

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE**Report on****Fact-Finding Meeting at DCP
on May 8 and 9, 2024****by****Per F. Peterson, Member, and Richard McWhorter, Consultant****1.0 SUMMARY**

The results of the DCISC May 8 and 9, 2024, Fact-Finding Meeting at the Diablo Canyon Power Plant (DCPP) in Avila Beach, CA, are presented. Although the Fact-Finding Team (FFT) was on-site at DCP, portions of the meeting were held remotely. The subjects addressed and summarized in Section 3 are as follows:

1. Meet with Nuclear Regulatory Commission (NRC) Senior Resident Inspector
2. Response to DCISC Recommendation on the Use of Earthquake Response Procedures
3. Observe Outage Scope Review Team and Daily Notification Review Team Meeting
4. Human Performance and Plant Status Control
5. Nuclear Insurance Programs
6. Meteorological Information and Dose Assessment System
7. Cause Evaluation for Auxiliary Saltwater Pump 2-2 Failure
8. Learning Services Department
9. Inspection and Maintenance Programs for Major Equipment Supports
10. Plant Tour
11. Refueling Equipment
12. Observe Corrective Action Review Board
13. Meet with DCP Officer
14. Equipment Reliability Program

2.0 INTRODUCTION

This Fact-Finding Meeting at the DCP was held 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 FFT 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 DCPD on specific areas of interest, etc.

Section 5 – Recommendations, presents specific recommendations to PG&E proposed by the FFT. These recommendations will be considered by the DCISC. After review and approval by the DCISC, this Fact-Finding Report, including its recommendations, will be provided to PG&E. The Fact-Finding Report will also appear in the DCISC Annual Report.

3.0 DISCUSSION

3.1 Meet with NRC Senior Resident Inspector

The DCISC FFT met with Mahdi Hayes, NRC Senior Resident Inspector, and Patricia Vossmer, Branch Chief, NRC Region IV, for an update. The DCISC meets regularly with the NRC Resident Inspectors and last met with the Senior Resident Inspector during its April 2024 Fact-Finding Meeting (Reference 6.1), when it concluded the following:

The meeting with the NRC Senior Resident Inspector was beneficial, and the DCISC should continue the meetings.

The items discussed in this meeting included the following:

- Refueling Outage 2R24 Performance
- Recent NRC Inspection Activities
- Resident Inspector Replacement Selected and Will Report Mid-year to DCPD
- Scheduling an NRC Presentation for the DCISC October Public Meeting

Conclusions: The meeting with the NRC Senior Resident Inspector was beneficial, and the DCISC should continue the meetings.

Recommendations: None.

3.2 Response to DCISC Recommendation on the Use of Earthquake Response Procedures

The DCISC FFT met with Dan McBride, Operations Director, for an update on PG&E’s response to a DCISC recommendation regarding post-earthquake response procedures for fire, security, and other emergency response personnel with respect to the use of FLEX Equipment. (FLEX is not an acronym but describes a strategy developed by the nuclear industry to provide diverse and flexible coping strategies and portable equipment to address the loss of safety-related systems due to beyond design basis events.) The DCISC last reviewed this topic during its December 2023 Fact-Finding Meeting (Reference 6.2) when it concluded the following:

DCPP initiated appropriate follow-up actions in response to a DCISC recommendation concerning post-earthquake procedures contained in its July 2023 Fact-Finding Report. Operations procedure CP M-4, "Earthquake," has been updated, and other departments are in the process of reviewing and modifying other related procedures. The DCISC should review the status of the follow-up actions again during a future Fact-Finding Meeting in mid-2024.

During the DCISC's December 2023 Fact-Finding Meeting, PG&E reported that it had initiated follow-up actions under a Corrective Action Program Notification (SAPN 51215061) which documented the station's review of the recommendation and its responses. The Notification stated in its initial evaluation, "This SAPN update provides potential enhancements that will implement the DCISC recommendation. This recommendation will provide more clear direction to support operator performance of available FSG [FLEX Support Guideline] steps to ensure that site access status is understood, and access remains available or is restored promptly in the event that procedure CP M-4, Earthquake, is required to be entered following a seismic event or in the event of another condition that results in CP M-12, Stranded Plant, procedure entry."

Mr. McBride provided the FFT with an updated copy of procedure CP M-4, "Earthquake," Revision 39, showing all the changes that had been made to the procedure in response to the recommendation. The changes to CP M-4 included:

- Directing operators to refer to FSG 45, "FLEX Communications Equipment," if plant communications were lost. (Note prior to procedure Step 5)
- Directing operators checking the condition of the Spent Fuel Pool (SFP) status to refer to FSG 05, "Initial Assessment and FLEX Equipment Staging," and/or FSG 11, "Alternate SFP Makeup and Cooling," to assess the possible need for using FLEX equipment to mitigate SFP conditions. (Procedure Steps 5.13.2 and 5.13.3)
- Directing security officers to refer to FSG 05 and assess site damage that could impact FLEX implementation. (Procedure Step 6.1)
- Directing operators performing walkdowns in the Turbine and Auxiliary Buildings to refer to FSG 05 as an aid in assessing plant damage. (Procedure Attachment 9.10)

He also noted that additional changes in response to the DCISC's recommendation were still in process for procedure CP M-12, "Stranded Plant." A new revision to that procedure was expected to be completed by the end of May. DCPP also reviewed other Operations, Security, and Emergency Planning procedures and concluded that no changes were necessary to any other procedures.

The FFT reviewed the changes made to procedure CP M-4 and found that they formed an excellent response to DCISC's recommendation. The DCISC should review the planned additional revisions to procedure CP M-12 during a future Fact-Finding Meeting. The FFT also noted that

PG&E would formally respond to the DCISC's recommendation following issuance of the DCISC's 34th Annual Report in the fall of 2024.

Conclusions: DCPD initiated appropriate follow-up actions in response to a DCISC recommendation concerning post-earthquake procedures. Procedure changes to Operations procedure CP M-4, "Earthquake," were satisfactorily completed. The DCISC should review additional changes planned for procedure CP M-12, "Stranded Plant," during a future Fact-Finding Meeting.

Recommendations: None

3.3 Observe Outage Scope Review Team and Daily Notification Review Team Meeting

The DCISC FFT attended a combined meeting of the DCPD Outage Scope Review Team (OSRT) and Daily Notification Review Team (DRT) on May 8, 2024. The DCISC last observed a similar meeting of the Notification Review Team during its March 2022 Fact-Finding Meeting (Reference 6.3), when it concluded the following:

The March 23, 2022, meeting of the DCPD Notification Review Team was conducted efficiently and effectively. The team appropriately reviewed and dispositioned approximately 60 Notifications from the previous day.

Notifications are electronic documents used by plant personnel to identify and record plant problems, large or small, for tracking to resolution in the Corrective Action Program. Notifications are coded as either "DAs" or "DNs." DAs are for conditions adverse to quality. DNs are for work-only situations in which known corrective actions are to take place. Each day, some 50-100 Notifications are initiated, and each one is promptly reviewed by Work Control and the Control Room Shift Manager. Following the initial reviews, the multi-departmental Notification Review Team meets each weekday to review and approve disposition of the previous day's Notifications. Notifications that may impact plant equipment, operability, reportability, or personnel safety are further reviewed by a separate DRT held later in the day.

The FFT was provided a copy of the procedure governing the functions of the DRT, AD7.ID2, "Daily Notification Review Team (DRT) & Standard Plant Priority Assignment Scheme," Revision 42. The primary responsibility of the DRT is to review equipment-related Notifications for completeness and to direct the creation of any required work orders or tasks with an appropriate designation of work priority. During outage periods (as was the case during this meeting), the DRT meeting is combined with the OSRT meeting. The functions of the Outage Scope Review Team (OSRT) are covered under procedure AD8.ID5, "Outage Scope Determination and Control Process," Revision 5, a copy of which was also provided to the FFT. The primary responsibility of the OSRT is identifying, approving, and controlling refueling outage scope and ensuring outage work is appropriately prioritized. The FFT observed that combining the two meetings into a single meeting appeared to be an efficient process and allowed for new Notifications to be reviewed for work order creation and prioritization simultaneously with determining whether the work order would be added to the scope of the outage in progress at the time of the meeting (Refueling Outage

2R24 in this case). Essentially, the combined OSRT/DRT functioned as the management group who decided whether equipment deficiencies discovered during the outage would be corrected before the end of the outage or deferred for later correction following the outage.

The OSRT/DRT meeting was facilitated by Andy Halverson, Work Week Manager, and the team reviewed approximately 80 Notifications from the previous shift during the meeting. Each member had an opportunity to review the Notifications prior to the meeting and appeared knowledgeable about the notifications under review. Prioritizations for corrective maintenance work orders and decisions about outage scope additions appeared appropriate.

Conclusions: The May 8, 2024, meeting of the Outage Scope Review Team and Daily Notification Review Team was conducted efficiently and effectively. The team appropriately reviewed and dispositioned approximately 80 Notifications from the previous shift.

Recommendations: None.

3.4 Human Performance and Plant Status Control

The DCISC FFT met with Justin Rogers, Station Director, and Allen Wilson, Senior Director, Engineering, Technical, and Emergency Services, for an update on Human Performance (HU) and Plant Status Control at DCP. The DCISC last reviewed HU in April 2023 (Reference 6.4), when it concluded the following:

DCPP's Corrective Action Program was performing well in that issues at the station were being effectively identified, evaluated, and tracked for resolution. DCP's Human Performance has been excellent over the last two years based on data and trends in Human Performance (HU) events. DCP has had no HU events since April 2021 receiving the highest classification of significance as a Station Level Event.

DCPP reports and classifies all HU events and records via the Corrective Action Program for action and resolution. The classifications are as follows:

- Station Level Events (SLEs; highest significance)
- Department Level Events (DLEs)
- Organizational Learning Opportunities (OLOs; lowest significance)

At the request of the FFT, Mr. Wilson provided an update on the numbers of SLEs and DLEs for the last year. The last SLE at the station occurred on April 18, 2021, when operators and maintenance personnel identified that two cooling water hoses inside the Unit 2 Main Generator had been incorrectly installed by a contractor. This issue was previously reviewed by the DCISC during its April 2021 Fact-Finding Meeting (Reference 6.5).

Mr. Wilson reported that since May 2023, there were six DLEs at the station all of which were classified as 'discretionary.' He further explained that discretionary DLEs are events that do not

specifically meet the criteria for classification as DLEs but are judged by management to warrant additional attention. The benefits of using discretion to classify an HU event were to gain employee attention to lower-level problems and to disseminate the lessons learned and corrective actions among a wide audience of employees at the station. Mr. Wilson and Mr. Rogers believed that the additional attention given to discretionary DLEs was a key to preventing more significant HU events.

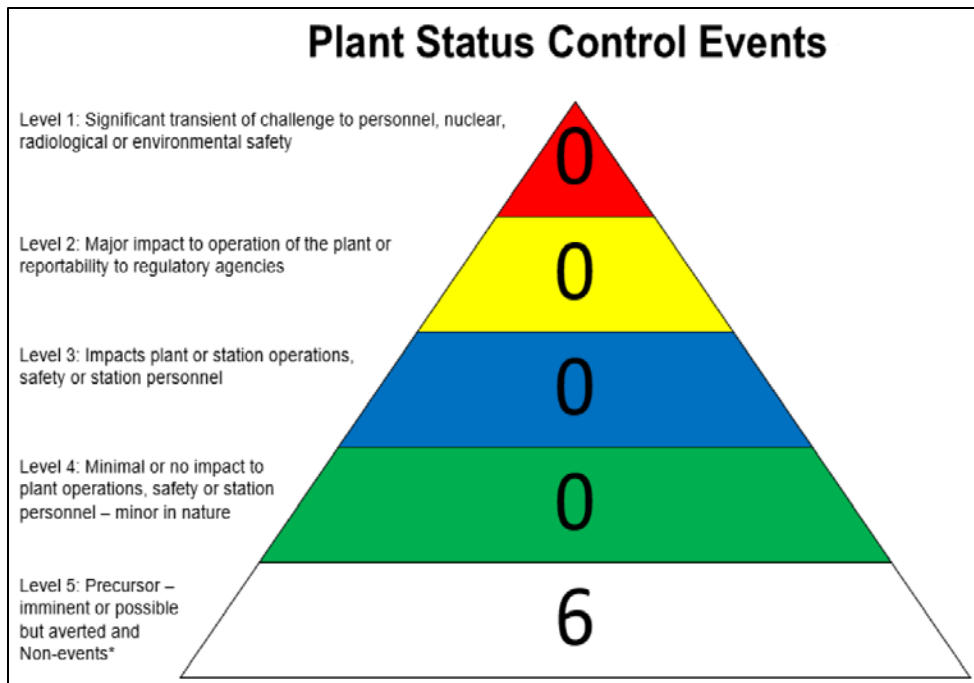
Taken with data from previous reviews by the DCISC, the FFT assembled the following table of the recent history of DLEs at DCP:

<u>Year</u>	<u>Number of DLEs</u>
2021	4
2022	9
2023	4
2024 (to date)	2

For 2023 and 2024 year-to-date, all six of the DLEs were discretionary. For 2021 and 2022, the majority of DLEs were non-discretionary, meaning that criteria for classifying the HU Event as a DLE were exceeded (more severe errors or consequences). The FFT concluded that the low number of SLEs and DLEs over the past two years (including two Refueling Outages) represented excellent human performance at DCP.

Regarding OLOs, the station continued its process of conservatively identifying a large number of minor issues for formal evaluation by the HU review process and classifying many as OLOs to ensure that all available lessons learned for minor issues were captured and disseminated to station employees. Data routinely provided to the DCISC via Performance Improvement Reports continued to show a high number of events reviewed by the program along with a high number of OLOs recorded. For example, the March 2024 Performance Improvement Summary showed 12 OLOs recorded for January and February 2024 (non-outage months) with 5 of the OLOs classified as discretionary. The November 2023 Performance Improvement Summary showed about 50 OLOs recorded for September and October 2023 (during Refueling Outage 1R24) with 14 of the OLOs classified as discretionary. The FFT considered that this approach and the supporting data represented a conservative and safety-focused approach to reporting, analyzing, and learning from all issues that could be caused by human errors, and has contributed to reducing the frequency of more serious DLE and SLE events.

The term Plant Status Control Events generally refers to events in which an operator or technician manipulates the wrong component (such as a valve or switch) or places a component in the wrong position. In this area, Mr. Rogers reported that DCP's performance has also recently remained strong. Previous DCISC reviews of Plant Status Control Events in April 2023 (Reference 6.4) found that actions taken to reduce Plant Status Control errors had been effective and the number and significance of events was low. The March 2024 Operations Services Performance Improvement Dashboard provided the following data for Plant Status Control Events over the last six months at DCP:



DCPP Plant Status Control Events October 2023 to March 2024

The FFT concluded that DCP's performance in minimizing Plant Status Control Events continued to be good.

Conclusions: DCP's Human Performance has been excellent over the last two years based on data and trends in Human Performance events. DCP has had no events classified with the highest significance of a Station Level Event since April 2021. The numbers and significance of Department Level Events and Plant Status Control Events remained very low.

Recommendations: None.

3.5 Nuclear Insurance Programs

The DCISC FFT met with Mark Frantz, Plant Engineering Manager; Mark Baker, Engineering Programs Supervisor; and Kelly Kessloff, Fire Protection Engineer, for an update on the structure and status of nuclear insurance programs at DCP. This was the DCISC's first review of this topic.

Mr. Baker explained that DCP's insurance programs were structured in two primary areas:

- Property and Boiler Machinery – Insured by Nuclear Electric Insurance Limited (NEIL) and European Mutual Association for Nuclear Insurance (EMANI)
- Radiological Protection (radiation exposures and releases) – Insured by American Nuclear Insurers (ANI)

The property insurance portion was structured into several tiers above PG&E's deductible threshold. Policies from NEIL and EMANI were combined to cover the first \$1.5 billion and excess losses above that amount were covered by a separate policy from NEIL for another \$1.25 billion. [These policies and their values were also required to be regularly reported to the NRC and were last reported in March 2024 (Reference 6.6).]

As a part of its activities in holding the insurance policies for PG&E, NEIL staff members regularly review loss prevention programs and the condition of equipment at DCP. These reviews include both programmatic document reviews and onsite equipment inspections at DCP. The last NEIL inspection was completed in February 2022, and the next NEIL inspection is scheduled for the Fall of 2024. Inspections were performed against detailed loss prevention standards provided by the insurer. The FFT requested to review the 2022 inspection report and was provided a copy under a confidentiality declaration. The FFT found that the report was generally positive with no major equipment or program deficiencies noted and a few minor deficiencies being corrected by PG&E.

The FFT also requested to discuss the radiological protection insurance provided by ANI and were referred to other DCP personnel who would be made available during a future Fact-Finding Meeting.

Conclusions: Property and equipment insurance policies were being properly maintained by PG&E, and a 2022 inspection by the insurer found no major deficiencies. The DCISC should review results from the next NEIL inspection (fall 2024) and the status of radiological protection insurance during future Fact-Finding Meetings.

Recommendations: None.

3.6 Meteorological Information and Dose Assessment System

The DCISC FFT met with Cameron Christensen, Senior Emergency Planning Coordinator, to discuss the status of the Meteorological Information and Dose Assessment System (MIDAS) Program. The DCISC last reviewed the MIDAS Program during its December 2021 Fact-finding Meeting (Reference 6.7), when it concluded the following:

DCPP continues to properly maintain and use the MIDAS software system for predicting the magnitude and path of airborne radioactive plumes from the plant in the event of an emergency. Problems in software usage that occurred during the September 2021 Emergency Response exercise had been appropriately addressed.

MIDAS is a computer software program that is used to predict the path and magnitude of radiation releases to the surrounding environment caused by an accidental radiation release into the air from the plant. The output of the MIDAS software is used by DCP to make protective action (sheltering, evacuation, etc.) recommendations for protection of the public to governmental authorities (i.e., the San Luis Obispo County Office of Emergency Services). Inputs to MIDAS include the concentration and height of radioactive releases into the air from the plant along with wind and temperature data from up to seven meteorological towers and several SODAR (Sonic

Detection and Ranging) units. The predictions are compared to data from roving field monitoring teams and by radiation detectors at fixed locations in the field.

Mr. Christensen reported that no significant changes had been made to the MIDAS software since the DCISC last reviewed this topic in 2021, and the hardware was also performing well in general. Minor issues had occurred with communications to other systems, such as the meteorological instrument towers, but reconfiguring server network ports successfully resolved the issues. The FFT asked about what surveillance tests were performed on MIDAS, and Mr. Christensen reported that a procedure was performed monthly to test the software and confirm that all functions were working well. He also briefed the FFT on how data is shared both with the NRC and with the National Atmospheric Release Advisory Center at the Lawrence Livermore National Laboratory in Livermore, California.

The FFT also asked about what training on MIDAS was held for dose assessment personnel, and Mr. Christensen reported that Emergency Response Organization muster meetings regularly included Dynamic Learning Activities (DLAs) for dose assessment personnel in the use of the MIDAS software. He provided a copy of a DLA which provided background information for a release scenario that was set up in the MIDAS software to facilitate dose assessment personnel in getting hands-on use of the system to calculate the activity and direction of a radiation release.

Conclusions: DCPP continues to properly maintain and use the Meteorological Information and Dose Assessment System (MIDAS) software system for predicting the magnitude and path of airborne radioactive plumes from the plant in the event of an emergency.

Recommendations: None

3.7 Cause Evaluation for Auxiliary Saltwater Pump 2-2 Failure

The DCISC FFT met with Mark Frantz, Plant Engineering Manager; Alex Brown, Performance Improvement Manager; and Jeff Wilkinson, Component Engineer, to review the status of the Cause Evaluation for the failure of the motor for Auxiliary Saltwater (ASW) Pump 2-2 in the fall of 2023. This item was a follow-up to the DCISC's review in March 2024 (Reference 6.8), when it concluded the following:

A motor bearing degradation on Auxiliary Saltwater Pump 2-2 discovered in the fall of 2023 was found to be a repeat of a bearing degradation issue that occurred in 2018. DCPP has initiated a Cause Evaluation to determine why corrective actions from the 2018 event were ineffective in preventing recurrence, and the DCISC should review the results of that Cause Evaluation following its completion.

As reviewed by the DCISC in March 2024, examinations following pump removal revealed that the motor bearing was degraded with wear patterns the same as a motor bearing degradation that occurred in November 2018 on the motor for ASW Pump 2-1. At that time, a Root Cause Evaluation (RCE) was performed and the cause of the 2018 bearing degradation was determined to be excessive axial pre-loading (thrust) of the bearing when it was reassembled following motor

overhaul in 2016. The axial pre-loading was determined by the installation of a proper thickness of shims which limited the amount of endplay for the motor shaft. Mr. Wilkinson reviewed with the FFT the complexity of the steps involved in setting the axial pre-load and how the procedure will likely need additional revisions beyond what was implemented as corrective actions for the 2018 RCE. Given the complexity of the task, the date to complete the RCE had been extended to late summer 2024 to allow validation of any procedure changes during the next motor overhaul currently planned for July 2024. As such, the RCE would not be fully complete before the fall of 2024. The FFT also inquired as to how an extent of condition review would be performed based on the fact that the 2018 RCE turned out to be ineffective in preventing recurrence, and the DCPD personnel responded that aspect was still under review.

Conclusions: A motor bearing degradation on Auxiliary Saltwater Pump 2-2 discovered in the fall of 2023 was found to be a repeat of a bearing degradation issue that occurred in 2018. A Cause Evaluation is in progress to determine why corrective actions from the 2018 event were ineffective in preventing recurrence, and the DCISC should review the results of that Cause Evaluation following its completion.

Recommendations: None

3.8 Learning Services Department

The DCISC FFT met with Abdul Kadir, Operations Training Manager, and Roger Reid, Requalification Training Supervisor, to discuss Learning Services (Training) Department programs and performance. The DCISC last reviewed this topic during its May 2022 Fact-Finding Meeting (Reference 6.9), when it concluded the following:

Learning Services Department overall performance was good, and the Department was appropriately focused on ensuring that staff remaining on site through the cessation of power operations will be adequately qualified.

Mr. Kadir provided an overview of department activities for Operations training programs. Overall, the move from a planned DCPD shutdown to the possibility of extended operations had been a large challenge for the department. In mid-2021, DCPD successfully completed what it thought at the time would be its last class of Initial License Training (ILT) for new licensed operators. When those classes were complete, the contract instructors were released, and the remaining excess ILT instructors moved back to active roles in Operations or transitioned to Licensed Operations Continuing Training (LOCT) staff. When the initiative to extend operations began in late 2022, the department needed to increase the number of ILT instructors quickly at a time when there was an overall shortage of experienced instructors in the industry. In the early part of 2023, the station was successful in hiring about 13 new instructors for operations training, including hiring four instructors who were previously working out of the country.

Since the proposal to extend operations was initiated, the department had started four additional ILT classes: an initial round of Reactor Operator (RO) to Senior Reactor Operator (SRO) upgrades in early 2023, two additional ILT classes for both ROs and SROs in 2023 and 2024, and another

ILT class for both ROs and SROs scheduled to begin in the summer of 2024. Overall, the performance of personnel trained in the recent ILT programs had been good (100% pass rate on the 2023 NRC examination), but there had also been a few unplanned losses from the program during the process. The FFT inquired about the source of the staff that participated in the new ILT classes, and Mr. Kadir reported that many of the later classes were staffed by internal employees from departments other than Operations (such as from the Maintenance and Radiation Protection Departments) as well as from external hires (primarily from the US Navy). He also noted that the 25% retention bonus offered under the proposal to extend operations was very helpful in attracting quality external hires despite the high cost of living in the local area.

Regarding other training programs in the department, Mr. Reid reported that the LOCT program was also required to hire new instructors and move staff around to maintain the ongoing routine of LOCT training while also supporting ILT program. In Radiation Protection (RP) and Chemistry Training, the department was pursuing obtaining packaged contractor training services for RP and Chemistry personnel. Training for contract employees coming to the station to support the last two refueling outages had generally gone well despite the large number of employees being processed. The FFT inquired about the results of external evaluations of the department and Mr. Reid reported that there were some gaps identified by Quality Verification in updates to training materials and corrective actions had been initiated. The next Institute of Nuclear Power Operations accreditation review was scheduled for mid-2025 and would cover all training programs.

Lastly, the FFT inquired about the status of the Control Room Simulator with regards to reliability and performance. Mr. Kadir reported that the simulator had been performing well with no major issues. Input/output cards were at the end of their planned life, and they were being replaced as needed from an ample on-hand stock of new cards. The Simulator was last upgraded in 2015, and new upgrades to the digital systems were being considered for implementation in the near future. He also noted that DCP's glass top simulator was now being frequently used during training programs and had been reconfigured to allow for the simultaneous training of multiple groups of students.

Conclusions: Learning Services Department overall performance was good, and the Department was appropriately focused on ensuring that staff were properly trained and qualified to support extended operations.

Recommendations: None.

3.9 Inspection and Maintenance Programs for Major Equipment Supports

The DCISC FFT met with Scott Maze, Design Engineering Manager; Jeff Stallman, Civil Design Engineer; Chris Beard, Inservice Inspection (ISI) Program Supervisor; Shane Guess, Quality Verification Director; and Jordan Tyman, Risk and Compliance Director, for a briefing on the design and maintenance of supports for major safety-related components, such as the Reactor Vessel and Steam Generators (SGs). This was the DCISC's first review of this topic.

Mr. Maze explained that the Reactor Vessels were supported by pads under the eight cold and hot leg nozzles for each vessel. The steel pads were actively cooled by Component Cooling Water and transferred the weight of the vessel to the cylindrical concrete structure surrounding the vessel. Because the support pads are passive components that cannot easily be replaced and have a safety-related function to provide structural support to the reactor vessel under normal operation and in earthquakes, the FFT was interested in understanding their inspection methods and aging management. The support pads were not accessible to the FFT due to the high radiation in the area, and the FFT requested and was provided with a picture as follows:



Picture 3.9-1, Reactor Vessel Support Under Loop 3 Cold Leg. Note the horizontal restraint to motion during earthquakes (circled).

The FFT inquired as to how the vessel supports were maintained, and Mr. Beard responded that DCP's ISI Program required that a "VT-3" visual inspection be performed on the supports by a qualified inspector each outage. Often, the visual inspection of the support was combined with ultrasonic inspections of the nozzle welds that were also required to be performed in the area. The FFT also inquired about the type of insulation in the area and Mr. Maze reported that removable sections of reflective stainless steel insulation were used in that area as well as elsewhere on almost all primary systems inside of the Containment Building. The FFT requested and was provided with a copy of procedure NDE VT 3-1, "Visual Examination of Component and Piping Supports," Revision 3, which detailed the inspection procedure and documentation required for piping support inspections.

Regarding SG supports, Mr. Stallman explained that the weight of each SG is supported by four columns with pivots to allow some movement to accommodate expansion of the hot legs

connecting the Reactor Vessel to the SGs (see tour Picture 3.10-4 below). At the upper section of the SG, lateral sliding frames were installed with small gaps to allow movement. The gaps were measured and verified during every outage. Additionally, each SG had four of the largest hydraulic snubbers at the station which were used to allow axial growth of the SGs while limiting sudden lateral movement that could occur during an accident or a seismic event (see tour Picture 3.10-2 below).

Mr. Stallman further explained the general use and maintenance of snubbers at DCP. A snubber is a device that allows for slow axial movement (as from thermal expansion) in a support while limiting sudden movements that could occur during an accident or a seismic event. Snubbers fell into two categories: 1) mechanical, typically used for small snubbers (see tour Picture 3.10-3 below), and 2) hydraulic, typically used for large snubbers (see tour Picture 10-2 below). He used a disassembled snubber to explain the inner mechanism of a mechanical snubber to the FFT. Mr. Stallman also explained that there were about 500 total snubbers at the station of a wide variety of types and manufacturers. All the snubbers were regularly inspected and tested in accordance with ISI Program requirements. He provided a copy of the testing procedure, MP M-55.3, "PSA Snubber Maintenance," Revision 23, for review by the FFT. The procedure contained requirements for snubber removal, installation, and testing at frequencies determined by the ISI Program. The FFT asked about test results for recent outages, and Mr. Stallman reported that there were no failures out of about 50 snubber tests during Refueling Outage 2R23 in the fall of 2022, and one snubber failure out of about 50 tests during Refueling Outage 1R24 in the fall of 2023.

Conclusions: DCP's inspection and maintenance programs for major equipment supports appeared well designed and effectively implemented.

Recommendations: None.

3.10 Plant Tour

The DCISC FFT met with Scott Maze, Design Engineering Manager; Jeff Stallman, Civil Design Engineer; and Josh Mendez, Radiation Protection Foreman, for a tour of the DCP Unit 2 Containment Building. The DCISC last conducted a plant tour during its April 2024, Fact-Finding Meeting (Reference 6.10) when it concluded the following:

The DCISC Fact-Finding Team toured the Unit 2 Control Room and maintenance work areas in the Turbine Building. Work was being managed properly, and all areas were clean, orderly, and well lit, with equipment in excellent condition.

At the request of the FFT, Mr. Mendez guided the team in entering the Radiation Control Area (RCA) and touring areas inside of the Unit 2 Containment Building where many of the supports discussed in Section 3.9 above were located. At the time of the tour, Unit 2 was in the last scheduled week of Refueling Outage 2R24 in Cold Shutdown having recently completed refueling of the Reactor. Areas toured included:

- 140' Level, Refueling Floor and Steam Generator 2-1 Enclosure

- 115' Level, Reactor Coolant Pump 2-4 and Steam Generator 2-4 Enclosures
- 91' Level Bio-shield Entry Area, Steam Generators 2-3 and 2-4 Pedestals

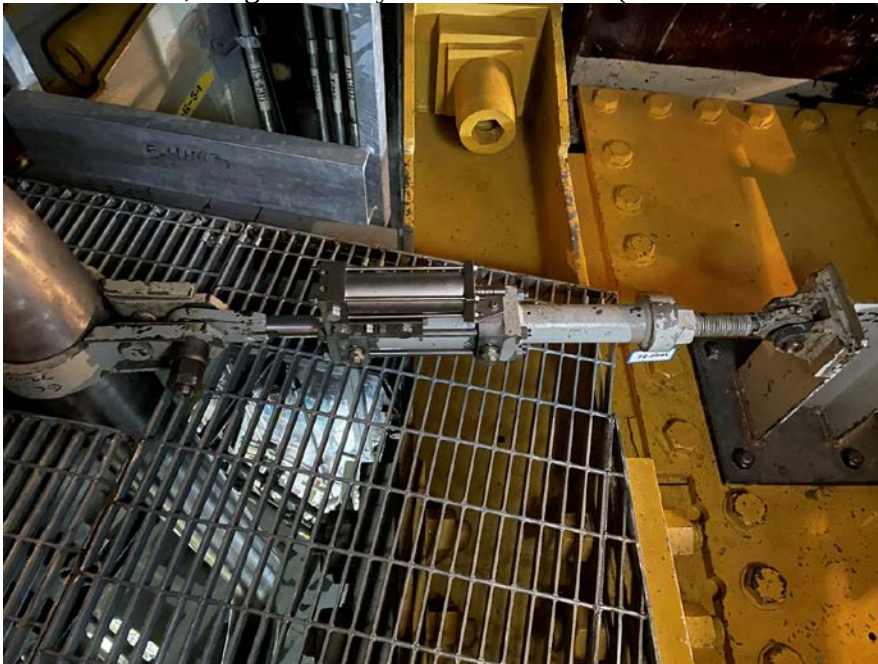
Overall, the FFT found that all observed areas were clean, orderly, and well lit. Selected pictures of areas toured by the FFT were as follows:



Picture 3.10-1, FFT and Escorts at Containment Entry



Picture 3.10-2, Large Bore Hydraulic Snubbers (Steam Generator Lateral Supports)



Picture 3.10-3, Typical Small Bore Mechanical Snubber (Pipe Support)



Picture 3.10-4, Steam Generator Support Legs

Conclusions: The DCISC Fact-Finding Team toured the DCP Unit 2 Containment and found that all observed areas and equipment were in good condition.

Recommendations: None.

3.11 Corrective Action Review Board

The DCISC FFT met attended the Corrective Action Review Board (CARB) meeting of May 9, 2024. The DCISC last observed a CARB meeting in April 2023 (Reference 6.11), when it concluded the following:

The April 18, 2023, DCP Corrective Action Review Board (CARB) meeting covered items on the agenda efficiently while allowing adequate time for any

participants to question and discuss items of interest in more detail. There was good participation by CARB attendees.

The CARB's purpose is to provide a venue for station management to demonstrate commitment to Corrective Action Program (CAP) excellence. The CARB fulfills a need for senior management oversight of the CAP, and this oversight function includes:

- Reviewing Root Cause Evaluations (RCEs) for accuracy, completeness and alignment of the problem, causes, and corrective actions.
- Approving extensions to the due dates for Corrective Actions to Prevent Recurrence.
- Approving Effectiveness Evaluations for CAP resolutions.
- Periodically reviewing CAP metrics to ensure the CAP is meeting management expectations.
- Reviewing and dispositioning requests for changes to Cause Evaluations.
- Reviewing Notifications screened by the Notification Review Team, which performs the initial screening of all Notifications.

The membership of the CARB consists of regular and alternate members designated in writing by the Station Director, and CARB meetings are held as necessary, typically on a weekly basis. This meeting was chaired by Justin Rogers, the Station Director. The agenda for this meeting included the following:

- Safety Minute
- Facilitative Leadership Minute
- Review Desired Outcomes
- Verify Quorum
- Review Previous Meeting Minutes, Action Items, and Evaluation
- Review Cause Evaluation Assignments Regarding an NRC Question on the Operation of the P-9/C-9 Reactor Protection System Interlock
- Review Cause Evaluation Assignments Regarding Refueling Outage 2R24 Drindown Clearance Delays
- Review Oldest Open Corrective Action Notification Task Assignments
- Review Selected Open Significance Level 1 and 2 Work Group Evaluations
- Review Condition Reports
- Review Action Items and Meeting Evaluation

The FFT observed that the meeting was effectively managed, covering items on the agenda efficiently while allowing adequate time for any participants to question and discuss items of interest in more detail. There was good participation by all CARB attendees.

Conclusions: The May 9, 2024, DCPD Corrective Action Review Board (CARB) meeting covered items on the agenda efficiently while allowing adequate time for any participants to question and discuss items of interest in more detail. There was good participation by CARB attendees.

Recommendations: None.

3.12 Refueling Equipment

The DCISC FFT met with Mark Frantz, Plant Engineering Manager; Chris Ingram, Primary Systems Strategic Engineer; Brian Kleinsmith, Project Engineer; and Casey Weir, Outage Manager, for an update on DCPD Refueling Equipment Health. Christian Arechavaleta, Eric Blocher, and Jerry Bischof from the California Department of Water Resources (DWR) also participated remotely in the meeting. (DWR is the state agency charged with overseeing state funds allocated to facilitate the extension of DCPD power operations under Senate Bill 846.) The DCISC last reviewed this subject in January 2022 (Reference 6.12), when it concluded the following:

DCPD's refueling equipment is in good health, with DCPD having experienced smooth fuel movement in the recent 2R22 Refueling Outage. DCPD's maintenance, upgrades, and equipment testing have been effective in supporting good system health. Additionally, contingency plans are in place if problems occur.

DCPD's Refueling Equipment on each unit consists primarily of the Manipulator Crane (used to move fuel inside Containment), the Transfer System (used to move fuel between Containment and the Spent Fuel Pool (SFP), and the SFP Bridge Crane. In the past, portions of the system have experienced unreliability which caused delays in outage fuel offloading and onloading on both units. The main issues that affected system health were obsolescence, unavailability of spare parts, and unreliability of equipment and components.

With the decision to pursue extended operations in late-2022, DCPD reviewed the health of Refueling Equipment as a part of the station-wide effort to review plans for maintenance and upgrade activities. Mr. Ingram explained that for this system, most of that review was captured in an action plan presented to the Plant Health Committee (PHC) in March 2023, and he provided the FFT with a copy of the 2023 PHC presentation. Plans (bridging strategies) were developed to prepare for the 1R24 and 2R24 Refueling Outages mostly by obtaining critical spare parts, reviewing the status of critical components, ensuring checkout inspections were thorough, completing open maintenance work orders, and developing contingency plans. In the most recent series of outages, all core offloads and core onloads were completed in less than 50 hours (versus a planned duration of 48 hours), and one core offload was completed in less than 46 hours. Mr. Ingram considered this a success and attributed it to the work of a multi-discipline High Impact Team which met weekly to review the system issues and ensure that the issues would be effectively addressed before the recent outages.

Mr. Ingram also explained that for the next series of outages, additional projects had been initiated to upgrade portions of the system. For the next set of Refueling Outages, 1R25 and 2R25, (expected to occur in calendar year 2025) the station planned to replace most critical components subject to mechanical wear, particularly in the Transfer System (upenders and transfer carts). For outages beyond the next set, broader proposals for upgrades were being considered, including possible replacements of the Manipulator Cranes on both units, a major project currently approved

for “Gate 1” scoping. Lastly, upgrades to replace outdated software in the SFP Bridge Cranes were planned to be completed in late 2024 or early 2025, following completion of the planned campaign to move spent fuel from the SFP to the Independent Spent Fuel Storage Installation.

Conclusions: DCP’s Refueling Equipment was in good health, and DCP experienced only minor problems with fuel movement during the recent 1R24 and 2R24 Refueling Outages. Long-term plans have been initiated to refurbish or upgrade portions of the system to support extended operations.

Recommendations: None.

3.13 Meet with DCP Officer

The DCISC FFT met with Adam Peck, Site Vice-President, for a general update. The discussion centered on the agenda items in this fact-finding meeting and other items of mutual interest. The DCISC last met with a DCP Officer in April 2024 (Reference 6.13) when it concluded the following:

The regular meetings between DCISC and DCP Officers and Directors continue to be beneficial for both organizations.

Conclusions: The regular meetings between DCISC and DCP Officers and Directors continue to be beneficial for both organizations.

3.14 Equipment Reliability

The DCISC FFT met with Michael Jackson, Engineering Director, for an update on DCP Equipment Reliability (ER). Delphine Hou, Christian Arechavaleta, Eric Blocher, and Jerry Bischof from the California DWR also participated remotely in the meeting. The DCISC last reviewed ER in May 2023 (Reference 6.14) when it concluded the following:

DCP’s Equipment Reliability performance has improved substantially since 2021 and 2022, and its health has improved to Green (good) and stable.

Mr. Jackson began by briefing the FFT on the current status of ER at DCP. DCP’s metrics placed it in the second quartile in the industry’s Equipment Performance Indicator. Unit 1’s indicator was negatively affected by two events in the fall of 2023 associated with a manual trip during ramp down and a forced outage to repair a leaking Pressurizer Safety Valve. Unit 2’s indicator was negatively affected by a reduction in power in the spring of 2023 caused by a biolab water line break. Despite those events, he judged that ER at the station had generally been good over the past two years but there was more that DCP could do to improve ER in the future.

The FFT inquired about the status of implementing a recommended initiative in ER from the Institute of Nuclear Power Operations (INPO). Mr. Jackson reported that DCP had completed

its response to the INPO initiative, which was focused on improving the quality and reliability of parts procurement as well as incorporating cross-functional approaches to maintaining reliable equipment and in managing risk at the station. He provided the FFT with several documents that the station prepared in response to the INPO initiative.

Mr. Jackson then pointed out that most previous initiatives in ER were focused on looking backward and preventing repeat equipment problems. While important and necessary, he believed that DCP's transition to extended operations required it to be more forward-looking. The change in direction from the planned cessation of power operations to an extension of operations left the station in a position of needing to perform many maintenance activities and initiate numerous upgrade projects to address obsolescence and/or implement new technologies at the station. The recently completed series of Refueling Outages, 1R24 and 2R24, allowed the station to catch up on maintenance activities and address needed inspections and minor improvements, and such would also be the case for the next series of Refueling Outages, 1R25 and 2R25. During recent outages, the station had also taken advantages of opportunities to perform low complexity projects that would add to reliability such as High-Voltage Transformer refurbishments, Condenser Tube Sheet coatings, and Main Condenser internal lagging strap replacements.

He believed that planning and implementing effective plant upgrades in the future 1R26 and 2R26 Refueling Outages would be critical to maintaining a high level of ER going forward into an extended operating period. Examples of projects to be completed in that timeframe that could have a positive impact on ER included replacements of the Main Feedwater Heaters, Annunciator Systems, and High-Pressure Turbines. He stated that the station wanted to be proactive in implementing digital technologies but believed that caution was needed as digital technologies tended to drive up the level of complexity along with increased project implementation risks. Installation of a digital level control system for the Feedwater Heaters was discussed as an area where a digital upgrade was being considered, but extensive reviews were needed to ensure that the risk of implementation problems was acceptably low.

Conclusions: DCP's Equipment Reliability programs have been effective, and station reliability has improved over the last two years. With the transition to extended operations, the station is focusing on implementation of future equipment replacements and upgrades to maintain and improve reliability.

Recommendations: None

4.0 CONCLUSIONS

- 4.1 The meeting with the NRC Senior Resident Inspector was beneficial, and the DCISC should continue the meetings.**
- 4.2 DCP initiated appropriate follow-up actions in response to a DCISC recommendation concerning post-earthquake procedures. Procedure changes to Operations procedure CP M-4, "Earthquake," were satisfactorily completed. The**

DCISC should review additional changes planned for procedure CP M-12, “Stranded Plant,” during a future Fact-Finding Meeting.

- 4.3 The May 8, 2024, meeting of the Outage Scope Review Team and Daily Notification Review Team was conducted efficiently and effectively. The team appropriately reviewed and dispositioned approximately 80 Notifications from the previous shift.**
- 4.4 DCP’s Human Performance has been excellent over the last two years based on data and trends in Human Performance events. DCP has had no events classified with the highest significance of a Station Level Event since April 2021. The numbers and significance of Department Level Events and Plant Status Control Events remained very low.**
- 4.5 Property and equipment insurance policies were being properly maintained by PG&E, and a 2022 inspection by the insurer found no major deficiencies. The DCISC should review results from the next NEIL inspection (fall 2024) and the status of radiological protection insurance during future Fact-Finding Meetings.**
- 4.6 DCP continues to properly maintain and use the Meteorological Information and Dose Assessment System (MIDAS) software system for predicting the magnitude and path of airborne radioactive plumes from the plant in the event of an emergency.**
- 4.7 A motor bearing degradation on Auxiliary Saltwater Pump 2-2 discovered in the fall of 2023 was found to be a repeat of a bearing degradation issue that occurred in 2018. A Cause Evaluation is in progress to determine why corrective actions from the 2018 event were ineffective in preventing recurrence, and the DCISC should review the results of that Cause Evaluation following its completion.**
- 4.8 Learning Services Department overall performance was good, and the Department was appropriately focused on ensuring that staff were properly trained and qualified to support extended operations.**
- 4.9 DCP’s inspection and maintenance programs for major equipment supports appeared well designed and effectively implemented.**
- 4.10 The DCISC Fact-Finding Team toured the DCP Unit 2 Containment and found that all observed areas and equipment were in good condition.**
- 4.11 The May 9, 2024, DCP Corrective Action Review Board (CARB) meeting covered items on the agenda efficiently while allowing adequate time for any participants to question and discuss items of interest in more detail. There was good participation by CARB attendees.**
- 4.12 DCP’s Refueling Equipment was in good health, and DCP experienced only minor problems with fuel movement during the recent 1R24 and 2R24 Refueling Outages.**

Long-term plans have been initiated to refurbish or upgrade portions of the system to support extended operations.

- 4.13 The regular meetings between DCISC and DCPD Officers and Directors continue to be beneficial for both organizations.**
- 4.14 DCPD's Equipment Reliability programs have been effective, and station reliability has improved over the last two years. With the transition to extended operations, the station is focusing on implementation of future equipment replacements and upgrades to maintain and improve reliability.**

5.0 RECOMMENDATIONS

- 5.1 None.**

6.0 REFERENCES

- 6.1 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2023 – June 30, 2024," Approved October 9, 2024, Volume II, Exhibit D.8, Section 3.3, "Meeting with NRC Senior Resident Inspector."
- 6.2 Ibid., Exhibit D.5, Section 3.3, "Response to DCISC Recommendation on the Use of Earthquake Response Procedures."
- 6.3 "Diablo Canyon Independent Safety Committee Thirty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2021 – June 30, 2022," Approved September 28, 2022, Volume II, Exhibit D.7, Section 3.4, "Attend Notification Review Team Meeting."
- 6.4 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2023 – June 30, 2024," Approved October 9, 2024, Volume II, Exhibit D.9, Section 3.6, "Corrective Action Program and Human Performance Update."
- 6.5 "Diablo Canyon Independent Safety Committee Thirty-First Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2020 – June 30, 2021," Approved October 20, 2021, Volume II, Exhibit D.8, Section 3.8, "Unit 2 Main Generator Issues and Root Cause Evaluation Update."
- 6.6 "2024 Annual Statement of Insurance for Pacific Gas and Electric Company's Diablo Canyon Power Plant," submitted to the Nuclear Regulatory Commission as PG&E letter DCL-24-032, March 27, 2024, NRC ADAMS Accession Number ML24088A096.

- 6.7 “Diablo Canyon Independent Safety Committee Thirty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2021 – June 30, 2022,” Approved September 28, 2022, Volume II, Exhibit D.5, Section 3.11, “Meteorological Information and Dose Assessment System.”
- 6.8 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2023 – June 30, 2024,” Approved October 9, 2024, Volume II, Exhibit D.7, Section 3.8, “Cause Evaluation for Auxiliary Saltwater Pump 2-2 Failure.”
- 6.9 “Diablo Canyon Independent Safety Committee Thirty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2021 – June 30, 2022,” Approved September 28, 2022, Volume II, Exhibit D.9, Section 3.1, “Learning Services Department.”
- 6.10 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2023 – June 30, 2024,” Approved October 9, 2024, Volume II, Exhibit D.7, Section 3.6, “Plant Tour.”
- 6.11 Diablo Canyon Independent Safety Committee Thirty-Third Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2022 – June 30, 2023,” Approved September 13, 2023, Volume II, Exhibit D.9, Section 3.1, “Corrective Action Review Board.”
- 6.12 “Diablo Canyon Independent Safety Committee Thirty-Second Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2021 – June 30, 2022,” Approved September 28, 2022, Volume II, Exhibit D.6, Section 3.6, “Refueling Equipment Health.”
- 6.13 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2023 – June 30, 2024,” Approved October 9, 2024, Volume II, Exhibit D.8, Section 3.9, “Meet with DCCP Officer.”
- 6.14 Diablo Canyon Independent Safety Committee Thirty-Third Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2022 – June 30, 2023,” Approved September 13, 2023, Volume II, Exhibit D.10, Section 3.4, “Equipment Reliability.”