants for their review and consideration.

As the primary responsibility for safety at Diablo Canyon lies with the NRC and PG&E, the Committee supports and encourages the use of their existing programs, such as the Employee Concerns Program, to address safety concerns.

The petition attached to your email to dcsafety@dcsisc.org on March 10, 2011, also listed PG&E’s corporate leadership and PG&E’s Compliance and Ethics Group, as well as the Diablo Canyon Nuclear Safety Oversight Committee, as additional addressees. If the petition has been provided to PG&E as addressed, obviously the Committee cannot offer you confidentiality concerning that communication. Your email did not mention or request further confidentiality and your email was sent from a pge.com address, however, in accordance with Committee Policy No. 7 please find attached a copy of the DCISC’s policy concerning Identity Protection. After you have the opportunity to review the policy, it would be appreciated if you would sign the Advisement of Identity Protection on the last page and return the last two pages to:

DCISC, Office of the Legal Counsel, 857 Cass Street, Ste. D., Monterey, CA 93940.

In the alternative, you may choose to simply scan the signed Advisement and email it to this office at dcsafety@dcsisc.org.

Thank you for contacting the DCISC with your concern. After you have reviewed this email, please do not hesitate to contact the undersigned, or Robert Rathie of this office, should you wish to provide further information or have any questions about the Committee’s response or this acknowledgment. Please feel free to telephone this office with any information or questions, should you not wish to reply to this email.

Rob Wellington
DCISC Legal Counsel
1-800-439-4688
831-373-8733 (fax)"

1

G.2-54
From: atty's mail [mailto:atty@wellingtonlaw.com]
Sent: Saturday, March 12, 2011 8:19 AM
To: 'O'hagan, Neal'
Cc: 'DCISC'
Subject: RE: Diablo Canyon Operation's Department personnel Issue

Dear Mr. O'Hagan,

The Diablo Canyon Independent Safety Committee acknowledges receipt of your email and its attachment. Our Committee’s charter is to review the safety of operations at the Diablo Canyon Power Plant and to report on that issue to the citizens and elected officials of California. With that charter in mind, we do not get involved in personnel or union issues per se, unless and to the extent that they may affect operational safety. Our Committee will evaluate whether there are important operational-safety concerns associated with the issue your email has raised through our normal process, namely through fact-finding visits to the plant (presently scheduled for April 19-20), through reading documents that we have access to, including those provided to us by the plant and the NRC, and through our Public Meeting format if appropriate.

If you believe that any further information could be useful to us, please send it to us through one of the Committee's normal channels. (The email you sent us is one such effective way to reach our Committee, but we have others too, as described in our web site, <www.dcisc.org>.)

Sincerely

Robert J. Budnitz
DCISC Chair

From: O'hagan, Neal
Sent: Thursday, March 10, 2011 6:17 PM
To: dcsafety@dcisc.org
Subject: Diablo Canyon Operation's Department personnel Issue

Gentlemen, I find myself in the position of making you aware of an issue here at Diablo Canyon. Find attached a petition outlining the problem. A large number of union operation's staff agree with the statements in the document as evidenced by their signature.

We look forward to evidence of actions you feel are appropriate to address the matter.

On behalf of the members,

Neal O'Hagan
IBEW Steward
WCL Operations 23 years <<20110310181207.pdf>>
Mr. O'Hagan —

Thank you for scanning and sending the signed Advisement on Identity Protection. I noticed that you did not indicate on the last line of the second page whether or not you wish to request identity protection, in accordance with the Advisement, for your future communications with the DCISC.

Did you want to indicate a preference, for the record? If so, please so indicate on the second page.

Thank you,

Bob Rathie
DCISC
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
ADVISEMENT ON IDENTITY PROTECTION

Concerned private citizens or PG&E employees who bring information or allegations about safety concerns including perceived wrongdoing to the Diablo Canyon Independent Safety Committee (DCISC) in a private manner or forum may desire to have the DCISC protect their identities from disclosure. Such persons should be advised that the primary responsibility in such matters lies with PG&E and the NRC, and are encouraged to utilize their existing programs to identify and resolve safety concerns. It is the policy of the DCISC, however, to communicate fully with any individuals raising safety concerns and, to the extent of its jurisdiction and authority, see that the concerns are addressed and responded to in a timely manner. Therefore, this advisement is provided to clarify the degree of protection which can be afforded to a concerned private citizen or a PG&E employee bringing such information, concerns or allegations privately to the DCISC:

(1) In resolving technical issues, the DCISC in protecting your identity will make all reasonable efforts to not disclose your identity to any organization or individual outside the DCISC or to the public unless:

✓ You clearly indicate no objection to being identified; or

✓ Disclosure is necessary to ensure public health and safety; or

✓ Disclosure is necessary, in accordance with the DCISC's responsibilities under law or public trust, to respond to an order from a state or federal legislative body, regulatory agency or judicial body in furtherance of its statutory responsibilities; or

✓ You take actions that are inconsistent with and override the purpose of protecting your identity such as disclosing publicly information revealing your identity or status with respect to the Committee or intentionally providing false information to the DCISC; or

✓ Disclosure is necessary to pursue a law enforcement agency investigation.
(2) If your allegation is that you have in some manner been
discriminated against for having raised safety concerns, it may
be impractical to review or attempt to address such an allegation
without using your name. Therefore, for allegations of
harassment and intimidation, the DCISC may have no alternative
but to disclose your identity. If you request that your name be
kept confidential, the DCISC will not normally review your
allegation of discrimination.

(3) Information provided under the California Public Records Act
(PRA) or the Federal Freedom of Information Act (FOIA) will, to
the extent consistent with those Acts, have the names and other
potential identifiers deleted.

I fully understand the degree of protection of my identity as
explained in this document.

I do / do not hereby request identity protection.

[strike out or circle as appropriate]

Date: 3/28/11
Signature: [Signature]
Name: [Name]
Mr. Brody -

This will again acknowledge and further responds to your email to the Diablo Canyon Independent Safety Committee (DCISC) regarding your question about the nature of the Committee’s oversight function and your concerns related to the unintentional disabling of the Unit 2 Containment sump suction valve interlocks at Diablo Canyon Power Plant (DCPP).

Concerning the role of the DCISC, the Committee was established to review DCPP operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members have any responsibility or authority for plant operations, nor do they have authority to direct PG&E personnel. The DCISC prepares an annual report which includes the assessment and recommendations of the Committee.

The DCISC typically conducts three public meetings each year in the San Luis Obispo area. The DCISC also conducts numerous fact-finding visits by individual Committee members and consultants to the plant site and to other locations as necessary to assess issues, review plant programs and activities, interview and meet with PG&E management, employees and members of the public, follow-up on current items on the DCISC's Open Items List and to identify agenda items for future public meetings. These fact-finding visits generally occupy one or two intensive days of research and investigation concerning PG&E’s current activities and programs.

A detailed written report, summarizing their activities, is prepared for each fact-finding visit by the participants. Comments concerning these reports are sought from each of the other members and consultants, oral reports are presented during public meetings and, when approved by the Committee at a public meeting, the fact-finding reports are provided to PG&E. All fact-finding reports are included as part of the Committee’s annual reports.

Here are specific answers to your questions:

1) What is your role in oversight on this issue?

The DCISC’s role in this issue, like any other issue, is to review and monitor DCPP actions in assuring the issue is satisfactorily resolved and does not compromise safety.

2) What are you planning to do about it?

The DCISC’s has completed its actions, namely to promptly review the issue (identified in October 2009) at Diablo Canyon Power Plant with plant management and engineers, perform follow-up reviews and have DCPP management present its analyses, safety significance and corrective actions to the DCISC in a public forum, namely the December 2009 Public Meeting (see the DCISC’s 20th Annual Report, available online at www.dcisc.org, Volume II, Exhibit B-3, "Status of Recirculation Valve Position Interlocks"). The DCISC followed up again at its April 2010 fact-finding meeting (20th Annual Report, Volume II, Exhibit D.8) and at its July 2010 fact-finding meeting at DCPP and reported its final conclusions at its November 2010 Public Meeting. (Streaming video of the Committee's consideration and approval of the July 6-7, 2010, Fact Finding Report at the November 17 public meeting, under Agenda Item VIIIB, is available by accessing the link on the homepage at www.dcisc.org). Note that, even with the
valve issue, procedures directed operators to manually operate the valve, which would provide a satisfactory means of providing cooling water when and where needed.

3) How can this be avoided in the future?

DCPP has taken "corrective actions to prevent recurrence" for this issue, which the DCISC concludes will assure this will be avoided in the future.

For complete information concerning the DCISC's review, I again direct your attention to the Committee's website at www.dcisc.org, where the 20th Annual Report is posted in its entirety. Specifically, I direct your attention to Volume I, section 4.6 "Summary of Major Review Topics" and therein to subsection 4.15 wherein the Committee's review of this topic is discussed (including a hyperlinks to the exhibits in Volume II).

In its 20th Annual Report, the DCISC recommended that DCPP managers and supervisors share the specific lessons learned from the unintentional disabling of the containment sump valve interlocks with DCPP personnel at all levels, especially before the commencement of outages and further recommended the DCPP share this same information with the industry.

I hope you find the foregoing responsive to your inquiry.

Robert Rathie
Asst. Legal Counsel
DCISC

-----Original Message-----
From: Jeff Brody
Sent: Wednesday, March 23, 2011 12:35 PM
To: dcsafety@dcisc.org
Subject: Next Steps

Hello -

Given the UCS report that at Diablo Canyon valves that provide emergency cooling water to the Unit 2 reactor core and containment vessel had been stuck in the closed position for 18 months without anyone knowing about it.

My questions are
1) What is your role in oversight on this issue and
2) What are you planning to do about it and
3) How can this be avoided in the future?

Had an earthquake occurred on the nearby faults, this would be viewed as criminal negligence no?

Thank You,
Jeff Brody
Mr. O'Driscoll:

This will acknowledge receipt of your email to the Diablo Canyon Independent Safety Committee (DCISC) regarding lessons to be learned from the Japanese earthquake.

The DCISC is independent of, and not a part of, Pacific Gas & Electric Company (PG&E), the operator of the Diablo Canyon Power Plant (DCPP). The DCISC was established by the California Public Utilities Commission to review PG&E's operation of DCPP for the purpose of assessing the safety of operations and suggesting any recommendations for safe operations. Neither the Committee nor its members have any responsibility or authority for plant operations, nor do they have authority to direct PG&E personnel. The DCISC prepares an annual report which includes the assessment and recommendations of the Committee.

You may wish to contact PG&E and DCPP directly at diablocanyon@pge.com concerning the lessons you believe PG&E should learn from the Japanese earthquake and the essential safety precautions you believe should be taken at DCPP.

For complete information concerning the DCISC's review of DCPP operations, I direct your attention to the Committee's website at www.dcisc.org, where the DCISC's most recent 20th Annual Report, as well past annual reports, are available for review.

Your email was provided to the DCISC's Members.

Robert Rathie
Asst. Legal Counsel
DCISC

-----Original Message-----
From: Peter O'Driscoll
Sent: Friday, April 01, 2011 1:25 AM
To: dcsafety@dcisc.org
Subject: Essential safety precautions at Diablo Canyon

Three obvious lessons can be learned from the Japanese earthquake.

Your estimated maximum earthquake intensity for this site is almost certainly wrong. Your statistical studies are not convincing.

A gravity-feed cooling water system must be available. Sufficient cooling water must be available for the duration necessary for repairs. Multiple pools should be used so that a crack or failure in a single pool will not kill this backup system. The pools could be on adjacent hills.

An emergency power supply must be available which does not depend on operation of the reactors. This could be standby gas turbines, with fuel stored in multiple containers.
The bottom line is that Diablo Canyon is not safe. If more statistical studies are offered to show that it is, then you cannot be trusted. It has been unnerving to watch PG&E scramble after the San Carlos gas line disaster. A pathetic performance.

Only when well-designed engineering systems are added to avoid the problems manifest in the Japanese disaster, can you hope to have the trust of the public. Let the public know that you have learned from Japan, and you are doing something about it.

Peter O'Driscoll.
Hi Jim,

Notification 50387645 was written yesterday to evaluate the information you provided. I am usually at work from 0430 – 1500, M – Th. You can give me a call at 545-3430 or email me, so I can periodically update you.

Thanks for bringing the issue to our attention,

Rick

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From: jk bigelow
Sent: Wednesday, April 06, 2011 10:27 AM
To: Burnside, Rick
Cc: 'Dcsafety@Dcisc. Org'; attys@wellingtonlaw.com
Subject: RE: Auxiliary Saltwater System

Rick, I submitted the following to the DCISC. I would have sent this to ECP if retirees were informed of a procedure to do so. What would be the best way to get concerns to the ECP and is that the proper entity to receive concerns?

James Bigelow

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From: attys mail [mailto:attys@wellingtonlaw.com]
Sent: Wednesday, April 06, 2011 10:00 AM
To: 'jk bigelow'
Cc: Dcsafety@Dcisc. Org
Subject: RE: Auxiliary Saltwater System

Mr. Bigelow:

This will again acknowledge and further respond to your email of March 29 to the Diablo Canyon Independent Safety Committee (DCISC) with your concerns regarding the possible effects of a tsunami on the ASW System at Diablo Canyon Power Plant (DCPP). DCPP is performing a formal review of the Fukushima earthquake and the effect of the resulting tsunami on the Fukushima Dai-ichi nuclear power plant. The DCISC is following this and will review it at our fact-finding visit to DCPP on April 19-20, 2011.

As a former DCPP employee, I’m sure you are aware the primary responsibility for safety at Diablo Canyon lies with PG&E as regulated by NRC and, therefore, the Committee supports and encourages the use of their existing programs, such as the Employee Concerns Program, to address safety concerns. We have been advised by PG&E that retired DCPP employees are welcome to use these programs.

With your permission, the DCISC would like to forward your email to DCPP as input to this review and follow up on it in April during fact-finding at DCPP. In accordance with the attached Committee Policy No. 7, please find attached a copy of the DCISC’s advisement concerning Identity Protection. After you have the opportunity to
review the policy, it would be appreciated if you would indicate your preference regarding identity protection, sign the Advisement of Identity Protection on the last page and return the last two pages to:

DCISC, Office of the Legal Counsel, 857 Cass Street, Ste. D., Monterey, CA 93940.

In the alternative, you may choose to simply scan the signed Advisement and email it to this office at dcsafety@dcisc.org.

Again, thank you for contacting the DCISC with your concerns. After you have reviewed this email, please do not hesitate to contact me should you wish to provide further information. Please feel free to telephone this office with any information or questions.

Robert Rathie
DCISC Asst. Legal Counsel
1-800-439-4688
831-373-8733 (fax)

From: attys mail [mailto:attys@wellingtonlaw.com]
Sent: Tuesday, March 29, 2011 4:33 PM
To: 'jk bigelow'
Cc: Dcsafety@Dcisc. Org
Subject: RE: Auxiliary Saltwater System

Mr. Bigelow -

This will acknowledge receipt of your email to the Diablo Canyon Independent Safety Committee. Your email has been provided to the Committee Members and technical consultants for their review of your concerns.

Thank you for contacting the DCISC.

Robert Rathie
DCISC Asst Legal Counsel
(800)439-4688 (toll-free in CA)

From: jk bigelow
Sent: Tuesday, March 29, 2011 2:58 PM
To: dcsafety@dcisc.org
Cc: jkbigelow@charter.net
Subject: Auxiliary Saltwater System

I believe that one lesson learned from the Fukushima Nuclear Power Plant tsunami is that Diablo Canyon Power Plant may need to require additional reviews of its ability to survive the effects of the aftermath of a design basis tsunami.

While the Auxiliary Saltwater System (ASW) ventilation system (the large pipes that connect the ASW pump pit to the atmosphere) was designed to withstand the initial wave(s) of a tsunami, the backwash of the wave(s) down the slopes of the hillside, may carry floatable structures that could collide with and disrupt the ASW pump ventilation systems. There are many temporary buildings and vehicles that could be swept up the hillside in a tsunami and then impact the ASW pump ventilation system pipes when the backwash travels down the hillside. The intake bay should be cleansed of temporary buildings and vehicles such as automobiles, bio-lab structures, docks, the kelp cutter, and the bio-lab boat.
Additionally, the ability of the ASW system to adequately pump saltwater should be reviewed in the light of possible debris carried into the intake bay from the backwash of the design basis tsunami. There is a considerable amount of brush and temporary buildings that could ‘plug’ the intake screens of the ASW system. This would limit the ability of the ASW system to perform its design function.

If it is deemed that floatable debris would not damage the ASW ventilation system via the backwash mechanism, then a review of a tsunami coincident with a large storm should also be considered. In a large storm with a tsunami surge present, many floatable objects could be thrust at the ASW ventilation system which could cause damage to the ASW ventilation system.

In light of the scenarios above, it would seem advisable to cleanse the intake bay of brush, temporary structures and floatable objects.

James K. Bigelow
Arroyo Grande, CA
(Retired DCPP employee)
04/07/2011 13:55:49 Sandra M. Wessel (SML1) Phone 805/545-4154
04/06/2011 15:32:54 Russell E. Glines (REG1) Phone 805/545-6091

Please evaluate the following as part of lessons learned from the
Fukushima Nuclear Power Plant tsunami:

Diablo Canyon Power Plant should evaluate its ability to survive the
effects of the aftermath of a design basis tsunami and a large storm
with a tsunami surge.

While the Auxiliary Saltwater System (ASW) ventilation system (the large
pipes that connect the ASW pump pit to the atmosphere) is designed to
withstand the initial wave(s) of a tsunami, the backwash of the wave(s)
down the slopes of the hillside, may carry floatable structures that
could collide with and disrupt the ASW pump ventilation systems. There
are many temporary buildings and vehicles that could be swept up the
hillside in a tsunami and then impact the ASW pump ventilation system
pipes when the backwash travels down the hillside. The intake bay should
be evaluated for the removal of temporary buildings, bio-lab structures,
sea trains, docks, the kelp cutter, the bio-lab boat, and vehicles.

Additionally, the ability of the ASW system to adequately pump saltwater
should be reviewed in the light of possible debris carried into the intake bay from the backwash of the design basis tsunami. In addition to temporary buildings and floatable objects, there is a considerable amount of brush that could "plug" the intake screens of the ASW system. This would limit the ability of the ASW system to perform its design function.

If it is deemed that floatable debris would not damage the ASW ventilation system via the backwash mechanism of a tsunami, then a review of a tsunami coincident with a large storm should also be considered. In a large storm with a tsunami surge present, many floatable objects could be thrust at the ASW ventilation system which could potentially cause damage or "plug" the ASW ventilation system.

This scenario also had the potential to plug the intake screens of the ASW system with debris that would be carried into the intake bay from the backwash of a large tsunami type storm surge.

In light of the scenarios above, it would seem advisable to cleanse the intake bay of brush, temporary structures and floatable objects.

Recommend a significance level 3 work group evaluation.


The issue/event documented on this notification was reviewed by the Notification Review Team (NRT) and determined to be the indicated significance level per OM7.ID1, Attachment 1, Category 17. If additional information is discovered that would affect the significance level determination, contact a member of the NRT or e-mail DCPP NRT Members.

DN closed to DA.

Per the 4/7/11 NRT, add EDC to main work center.
Description: Evaluate Tsunami Lessons Learned

STATUS DETAILS

System Status: OSNO

User Status: 20 APPV Approved
April 10, 2011

PG&E Letter DCL-11-047

US Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Request for Deferral of Issuance of Diablo Canyon Power Plant Renewed Operating Licenses

Dear Commissioners and Staff:

By Pacific Gas and Electric Company (PG&E) Letter DCL-09-079, “License Renewal Application,” dated November 23, 2009, PG&E submitted an application to the Nuclear Regulatory Commission (NRC) for the renewal of Facility Operating Licenses DPR-80 and DPR-82, for Diablo Canyon Power Plant (DCPP) Units 1 and 2, respectively. The application included the license renewal application (LRA), and Applicant's Environmental Report – Operating License Renewal Stage.

As you know, the Commission's review of the LRA includes consideration of whether license renewal is consistent with the Coastal Zone Management Act (CZMA). The agencies responsible for performing the coastal consistency review for DCPP are San Luis Obispo County and the California Coastal Commission. In light of recent events at the Fukushima Daiichi Power Plant, and the considerable public concern regarding the need to assure the seismic safety at DCPP, PG&E has decided it is most prudent to have completed certain seismic studies at DCPP prior to issuance of the coastal consistency certification and the renewed NRC operating licenses, if approved.

The seismic studies referenced above are the seismic studies approved and funded by the California Public Utilities Commission (CPUC), including 3-D seismic studies recommended by the California Energy Commission (collectively referred to in this letter as the “3-D seismic studies”). The CZMA and the California Coastal Act, and their implementing regulations, do not necessarily require the 3-D seismic studies to be completed prior to issuance of the coastal consistency certification or that a coastal development permit be obtained in connection with license renewal. Nonetheless, as noted above, PG&E believes it prudent to complete these studies and issue a report addressing the results prior to issuance of a consistency certification and/or renewed operating licenses, if approved.
The CPUC approved PG&E’s application for funding to perform the 3-D seismic studies on August 16, 2010. PG&E estimates that implementation of the 3-D seismic studies and investigations will occur over a minimum three-year period, which started in 2010. However, because this task will require the acquisition of all necessary State of California permits for seismic sources that exceed the 2-kilojoule energy limit, compliance with the California Environmental Quality Act, conducting data collection over the defined off-shore survey area, and data interpretation and integration, it is possible for the completion date for the studies to be delayed. In any event, presuming PG&E obtains all necessary permits, PG&E expects the 3-D seismic studies to be completed, and intends to issue a report addressing the results of those studies, as soon as possible after completing the analysis of the data and no later than December 2015.

PG&E therefore requests that the Commission delay the final processing of the LRA such that the renewed operating licenses, if approved, would not be issued until after PG&E has completed the 3-D seismic studies and submitted a report to the NRC addressing the results of those studies. PG&E would appreciate a Commission response to this letter granting this request on the docket for the License Renewal Application, Docket No. 50-275, OL-DPR-80, Docket No. 50-323, OL-DPR-82.

Please contact Mr. Terence L. Grebel, License Renewal Project Manager, at (805) 545-4160 with any questions about this letter.

Executed on April 10, 2011.

Sincerely,

John T. Conway
Senior Vice President - Energy Supply and Chief Nuclear Officer

Jlp/223-9809

cc: Elmo E. Collins, NRC Region IV Regional Administrator
    Nathanial B. Ferrer, NRC Project Manager, License Renewal
    Kimberly J. Green, NRC Project Manager, License Renewal
    Michael S. Peck, NRC Senior Resident Inspector
    James T. Polickoski, Project Manager, Office of Nuclear Reactor Regulation
    Alan B. Wang, Project Manager, Office of Nuclear Reactor Regulation
    Diablo Distribution
Ms. Cochran -

The next public meeting of the DCISC will be held in Avila Beach on June 21-22 (the public tour, usually held on the first day in the morning, is now expected to be conducted on Wednesday, June 22). The agenda will be posted on the Committee's website at www.dcisc.org as soon as it is available.

Thanks for your interest in the Committee.

Regards,

Bob Rathie

-----Original Message-----
From: June Cochran  
Sent: Sunday, April 10, 2011 8:13 PM  
To: attys mail  
Subject: Next DCISC Meetings

Dear Mr. Rathie,

Do you have the date for the next DCISC meetings?
Will they be in Avila or SLO?

Thank you,

June Cochran
April 12, 2011

R.E. Kennedy Library
Attn: Ms. Gayle Chipman
Government Document Specialist
California Polytechnic State University
San Luis Obispo, California 93407

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Brown:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E’s response incorporated therein. Please make it available to the public. Compact disks are also being sent to the San Luis Obispo, Arroyo Grande and Shell Beach public libraries. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at Kennedy Library.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 12, 2011

County Library
County of San Luis Obispo
Shell Beach Branch
230 Leeward Avenue
Pismo Beach, California 93449

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein. Please make it available to the public. Compact disks are also being sent to the Arroyo Grande County Branch Library, to the San Luis Obispo City Library and to the R.E. Kennedy Library at Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this annual report. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 12, 2011

County Library
County of San Luis Obispo
Arroyo Grande Branch
800 W. Branch
Arroyo Grande, California 93420

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on
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Obispo City Library, to the Shell Beach County Branch Library and to the R.E. Kennedy Library
at Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to
the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which
you or your staff might have concerning the value and usefulness of this annual report. If you
have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 12, 2011

City Library
Cities of San Luis Obispo
995 Palm Avenue
San Luis Obispo, California 93401

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Librarian:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We
enclose a compact disk containing the completed report, with PG&E’s response incorporated
therein. Please make it available to the public. Compact disks are also being sent to the County
Public Library Branches at Arroyo Grande and Shell Beach and to the R.E. Kennedy Library at
Cal Poly. The two bound volumes which comprise the Annual Report were sent previously to
the Reference Department Desk at the Cal Poly Library.

The Members of the Committee welcome and invite any thoughts and comments which
you or your staff might have concerning the value and usefulness of this annual report. If you
have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 12, 2011

Martin A. Mattes, Esq.
Nossaman, Guthner, Knox & Elliott, LLP
50 California Street
San Francisco, California 94111

Re: Diablo Canyon Independent Safety Committee;

Dear Marty:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files.

The Members of the Committee welcome and invite any thoughts and comments which you might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 12, 2011

Ms. Kristin Inman
Media Relations & Nuclear Communications
Diablo Canyon Power Plant
P.O. Box 56
Mail Code 104/6/33
Avila Beach CA 93424

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Inman:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Site Vice President James Becker, Jennifer Post, Esq., PG&E Law Department, and Mr. Peter Bedesem at Diablo Canyon. The two bound volumes which comprise the Annual Report were sent previously to Senior Vice President and Chief Nuclear Officer John Conway.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
Greetings,

Few people know that Cal Poly, San Luis Obispo has an archive of historical documents related to the creation, construction, and licensing of the Diablo Canyon Nuclear Power Plant. We here at the Robert E. Kennedy Library would like the public to know that this collection exists and is available to the public for research.

WHAT: An historical archive of documents related to the Diablo Canyon Nuclear Power Plant designated and established by the U.S. Nuclear Regulatory Commission (NRC). It includes paper documents (including letters of correspondence, regulatory compliance documents, inspection reports, safety reports, environmental studies, and emergency planning) and microfiche copies of documents. It only covers the period, 1967 through 2000.

WHERE: The collection is located in the Reference Department of the Robert E. Kennedy Library on the campus of Cal Poly University, San Luis Obispo.

HOW: The collection is open to the public during the hours of regular operation of the Kennedy Library. NOTE: Non-campus people must visit the information kiosk on Grand Avenue to purchase a parking permit to park on campus.

Please check this web site for more information on the collection:

http://tinyurl.com/DiabloCanyonDocs

Wayne Montgomery, MLS, MA
Engineering Librarian
Robert E. Kennedy Library
Cal Poly University
San Luis Obispo, CA 93407

"Too often we ... enjoy the comfort of opinion without the discomfort of thought." John F. Kennedy
To the committee staff:

I have noted the brief paragraph on the possible impact of Fushima on lessons for Diablo Canyon, and noted this phrase: "...special studies previously performed at DCPP to assess its “ultimate capabilities” in the wake of worst case conditions."

Is there a brief summary on the results of those "special studies", or could I talk to a staff member who might discuss them briefly with me?

I am writing an article right now designed to relate our readers to the relationship between the Fukushima events and Diablo Canyon and will telephone you tomorrow (Tuesday) as my deadline approaches.

Thank you very much,

Sincerely,

David Perlman
Science Editor
San Francisco Chronicle

==================================================================
This e-mail message is intended only for the personal use of the recipient(s) named above. If you are not an intended recipient, you may not review, copy or distribute this message.

If you have received this communication in error, please notify the sender immediately by e-mail and delete the original message.
==================================================================
April 20, 2011

Commissioner James D. Boyd  
California Energy Commission  
1516 Ninth Street, MS-34  
Sacramento California 95814  

Re: Diablo Canyon Independent Safety Committee;  
20th Annual Report on Safety of Diablo Canyon  
Nuclear Power Plant Operations.

Dear Commissioner Boyd:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. A compact disk is also being sent to Ms. Barbara Byron. The two bound volumes which comprise the Annual Report were sent previously to the Chair of the Energy Commission, to the attention of the Commission's Head Librarian.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington  
DCISC Legal Counsel

RRW:rr  
Enclosure  
Cc w/o encl.: DCISC Members
April 20, 2011

Ms. Barbara Byron  
California Energy Commission  
1516 Ninth Street, MS-36  
Sacramento California 95814

Re: Diablo Canyon Independent Safety Committee;  
20th Annual Report on Safety of Diablo Canyon  
Nuclear Power Plant Operations.

Dear Ms. Byron,

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon  
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on  
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We  
enclose a compact disk containing the completed report, with PG&E's response incorporated  
therein, for your information and files. A compact disk is also being sent to Commissioner Boyd.  
The two bound volumes which comprise the Annual Report were sent previously to the Chair of  
the Energy Commission, to the attention of the Commission's Head Librarian.

The Members of the Committee welcome and invite any thoughts and comments which  
you or your staff might have concerning the value and usefulness of this and the previous DCISC  
annual reports. If you have any questions or comments concerning the above, please feel free to  
contact me.

Very truly yours,

Robert R. Wellington  
DCISC Legal Counsel

RRW:rr  
Enclosure  
Cc w/o encl.: DCISC Members
April 20, 2011

Susan Durbin, Esq.
Deputy Attorney General
Office of the California Attorney General
1300 "I" Street
P.O. Box 944255
Sacramento, California 94244-2550

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Durbin:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We
enclose a compact disk containing the completed report, with PG&E's response incorporated
therein, for your information and files. The two bound volumes which comprise the Annual
Report were sent previously to the attention Senior Assistant Attorney General, Natural
Resources Section.

The Members of the Committee welcome and invite any thoughts and comments which
you or your staff might have concerning the value and usefulness of this and the previous DCISC
annual reports. If you have any questions or comments concerning the above, please feel free to
contact me.

Very truly yours,

[signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 20, 2011

Laurence G. Chaset, Esq.
Senior Attorney
California Public Utilities Commission
Legal Division
505 Van Ness Avenue
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;

Dear Mr. Chaset:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Maria Salinas, Ms. Carol Brown, Mr. Massis Galestan and Mr. Robert Kinosian. The two bound volumes which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 20, 2011

Ms. Carole Brown
Chief of Staff
President Michael R. Peevey
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Ms. Brown:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We
enclose a compact disk containing the completed report, with PG&E's response incorporated
therein, for your information and files. Compact disks are also being sent to Laurence Chaset,
Esq., Ms. Maria Salinas, Mr. Massis Galestan and Mr. Robert Kinosian. The two bound volumes
which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon
and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which
you or your staff might have concerning the value and usefulness of this and the previous DCISC
annual reports. If you have any questions or comments concerning the above, please feel free to
contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
April 20, 2011

Mr. Robert Kinosian
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Kinosian:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We
enclose a compact disk containing the completed report, with PG&E's response incorporated
therein, for your information and files. Compact disks are also being sent to Laurence Chaset,
Esq., Ms. Carol Brown, Mr. Massis Galesian and Ms Maria Salinas. The two bound volumes
which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon
and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which
you might have concerning the value and usefulness of this and the previous DCISC annual
reports. If you have any questions or comments concerning the above, please feel free to contact
me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rt
Enclosure
Cc w/o encl.: DCISC Members
April 20, 2011

Mr. Massis Galestan  
California Public Utilities Commission  
Energy Division  
505 Van Ness Avenue  
San Francisco, California 94102

Re: Diablo Canyon Independent Safety Committee;  
20th Annual Report on Safety of Diablo Canyon  
Nuclear Power Plant Operations.

Dear Mr. Galestan,

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files. Compact disks are also being sent to Ms. Maria Salinas, Laurence Chaset, Esq., Ms. Carol Brown and Mr. Robert Kinosian. The two bound volumes which comprise the Annual Report were sent previously to CPUC Executive Director Clanon and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which you might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington  
DCISC Legal Counsel

RRW:rr  
Enclosure  
Cc w/o encl.: DCISC Members
Ms. Maria Salinas  
California Public Utilities Commission  
Energy Division  
505 Van Ness Avenue  
San Francisco California 94102  

Re: Diablo Canyon Independent Safety Committee;  
20th Annual Report on Safety of Diablo Canyon  
Nuclear Power Plant Operations.

Dear Ms. Salinas:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon  
Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on  
Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We  
enclose a compact disk containing the completed report, with PG&E’s response incorporated  
therein, for your information and files. Compact disks are also being sent to Laurence Chaset,  
Esq., Ms. Carol Brown, Mr. Massis Galestan and Mr. Robert Kinosian. The two bound volumes  
which comprise the Annual Report were sent previously to the CPUC Executive Director Clanon  
and Mr. Truman Burns of DRA.

The Members of the Committee welcome and invite any thoughts and comments which  
you might have concerning the value and usefulness of this and the previous DCISC annual  
reports. If you have any questions or comments concerning the above, please feel free to contact  
me.

Very truly yours,

Robert R. Wellington  
DCISC Legal Counsel

RRW:rr  
Enclosure  
Cc w/o encl.: DCISC Members
April 20, 2011

Mr. Ron Alsop
Emergency Services Manager
Office of Emergency Services
County of San Luis Obispo
County Government Center
San Luis Obispo, California 93408

Re: Diablo Canyon Independent Safety Committee;
20th Annual Report on Safety of Diablo Canyon
Nuclear Power Plant Operations.

Dear Mr. Alsop:

At its November 17, 2010, public meeting in Avila Beach the Diablo Canyon Independent Safety Committee acted to approve and adopt its Twentieth Annual Report on Safety of Diablo Canyon Operations for the period of July 1, 2009 through June 30, 2010. We enclose a compact disk containing the completed report, with PG&E's response incorporated therein, for your information and files.

The Members of the Committee welcome and invite any thoughts and comments which you or your staff might have concerning the value and usefulness of this and the previous DCISC annual reports. If you have any questions or comments concerning the above, please feel free to contact me.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
Cc w/o encl.: DCISC Members
Colleagues, here's another note from Neal O'Hagan regarding Operations culture and requesting that we look into the issues. In April Peter and I met with O'Hagan, Operations management, and the affected (at that time) employee regarding O'Hagan's previous note. Though we have not written up that section of our FF report, I believe we feel there is not an "operational safety" concern, but instead a personnel/union matter; however, if these situations are widespread, there could be an effect on morale and perhaps safety culture.

These two Notifications describe Control Room behaviors, which if described correctly, are unacceptable. It appears they have been dealt with. If we want to pursue them, the next opportunity would be Per's and Dave's FF next week, but their agenda is set but with some gaps.

Ferman

Begin forwarded message:

From: "O'hagan, Neal"
Date: May 23, 2011 10:43:20 AM EDT
To: "Ferman Wardell"
Subject: RE: Operations Culture Diablo Canyon

Ferman, Sorry about that PDF is now attached. Neal

-----Original Message-----
From: Ferman Wardell
Sent: Monday, May 23, 2011 5:34 AM
To: O'hagan, Neal
Subject: Re: Operations Culture Diablo Canyon

Neal, there was no attachment - please resend. Our public meeting will be June 21-22.

Thanks,
Ferman

On May 22, 2011, at 6:31 PM, O'hagan, Neal wrote:

Ferman, We spoke at length concerning the culture in the Diablo Canyon
operations department last month in Pismo Beach. I do not recall the
time line for your public meeting, it may have occurred when you
receive this email.

The PDF attached contains to notifications in our corrective action
program that illustrate the problem that I attempted to bring to your
attention at our meeting. On two separate occasions the pressure of an

outage broke the professionalism of our ops department staff to the

point that the interaction resulted in an entry into corrective action

program. I will let you read the notifications and make your own
determination. I was not present for either event as they both
occurred on back shift.

It is also telling that the entry was made anonymously into CAP.

If I can offer any other information let me know. I encourage you to
make inquiry into the situation.

Thank you for making yourself available.

Neal O'Hagan
Operations department
WCL 23 years
05/16/2011 16:39:14 Sandra M. 
05/15/2011 04:15:50 WDDCPPCPIC (WDDCPPCPIC)
Two operators where called up for a job at 0000 for a 0015 tailboard in
the control room. After about a five minute brief description of the
evolution from the Primary Work Control Lead (WCL), the first operator
began a task preview. The job consisted of performing the fill of the
boric acid and primary water sides of the Boric Acid Blender.

There
was a clearance OFF associated with the job as well as a OP K-15 Stroke
And Lube valve specified by the clearance that needed to be stroked.
There were two procedures, with its associated OE sheets, and one
clearance that needed to be reviewed prior to the tailboard. The first
operator had never performed this job in the past. The first operator
took about 30 minutes previewing the job until he felt comfortable with
it. The second operator began previewing the job as the first had
finished previewing different parts of the job and when the paperwork
was available for him to do so.

Just as the first was finished with
his preview the Primary Foreman asked, from his desk, when the two
operators thought they would be ready for a tailboard. The first
operator responded that he was ready and that the second operator was still previewing the paperwork.

At about five minutes to 0100 the Primary Foreman got up from his desk and walked over to the operators to ask if they would be ready for a 0100 tailboard in the control room. The first operator responded that he was ready and before the second operator responded the first said that it seemed that the Primary Foreman was applying some time pressure on the second operator to finish his task preview. At this point the Primary Foreman began raising his voice and told the first operator to not answer his question with a question and that it didn't matter if they felt time pressure from him. The Primary Foreman said that he was not talking to the first operator but to the second. The first operator questioned why it didn't matter if they felt time pressure. The Primary Foreman then threatened to continue the conversation up in the Shift Managers office if the first operator liked. Before the first operator responded, the Primary Foreman asked the second operator again if he would be ready at 0100 for a tailboard in the control room. The second operator said, "Sure."

The Primary Foreman sat down at his desk at that point. The first operator again asked why it didn't matter if he felt time pressured. The Primary Foreman got out his chair, grabbed his hardhat, and told the first operator to follow him up to the Shift Managers office to continue the conversation. The operator asked if he needed a Shop Steward with him and the Foreman said that he didn't know and that if the operator wanted one he could call one. The operator got up to call a steward and to follow the Primary Foreman to the SM office.

At that point the Primary Foreman decided not to go to the SM office and stated that he was not applying time pressure. That satisfied the operator and the exchanged ended with that. The operators continued up to the control room for the tailboard, and continued with the job after that.
The constant hawking of the operators during their task preview gives a perceived time pressure that the task preview should be expedited.

The threats to continue a conversation in the SM office when the Primary Foreman is questioned about time pressure does not promote a healthy questioning attitude and will cause some to lower the standards required of them for performing a good task preview in order to avoid such heated exchanges.

Please document in this SAPN any corrective actions taken, if needed, as soon as they happen in order to quickly replace in the working force the trust in management that they will provide a non hostile work environment in which time for a task preview is provided for any and all jobs with out threat or retaliation.
05/16/2011 16:39:06 ~

The issue/event documented on this notification was reviewed by the Notification Review Team (NRT) and determined to be the indicated significance level per OM7.ID1, Attachment 1, Category 17. If additional information is discovered that would affect the significance level determination, contact a member of the NRT or e-mail DCPP NRT Members.

DN closed to DA.

Per the 5/16/11 NRT, changed the main work center from QEQ to OPS.

05/19/2011 19:15:46 !
All employees should be provided time to perform a proper task review - Operations is provided this guidance per OP1.DC10, Conduct of Operations. When given a task employees have the responsibility to focus on the task at hand and perform it in a timely manner. If there
are issues or concerns, management should be contacted for resolution. All employees should treat each other with respect and consideration. Any employee has the capability of creating a hostile work environment either consciously or unconsciously and we all have the responsibility of not doing so. Long hours and a busy work environment can readily create the beginnings of an unharmonious working relationship. Working together and pointing out these behaviors in a courteous manner can help prevent further escalations.

**STATUS DETAILS**

System Status: OSNO NOPT
User Status: 20 APPV Approved
05/09/2011 16:51:29
05/07/2011 06:51:09  WDDCPCPIC (WDDCPCPIC)
At the beginning of 2R16 there was an incident in the Unit 2 Control Room
where the Shift Manager intervened and began directing Control Room
personnel including the Reactor Operator at the Controls to immediately
perform activities contrary to plant procedural limits. Control Room
staff responded that they were going to maintain procedural limits and a
shouting match ensued that included profanity.

There has been no
action or entry into CAP on the issue.

Both this inaction and
tolerance of the issue are creating an adverse working
environment.

05/09/2011 16:50:53

The issue/event documented on this notification was reviewed by the
Notification Review Team (NRT) and determined to be the indicated
significance level per OM7.ID1, Attachment 1, Category 17. If additional
Notification: **50398264**  Type: DA  Work Type: EVAL  AANS
Description: Control Room Oversite concerns
Order:

Information is discovered that would affect the significance level
determination, contact a member of the NRT or e-mail DCPP NRT Members.

DN closed to DA.

Per the 5/9/11 NRT, changed the main work center from QEQ to OPS.

05/09/2011 19:39:00

Operations Manager is aware of this issue. Involved parties have been
spoken with. Proper control room protocol and behaviors have been
reinforced.
05/10/2011 17:40:05

Trending has been completed and will be reviewed in next PI Rollup
Meeting. No further actions required, taken to complete with Supervisor
approval.

**STATUS DETAILS**

System Status: NOCO NOPT
User Status: 20 APPV Approved
FYI - more from O'Hagan.

Ferman

Begin forwarded message:

From: "O'hagan, Neal"
Date: May 23, 2011 8:30:03 PM EDT
To: "Ferman Wardell"
Subject: FW: Kline

Ferman, This is an email exchange between IBEW stewards and our IBEW business manager on the subject of a SM raising his voice at the Operator at the controls during the initial days of the outage. From our point of view as stewards it is clear, stop asking about the issue it has been dealt with. Again, let me know if there is anything else I can follow up with.

Neal O'Hagan
IBEW Steward
Work Control Lead DCPP

From: Taylor, Mark (IBEW)
Sent: Thursday, May 12, 2011 12:07 PM
To: Petersen, Gary E (DCPP)
Cc: Winn, Jeremy; O'hagan, Neal; Williams, Samuel; Roby, Jeff W
Subject: Re: Kline

This is an attempt to insulate you from any potential "in your face time" with Bob. Channel the concerns through me.
Thanks,
Mark

From: Petersen, Gary E (DCPP)
To: VanBogelen, Micah
Cc: Taylor, Mark; Winn, Jeremy; O'hagan, Neal; Williams, Samuel; Roby, Jeff W
Sent: Thu May 12 06:08:33 2011
Subject: RE: Kline

Micah,
Understand per Ops Management and IR, do not attempt to address on site or with Paula first. (don’t think this makes sense)

Can do.

Gary Petersen
IBEW STEWARD

From: Van Bogelen, Micah
Sent: Monday, May 09, 2011 12:38 PM
To: Petersen, Gary E (DCPP)
Cc: Taylor, Mark (IBEW)
Subject: Kline

Gary,

Thanks for stopping by my office this morning. Per our discussion, I did verify that Paula has been in contact with Mark Taylor on issues related to management style and behaviors.

Paula has invited an open dialogue with Mark any time needed. As future issues arise, please forward your observations and requests on behalf of the union through Mark. Paula is committed to improving the situation.

Regards,

Micah Van Bogelen
Senior Labor Relations Specialist
Pacific Gas and Electric Company
Patrick -

This will acknowledge your email to the Diablo Canyon Independent Safety Committee (DCISC) and your inquiry therein about an entry level position. The DCISC is a California State three-member committee charged with the review of operations at PG&E's Diablo Canyon Nuclear Power Plant, as such the Committee does not have employees. The members conduct the affairs of the Committee assisted only by two technical consultants and legal counsel.

Your inquiry about an entry level position where you might use your skills in mitigation and response at nuclear facilities would be better addressed to PG&E, as the owner/operator of Diablo Canyon, to the attention of the human resources director. The mailing address for Diablo Canyon Power Plant is P.O. Box 56, Avila Beach, CA 93424.

I wish you every success in your search.

Robert Rathie
Asst. Legal Counsel
Diablo Canyon Independent Safety Committee

-----Original Message-----
From: Joey Shea [mailto:joleyshea@mac.com]
Sent: Thursday, May 19, 2011 10:49 AM
To: dcsafety@dcisc.org
Subject: Entry-Level Emergency Management Position

Good morning!

My name is Patrick and I am currently completing a M.S. in Crisis & Emergency Management at the University of Nevada, Las Vegas.

Thus far, much of my research has been done on mitigation and response at nuclear power facilities, and I was wondering if there were any entry-level positions in your department I can submit my resume for?

Thank you!

Patrick
May 31, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Ms. Grace Guanlao
Advertising Department

Re: Diablo Canyon Independent Safety Committee; Public Tour Display Ad

Dear Grace:

Attached herewith is a copy of a public tour display ad for the Diablo Canyon
Independent Safety Committee. Would you please publish the enclosed as a two column wide
ad in your edition on Sunday, June 5, 2011. Upon completion of publication, please provide us
with a copy of the display ad.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay
upon receipt of an invoice.

Very truly yours,

Robert W. Rathie
DCISC Asst. Legal Counsel

RRW:rr
Enclosure
DIABLO CANYON
POWER PLANT PUBLIC TOUR
WITH THE MEMBERS OF THE
DIABLO CANYON INDEPENDENT
SAFETY COMMITTEE

At 8:00 A.M. on the morning of Wednesday, June 22, 2011, the Diablo Canyon Independent Safety Committee will conduct an inspection tour of certain accessible areas at the Diablo Canyon Nuclear Power Plant. This tour, which will take approximately three and a half hours, will be open to members of the public on a limited basis. Because the plant is an operating nuclear facility, the number of participants must be limited and space will be reserved on a first-come, first-served basis. Reservations, which have usually been in high demand, will be accepted for a maximum of four immediate family members, each of whom must be at least twelve years of age, per call. Priority will be given to those persons who have not attended previous public tours conducted by the Committee. The Committee makes every effort to make its public tour wheelchair accessible and to accommodate specialized equipment and other services useful to persons with disabilities. If you plan to attend and need specialized accommodations, please so indicate when making your reservation. Prior security clearance of all attendees is required in compliance with the rules of the U.S. Nuclear Regulatory Commission.

Reservations may only be made by telephoning the Committee's toll-free number

1-800-439-4688

on Monday, June 6, 2011

Between the hours of 9:00 A.M. - Noon
and 2:00 P.M. - 5:00 P.M.

Please place your call no earlier than 9:00 A.M.
& prior to 5:00 P.M.

Please be patient as call volume is expected
to be very heavy

Email reservations cannot be accepted
nor will requests for reservations left with anyone
other than Committee staff answering the telephone
at the number provided above.

In the event that security considerations preclude a public tour of Diablo Canyon on June 22nd, in the alternative the DCISC may convene an informal question and answer session at the PG&E Community Center, 6588 Ontario Road, San Luis Obispo at 8:00 A.M. Information concerning the agenda for DCISC public meetings on June 21-22, 2011, will be available on the Committee's homepage at www.dcisc.org or by contacting the office of the Committee's Legal Counsel at the Committee's toll-free telephone number.

Dated: June 5, 2011.
June 6, 2011

The Tribune
3825 South Higuera
Post Office Box 112
San Luis Obispo, California 93406-0112

Attention: Legal Advertising.

Re: Diablo Canyon Independent Safety Committee - Legal Notice of Meeting.

Dear Sir of Madam:

Enclosed herewith is a copy of a legal Notice of Meeting for the Diablo Canyon Independent Safety Committee. Would you please publish this Notice with your edition on Saturday, June 11, 2011. Upon completion of publication, please provide us with your Affidavit of Publication.

As we have done in the past, upon receipt of this Notice, would you please provide us with your invoice for the cost of publication, and we will send our check to cover same.

If you require anything additional in order to comply with this request, please advise.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

G.2-102
THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
NOTICE OF PLANT TOUR AND PUBLIC MEETING

NOTICE IS HEREBY GIVEN that on June 22, 2011, at 8:00 A.M., the members of the Diablo Canyon Independent Safety Committee ("DCISC") will conduct an inspection tour of certain accessible areas of the Diablo Canyon Power Plant ("DCPP"). This tour, which will take approximately three and one-half hours, was previously advertised to the public. Because the plant is an operating nuclear power plant the number of participants was limited and space has been assigned on the basis of prior reservation taken on a first-come, first-served basis, with priority given to those persons who were not accommodated on recent DCISC inspection tours. Prior clearance of all public attendees is required in compliance with rules of the U.S. Nuclear Regulatory Commission ("NRC").

In the alternative if security considerations preclude the public tour on June 22nd, the DCISC may convene an informal power point presentation and question and answer session at the Pacific Gas & Electric Company ("PG&E") Community Center, 6588 Ontario Road, San Luis Obispo.

NOTICE IS HEREBY FURTHER GIVEN that on June 21-22, 2011, at the Avila Lighthouse Suites, Point San Luis Conference Facility, located at First and San Francisco Streets, Avila Beach, California, a public meeting will be held by the DCISC in four separate sessions, at the times indicated, to consider the following matters:

1. **Morning Session - (06/21/2011) - 8:30 A.M.** Opening comments and remarks; receive public comments and communications to the Committee; approve minutes of February 15-16, 2011, public meeting; discussion of administrative matters, including an update on financial matters and activities during 2011; review of the Open Items List; nomination and election of DCISC Chair and Vice Chair for the July 1, 2011 - June 30, 2012 term; reports by Committee members, consultants and legal counsel; receive, approve and authorize transmittal of fact-finding reports to PG&E; review of Committee correspondence and documents received; and receive informational presentation requested by the Committee from PG&E on review of plant events, operational status and station performance indicators.

2. **Afternoon Session - (06/21/2011) - 1:30 P.M.** Comments by Committee members; receive public comments and communications to the Committee; consider further informational presentations from PG&E on topics relating to plant safety and operations, including recent NRC Notices of Violation, Licensee Event Reports, and NRC Performance Indicators; the Quality Verification organization's perspective on plant performance including the Quality Performance Assessment Report (QPAR) and Quality Verification's top concerns; DCPP performance during the 16th refueling outages for Units 1 and 2; and efforts and actions to improve and expand the Emergency Preparedness Dose Assessment and Meteorological Information and Dose Assessment Systems.

3. **Evening Session - (06/21/2011) - 5:30 P.M.** Committee member comments; receive public comments and communications to the Committee; Committee presentation on the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami; and receive further informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including a summary of preliminary lessons learned from the Fukushima Daiichi events and actions taken and planned by DCPP in response.

4. **Afternoon Session - (06/22/2011) - 1:30 P.M.** Reconvene public meeting; comments by Committee members; receive public comments and communications to the Committee; receive informational presentations requested by the Committee from PG&E on topics relating to plant safety and operations, including DCPP facility and design overview compared to the Fukushima Daiichi Nuclear Power Plant; DCPP systems of normal operating procedures, Emergency Operating Procedures, Severe Accident Management Guidelines and PG&E's organizational structure for responding to plant events; wrap-up discussion by Committee members, and the scheduling of future site visits, study sessions and meetings.

The specific meeting agenda and the staff reports and materials regarding the above meeting agenda items will be available for public review commencing Friday, June 17, 2011, at the Reference Department of the Cal Poly Library in San Luis Obispo. For further information regarding the public meeting, please contact Robert Wellington, Committee Legal Counsel, 857 Cass Street, Suite D, Monterey, California, 93940; telephone: 1-800-439-4688 or read the agenda online by visiting the Committee's website at www.dciscc.org.

Dated: June 11, 2011.
PRESS RELEASE:

PUBLIC MEETING OF THE DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

WHO: The Members of the Independent Safety Committee:

Robert J. Budnitz
Peter Lam
Per F. Peterson

WHAT: An opportunity for the public to observe and receive information concerning the activities of the Independent Safety Committee including recent fact-finding visits and informational presentations concerning safety-related issues at Diablo Canyon:

- Committee Business Session - Tuesday Morning
- Plant Performance Indicators, Events, Violations, and Operational Status
- Quality Verification Organization’s Perspective on Plant Performance, Including the Quality Performance Assessment Report and Quality Verification’s Top Concerns
- Performance During Sixteenth Refueling Outages for Units 1 & 2
- Improvements to Emergency Preparedness Dose Assessment System
- “Big Picture” of the Events at the Fukushima Daiichi Nuclear Power Plant
- Preliminary Lessons Learned by Diablo Canyon from the March 11th Earthquake and Tsunami at the Fukushima Daiichi Plant
- Comparison and Overview of the Facilities and Designs of Diablo Canyon and Fukushima Daiichi Plants
- Diablo Canyon’s Procedures, Guidelines and Organizational Structure to Respond to and Mitigate an Accident or Damage.

WHERE: Avila Lighthouse Suites - Point San Luis Conference Center
First & San Francisco Streets, Avila Beach CA

WHEN: Tuesday and Wednesday - June 21st & 22nd

TIMES:
8:30 p.m. to Noon (Tuesday, June 21st)
1:30 p.m. to approx. 4:45 p.m. (Tuesday, June 21st)
5:30 p.m. to approx. 7:45 p.m. (Tuesday, June 21st)
1:30 p.m. to approx. 3:45 p.m. (Wednesday, June 22nd)

FOR FURTHER INFORMATION:

including more information on these and other topics to be reviewed by the Independent Safety Committee or the specific days and times for particular presentations

Contact 1-800-439-4688
or review the meeting agenda online at www.dcis.org

The Committee’s policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.
June 10, 2011

New Times
1010 Marsh Street
San Luis Obispo, California 93401

Attention: Advertising Department- Mr. Bob Rucker.

Re: Diablo Canyon Independent Safety Committee; Display Ad

Dear Mr. Rucker:

Attached herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the attached in your edition to be published on Thursday, June 16, 2011, which we understand will be available in the local area through Wednesday, June 22. The same format and style as used for our past advertising publications in the New Times should be used for the February 2011 publication. Please provide a proof copy of the display ad for review prior to publication.

Please confirm receipt of this request.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
TUESDAY MORNING,
JUNE 21ST 8:30 A.M.
Introductions, public comments and communications to the Committee; Committee business session and discussion of Committee activities and plans during 2011, and reports on fact-finding visits by members and consultants; informational presentation by PG&E officials on plant events, operational status and plant performance indicators.

TUESDAY AFTERNOON,
JUNE 21ST 1:30 P.M.
Receive public comments and communications to the Committee; further informational presentations by PG&E officials on topics requested by the Committee including licensee event reports and NRC cited or non-cited violations and NRC Performance Indicators, the Quality Performance Assessment Report and Quality Verification's top concerns, station performance during the 16th refueling outage for Units 1 and 2, and efforts to improve and expand the Emergency Preparedness Dose Assessment System.

TUESDAY EVENING,
JUNE 21ST 5:30 P.M.
Receive public comments and communications to the Committee; informational presentation by the Committee on events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, earthquake and tsunami; further informational presentation by PG&E officials on a summary of preliminary lessons learned from the events at the Fukushima Daiichi Plant and actions taken and planned by Diablo Canyon in response.

WEDNESDAY AFTERNOON,
JUNE 22ND 1:30 P.M.
Introductions, public comments and communications to the Committee; further informational presentations by PG&E officials on topics requested by the Committee including a comparison and overview of the facilities and the designs of Diablo Canyon and Fukushima Daiichi Plants, Diablo Canyon's normal operating procedures, Emergency Operating Procedures, Severe Accident Management Guidelines and PG&E's organizational structure for responding to plant events; and wrap-up discussion by Committee members.

Please plan to attend! For further information call 1-800-439-4688 or visit the Committee’s website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library’s Documents and Maps Department and the Agenda is available on the DCISC’s website. Each session of a public meeting of the DCISC is available live and online during the meeting by visiting www.sio-span.org and after a meeting in archived format, indexed to the meeting's agenda, or by following links on the Committee's website.
DCISC
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS
ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FACSIMILE
1-805-781-7871

June 13, 2011

The Tribune
3825 South Higuera
Post Office Box 112
1321 Johnson Avenue
San Luis Obispo, California 93406-0112

Attention: Advertising Manager/Advertising Department
& County Round-Up Section Editor

Re: Diablo Canyon Independent Safety Committee: Display Ad.

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. As you have done in the past, would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Sunday, June 19, and Tuesday, June 21, 2011. Upon completion of publication, please provide us with a copy of the display ad.

We would also appreciate consideration of the inclusion of information concerning the June 21-22, 2011, meetings of the DCISC in the County Round-Up section of the Tribune on a date prior to the meeting. Please feel free to contact our office if further information is required.

Please bill our account (#4463-0-9) for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

[Signature]
Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
June 13, 2011

TIMES-PRESS-RECORDER
Post Office Box 460
Arroyo Grande, California  93421-0460

Attention:  Advertising Department

Re:  Diablo Canyon Independent Safety Committee: Display Ad

Dear Sir or Madam:

Enclosed herewith is a copy of a Public Meeting display ad for the Diablo Canyon Independent Safety Committee. Would you please publish the enclosed as a two-column wide ad on two separate dates, preferably on Friday, June 17 and Wednesday, June 22, 2011. Upon completion of publication, please provide us with a copy of the display ad.

Please bill our account for this publication, which we will promptly pay upon receipt of an invoice.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE
- PUBLIC MEETING -

When:

Tuesday Morning, June 21st
8:30 A.M.

Introductions, public comments and communications to the Committee, Committee business session, and informational presentation by PG&E officials on Plant events and operational status.

Tuesday Afternoon, June 21st
1:30 P.M.

Introductions, public comments and communications to Committee members, further informational presentations by PG&E officials on Plant operational topics requested by the Committee.

Tuesday Evening, June 21st
5:30 P.M.

Introductions, Public comments and communications to the Committee members, presentation by the Committee on the recent events at the Fukushima Daiichi Nuclear Power Plant in Japan, and further informational presentations by PG&E officials on preliminary lessons learned from the events at the Fukushima Daiichi Plant.

Wednesday Afternoon June 22nd
1:30 P.M.

Introductions, public comments and communications to the Committee, and informational presentations by PG&E concerning Plant operations requested by the Committee. and concluding remarks by the members.

Where:
Avila Lighthouse Suites
Point San Luis Conference Center
First & San Francisco Streets
Avila Beach, California

Please plan to attend! For further information call 1-800-439-4688 or visit the Committee’s website at www.dcisc.org.

A copy of the meeting Agenda packet may be reviewed at the Cal Poly Library's Maps & Documents Department and the Agenda is available on the DCISC's website.

The Committee’s policy is to schedule its public meetings in locations that are accessible to people with disabilities. The Point San Luis Conference Facility is a wheelchair accessible facility and devices for attendees who may be hearing impaired are available.

G.2-109
DCISC
DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

COMMITTEE MEMBERS

ROBERT J. BUDNITZ
PETER LAM
PER F. PETERSON

WEBSITE - WWW.DCISC.ORG

VIA FEDERAL EXPRESS

June 16, 2011

R.E. Kennedy Library
Documents & Maps Dept.
California Polytechnic
State University Library
San Luis Obispo, California 93407

Attention: Ms. Janice Klien
Re: Diablo Canyon Independent Safety Committee: Agenda Packet.

Dear Ms. Klien:

Enclosed please find a copy of the Agenda Packet for the next meeting of the Diablo Canyon Independent Safety Committee which will be held in San Luis Obispo on June 21-22 2011. Would you please file this packet in the Reference Department and make it available to the public. Thank you for your cooperation and assistance in this matter.

Very truly yours,

Robert R. Wellington
DCISC Legal Counsel

RRW:rr
Enclosure
cc: w/encl to:

Dr. Robert J. Budnitz
Dr. Peter Lam
Dr. Per F. Peterson
Mr. R. Ferman Wardell, P.E.
Mr. David C. Linnen
Mr. William Conway
California Energy Commission
(o/o Ms. Barbara Byron)
The Attorney General
(o/o Susan Durbin, Esq.)
Governor’s Office

Mr. John T. Conway - PG&E/DCPP
Mr. James R. Becker - PG&E/DCPP
Mr. Peter Bedesem - PG&E/DCPP
Jennifer K. Post, Esq. - PG&E/SF
Mrs. Adriana Hartwig - PG&E/DCPP
Mr. Truman Burns - CPUC/DRA
Mr. Robert Kinosian - CPUC/EXEC
Ms. Maria Salinas - CPUC/ENERGY

OFFICE OF LEGAL COUNSEL • ROBERT R. WELLINGTON
• 857 CASS STREET • SUITE D • MONTEREY • CA • 93940-
TELEPHONE [800] 439-4688/[831] 647-1044 • FACSIMILE [831] 373 7106 • INFO@DCISC.ORG

G.2-110
21st Annual Report, Volume 2, Exhibit G.3, Comments Received at Public Meetings

This exhibit provides summaries of comments received by the DCISC from members of the public at public meetings. The full text of the meeting minutes can be found in Exhibits B.6, and B.9.

November 17-18, 2010 Public Meeting

There were no comments or questions from members of the public during the meeting.

February 15 & 16, 2011 Public Meeting

Ms. Sherry Lewis, a resident of San Luis Obispo, was recognized and addressed remarks to the Committee following Mr. David’s presentation on February 15, 2011, concerning an update on plant events, operational status and performance indicators. Ms. Lewis stated that with regard to the nuclear industry a culture which is much safer is required because what is being dealt with is so inherently dangerous and she encouraged the Committee not to hide this fact.

Ms. Jane Swanson, representing the group San Luis Obispo Mothers for Peace, was recognized to address remarks to the Committee following Mr. Sharp’s presentation on February 16, 2011, concerning the status and plans for the Probabilistic Risk Assessment Group. Ms. Swanson reported the NRC has scheduled a special inspection related to license renewal for DCPP on April 6-7, 2011. Ms. Swanson stated she wished to inquire about a Licensee Event Report reviewed earlier during this public meeting when, on December 25, 2010, faulty equipment on one of DCPP’s meteorological towers erroneously indicated a wind speed of 80+ miles per hour. Ms. Swanson stated it was her understanding this event resulted in the primary Meteorological Tower being declared inoperable and she asked whether the equipment had been repaired and how many meteorological towers were currently operable. Ms. Swanson observed that it was her understanding both towers needed to be operational to provide information in the event of a radiological release. Ms. Swanson commented on the difficulty of predicting wind conditions at the site.

Ms. June Cochran of Shell Beach was recognized and addressed several remarks to the Committee following Mr. Petersen’s presentation on February 16, 2011, concerning the Quality Verification Organization’s perspective on plant performance; the Quality Performance Assessment Report; and Quality Verification’s top concerns. Ms. Cochran referred to Mr. Petersen’s presentation and asked why Maintenance department work practice experience remained weak. Ms. Cochran commented on a remark made by Dr. Lam concerning the time taken by the CAP to address issues and on her perception from Mr. Petersen’s presentation that Security training at DCPP is not up to the standards within the nuclear industry and she inquired when it might be and requested an example of below standard Security training at DCPP. Ms. Cochran requested an example of a DCPP Security procedure which had not been adequately maintained. Ms. Cochran then asked whether the cross-
cutting measures which were resolved within the last six months included a clearance by the NRC resident inspector.

Ms. Elizabeth Apfelberg of San Luis Obispo was recognized to address comments to the Committee following Mr. Cunningham’s presentation on February 16, 2011, concerning the impacts of the elimination of once-through cooling (OTC). Ms. Apfelberg stated she was aware of the proposals regarding OTC but not of the safety and economic costs of eliminating OTC. She observed that as OTC elimination would not be required prior to the end of the present operating license so why not shut the plant down at that time?

**June 21-22, 2011 Public Meeting**

Ms. Sherry Lewis, a resident of San Luis Obispo, identified herself as a member of the group San Luis Obispo Mothers for Peace (MFP) and was recognized, in response to Dr. Budnitz’ invitation to members of the public at the June 21, 2011, morning meeting to address the Committee on matters not on the agenda. Ms. Lewis stated she had read a series of articles in the local newspaper which discussed the dangers of nuclear power and she stated that it was the radioactive waste which was of the greatest concern to her. She stated her opinion that nuclear power was just too unforgiving of human error and there is no way to prevent accidents. She observed the waste produced by nuclear power will remain toxic for generations and will burden our descendants far into the future. She stated she believes people are too used to having radioactivity around in their daily lives and that when levels increase, standards have been relaxed. Ms. Lewis commented she viewed a film about efforts in Finland to permanently store and safeguard two years worth of nuclear waste into the future and stated the film discussed the many problems encountered in that effort. She stated that nuclear power is simply not worth the effort and expense which could be better employed in finding alternative sources of energy and stated that nuclear power should be stopped as soon as possible.

Ms. Sherry Lewis was recognized following Legal Counsel Wellington’s report on financial matters and Committee activities at the morning meeting of the DCISC on June 21, 2011, inquired about the source of the DCISC’s funding and whether a conflict of interest existed for the Committee as it is PG&E which provides funding for the DCISC in its rate base.

Ms. Sherry Lewis inquired during Mr. Wardell’s presentation regarding the Open Items List on June 21, 2011, concerning the process and the role of the determination of design margin and the rationale for categorizing something as being within or outside of a plant’s design basis.

Ms. Sherry Lewis inquired following Mr. Wardell’s report on the February 28-March 1, 2011 fact-finding visit to DCPP on the morning of June 21, 2011, concerning the DCISC recommendation in that fact-finding report that DCPP perform a self-assessment of the engineering evaluation rigor improvement action plan as to her that appeared to be a weak response and she inquired whether an evaluation has been done concerning whether persons using the ECP were punished for having done so. She stated she has heard that DCPP employees are fearful of losing their jobs or pensions if they act as whistle-blowers. She inquired whether the DCISC felt it was warranted to review issues of confidentiality and commented that confidentiality can be leaked.
Ms. Sherry Lewis inquired following Mr. Wardell’s report on the April 19-20, 2011 fact-finding visit to DCPP, a the DCISC’s morning meeting on June 21, 2011, concerning the DCISC’s function was relative to the CEC recommendation concerning the spent fuel pools (SFPs) and if the SFPs cannot comply with the CEC recommendation why is a decision not being taken to stop making more waste. Ms. Lewis commented the fact the DCISC is without authority to direct PG&E is a real problem.

Ms. Sherry Lewis was recognized, in response to Dr. Budnitz invitation to members of the public to address remarks to the Committee upon commencing the public meeting on the afternoon of June 21, 2011. Ms. Lewis stated she wished to reiterate her position concerning the problems of toxic nuclear waste and human error which is always present. She observed there have been some catastrophic events and there will be more. She stated radioactive waste is too toxic and should not have to be dealt with at all. She stated her belief the DCISC’s role is to make sure things at DCPP are as safe as they can be and the safest thing would be to have no nuclear power at all as it will be impossible to control it forever.

Ms. Elizabeth Apfelberg, a resident of San Luis Obispo and member of MFP was recognized following DCPP Regulatory Services Manager Tom Baldwin’s presentation on Licensee Event Reports, Review of NRC Violations and NRC Performance Indicators on the afternoon of June 21, 2011. Ms. Apfelberg referred to LER 1-2011-002-00 concerning the Auxiliary Building Ventilation System design flaw and inquired whether this was discovered by PG&E or by the NRC.

Ms. June Cochran, a resident of Shell Beach, was recognized following Mr. Tom Baldwin’s presentation on Licensee Event Reports, Review of NRC Violations and NRC Performance Indicators on the afternoon of June 21, 2011. Ms. Cochran stated that she has heard references to the terms ‘procedure flawed,’ ‘guidance error,’ ‘inappropriate analysis of system,’ and ‘long-term degradation’ many times during PG&E presentations to the DCISC and to the NRC. She stated such references were worrisome to her as the issues related to these references do not appear to be improving nor are they as perfect as possible. She stated that with reference to DCPP there should be no missed opportunities or failures to install installations such as fire barriers according to regulations. She cited a presentation by PG&E on the degradation of the Fire Protection System at DCPP and inquired whether that system had improved to Green from its previous Yellow status. She commented PG&E has stated that the system cannot be fixed and she displayed a photo which showed a degraded section of piping. She observed that in response to her inquiries PG&E has stated that it does not inspect all underground piping but instead waits for problems to occur before addressing them. Ms. Cochran stated this was not comforting. She cited a reference from the Chief of the NRC’s Reactor Program that acknowledged that problem evaluation at DCPP has not proven effective. She inquired how long the public should put up with these issues and stated that the DCISC should take a stand. Ms. Cochran stated the issue Mr. Baldwin reported on with the Security organization showed a trend in the NRC downgrading its requirements and she cited the example of the compliance waiver received by DCPP until April 13, 2011, which was extended to June 30, 2011, and now has been extended for another year and she questioned whether security issues were being adequately addressed. Finally she inquired when PG&E might not have 200 corrective actions to deal with every week.

Ms. Sherry Lewis was recognized following Mr. Baldwin’s presentation on Licensee Event Reports,
Review of NRC Violations and NRC Performance Indicators on the afternoon of June 21, 2011. Ms. Lewis stated that a single failure of a pipe could lead to increased levels of tritium, which have occurred in 83% of reactors, so that this would represent multiple failures which can cause cell damage.

Ms. June Cochran was recognized to address remarks to the DCISC following DCPP Emergency Planning Manager Michael Ginn’s presentation to the DCISC on the afternoon of June 21, 2011. Ms. Cochran stated that the map in the local telephone book does not include streets by name to let the public know what zone they may be within. She remarked that Los Osos Valley Road would create problems for those persons wishing to evacuate the area of Avila Beach, especially because those persons responding to the emergency would be proceeding in the opposite direction. She commented there has never been an actual practice evacuation and predicted that in any such situation there would be gridlock within ten minutes. She inquired how PG&E could infer that persons in zones other than those designated to be evacuated would not join in the exodus from the area and she questioned, as the NRC recommended a 50 mile evacuation zone from around the Fukushima Daiichi plant, why 50 miles should not be the starting point for DCPP’s evacuation zone.

Ms. Sherry Lewis was recognized following Mr. Ginn’s presentation on the afternoon of June 21, 2011 and she commented Mr. Ginn had not addressed the situation mentioned by Ms. Cochran where persons outside of a designated evacuation zone choose to join in the evacuation.

Ms. Elizabeth Apfelberg was recognized following Mr. Ginn’s presentation on the afternoon of June 21, 2011, and she described an incident which occurred two years ago when she was prevented for over one hour from reaching Avila Beach due to a head-on traffic collision which occurred during a time of shift change at DCPP and she stated her opinion that in the event of an evacuation the plans would not work.

Mr. Mark Phillips, a resident of Atascadero, was recognized to address remarks to the Committee upon Dr. Budnitz invitation upon commencement of the evening meeting of the DCISC on June 21, 2011. Mr. Phillips stated he received information that the radiation levels at the Fukushima Daiichi plant were higher than had been previously reported. He stated that it was the stakeholders with the most at stake who appear to be in control of information about the events in Japan. He questioned whether PG&E would be in that role if an accident to happen at DCPP and would the public be at the mercy of PG&E? Mr. Phillips stated he had no confidence in the NRC. He remarked that at another public meeting he attended the NRC was unable to address questions regarding the length of time radioactive waste remains significantly hazardous and had promised to get back to him with answers but never did. He observed the Environmental Protection Agency has stated such waste remains dangerous for one million years and he does not trust information provided by PG&E or the NRC.

Mr. Klaus Schumann of Paso Robles was recognized following Mr. Philip’s remarks on the evening of June 21, 2011. Mr. Schumann stated he served on the San Luis Obispo Nuclear Waste Management Committee. He stated the goal is to keep the area free of contamination. He remarked that DCPP should never have been built in its present location and should not be relicensed. He further directed the Committee’s attention to a recent series of news articles in the
San Luis Obispo Tribune. He further directed the Committee’s attention to, and he showed copies of, several news articles including articles concerning the NRC’s relationship with nuclear utilities; the Alvarez article on spent fuel pools; the Nuclear Information Resource Service article regarding safeguarding waste; an article on predicting beyond design basis earthquake activity on the San Andreas fault; a Russian study on the effects and consequences of the accident at the Chernobyl Nuclear Plant, published in the Washington Spectator which Mr. Schumann stated found a total of 985,000 fatalities as a result; an article published in 2009 concerning the history of tsunamis on the California coastline, which described past tsunamis as reaching heights of 55 - 100 feet locally. Mr. Schumann stated that risk assessment was applied to Three Miles Island and Chernobyl and determined the probabilities of those events to be very low. He questioned what the probability risk analysis would have been for the earthquake and tsunami at Fukushima Daiichi which resulted in three reactor meltdowns. He stated those previous predictions were very far off from what actually occurred and he wondered just how useful were these risk assessments and if they are not accurate how can the design of a plant be conservative.

Ms. Sherry Lewis was recognized following Mr. Schumann’s remarks on the evening of June 21, 2011. Ms. Lewis stated the two earlier sessions included discussion of the dilemma of nuclear waste storage. She observed that all the DCISC can do is make PG&E aware of issues as the Committee has no authority or ability to force PG&E to do anything. She commented the independence of the Committee encouraged complacency in that each member of the Committee must believe that nuclear power is a good thing. She stated that someone should address the waste issue. She remarked that she had spoke with a person who worked at the NRC who assured her that a use would be found for nuclear waste but Ms. Lewis observed people have previously repeatedly tried to turn lead into gold and failed and she stated there are no safe storage options for this waste.

Ms. Joyce Pallela, a resident of Avila Beach, was recognized following Ms. Lewis’ remarks on the evening of June 21, 2011. Ms. Pallela inquired whether any of the members believe nuclear power is too dangerous or too expensive?

Ms. Elizabeth Apfelberg was recognized following presentations by Dr. Budnitz and Assistant to the DCPP Site Vice President Bill Guldemond on the evening of June 21, 2011, concerning the events at the Fukushima Daiichi Nuclear Power Plant in Japan following the March 11, 2011, magnitude 9.0 earthquake and resulting tsunami. She identified herself as a resident of San Luis Obispo and member of MFP. Ms. Apfelberg stated the tsunami size was the cause of the accident at the Fukushima Daiichi plant, the tsunami reached the plant one hour after the earthquake and she stated this was not addressed by Mr. Guldemond during his presentation. She observed unlike evacuees from areas impacted due to radiation, the evacuees from areas damaged by the tsunami can return.

Ms. Sherry Lewis was recognized following Ms. Apfelberg’s remarks on the evening of June 21, 2011. She inquired about Mr. Guldemond’s title and stated she was bothered by her impression that Mr. Guldemond’s presentation was too glib sounding, akin to a to-do list. She inquired whether the information presented was information which was to be acquired and gave as an example Mr. Guldemond’s reference to a focus on excellence. She expressed her belief that there was very little detail given by his presentation.
Mr. Mark Phillips was recognized following Ms. Lewis’ remarks on the evening of June 21, 2011. Mr. Phillips stated he would prefer that the Committee members address his questions as he asked them. He stated that it is apparent all blame for the events at the Fukushima Daiichi plant is being placed on the tsunami. He commented that he read an article which stated that radiation levels at that plant were found to have increased prior to the arrival of the tsunami. He observed Mr. Guldemond spoke about the roads not being adequate for DCPP to received supplies of diesel fuel and he questioned their adequacy for evacuation purposes in the event of an accident at DCPP. He stated that the local population does not trust PG&E because of this type of information.

Mr. Klaus Schumann was recognized following Mr. Phillip’s remarks on the evening of June 21, 2011. Mr. Schumann stated he shared the disappointment that things that should have been done were not. He inquired about the design basis for the Fukushima Daiichi plant and about any affect on the events there due to aging components. Mr. Schumann observed that ultimately the events at Fukushima Daiichi occurred because of a beyond design basis earthquake and tsunami and the contributions of an operator acting outside the regulations were a primary contributor to making the impact on the plant less severe than it might have otherwise been and he questioned whether the public can rely on operators to make similar decisions in the future. Mr. Schumann inquired about the elevations of the top and bottom of DCPP’s spent fuel pools, the elevation of the surface of the water and the configuration of the fuel assemblies in the pools. Mr. Schumann stated it was his understanding that PG&E has made the decision to accelerate transfer of spent fuel out of the SFPs. Mr. Schumann stated it was his understanding there were now 1,100 fuel assemblies in each SFP and at PG&E, three months prior to the events at Fukushima Daiichi, there was fear that a full DCPP core could not be offloaded into a SFP and he queried whether DCPP maintained its capacity for a full core offload into a SFP.

Ms. June Cochran was recognized following Mr. Schumann’s remarks on the evening of June 21, 2011. Ms. Cochran stated her belief that the Task Force being formed by DCPP in response to the events at Fukushima Daiichi should have subcategories and should include participation by environmentalists and members of the local community. She stated it was important that the Task Force’s work have complete transparency and if PG&E again tried to keep the local community out of the process she wondered how PG&E could regain its trust. She stated in her review of DCISC reports she noted that a lack of thoroughness and oversight by senior DCPP leadership had been referenced and that this oversight was now needed from DCPP and from the nuclear industry.

Mr. Greg Davis of Livermore was recognized in response to Dr. Budnitz invitation to member of the public to address the Committee at the commencement of its public meeting on the morning of June 22, 2011. Mr. Davis remarked the presentations made and the tour conducted during the morning had been excellent and the information received useful.

Ms. Sherry Lewis was recognized following Mr. Davis’ remarks on the afternoon of June 22, 2011. Ms. Lewis stated she was inquiring this afternoon on her own behalf and that of another individual. She referred to the presentation made by Dr. Budnitz the previous evening on the Japanese earthquake and tsunami and their effect on the Fukushima Daiichi nuclear plant. She stated that as the SFP for Reactor No. 4 was found to be filled with water, it was a mystery why an explosion which blew off the roof of Reactor No. 4, caused by hydrogen from Reactor No. 3, had occurred.
She wondered how a pipe break associated with Reactor No. 3 could have resulted in a hydrogen buildup in Reactor No. 4. Ms. Lewis concluded her remarks with the observation that she was not satisfied and that she hoped the Committee was also not satisfied with what is known to date about these events.

Ms. June Cochran was recognized following Ms. Lewis’ remarks on the afternoon of June 22, 2011. Ms. Cochran stated when she reads the NRC’s inspection reports for DCPP it is evident that PG&E is required to admit when problems are found and to enter those problems into the CAP. She remarked that recently 11 violations were identified which included an adverse trend in problem identification and resolution which does not appear to be going away. She cited PG&E’s description of issues related to problem identification and resolution which indicate a lack of involvement by senior leadership at DCPP. She stated that the red status for the DCPP fire protection system is not reassuring to the public and that she has not received a response to her inquiry of PG&E concerning when, if ever, the fire protection system is expected to return to acceptable status. She stated her believe that as DCPP is an older plant utilizing older technology and equipment, the plant should be decommissioned. In response to PG&E’s question of how PG&E might regain the trust of the public, she stated that while PG&E has expressed its commitment to sustainable energy, there is no evidence that PG&E is taking any action on site at DCPP toward this goal.

Mr. Tom Shuman, a resident of San Luis Obispo, was recognized following Ms. Cochran’s remarks on the afternoon of June 22, 2011. Mr. Shuman commented that San Luis Obispo and Santa Maria are both within a 50 mile radius of DCPP and that this was the distance the NRC found to be within the danger zone following the events at the Fukushima Daiichi plant and he wondered whether an accident at DCPP could result in 150,000 refugees being evacuated to Santa Barbara and Salinas in the event of a similar accident at DCPP.

Mr. Doug Whitney, who identified himself as an energy consultant, was recognized following Mr. Shuman’s remarks on the afternoon of June 22, 2011, and he thanked the Committee for the tour conducted during the morning. Mr. Whitney observed that while the focus and background of the DCISC is mainly mechanical, nuclear and environmental, it may also be important to review issues related to software engineering and electronic hardware. For instance, he stated there is no longer a need to use electrolytic capacitors and commented that review of these types of issues may be useful.

Ms. Sherry Lewis was recognized from the audience to address comments to the Committee following Mr. Guldemond’s presentation to the Committee on DCPP’s facility and design overview and comparison to the Fukushima Daiichi Nuclear Power Plant on the afternoon of June 22, 2011. Ms. Lewis inquired whether the manual procedures, discussed by Mr. Guldemond and Dr. Lam, were practiced by operators at the plant. Ms. Lewis observed that although the BWR containment was a nitrogen atmosphere the explosions at Fukushima Daiichi occurred within its secondary containments. She stated her understanding that the tsunami on March 11, 2011, may have reach 100' in height. Ms. Lewis stated it was also her understanding that there was some thrust faulting found in the vicinity of DCPP. Ms. Lewis inquired whether the ability to cross-tie systems made them more or less vulnerable.
Mr. Tom Schuman was recognized from the audience to address a question to the Committee following Mr. Guldemond’s presentation to the Committee on the afternoon of June 22, 2011, concerning DCPP systems of normal operating and emergency procedures, emergency, severe accident and extensive damage mitigation guidelines and organizational structure for responding to plant events. Mr. Shuman inquired how often DCPP practices emergency actions?

Ms. Sherry Lewis was recognized following Mr. Schuman’s remarks on the afternoon of June 22, 2011. She commented she was puzzled by the reference to the lighting situation in the Control Room in the event of a station blackout described by Mr. Guldemond. Ms. Lewis also inquired whether there was sufficient makeup water available for the SFPs as it was her understanding the onsite supply was insufficient to totally resupply both SFPs. Ms. Lewis also inquired regarding the water demands associated with operation of the reactors and concerning the SFP water inventory.
The DCISC held three public meetings in the vicinity of the Diablo Canyon Power Plant (DCPP) on the following dates:

- **November 17 & 18, 2010, Public Meeting and Public Plant Tour**
- **February 15 & 16, 2011, Public Meeting and Public Plant Tour**
- **June 21 & 22, 2011 Public Meeting and Public Plant Tour**

These are described in Section 2.0.
21st Annual Report, Volume 1, Section 1.4, Committee Member Site Inspection Tours and Fact-finding Meetings

The DCISC Members and Consultants visit DCPP regularly to conduct Fact-finding meetings and tour areas of the plant to review operational activities and inspect systems, equipment or structures which the Committee has under review or has interest. A record of these Fact-finding meetings is contained in Volume 2, Exhibits D.1 – D.10, and plant tours and inspections are listed in Exhibit E.

1.4.1 Inspections and Fact-finding meetings by Robert J. Budnitz


To DCPP on January 19, 2011 to observe the DCPP Nuclear Safety Oversight Committee (NSOC) meeting.


1.4.2 Inspections and Fact-finding meetings by Peter Lam

To San Luis Obispo, CA on September 8-9, 2010 with Member Per Peterson and Consultant Wardell to attend the NRC Seismic Information Workshop.


1.4.3 Inspections and Fact-finding meetings by Per F. Peterson

To DCPP on July 6-7, 2010 with Consultant Linnen to review Thoroughness of Problem Evaluations, 2009 Annual Radiological Releases, Seismic Bracing of Tall Furniture, Operational Focus, Seismically Induced System Interactions (SISI) Housekeeping Activities, Follow-up on Functional Failure of Emergency Core Cooling System Recirculation Suction Valve Interlocks, Unplanned Release of Carbon Dioxide (CO2) from Unit 1 CARDOX System, and the July 7, 2010 Emergency Preparedness Drill.

To DCPP on August 11, 2010 with Consultant Wardell to review and observe the NRC-evaluated emergency exercise.

To San Luis Obispo, CA on September 8-9, 2010 with Member Lam and Consultant Wardell to attend the NRC Seismic Information Workshop.

To DCPP on December 15-16, 2010 with Consultant Wardell to review EPA Closed Cooling, Plant Health Committee (PHC) Meeting, Environmental Qualification Program (EQP), Software Quality Assurance (SQA), Human Performance (HP) Program, License Basis Verification Program (LBVP), Corrective Action Program (CAP), Used Fuel Storage Program (UFSP), DCPP Safety/Security Interface, Outage 1R16 Radiation Protection (RP) Performance, and DCPP DCISC Open Items.

To DCPP on May 24-25, 2011 with Consultant Linnen to review Auxiliary Saltwater System, Auxiliary Building Control Board Replacement Project, Unexpected Control Rod Movement, Seismic Bracing of Tall Furniture, Spent Fuel Pool System, and Seismically Induced Systems Interaction (SISI) Housekeeping Program, and to Tour Unit 2 Containment Building and Other Selected Areas.

1.4.4 Tours of DCPP by DCISC Members and Members of the Public During the Period July 1, 2010 – June 30, 2011

The DCISC had historically performed a public tour of Diablo Canyon Power Plant each year with members of the public in conjunction with its January/February Public Meeting (except for two years following the terrorist activities of September 11, 2001 because of tightened security at nuclear power plants, including DCPP). With its June 2004 public meeting, the Committee resumed conducting tours of DCPP with members of the public, offering a tour in conjunction with each of its...
public meetings since that time, unless precluded by security concerns. The tours are noticed in advance in the local newspapers, and members of the public sign up in advance. During the tours members of the public and the Committee Members and Consultants hold individual discussions concerning the DCISC, Diablo Canyon and nuclear power. The tours have proven to be very popular with the local residents and are considered by the DCISC as an important aspect of its public outreach activities. Public tours were conducted at the November 17, 2010, February 15, 2010, and June 22, 2011 Public Meetings, with the DCISC Members, and DCISC Consultants. Each of the tours was filled to capacity (based on the number of seats available on the buses) with 47, 46 and 48 members of the public attending each of the tours, respectively. These tours are described in Volume II, Exhibit E. While strong public interest remains, the DCISC will continue to host public tours at each of its public meetings.
On November 10, 2010, DCISC Member Peter Lam and Assistant Legal Counsel Robert Rathie met in Sacramento with California Energy Commission Vice Chair James D. Boyd and Senior Nuclear Policy Advisor Barbara Byron and discussed the DCISC’s report on its evaluation of pressurized thermal shock and seismic interactions for a 20-year license extension for DCPP, concerning recent Committee activities, to deliver a copy of the Committee’s 20th Annual Report and to discuss matters related to DCPP’s current operational status and recent events and the activities of the DCISC.

On April 18, 2011, DCISC Member Per Peterson and Assistant Legal Counsel Robert Rathie met in Sacramento with Governor Brown’s Senior Policy Advisor and Director, Office of Planning and Research, Ken Alex and discussed matters concerning the events at the Fukushima Daiichi Nuclear Plant in Japan following the March 11 earthquake and tsunami, to deliver a copy of the Committee's 20th Annual Report and to discuss matters related to DCPP's current operational status and recent events and the activities of the DCISC.

The DCISC has plans to schedule annual meetings between its Members and the appointing entities and with the Commissioners or representatives of the California Public Utilities Commission to provide background on and information regarding current activities of the Committee.
The Restated Charter provides that the DCISC shall have the right to receive on a regular basis specified operating reports and records of Diablo Canyon, as well as such other reports pertinent to safety as may be produced in the course of operations and may be requested by the Committee. Thousands of PG&E and Nuclear Regulatory Commission documents (relating to both historical and current operations) have been provided to the DCISC. Document lists are shown in Volume 2, Exhibit A.
DCISC Activities and meetings are documented for public information in several ways as described below. Documents are available at the Reference Department at the California Polytechnic University (Cal Poly) R.F. Kennedy Library in San Luis Obispo, CA.

The DCISC’s Annual Report, covering the period July 1 through June 30, is a comprehensive description of Committee activities throughout the period. The report is published in two volumes and in a compact disk format and is made available on the Committee website and is provided to local San Luis Obispo City and County public libraries and interested persons.

Minutes of each public meeting are contained in the Annual Report in Exhibits B.3, B.6, and B.9.

Reports of DCISC visits to the Diablo Canyon Power Plant (DCPP) are contained in the Annual Report.

DCISC public meetings are webcast in real time and cablecast over the San Luis Obispo local public access television channel and are available through indexed, archived streaming video through the link on the Committee’s website to County Meetings on www.slospan.org.

The DCISC issues press releases before and after its public meetings concerning topics it believes to be of particular interest within the community.