

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

Report on

Fact-Finding Meeting at DCPD on December 12 and 13, 2023

by

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1.0 SUMMARY

The results of the DCISC December 12 and 13, 2023, 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 DCPD, portions of the meeting were held remotely. The subjects addressed and summarized in Section 3 are as follows:

1. Refueling Outage 1R24 Results
2. Outage Management Team Meeting
3. Response to DCISC Recommendation on the Use of Earthquake Response Procedures
4. Training Programs for New Engineers
5. Intake Cove Maintenance and Dredging Project Update
6. Unit 1 Reactor Vessel Embrittlement Update Including Efforts to Remove Capsule B
7. Refueling Outage 1R24 License Renewal Inspection Results
8. License Renewal Application Overview
9. Update on the Use of Electronic Procedures
10. Management Observation Programs
11. Emergency Preparedness Department
12. Meet with DCPD Officer
13. Auxiliary Saltwater Pump 2-2 Degradation and Exigent Technical Specification Change
14. Low Temperature Overpressurization Protection System
15. Meet with Nuclear Regulatory Commission (NRC) Senior Resident Inspector

2.0 INTRODUCTION

This Fact-Finding Meeting at the DCPD 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 Refueling Outage 1R24 Results

The DCISC FFT met with Erik Werner, Outage Planning Director, for a review of performance during Refueling Outage 1R24. Delphine Hou, Eric Wulff, Christian Arechavaleta, Jerry Bischof, and Eric Blocher from the California Department of Water Resources (DWR) 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 a similar topic during its December 2022 Fact-Finding Meeting (Reference 6.1), when it concluded the following:

DCPD’s Outage 2R23 was successful from a nuclear and personnel safety standpoint, meeting or exceeding all safety goals. One goal, outage length, was exceeded by almost five days due to repair of a Residual Heat Removal System isolation valve stem packing leak, which was a prudent decision to assure safe, reliable operation after reaching full power.

Mr. Werner reported that Refueling Outage 1R24 began on October 1, 2023, and ended on November 13, 2023. In general, all planned work was completed with no significant scope deletions or additions. Notable work activities completed during the outage included the following:

- Reactor Coolant System Drain Down and Refueling
- Reactor Coolant Pumps 1-3 and 1-4 Seal Replacements
- Steam Generator Eddy Current Testing
- High-Pressure Turbine Inspection and Mapping
- Main Generator Robotic Inspection
- Main Feedwater Pump 1-2 Inspection
- Feedwater Heater Inspections
- 480v Bus Preventive Maintenance
- 4kV Bus Preventive Maintenance
- Tank Inspections for License Renewal
- Electrical Inspections for License Renewal

- Piping Inspections for License Renewal

Mr. Werner reported that the station considered the outage very successful in managing and completing a much larger scope of work than was the case for recent outages. Compared to past refueling outages, the number of work packages, the number of supplemental workers, and the number of total work hours all generally doubled. The station completed numerous inspections to support license renewal without any major issues which he attributed to strong planning and the use of an Outage Control Center coordinator dedicated to track and manage the license renewal inspections. Challenges encountered included managing the workers, worker qualifications, and tasks supporting valve maintenance activities in an efficient manner as well as gaining access into the Condensate Storage Tank via its floating roof structure.

Refueling Outage 1R24 performance versus goals was as follows:

<u>Performance Measure</u>	<u>Goal</u>	<u>Actual</u>
Recordable Injuries	0	0
Serious Injury or Fatality Events	0	0
Nuclear Safety Issues	0	0
Site Human Performance Clock Resets	0	0
Foreign Material Exclusion Events	0	0
Outage Duration (Days)	< 45	44.4
Radiation Dose (Person-Rem)	< 35	38.4 (not met)
Power Ascension (Days)	< 5	3.9
Reliability (Days Following Outage)	> 90	26 (not met)

Regarding DCP's having exceeded the goal for radiation dose, Mr. Werner stated that a very challenging dose goal was set prior to the outage, and several emergent work items added about 3.5 Person-Rem of dose which was not accounted for in the goal. He expected that future radiation dose goals would likely include more contingency dose to cover emergent work activities. The station reliability goal was also not met because the unit shut down on December 9, 2023, to repair a leaking Pressurizer Safety Valve (PSV). The PSV leak was small (< 0.25 gallons per minute) and below the limits allowed by the plant Technical Specifications. However, it was decided to perform a shutdown to repair the valve to reduce operator burden in managing the leakage and to improve plant reliability for the remainder of the cycle. The work was in progress at the time of the FFT's meetings, and it was expected that it would take about one week to repair the valve. This offline period was designated as Maintenance Outage 1X25, and the DCISC should review the causes and corrective actions for the Pressurizer Safety Valve leakage during a future Fact-Finding Meeting.

Conclusions: DCP's Refueling Outage 1R24 was successfully performed. All planned scope of work was completed, and all performance goals were met except for radiation dose and post-outage reliability. The DCISC should follow up on reviewing the causes and corrective actions for Maintenance Outage 1X25 (Pressurizer Safety Valve repair) which occurred about one month after the end of the Refueling Outage.

Recommendations: None.

3.2 Outage Management Team Meeting

The DCISC FFT met with Hector Garcia, Chief Nuclear Officer Support Manager and DCISC Liaison, to observe the December 12, 2023, meeting of the Outage Management Team (OMT). This was the DCISC's first observation of an OMT meeting.

The OMT is governed by Procedure AD8.ID1, "Outage Planning and Management," Revision 32, a copy of which was provided to and reviewed by the FFT. According to AD8.ID1, the OMT is a group of station senior leaders whose purpose is to discuss pre-outage planning and outage implementation preparedness, and the OMT typically reviews:

- Projects, tasks, or evolutions in jeopardy of not being fully prepared for outage implementation
- Outage planning issues that rise to the level of needing Senior Leadership Team review
- Outage scope additions or appeals
- Risk decisions
- Forced loss rate due to interruptions in generation
- Single point vulnerabilities
- Major project, High Impact Team, department, process, or regulatory readiness
- Recovery plans for problem areas
- Decisions on bridging strategies and contingency planning
- Change management
- Large cost items

This meeting was focused upon preparations for Refueling Outage 2R24 scheduled to begin in March 2024 and was facilitated by Casey Weir, Outage Manager. The agenda included the following:

- Safety Review
- Review Purpose and Desired Outcomes
- Verify Quorum
- Review Previous Action Items
- Review Previous Meeting Pluses/Deltas
- Assigning a "What Excellence Looks Like" Observer
- Review Refueling Outage 2R24 Turbine Work Scope
- Review Refueling Outage 2R24 Reactor Cavity Seal Modification
- Recap Refueling Outage 1R24 and Preview Refueling Outage 2R24
- Review New Action Items
- Review Meeting Results
- Meeting Evaluation

The bulk of the meeting's time was dedicated to reviewing the two agenda items above that were potentially to be a part of the scope for the upcoming Refueling Outage 2R24. Regarding the scope of turbine work for Refueling Outage 2R24, there was much discussion on the advantages and disadvantages of disassembling the High-Pressure Turbine for internal inspections ahead of its planned replacement during the subsequent Refueling Outage 2R25 in the fall of 2025. At the end of the discussions, managers unanimously voted to remove the inspections from the upcoming outage pending a risk review by the insurer. Similar discussions were then held regarding the advantages and disadvantages of performing a modification to install a permanent Reactor Cavity Seal versus continuing with the use of temporary seals installed during outages. At the end of the discussions, managers unanimously voted to remove the permanent Reactor Cavity Seal modification from the upcoming outage primarily to free up funds and resources for other higher-priority projects. The FFT concluded that the discussions and decisions made regarding the two major agenda items were appropriate. Following discussion of those two major agenda items, the meeting ran out of time and the topic of the recap of Refueling Outage 1R24 and preview of Refueling Outage 2R24 was deferred until the next meeting.

Conclusion: The December 12, 2023, Outage Management Team meeting was conducted efficiently and effectively, and the DCISC should consider observing more of these meetings in the future.

Recommendations: None

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

The DCISC FFT met with Sam Williams, Operations Services Manager 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 July 2023 Fact-Finding Meeting (Reference 6.2) when it made conclusions and a recommendation as follows:

Conclusions: DCCP's post-earthquake response procedures are generally comprehensive; however, the primary earthquake response procedure CP M-4 does not include assessing FLEX equipment availability or transitioning to FLEX procedures should this be needed following a seismic event.

Recommendation: PG&E should review and update its post-earthquake response procedure, CP M-4, and supporting procedures, to include assessment of post-earthquake FLEX equipment availability and transition points to use FLEX procedures should they be required.

The FFT requested to meet on this topic to review the DCISC's recommendation with PG&E and to receive an update on any actions that had been taken or were planned by PG&E in response to

the recommendation. Mr. Williams informed the FFT that after receiving the approved version of the DCISC's July 2023 Fact-Finding report in early November 2023, the station reviewed the recommendation and initiated follow-up actions. On November 16, 2023, the station initiated a Corrective Action Program Notification (SAPN 51215061) to document the recommendation and track PG&E's actions. A copy of the Notification was provided to and reviewed by the FFT. 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. Williams provided a copy of procedure CP M-4, "Earthquake," showing several changes that had already been made to the procedure. Those changes included, 1) checking Spent Fuel Pool (SFP) status and referring to FLEX procedures to mitigate SFP conditions if needed, 2) checking site conditions to ascertain if FLEX implementation strategies had been impacted, 3) using FLEX procedures to assess plant damage during walkdowns, and 4) referring to the use of FLEX communications equipment if normal plant communications are lost. He also noted that other departments were in the process of reviewing and modifying other post-earthquake procedures. Procedure CP M-12, "Stranded Plant," had been evaluated by the Emergency Planning Department and would likely be modified, and another supporting procedure was under review for enhancements.

In general, the FFT concluded that PG&E understood the DCISC's recommendation and had promptly initiated appropriate follow-up actions. Since not all follow-up actions were yet complete, the DCISC should review the status of the follow-up actions again during a future Fact-Finding Meeting, preferably in May 2024. Mr. Garcia also noted to the FFT 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 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.

Recommendations: None

3.4 Training Programs for New Engineers

The DCISC FFT met with Ryan West, Engineering Services Director, for a briefing on the training of new engineers. The DCISC last reviewed a training-related topic at DCPD during its May 2023 Fact-Finding Meeting (Reference 6.3) when it concluded the following:

The DCPD Non-Licensed Operator training class on the Main Generator Hydrogen (H₂) and Carbon Dioxide (CO₂) System appeared satisfactory and effective.

Mr. West reviewed the status of staffing within the Engineering Department over the year since the decision was made to pursue extended operations for DCPD. Over the last year, 48 new engineers were hired of which about 95% were experienced, mid-career engineers. Some came from other nuclear facilities, but most were from other industries and many already resided in the area around the station. Given the scope of new personnel, the services of a retired senior manager from DCPD were obtained to help coordinate both overall engineering-related training activities and specific training assignments for each engineer. Engaging retired plant staff, who are highly knowledgeable about the plant's history, is excellent and has proven to be effective in this case. Overall, there were 127 staff (including the 48 new engineers) currently employed in the Engineering Department.

The initial training program for new engineers included three areas: Engineering Support Personnel (ESP) initial training, individual qualification programs, and Individual Development Plans (IDPs). The ESP initial training program was structured and accredited under guidelines from the Institute for Nuclear Power Operations and consisted of ten weeks of formal training in a classroom environment. Simulator activities were also included in the ESP program to provide engineers with an opportunity to get hands-on experience in the operation of plant systems. The ESP training program covered administrative requirements, engineering fundamentals, DCPD plant systems, and system design bases including accident analyses. Each topic was taught by a certified instructor who was also qualified as a Subject Matter Expert in the topic. Recently, the ten-week program was separated into two segments and presented in the summer of 2023 and winter of 2024 to work around the fall outage schedule. The FFT requested and was provided with a schedule for the ESP training session scheduled to begin in January 2024. The FFT found that the topics covered by the program were extensive and fell into the general areas as discussed above.

In addition to the ESP training program, each engineer was assigned an individual qualification program that was specific to the engineer's position. Typically, the engineer was expected to complete the qualification program for their position within one year of hiring. Each engineer also was provided an IDP, which was updated annually by the supervisor and the engineer working together to identify and provide focused training on specific skills or knowledge needed by the engineer in their current or future assignments. The FFT inquired about how much training was provided after an engineer was fully qualified, and Mr. West responded that the IDP process and ongoing training activities typically resulted in each engineer receiving 10 to 40 hours of formal training activities per year.

Supplementing the accredited training program, the station was also focused on knowledge retention given the large amount of staff turnover in the last few years. A Knowledge Retention Working Group was established and developed a Knowledge Transfer Plan. The plan was focused on identifying critical skills needed by staff and developing appropriate actions to ensure that those critical skills were maintained when experienced staff left the station and were replaced by new employees. The working group also focused on looking ahead at future losses and making plans to ensure critical skills continued to be maintained in the future.

Conclusions: DCP's training programs for new engineers were well organized and appropriately focused to maintain an adequate level of technical knowledge within the Engineering Department. As a result of reaching out to a retired member of the plant staff for support, the updates to the training programs benefited from historical knowledge about the training program, which the DCISC considered to be an excellent practice.

Recommendations: None

3.5 Intake Cove Maintenance and Dredging Project Update

The DCISC FFT met with Mark Sciacca, Director, Projects, and Trevor Rebel, Environmental Permitting Manager, for an update on dredging and diving operations to remove sediment at the DCP Intake Cove. The DCISC last reviewed Intake Cove sediment issues during its August 29, 2023, Fact-Finding Meeting (Reference 6.4), when it concluded the following:

DCP's plans to pursue dredging of the intake cove are appropriate. Circulating water system trips caused by kelp ingestion place significant stress on plant systems and can cause turbine and reactor trips. Reducing the risk of such trips by dredging accumulated sand from the intake cove, as well as reducing plant power during winter storms, are both appropriate. The DCISC concurs that dredging should be performed and should continue to follow DCP's efforts in this area.

This update was prompted by DCISC's receipt of an email from a member of the Alliance for Nuclear Responsibility (A4NR) with two attachments received by mail from an anonymous source, alleging certain improprieties related to dredging and diving operations at the DCP Intake Cove. A summary of the alleged improprieties was as follows:

- The allegation was made anonymously by a "concerned plant associate and citizen" due to a fear of retaliation from PG&E.
- The dredging of the Intake Cove had been deferred, including an inference that cost was the basis for the deferral.
- In lieu of dredging, divers were using fire hoses to push large amounts of sand towards the Circulating Water System intakes. As a result, trenches in front of the intake had been created.
- The movement of sand by divers had been going on for years but recently became more frequent.
- The practice of sand movement by the divers was illegal.
- Concerns once voiced "from there" were unvalued and dismissed, and employees could be reluctant to discuss the issue.

Prior to informing PG&E of the existence of the A4NR email, the FFT first requested an update on the status of the project to dredge the Intake Cove and a briefing on maintenance activities performed at the Intake Cove using divers. Mr. Sciacca reported that PG&E was continuing to pursue the Intake Cove dredging project which was now planned for completion during Refueling Outage 2R24 in the Spring of 2024. It was desirous to perform the dredging when one of the units

was shut down as that reduced the flow of water through the cove by 50%. The day prior to the FFT's meetings, senior managers had completed their review of the final bids and narrowed contractor selection down to two possible contractors. DCPD expected to award a contract sometime in the first quarter of 2024. The plant had originally planned to perform the dredging during Refueling Outage 1R24 in the fall of 2023 but had discovered that additional detailed planning and specifying of contract terms were needed to ensure that the work could be safely performed without adversely affecting the operating unit.

Regarding maintenance of the Intake Cove using divers, Mr. Rebel reported that PG&E routinely used divers in the Intake Cove to keep the intake bar rack area clean of debris and sand. The cleaning was performed periodically and was necessary to ensure that the traveling screens did not degrade or plug and that the area was kept clear to allow the installation of the bar racks for maintenance if needed. The cleaning involved using fire hoses to spray the bar racks and the sand near the intakes, with the material then being carried into the travelling screen system which removes larger material, and the smaller material including the sand then traveling through the Circulating Water System. The sand was cleared away from the intakes out to whatever distance was necessary to create a gentle slope that would ensure the sand could not collapse on divers working near the intake. The FFT asked if moving the sand through the Circulating Water System was allowed by the environmental permit, and Mr. Rebel reported that it was not precluded by any conditions of the station's environmental permits. He also noted that the sand which was moved by the divers was sand which had been swept from the ocean into the cove and was not a part of the cove's original bottom surface. Also, he pointed out that if the sand were not moved by the divers, the sand would eventually accumulate to a point where it would be picked up and carried through the system anyway.

The FFT then informed PG&E of the A4NR email and provided PG&E with copies of the two documents. The individuals present in the meeting were not aware of any similar concerns expressed by any plant employees in the past. The PG&E personnel suggested and the FFT agreed that the documents should be entered into the station's Employee Concerns Program (ECP) to receive a detailed investigation and evaluation similar to that which would be normally done had the documents been received anonymously from a plant employee. PG&E agreed to provide an update on its investigation at the DCISC's next Fact-Finding Meeting in January 2024.

Based on the information provided by PG&E, the FFT concluded that there were no nuclear safety concerns stemming from the alleged improprieties sent to the DCISC by A4NR. The FFT found that the Intake Cove dredging project was on track for completion in the Spring of 2024 and had not been inappropriately deferred. Additionally, maintenance activities using divers in the Intake Cove were appropriate and not precluded by the station's environmental permits. The FFT did not find any reluctance on PG&E's part to discuss the matters. Based on past reviews of the ECP and other matters, the FFT was not immediately concerned about possible threats of retaliation to employees at the station who raised concerns. The documents received from A4NR were referred to the station's ECP for further investigation, and the DCISC should follow up on the investigation results during its January 2024 meetings.

Conclusions: The DCISC reviewed documents received from the Alliance for Nuclear Responsibility regarding alleged improprieties in managing dredging and maintenance of

DCPP's Intake Cove, and the DCISC concluded that there were no nuclear safety concerns. The dredging project was being properly managed for completion in the spring of 2024, and maintenance activities using divers in the Intake Cove were appropriate and not precluded by the station's environmental permits. The documents were provided to PG&E for additional investigation through its Employee Concerns Program, and the DCISC should follow up on the investigation's results during its January 2024 meetings.

Recommendations: None

3.6 Unit 1 Reactor Vessel Embrittlement Update Including Efforts to Remove Capsule B

The DCISC FFT met with Philippe Soenen, Strategic Initiatives Director, and Terri Carraher, Inservice Inspection (ISI) Program Owner, to discuss questions related to Unit 1 Reactor Vessel embrittlement and for an update on PG&E's efforts to remove Capsule B during Refueling Outage 1R24. The following personnel also participated remotely in the meeting:

- DCPD License Renewal Program Manager Brandy Lopez
- Westinghouse Engineers Jerry Simpson and Brian Hall
- DCISC Consultants Ferman Wardell, Andrew Kadak, and Mark Kirk (DCISC Consultant on Reactor Vessel Embrittlement)
- DWR Representatives Eric Wulff, Christian Arechavaleta, Jerry Bischof, and Eric Blocher

The DCISC last reviewed Reactor Vessel embrittlement during its November 2023 Fact-Finding Meeting (Reference 6.5) when it concluded the following:

PG&E provided satisfactory answers to DCISC Unit 1 Reactor Vessel embrittlement questions submitted by DCISC's Embrittlement Consultant, Dr. Mark Kirk. This will help provide data needed by Consultant Kirk in his independent review of DCPD reactor vessel embrittlement status, which is to be completed in draft form by the end of 2023, discussed with DCISC and PG&E at the DCISC January 24-25, 2024, Fact-finding Meeting, and reported publicly at the DCISC February 21-22, 2024, Public Meeting. PG&E reported that its evaluation has demonstrated that the 60-year limits are met, which the NRC has independently evaluated. DCPD reported that they were unable to withdraw the weld material specimen (Capsule "B") from the Unit 1 Reactor Vessel during Outage 1R24 due to limited access and tool fitment problems. DCPD will retry this procedure and other approaches in Outage 1R25 with the reactor vessel core barrel removed for better access.

The Fact-finding Team concluded that the PG&E evaluation (showing the DCPD Unit 1 Reactor Vessel meets NRC fracture toughness limits through its 60-year plant life) appeared satisfactory, pending the DCISC embrittlement consultant's review to be completed and presented at the DCISC February 21-22, 2024, Public Meeting.

The DCISC first requested that PG&E review the history of internal inspections of Unit 1's Reactor Vessel under the station's ISI Program. DCP's ISI Program is a part of its licensing basis and is required to comply with NRC Regulation 10 CFR 50.55a, "Codes and Standards." The program is designed to comply with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." The code's rules and requirements apply to piping and vessels containing pressurized fluids and identify the areas subject to inspection, responsibilities, provisions for accessibility and inspectability, examination methods and procedures, personnel qualifications, frequency of inspections, record-keeping and report requirements, procedures for evaluating inspection results, subsequent disposition of results of evaluations, and repair requirements. For the Reactor Vessel, the program typically requires that non-destructive internal examinations of Reactor Vessel welds be performed every 10 years.

Mr. Carraher reported that for DCP Unit 1, the last full vessel weld inspection was performed in 2005. In 2014, a partial vessel weld inspection was completed during Refueling Outage 1R18 with a plan to complete the remaining portion of the inspection during Refueling Outage 1R19 in 2015. Later, a one-time exemption was requested to and granted by the NRC to delete the remaining scope of the 2015 weld inspections. The past vessel weld inspections found two small weld indications that were dispositioned under acceptability tables in the ASME code and were not significant enough to require additional engineering evaluations. Currently, the next full inspection of the Unit 1 vessel welds was planned for Refueling Outage 1R25 in the spring of 2025. Documents reporting detailed information on the inspection results were requested and provided to the DCISC after the meeting for additional review as a part of a report on Reactor Vessel Embrittlement being separately prepared by the DCISC.

The DCISC submitted the following questions in advance of the meeting. Mr. Soenen discussed answers to the questions during the meeting and provided written answers after the meeting:

1. The DCISC estimates that Capsule V represents 32.4 EFPY (Effective Full Power Years) at the clad to base metal interface. Does PG&E agree? In what calendar year does PG&E expect that Unit 1 will reach 32.4 EFPY?

PG&E Response: Based on Westinghouse WCAP 18655-NP (PG&E's most recent Unit 1 fluence analysis from 2021; copy provided to the DCISC with this response), DCP Unit 1 Capsule V has a fluence value of 1.34×10^{19} [neutrons/square centimeter (n/cm^2), Energy > 1.0 MeV]. Per WCAP-18655-NP, Table 2-2, the maximum vessel fluence at 32 EFPY and 36 EFPY are 1.22×10^{19} and 1.37×10^{19} n/cm^2 , respectively. By performing linear interpolation using these data points, Capsule V represents 35.2 EFPY of vessel maximum fluence. PG&E would expect DCP Unit 1 to reach 35.2 EFPY in 2025. DCP Unit 1 reached 32.4 EFPY in 2022.

2. What EFPY for Unit 1 corresponds to the highest fluence from the Palisades "sister plant" data (2.36×10^{19} n/cm^2) being achieved at the vessel clad to base metal interface? During what calendar year does PG&E expect this EFPY to be reached?

PG&E Response: Per WCAP-18655-NP, Table 2-2, the maximum vessel fluence at 54

EFPY is 2.01×10^{19} n/cm². (No fluence projections were performed beyond 54 EFPY.) Upon extrapolation with respect to the projected future maximum fluence data, Capsule SA-240-1 is representative of 64.2 EFPY of vessel maximum fluence. PG&E would expect DCP Unit 1 to reach 64.2 EFPY in 2056, which is more than 10 years after the license renewal period of extended operations.

3. What EFPY for Unit 1 corresponds to the expected fluence for capsule B ($\sim 3.7 \times 10^{19}$ n/cm²) being achieved at the vessel clad to base metal interface? During what calendar year does PG&E expect this EFPY to be reached?

PG&E Response: As discussed in DCL-23-038 (PG&E's request to NRC to withdraw Capsule B in 1R24 or 1R25), the expected Capsule B fluence in 1R25 is 3.56×10^{19} n/cm². Per WCAP-18655-NP, Table 2-2, the maximum vessel fluence at 54 EFPY is 2.01×10^{19} n/cm² (No fluence projections were performed beyond 54 EFPY). Upon extrapolation with respect to the projected future maximum fluence data, Capsule B at 3.56×10^{19} n/cm² is representative of 97.1 to 101.01 EFPY of vessel maximum fluence, depending on assumptions. PG&E would expect DCP Unit 1 to reach 101 EFPY in 2095.

The FFT then requested that PG&E provide a summary of the efforts that were made to retrieve weld coupon Capsule B during Refueling Outage 1R24 that was recently completed in November 2023. Mr. Soenen reported that during a previous attempt to retrieve Capsule B, the tool engaged into the plug on the top of the sample tube but large amounts of force were not successful in removing the plug. During the recent outage, the tool would not engage into the plug on the top of the sample tube. Following the failure of the tool to engage, measurements were taken and it was found that the top of the plug had deformed slightly which resulted in a hole 0.01 inches smaller than the tool. None of the retrieval options planned for the outage could be used without a proper engagement of the tool into the plug.



Unit 1 Reactor Vessel Showing Tool Attempting to Engage Capsule B Sample Tube Top Plug

Regarding future efforts, PG&E reported that additional retrieval options would be available during Refueling Outage 1R25 in the spring of 2025 when the reactor core barrel would be removed to support ISI Program inspections. Also, the tool would be modified prior to that outage to ensure that it would fit into the smaller hole. Mr. Soenen also reviewed with the FFT several alternative approaches that could be used for the embrittlement analysis of Unit 1's Reactor Vessel including the possible use of the 10 CFR 50.61a rule or the possible use of comparable data from the same weld material located at another nuclear power plant.

Conclusions: PG&E provided information on past Unit 1 Reactor Vessel weld inspection results along with answers to questions related to vessel embrittlement. DCPD was unable to withdraw the Capsule B weld material specimen from the Unit 1 Reactor Vessel during Refueling Outage 1R24 due to tool fitment problems. DCPD will retry this procedure and other approaches in Refueling Outage 1R25 with the Reactor Vessel core barrel removed, which should enable better access. The DCISC's evaluations of Unit 1's Reactor Vessel embrittlement will be completed and presented at the DCISC February 21-22, 2024, Public Meeting.

Recommendations: None

3.7 Refueling Outage 1R24 License Renewal Inspection Results

The DCISC FFT met with Philippe Soenen, Strategic Initiatives Director, and Brandy Lopez, License Renewal Program Manager, for an update on the results of inspections performed during Refueling Outage 1R24 in support of license renewal activities. Eric Wulff, Christian Arechavaleta, Jerry Bischof, and Eric Blocher from the California Department of Water Resources (DWR) also participated remotely in the meeting. The DCISC last reviewed License Renewal inspections its August 29, 2023, Fact-Finding Meeting (Reference 6.6), when it concluded the following:

DCPP's preparation of a License Renewal Application was proceeding on schedule to meet the needed submission date to the NRC of December 31, 2023. Planning was nearly complete for initial Aging Management Plan inspections to be performed during the upcoming Refueling Outage 1R24.

As a part of license renewal activities, NRC regulations require that plants develop Aging Management Plans (AMPs) for plant Structures, Systems and Components (SSCs) to ensure that the effects of aging will be managed so that their intended functions will be maintained for the period of extended operation. The AMPs generally include both one-time and periodic inspections of SSCs to ascertain their condition and determine if further actions are required to manage aging during the period of extended operations. During the recently completed Refueling Outage 1R24, DCPP performed a large number of AMP inspections in support of license renewal activities, including inspections in the following general areas:

- Inspections of small-bore piping welds on primary systems
- Refueling Water Storage Tank internal inspections
- Condensate Storage Tank (CST) internal inspections
- Condensate Polisher vessel internal inspections
- Diesel Fuel Oil Storage Tank internal inspections
- Intake Structure concrete inspections
- Discharge Structure concrete inspections
- Electrical testing and inspections of 4kV Vital Bus cables
- Electrical testing and inspections of 480V Vital Bus cables
- Metal electrical bus internal inspections

Mr. Soenen reported that a total of approximately 182 AMP inspections in support of license renewal activities were completed during Refueling Outage 1R24. Additionally, 35 components were removed and replaced with new components for inspections to be completed after the outage. Overall, all required inspections were completed satisfactorily with no findings of aging related challenges to any SSC's ability to perform its intended functions. There were four inspection findings requiring additional engineering evaluations as follows:

- One CST area (6" x 7") was found with less than desirable wall thickness (SAPN 51204812). Future additional inspections could be required in this area.
- One Fuel Oil Transfer Pump vent line thickness was found to be below manufacturer's tolerance (SAPN 51209720). Replacement of the pipe was tentatively scheduled for January 2024, and the removed component would be further analyzed to ascertain if age-related degradation was present.
- One Fire Protection System valve was identified as degraded with potential selective leaching (SAPN 51211955). The valve was replaced and will be further analyzed to ascertain if the degradation was due to selective leaching.
- One CST external stiffener was found with a thickness below that assumed in calculations (SAPN 51209739). Corrosion was removed and coatings were reapplied. Future additional inspections were planned in this area.

The FFT concluded that none of the above items represented any significant safety concerns.

The FFT inquired about the results of the NRC inspection of license renewal activities that was also conducted during the outage. Mr. Soenen reported that the NRC was generally pleased with the number of inspection activities which they were able to directly observe and appreciated the good communications with PG&E in coordinating many NRC observations. The NRC found no significant issues with the license renewal inspection activities. The NRC did preliminarily report that it found one potential Non-Cited Violation unrelated to Unit 1 license renewal activities. The potential NCV concerned a failure to update procedures to require inspections of sealants used to fill the gap between the Unit 2 Containment liner and floor. The final NRC inspection report was not available at the time of the FFT's meetings, but it will be provided to the DCISC when received by DCPD.

Conclusions: DCPD successfully completed a total of approximately 182 Aging Management Plan inspections during Refueling Outage 1R24 in support of license renewal. Overall, there were no findings of aging-related challenges to any Structure, System or Component's ability to perform its intended functions. The DCISC considered these results to be excellent performance and provided a strong assurance of continued safety during a period of extended operations.

Recommendations: None

3.8 License Renewal Application Overview

The DCISC FFT met with Philippe Soenen, Strategic Initiatives Director, and Brandy Lopez, License Renewal Program Manager, for an update on DCPD's recent submission of its License Renewal Application (LRA) to the NRC. Eric Wulff, Christian Arechavaleta, Jerry Bischof, and Eric Blocher from the California DWR also participated remotely in the meeting. The DCISC last reviewed the status of license renewal activities during its August 29, 2023, Fact-Finding Meeting (Reference 6.6), when it concluded the following:

DCPD's preparation of a License Renewal Application was proceeding on schedule

to meet the needed submission date to the NRC of December 31, 2023. Planning was nearly complete for initial Aging Management Plan inspections to be performed during the upcoming Refueling Outage 1R24.

On November 7, 2023, DCPD submitted its new LRA to the NRC (Reference 6.7), and the FFT requested that DCPD provide an overview of the LRA's organization and its contents. Mr. Soenen provided a brief summary of each LRA section as follows:

<u>Section</u>	<u>Content</u>
1	General corporate information and plant description
2	High level overview of scoping methodology and results
3	Scoping results (tables delineating which plant SSCs required AMPs)
4	Time Limited Aging Analyses (TLAAs; specialized analyses for specific aging mechanisms such as cyclic fatigue)
Apx. A	Changes to be made to the plant Final Safety Analysis Report
Apx. B	AMP descriptions organized under NUREG 1801-2 guidelines
Apx. C/D	Not used
Apx. E	Environmental Report (approximately 1140 pages)
Encls. 2/3	WCAP-17315-NP and WCAP-17299-NP related to Reactor Vessel Pressurized Thermal Shock

The LRA identified a total of 44 AMPs to be implemented at DCPD, including 14 completely new AMPs that were not included in the 2009 LRA.

The FFT inquired about when DCPD expected to receive feedback from the NRC with regards to a determination of application sufficiency. Mr. Soenen reported that DCPD expected that it would receive that determination within 60 days of submission of the LRA to the NRC. Once a sufficiency determination was received, DCPD could continue to operate past the end of its current operating licenses until such time as the license renewal application was acted upon.

Shortly after the completion of this Fact-Finding Meeting on December 14, 2023, the NRC issued its decision finding the new LRA sufficient and accepting the LRA for docketing (Reference 6.8). Because the sufficiency determination had been issued, DCPD could continue to operate past the end of its current operating licenses until such time as the LRA is acted upon by the NRC.

Conclusion: DCPD's submitted its new License Renewal Application on November 7, 2023, and the application was deemed sufficient and accepted by the NRC on December 14, 2023.

With that acceptance, DCPD can continue to operate past the end of its current operating licenses until such time as the application is acted upon by the NRC.

Recommendations: None

3.9 Update on the Use of Electronic Procedures

The DCISC FFT met with Matt Birkel, Performance Improvement and Innovation Director, and Colton Wells, Performance Improvement Supervisor, for an update on the status of the implementation of electronic procedures at DCPD. The DCISC last reviewed related topics during its August 9, 2023, Fact-Finding Meeting (Reference 6.9), when it concluded the following:

DCPD has WiFi throughout office areas and workspaces in the Powerblock, except in Containment where WiFi is temporarily installed during outages. The use of electronic work packages has not been broadly successful at DCPD. However, electronic procedures may be a better fit, and the DCISC should consider reviewing their past, current and future potential use in a future fact-finding meeting.

Mr. Birkel provided the FFT with an update on possible future uses of electronic procedures at DCPD considering the decision to extend operations beyond the expiration of the current operating licenses. He reported that DCPD's recent focus was on the successful completion of the current series of refueling outages and the submission of its LRA to the NRC. Looking beyond those activities, he stated that station management desired to be proactive in looking for innovative methods and technologies to improve efficiency and operational safety. As such, previous efforts to implement any electronic procedures at the station could be restarted; however, there was no current effort to do so. The station was in the process of looking to use new technologies in data analytics and specifically to apply modern data analytics tools to current data sets already available at the station. Also, the station was actively incorporating 3-D mapping technologies inside the power block to improve configuration management. Dr. Peterson emphasized that electronic procedures could bring added safety benefits in the areas of human performance and record-keeping, and Mr. Birkel agreed there would likely be benefits. The FFT concluded that it would be appropriate to review this topic again along with possible uses of other new technologies at the station in late 2024.

Conclusions: DCPD is not currently pursuing the use of electronic procedures at the station but is looking to be innovative in the use of new technologies in the future. The DCISC should review this topic again in late 2024.

Recommendations: None.

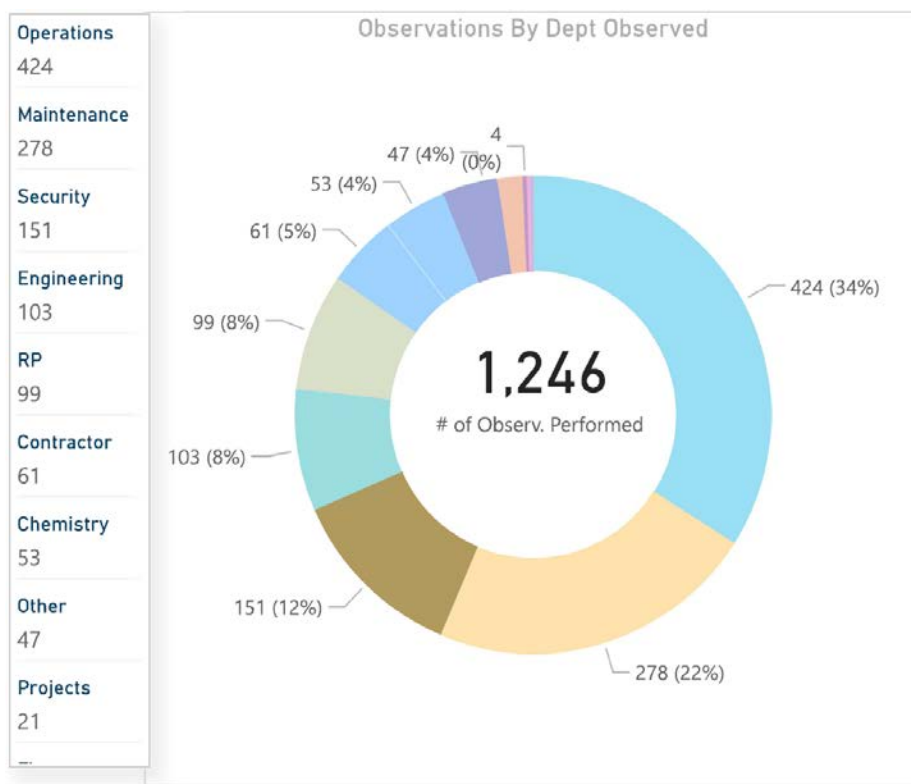
3.10 Management Observation Programs

The DCISC FFT met with Matt Birkel, Performance Improvement and Innovation Director, and Colton Wells, Performance Improvement Supervisor, for an update on the status of

the Management Observation Program at DCP. The DCISC last reviewed the Management Observation Program during its July 2021 Fact-Finding Meeting (Reference 6.10), when it concluded the following:

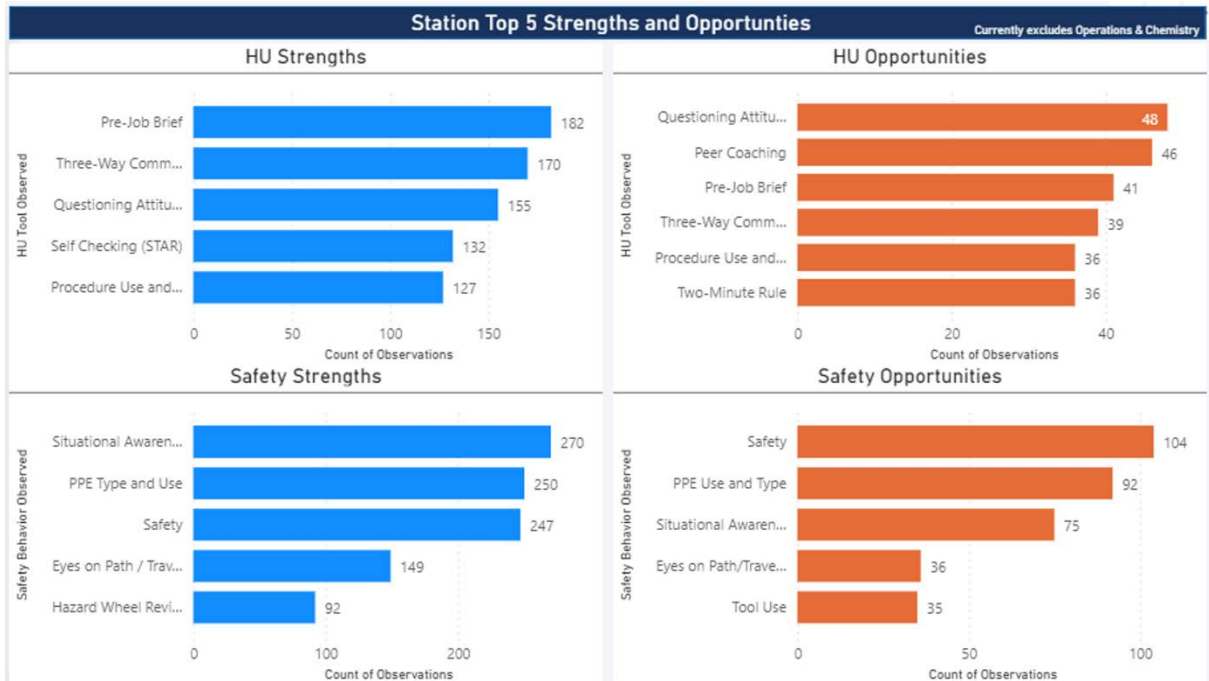
DCP's Management Observation program was being properly implemented with a focus toward first-line Supervisors observing employee activities in the field and reviewing their observations during bi-weekly departmental Observation Review Meetings.

Mr. Birkel reported that DCP's Management Observation Program continued to be focused on establishing requirements for supervisors to routinely observe employees in the field and discuss their observations with employees in a collaborative fashion. Observation activities generally fell into three areas: 1) management observations of training, 2) supervisory observations tracked within individual departments, and 3) the station-wide observation program. The management observations during training were a part of the industry-accredited training program and tracked separately from the station-wide observation program. The data from observations made within individual departments were rolled into the station-wide observation program tracking system. He briefly reviewed the use of the program's tracking software which produced reports showing the number of observations by department, classified the observations as strengths or opportunities, and further classified each observation by the types of strengths or opportunities that were observed (e.g., safety, tool use, situational awareness, communications, self-checking, etc.). The station-wide report showed that there were 1,246 observations performed at the station in the period from mid-September to mid-December (including Refueling Outage 1R24) broken down by department as follows:



Station Observations by Department (over 120 days)

The station-wide report's classification of observations and strengths and opportunities was as follows:



Station Observation Strengths and Opportunities (over 120 days)

Supervisory observations were documented and rolled up into reports that were discussed at departmental Observation Review Meetings (ORMs). The ORM were typically held bi-weekly to review the results of all observations, and departmental Performance Improvement Coordinators (PICOs) participated in the ORM. ORMs were not typically held during outage periods due to high departmental workloads; rather, the Performance Improvement Coordinators captured observation data and trends in the daily Outage Performance Improvement Dashboard, a sample of which was provided to the FFT.

The FFT inquired with regards to how feedback was provided to individuals and how individuals perceived the observation process. Mr. Birkle responded that it was expected that the manager would discuss the observation face-to-face with the employee during or immediately following the observation. He believed that in general, employees accepted the observations as routine and considered them to be a normal course of business for the station and the industry. The FFT also asked if Notifications were created for deficiencies observed, and Mr. Birkle responded that a Notification would be created if a safety significant problem or a condition adverse to quality was identified (such as a step completely missed in a procedure). He also noted that the observation forms had a place for checking whether a Notification was generated during the observation.

Conclusions: DCP's Management Observation Program was being properly implemented. A large number of observations were being completed, and the observations provided valuable insights into human performance strengths and opportunities at the station.

Recommendations: None

3.11 Emergency Preparedness Department

The DCISC FFT met with Jordan Tyman, Risk and Compliance Director, and Cameron Christensen, Emergency Planning Supervisor, to receive an update on the status of programs and performance in the Emergency Preparedness (EP) Department. The DCISC last reviewed EP Department performance during its July 2021 Fact-Finding Meeting (Reference 6.11) when it concluded the following:

DCPP appears to be effectively managing staffing and training for its Emergency Response Organization which has been challenged by a high turnover rate among assigned personnel. The DCISC should verify the effectiveness of DCPP's Emergency Response Organization by observing the upcoming September 15, 2021, emergency exercise and reviewing the Nuclear Energy Institute white paper on remote staffing of some ERO functions when it becomes available.

The Emergency Response Organization (ERO) is the group of employees that provides staff for emergency response facilities in the case of an emergency event. Although emergency preparedness overall is managed by a small group of full-time specialist staff members, the bulk of the ERO is comprised of DCPP employees who are trained and serve in assigned roles as a collateral duty to their regular duties. The ERO is divided into four assigned teams, Alpha, Bravo, Charlie and Delta, with approximately 70 individuals per team who serve “on call” for two weeks out of every eight weeks. Maintaining the proficiency of the ERO teams is an ongoing activity that is managed by the EP Department. It is given high visibility at the station, including having ERO qualification and training metrics included in the monthly Plant Performance Indicator Report.

Mr. Tyman began the meeting by providing an update on staffing and activities within the department. The department recently hired a new EP Coordinator and was in the process of adding another similar position. With the filling of both new positions, the department’s staff would consist of seven employees and a supervisor, an increase of two positions over the last year.

The FFT asked Mr. Tyman to provide an overall update on the status of training and drills for the ERO teams. He reported that a previous negative trend in ERO member attendance at muster (training) meetings had been reversed, and attendance was back to meeting station standards. ERO muster meetings were currently focused on disseminating new information to the ERO teams and providing a Dynamic Learning Activity to help team members to maintain proficiency. Recent drill and exercise performance was acceptable with some minor issues being tracked for resolution. The minor issues included problems in accurately filling out forms and paying attention to procedural details.

Regarding recent changes made to EP plans and procedures, Mr. Tyman stated that DCPP had just completed a significant change to its siren test protocols. The new protocols used technology to

verify proper operation of the sirens and no longer relied upon people listening locally. Siren reliability had recently been acceptable with no significant issues. The FFT asked about the possible implementation of the Integrated Public Alert and Warning System (IPAWS) at the station. (IPAWS uses cellular telephone text messages to alert people about an emergency.) Mr. Tyman stated that DCPD currently did not have any plans to replace the sirens with IPAWS as has been done elsewhere in the industry. DCPD was instead focusing on efforts to use IPAWS as a backup notification system, a function which is currently performed by route alerting using law enforcement personnel in vehicles. Mr. Tyman confirmed that DCPD's next evaluated full-scale emergency preparedness exercise was scheduled for July 31, 2024.

Conclusions: DCPD's Emergency Preparedness Department was performing well overall, and the DCISC should plan to observe the next evaluated emergency preparedness exercise on July 31, 2024.

Recommendations: None

3.12 Meet with DCPD Officer

The DCISC FFT met with Maureen Zawalick, Vice President, Business and Technical Services, to discuss items from this Fact-Finding Meeting and other items of mutual interest. The DCISC last met with a DCPD Officer or Director during its November 2023 Fact-Finding Meeting (Reference 6.12), when it concluded the following:

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

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

Recommendations: None.

3.13 Auxiliary Saltwater Pump 2-2 Degradation and Exigent Technical Specification Change

The DCISC FFT met with Ryan West, Engineering Services Director, and Jordan Tyman, Risk and Compliance Director, to review a License Amendment Request (LAR) that was recently submitted by PG&E to the NRC for the purpose of facilitating a replacement of the motor on Auxiliary Saltwater (ASW) Pump 2-2. This was the DCISC's first review of this matter.

The ASW System is a safety-related, Design Class 1 System which provides the heat sink required for the safe shutdown of the plant. 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 Residual Heat Removal and Containment

Ventilation Systems, which, in turn, cool the nuclear fuel in the reactor and cool the Containment, respectively. There are two ASW Pumps for each unit, and each pump can supply sufficient cooling water through both of two redundant trains to either of the two CCW heat exchangers for each unit. The ASW Pumps in each unit are electric motor driven 100 percent capacity pumps and are powered from separate vital power 4kV electrical buses. The pumps are physically located in watertight vaults in the Intake Structure.

Mr. West reported that the problem with ASW Pump 2-2 was first reported on August 23, 2023. At that time, routine testing of oil from the lower motor radial bearing reservoir indicated that the oil was darker in color than normal. A Notification was initiated (SAPN 51201169), and the FFT received and reviewed a copy of the Notification as a part of the DCISC's monthly documents routinely provided by PG&E. The August oil sample was analyzed and found to contain about 24 ppm of iron which was indicative of minor bearing degradation. The pump was evaluated by engineering and determined to be operable as there were no elevated vibrations or bearing temperatures. Bi-weekly monitoring of pump vibrations was initiated to monitor the motor for any possible future degradation. On October 23, 2023, another oil sample was taken and found that the iron concentration had risen to about 91 ppm. A formal Prompt Operability Assessment (POA) was performed, and the POA concluded that the pump remained fully capable of performing its design basis functions. The details of the POA were recorded in the Notification and reviewed by the FFT.

Given the adverse trend of iron concentration in the oil samples, DCPD managers decided that the prudent course of action would be to replace the pump motor as soon as possible rather than wait until the next scheduled outage in the spring of 2024. Because the pump is located within a watertight vault and surrounded by a complex seismically reinforced structure, DCPD has found in the past that it is difficult to complete a replacement of an ASW pump motor within the normal 72-hour out-of-service limitations of the plant Technical Specifications. Therefore, senior managers decided to pursue a one-time exigent change to the plant Technical Specifications to allow a longer out-of-service time (144 hours) for the pump to facilitate the motor replacement.

On November 14, 2023, PG&E submitted its initial LAR to the NRC (Reference 6.13) and supplemented its request with additional information on November 16, 2023 (Reference 6.14). The LAR requested an exigent, one-time only change to the plant Technical Specifications to allow an out-of-service time of 144 hours specific to repairing ASW Pump 2-2 in the current operating cycle. The LAR was based in part on a similar change that was requested and granted in 2021 to support replacement of the motor on ASW Pump 1-1. Risk informed evaluations demonstrated that the extended out-of-service time would not adversely affect safety provided that actions were taken to protect the operability of other equipment at the station. On November 17, 2023, the NRC approved the exigent change to the unit's Technical Specifications (Reference 6.15). Mr. Tyman noted that DCPD had recently submitted another LAR to the NRC to allow the use of risk-informed approaches to determining out-of-service times for equipment covered by the plant's Technical Specifications. Once the LAR for risk-informed Technical Specifications is approved (expected in mid-2024), the plant could extend the out-of-service time in a future similar situation without having to first seek approval from the NRC.

The FFT inquired regarding the schedule for performing the maintenance and were informed that the work had begun on the same day as the FFT's meetings, December 13, 2023, and was scheduled to be completed by December 16, 2023. The FFT concluded that DCP's plan to replace the motor on ASW Pump 2-2 was prudent and there were no significant safety concerns with the minor degradation of the oil in the motor's lower bearing. The FFT was informed that a Cause Evaluation would be performed on the motor bearing following its replacement, and the DCISC should review the results of that Cause Evaluation following its completion.

Conclusions: There were no significant safety concerns with the discovery of minor degradation of the oil in the lower motor bearing for Auxiliary Saltwater Pump 2-2, and DCP's plans to replace the motor were prudent. The DCISC should review the results of the Cause Evaluation for the oil degradation on Auxiliary Saltwater Pump 2-2 following its completion.

Recommendations: None.

3.14 Low Temperature Overpressurization Protection System

The DCISC FFT met with Ryan West, Engineering Services Director; Mark Frantz, Plant Engineering Manager; and Julio Barbosa, Mechanical Design Engineer, for a briefing on the purpose and operation of the Low Temperature Overpressurization Protection (LTOP) System. The purpose of the LTOP system is to reduce the risk posed by potential Pressurized Thermal Shock transients to the Reactor Pressure Vessel. This was the DCISC's first review of this system.

Mr. West explained that the LTOP System is designed to control Reactor Coolant System (RCS) pressure at low temperatures such that the integrity of the RCS pressure boundary is not compromised by violating the pressure and temperature limits of 10 CFR 50, Appendix G. The Pressure Temperature Limits Report (PTLR) provides the allowable actuation setpoints in the LTOP System for its control of two Power Operated Relief Valves (PORVs) along with the maximum RCS pressure allowed for various RCS temperatures during cooldown, shutdown, and heatup. The PTLR also provides temperature restrictions for operation of the Reactor Coolant Pumps and High- and Low-Pressure Safety Injection Systems. The PTLR is updated regularly and submitted to the NRC, with the most recent PTLR, Revision 16a, having been submitted on October 25, 2023 (Reference 6.16). He explained that the calculations supporting the LTOP setpoints and pressure/temperature limits contained in the PTLR are performed in accordance with guidance established by 10 CFR 50, Appendix G. The calculations assume that there is a preexisting elliptically shaped partial crack in the Reactor Vessel with a depth of 25% of the vessel thickness and a length of 150% of the vessel thickness (approximately two inches deep and twelve inches long for DCP). Using material properties corresponding to the reactor vessel's material with a neutron embrittlement that would be present at end of operating life, pressure and temperature limits are calculated and set to prevent a failure of the assumed preexisting crack. Stresses from heatup and cooldown are also considered in the calculations, and the pressurizer is assumed to be solid (full of water with no steam space).

During normal at-power operations, the LTOP system is off. When RCS temperature falls below the value defined in plant procedures, the system is enabled (or “armed”) by a switch on the main control board and the system is then ready to operate without further operator action. Currently, plant procedures required operators to enable the LTOP System prior to RCS temperature dropping below 350°F and the PTLR required the LTOP System to be enabled whenever RCS temperature was below 273°F. (If the reactor coolant temperature falls below the low temperature setpoint and the enable switch on the main control board is not in the enable position, an alarm will sound on the main annunciator panel.) The LTOP System consists of two mutually redundant and independent channels which receive RCS pressure and temperature signals as an input and cause a safety-related PORV to open should a low-temperature, high-pressure transient occur. Currently, the pressure setpoint where the LTOP System actuates to open one or both PORVs is 435 pounds per square inch as delineated in the PTLR. To ensure that water injection rates into the RCS cannot exceed the design flow rates of the PORVs, various injection systems (such as High- and Low-Pressure Safety Injection) are also required to be isolated when RCS temperatures fall below values specified in a table contained in the plant Technical Specifications.

Conclusions: DCPD appropriately uses a Low Temperature Overpressure Protection System to protect against an inadvertent overpressurization of the Reactor Vessel at low temperatures, that could result in Pressurized Thermal Shock occurring to a reactor vessel. The LTOP system reduces the risk posed by potential Pressurized Thermal Shock transients. Calculations for the system’s overpressure relief setpoint are contained in the plant’s Pressure Temperature Limits Report and presume the presence of an approximately two-inch by twelve-inch preexisting elliptically shaped partial crack in the Reactor Vessel.

Recommendations: None

3.15 Meet with NRC Senior Resident Inspector

The DCISC FFT met with Mahdi Hayes, NRC Senior Resident Inspector, for an update. The DCISC meets regularly with the NRC Resident Inspectors and last met with the Resident Inspectors during its November 2023 Fact-Finding Meeting (Reference 6.17), when it concluded the following:

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

The items discussed in this meeting included the following:

- Recent NRC Inspection Activities
- Refueling Outage 1R24 Results
- Refueling Outage 2R24 Preparations
- DCPD’s Corrective Action Program

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

Recommendations: None.

4.0 CONCLUSIONS

- 4.1 DCP's Refueling Outage 1R24 was successfully performed. All planned scope of work was completed, and all performance goals were met except for radiation dose and post-outage reliability. The DCISC should follow up on reviewing the causes and corrective actions for Maintenance Outage 1X25 (Pressurizer Safety Valve repair) which occurred about one month after the end of the Refueling Outage.**
- 4.2 The December 12, 2023, Outage Management Team meeting was conducted efficiently and effectively, and the DCISC should consider observing more of these meetings in the future.**
- 4.3 DCP 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.**
- 4.4 DCP's training programs for new engineers were well organized and appropriately focused to maintain an adequate level of technical knowledge within the Engineering Department. As a result of reaching out to a retired member of the plant staff for support, the updates to the training programs benefited from historical knowledge about the training program, which the DCISC considered to be an excellent practice.**
- 4.5 The DCISC reviewed documents received from the Alliance for Nuclear Responsibility regarding alleged improprieties in managing dredging and maintenance of DCP's Intake Cove, and the DCISC concluded that there were no nuclear safety concerns. The dredging project was being properly managed for completion in the spring of 2024, and maintenance activities using divers in the Intake Cove were appropriate and not precluded by the station's environmental permits. The documents were provided to PG&E for additional investigation through its Employee Concerns Program, and the DCISC should follow up on the investigation's results during its January 2024 meetings.**
- 4.6 PG&E provided information on past Unit 1 Reactor Vessel weld inspection results along with answers to questions related to vessel embrittlement. DCP was unable to withdraw the Capsule B weld material specimen from the Unit 1 Reactor Vessel during Refueling Outage 1R24 due to tool fitment problems. DCP will retry this procedure and other approaches in Refueling Outage 1R25 with the Reactor Vessel core barrel removed, which should enable better access. The DCISC's evaluations of**

Unit 1's Reactor Vessel embrittlement will be completed and presented at the DCISC February 21-22, 2024, Public Meeting.

- 4.7 DCPD successfully completed a total of approximately 182 Aging Management Plan inspections during Refueling Outage 1R24 in support of license renewal. Overall, there were no findings of aging-related challenges to any Structure, System or Component's ability to perform its intended functions. The DCISC considered these results to be excellent performance and provided a strong assurance of continued safety during a period of extended operations.
- 4.8 DCPD's submitted its new License Renewal Application on November 7, 2023, and the application was deemed sufficient and accepted by the NRC on December 14, 2023. With that acceptance, DCPD can continue to operate past the end of its current operating licenses until such time as the application is acted upon by the NRC.
- 4.9 DCPD is not currently pursuing the use of electronic procedures at the station but is looking to be innovative in the use of new technologies in the future. The DCISC should review this topic again in late 2024.
- 4.10 DCPD's Management Observation Program was being properly implemented. A large number of observations were being completed, and the observations provided valuable insights into human performance strengths and opportunities at the station.
- 4.11 DCPD's Emergency Preparedness Department was performing well overall, and the DCISC should plan to observe the next evaluated emergency preparedness exercise on July 31, 2024.
- 4.12 The regular meetings between DCISC Members and DCPD Officers and Directors continue to be beneficial for both organizations.
- 4.13 There were no significant safety concerns with the discovery of minor degradation of the oil in the lower motor bearing for Auxiliary Saltwater Pump 2-2, and DCPD's plans to replace the motor were prudent. The DCISC should review the results of the Cause Evaluation for the oil degradation on Auxiliary Saltwater Pump 2-2 following its completion.
- 4.14 DCPD appropriately uses a Low Temperature Overpressure Protection System to protect against an inadvertent overpressurization of the Reactor Vessel at low temperatures, that could result in Pressurized Thermal Shock occurring to a reactor vessel. The LTOP system reduces the risk posed by potential Pressurized Thermal Shock transients. Calculations for the system's overpressure relief setpoint are contained in the plant's Pressure Temperature Limits Report and presume the presence of an approximately two-inch by twelve-inch preexisting elliptically shaped partial crack in the Reactor Vessel.

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

5.0 RECOMMENDATIONS

- 5.1 None.**

6.0 REFERENCES

- 6.1 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.6, Section 3.2, “Outage 2R23 Results.”
- 6.2 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.1, Section 3.8, “Post-Earthquake Procedures for Plant Access and the Use of FLEX Equipment.”
- 6.3 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 3.5, “Non-Licensed Operator Training.”
- 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.3, Section 3.13, “Intake Cove Sediment Issues.”
- 6.5 Ibid., Exhibit D.4, Section 3.2, “Unit 1 Reactor Vessel Embrittlement Update.”
- 6.6 Ibid., Exhibit D.3, Section 3.2, “License Renewal.”
- 6.7 “License Renewal Application,” submitted to the Nuclear Regulatory Commission as an enclosure to PG&E Letter DCL-23-118, November 7, 2023, NRC ADAMS Accession Number ML23311A154.
- 6.8 “License Renewal Application; Acceptance for Docketing and Opportunity to Request a Hearing and to Petition for Leave to Intervene,” December 14, 2023, NRC ADAMS Accession Number ML23341A003.
- 6.9 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.2, Section 3.2, “Powerblock WiFi and Electronic Work Packages and Procedures.”

- 6.10 “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.1, Section 3.8, “Management Observation Program.”
- 6.11 Ibid., Exhibit D.1, Section 3.2, “Emergency Preparedness Update.”
- 6.12 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.4, Section 3.7, “Meeting with DCCP Officer.”
- 6.13 “License Amendment Request 23-03 Revision to Technical Specification 3.7.8, Auxiliary Saltwater (ASW) System,” submitted to the Nuclear Regulatory Commission as an enclosure to PG&E Letter DCL-23-120, November 14, 2023, NRC ADAMS Accession Number ML23319A204.
- 6.14 “Supplement to License Amendment Request 23-03 Revision to Technical Specification 3.7.8, Auxiliary Saltwater (ASW) System,” submitted to the Nuclear Regulatory Commission as an enclosure to PG&E Letter DCL-23-121, November 16, 2023, NRC ADAMS Accession Number ML23320A312.
- 6.15 “Diablo Canyon Nuclear Power Plant, Unit 2 - Individual Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing (Exigent Circumstances),” November 17, 2023, NRC ADAMS Accession Number ML23320A150.
- 6.16 “Reactor Coolant System Pressure and Temperature Limits Report for Units 1 and 2,” submitted to the Nuclear Regulatory Commission as an enclosure to PG&E Letter DCL-23-117, October 25, 2023, NRC ADAMS Accession Number ML23298A107.
- 6.17 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.4, Section 3.5, “Meeting with NRC Resident Inspector.”