

- **DIABLO CANYON INDEPENDENT SAFETY COMMITTEE**

Report on**Fact-Finding Meeting at DCP
on January 24-25, 2024****by****Peter Lam Member, and R. Ferman Wardell, Consultant****1.0 SUMMARY**

The results of the DCISC January 24-25, 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. Observe Plant Health Committee Meeting
2. 2R24 Refueling Outage Plans
3. Meet with NRC Senior Resident Inspector
4. 2023 Operating Plan Results and 2024 Operating Plan
5. Unit 1 Reactor Vessel Embrittlement
6. 2024 Spent Fuel Loading Campaigns
7. 2023 Regulatory Year in Review
8. Post-Refueling Outage 1R24 Reactor Physics Tests
9. Intake Cove Dredging Update
10. Observe Reactor Operator Continuing Simulator Training
11. Air- and Motor-Operated Valve Programs
12. Emergency Diesel Generator Update

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 for approval by the DCISC at its next Public Meeting. 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

Note: This was the first meeting with DCPD's new DCISC liaison, Brandy Lopez, who is replacing Hector Garcia in this role. Both Ms. Lopez and Mr. Garcia participated in this Fact-Finding Meeting.

3.1 Observe Plant Health Committee Meeting

The DCISC FFT met with Dennis Petersen, Station Director, to observe a DCPD Plant Health Committee (PHC) meeting. The DCISC reviews PHC meetings several times per year at its Fact-Finding Meetings. The DCISC last observed a Plant Health Committee Meeting in August 2023 (Reference 6.1), when it concluded the following:

The August 29, 2023, Plant Health Prioritization Committee meeting was conducted efficiently and effectively. The DCISC should consider observing more of these meetings in the future as DCPD moves forward to implement new projects to support extended operations.

This January 24, 2024 PHC meeting was canceled due to an unannounced emergency preparedness exercise, which required participation by most PHC attendees.

Conclusions: The January 24, 2024 Plant Health Committee meeting was canceled due to a conflict with an Emergency Preparedness exercise. The DCISC should observe a Plant Health Committee Meeting at one of its future fact-finding meetings.

Recommendations: None.

3.2 2R24 Refueling Outage Plans

The DCISC FFT, along with the following individuals (remotely), met with Erik Werner, DCPD Outage Director, for an update on the upcoming Unit 2 2R24 Refueling Outage: DWR (CA Department of Water Resources) Representatives Eric Blocher, Delphine Hou, Dauphine Luchsinger, Eric Wulff, Christian Arechavaleta, and Consultant Jerry Bishoff.

(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 DCPD Refueling Outage in December 2023 (Reference 6.2), when it concluded the following:

DCPD'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 Forced Outage 1X25 (Pressurizer Safety Valve repair) which occurred about one month after the end of the Refueling Outage.

The Unit 2 twenty-fourth Refueling Outage (2R24) will take place during the Spring of 2024. The 50-day planned outage will be very similar to 1R24 for Unit 1 and will include license renewal required inspections, planned maintenance, and other refueling activities. Approximately 1,000 temporary additional workers will support the completion of 2R24.

1. The following Primary System activities are planned:
 - Refuel Reactor
 - Reactor Coolant System (RCS) draindown repairs with vacuum refill
 - Accumulator nozzle repairs
 - Refueling Water Storage Tank (RWST) Inspection
 - Significant MOV work including work on MOVs with bus outages
 - Reactor Cavity Sump Pump 2-1 repair
 - Motor Overhauls
2. The following Secondary Systems activities are planned:
 - Steam Generator Blowdown Tank inlet nozzle repairs
 - Main Steam Isolation Valve FCV-43 internal inspection
 - Component Cooling Water Heat Exchanger Eddy Current Testing
 - Auxiliary Saltwater (ASW) piping internal inspection
 - Line-1900 repair
 - ASW pump swap
 - Circulating Water Pump (CWP) motor neutral lead swap
 - CWP 2-2 air cooler clean/inspection
 - Travelling Screen 2-1, 2-2 and 2-4 frame replacement
 - Main oil reservoir internal inspection
 - Main Feed Water Pump 2-1 oil cooler clean and inspect
 - Main generator inspection and repair
3. The following Electrical activities are planned:
 - 4kV/480V Bus G Maintenance Outage Window (MOW)
 - Bus Preventive Maintenance (PM) activities
 - License Renewal (LR) TAN-DELTA load cable testing MOW (TAN-DELTA is a testing method)
 - Breaker 52HG13 (Aux Feeder) and 52HG7 (Containment Spray Pump 21) racking mechanical overhauls

- 4kV bus H load cable TAN-DELTA testing (includes 480V H outage for feeder cable testing)
 - 4kV bus F load cable TAN-DELTA testing (includes 480V F outage for feeder cable testing)
 - 12kV bus E
 - Non-vital 480V bus PM windows (22J, 23D, 24E, 25E & 25I)
 - Control room recorder replacements
 - Non-vital bus LR required scope
4. Main Bank Transformer Project
- Full oil drain TGMA/TGMB (Main Bank 500kV Transformers A and B) for leak repairs and internal inspection
 - Iso-Phase duct and bus welding to support LV bushing/turret gasket replacement on TGMA & TGMB
 - Replace radiator valves and gaskets on TGMA
 - Power Factor testing on TGMA, TGMB, and TGMC
 - Replacing conservator bladders on all three main-bank transformers
 - Replacing Pressure Relief Device
 - LR bus duct inspections
 - 500kV tie-line differential set B relay 587-2B replacement
5. Startup Bank Transformer Project
- THU 2-1 and 2-2 (Startup Transformers) oil drain / leak repairs and oil replacement
 - THU 2-1 and 2-2 internal inspection and power factor testing
 - Start Up Transformer (SUT) 2-2 12kV cable TAN-DELTA testing
 - 52VU23 rack mech overhaul
6. The following License Renewal activities are planned:
- Primary:
- Refueling Water Storage Tank Inspection
- Secondary:
- Four Polisher Vessel Inspections
 - Condensate Storage Tank Inspection (bulk of work is pre-outage)
 - Component Cooling Water Heat Exchanger Internal Inspections
 - Auxiliary Saltwater Line-687 Internal Coatings Inspection
- Electrical:
- Tan-Delta Cable Testing
 - Metal Enclosed Bus inspections
 - Nuclear Instrumentation Cable Inspections
 - Transformer Deluge Flow Testing

Multiple areas:

- Small Bore Piping Inspections
- One Time Inspections
- Selective Leaching Inspections
- Concrete Inspections

5. The following Projects are planned:

- 500 kV Tie-Line Relay Upgrade
- Condensate Booster Pump (CBP) 2-2 Pedestal
- Condenser Steam Side Lagging Repairs
- Circulating Water Pump Neutral Connection Relocation
- Main Condenser Saltwater Expansion Joints Replacement
- Main Condenser Waterbox and Tubesheet Coatings Refurbishment
- Pipe Gallery Vital Area
- Replace Paper/Chart Recorders with Digital Recorders
- Rod Control Power Supply Replacement to Lower Spurious Trip Risk
- Transformer Repairs, Refurb and Refill of Oil
- Traveling Screen Frame Replacements

6. Outage Goals are as follows:

Safety: Zero Recordable Injuries
Zero Nuclear Safety Events – No Loss of Decay Heat Removal
Zero Serious Injuries or Fatalities (SIF) and Zero SIF Potentials

Human Zero Human Error Site Clock Resets
Performance: Zero Foreign Material Exclusion Events

Outage Duration: ≤ 50 Days

Dose Goal: As Low As Reasonable Achievable \leq Goal To Be Determined

Reliability: Power Ascension ≤ 5 Days
Reliability ≥ 90 Days Maximum Capable Power

Conclusions: DCPD has aggressive plans for Outage 2R24, a 50-day outage planned for Spring 2024. Planning for the outage appeared appropriate.

Recommendations: None

3.3 Meeting 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 Inspector during its December 2023 Fact-Finding Meeting (Reference 6.3), 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 and Future NRC Inspection Activities
- Refueling Outage 1R24 Results
- Refueling Outage 2R24 Preparations and Planned Inspections
- Replacement plans for the NRC Resident Inspector who is transferring to NRC Headquarters
- Three possible Non-Cited Violations in the upcoming Fourth Quarter Inspection Report
- One allegation about an Emergency Diesel Generator Fuel Leak, which was found not to be an issue by the NRC Office of Inspector General

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

Recommendations: None

3.4 2023 Operating Plan Results and 2024 Operating Plan

The DCISC Fact-finding Team (FFT) met remotely with Blair Jones, Director, Strategy and Policy, for a review of the 2023 DCPD Operating Plans results and the 2024 Operating Plan. The DCISC last reviewed the DCPD 2022 Operating Plan at the DCISC February 15-16, 2022 Public Meeting (Reference 6.4) when the following 2022 results were presented:

<u>Metric</u>	<u>Goal</u>	<u>Actual</u>
DCPD Reliability & Safety Indicator	87.5	92.5
2R22 Outage Radiation Exposure	<13.3 REM	10.8 REM
Preventable Motor Vehicle Incidents	1 st Quartile	1 st Quartile
Days Away, Restricted, or Transferred Cases	1 st Quartile	1 st Quartile
Lost Workday Cases	1 st Quartile	1 st Quartile
Regulatory Findings	No Significant	No Significant
NRC Reactor Oversight	Column 1 and no	Column 1 and no

Process






Cross-cutting issues


Cross-cutting issues

2023 Operating Plan




The PG&E Mission is “*We safely generate clean, reliable and affordable energy for California’s hometowns.*”

Results for the 2023 Operating Plan were as follows:

<u>Goal Item</u>	<u>Goal</u>	<u>Actual</u>
Achieve Continued Operations Milestones*		
Attain LEAN Maturity		
Experience Joy at Work		
Reliability & Safety Indicator	≥ 97.5	100.0
OSHA Recordables	0	1
Days Away, Restricted or Transferred	0	0
Preventable Motor Vehicle Incidents	0	0

*  = Continuous improvement

2024 Operating Plan (Mission is the same as 2023)

<u>Goal Item</u>	<u>Goal</u>
Achieve Continued Operations Milestones	
Attain LEAN Maturity	
Experience Joy at Work	
Reliability and Safety Indicator	≥ 97.5
OSHA Recordables	0
Days Away, Restricted or Transferred	0
Preventable Motor Vehicle Incidents	0

Conclusion: The DCPD 2023 Operating Plan goals were all met, most importantly to the DCISC, that for safety. The 2024 Operating Plan is essentially the same as that for 2023. The 2024 Goals are the same as those for 2023. The DCISC should continue to monitor DCPD's Operating Plan. DCPD will present the 2024 Operating Plan at the February 21-22, 2024 DCISC Public Meeting.

3.5 Unit 1 Reactor Vessel Embrittlement Update

The DCISC Fact-finding Team met with Philippe Soenen (Strategic Initiatives Director) (remotely), DCISC Consultants (all remote) Rick McWhorter, Andy Kadak, and Mark Kirk (DCISC Reactor Vessel Embrittlement Consultant) to discuss the two DCISC draft reports on DCPD Unit 1 Reactor Vessel Embrittlement that are now under development and review. Joining the meeting remotely were Ben Hayes (Westinghouse), Brian Hall (Westinghouse), and Department of Water Resources (DWR) representatives Jerry Bishoff (DWR Consultant), Eric Blocher, Deb Luchsinger, Delphine Hou, Christian Arechavaleta, and Eric Wulff. The DCISC last reviewed Unit 1 Reactor Vessel Embrittlement in December 2023 (Reference 6.5), when it concluded the following:

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.

The specific purpose of this meeting was to receive and understand PG&E's comments on the two draft DCISC reactor vessel embrittlement reports prepared by Dr. Kirk. PG&E's comments were limited by the DCISC to possible factual errors and errors of omission. Comments received from PG&E included only editorial and other minor corrections. There were no substantive PG&E comments. Dr. Kirk recorded the comments and planned to incorporate those which were needed to make the reports correct. Dr. Kirk will then send the final versions of the two reports to the DCISC for inclusion in documents for use in the February 21-22, 2024 Public Meeting.

Conclusions: The results of the review by PG&E for possible errors or omissions in the draft DCISC Reactor Embrittlement reports by DCISC Consultant Dr. Mark Kirk were editorial changes and other minor corrections, which had no substantive effect on the reports.

Recommendations: None

3.6 2024 Spent Fuel Loading Campaigns

The DCISC FFT met with Jearl Strickland, DCPD Consultant; Al Bates, DCPD Director, Nuclear Fuel and Decommissioning; and Eric Bracken, Manager, Decommissioning Project and

Spent Fuel, for an update on DCP's plans for spent fuel assembly transfers (campaigns) from the Spent Fuel Pools to the Independent Spent Fuel Storage Facility. The DCISC last reviewed this item in August 2023 (Reference 6.6), when it concluded the following:

DCP's procurement of a new spent fuel storage system from Orano was continuing. Site-specific analyses for use of the Orano system at DCP were in progress and could result in the submission of a new amendment for the Orano Certificate of Compliance to the NRC. Procurement of 12 new Holtec Multi-Purpose Canisters was underway, and a spent fuel offload campaign was planned to be performed in the period July to November 2024. The License Renewal Application for the existing spent fuel storage system was recently amended to reflect the possibility of extended operations, and DCP was working to respond to several Requests for Additional Information from the NRC.

The last transfer campaign was in 2018. In 2024 DCP plans to proceed with six campaigns per unit, which is a total of 12 campaigns moving 384 spent fuel assemblies. These campaigns will begin in July 2024 and conclude in October 2024. Then the next campaigns will be in 2027. Both the 2024 and 2027 campaigns will utilize the existing Holtec storage system.

In preparation for these campaigns, DCP personnel are undergoing training at Holtec. Improvements have been made to the transfer procedures and training compared to previous campaigns, and the training included operating experience from other plants. DCP will also perform dry runs of these campaigns prior to beginning. The improved procedures, training, and dry runs are being performed to assure problem-free transfers.

DCP is working on having the new Orano system available in 2030, which requires seismic qualifications to be completed.

Conclusions: DCP will resume transferring spent fuel from its Unit 1 and 2 Spent Fuel Pools to its existing Holtec dry cask Independent Spent Fuel Storage Installation (ISFSI) in July 2024 and concluding in October 2024. Plans call for the transfer of 384 spent fuel assemblies in 12 transfer campaigns. The new Orano System will be available in 2030, pending seismic qualifications. DCP's plans and actions in preparation for these campaigns appear appropriate.

Recommendations: None.

3.7 2023 Regulatory Year in Review

The DCISC FFT met with Jordan Tyman, Director, Risk and Compliance, to discuss the 2023 Nuclear Regulatory Commission (NRC) regulatory year-in-review. This is the first DCISC year-in-review; however, the DCISC receives updates to NRC's evaluations of DCP performance at each of its three public meetings each year (Reference 6.7) and by reading NRC reports throughout the year as they are issued.

The following are significant NRC regulatory activities occurring in 2023:

- The NRC spent 5600 inspection hours at DCPD during 2023.
- NRC identified 11 non-cited violations, the lowest in NRC Region IV.
- All 16 NRC performance indicators were Green.
- DCPD submitted a License Amendment Request (LAR) to NRC in 2023 for their Risk Informed Completion Times Model, which the NRC inspected in December 2023. NRC approval is expected in May 2024.
- DCPD submitted its LAR for License Renewal in November 2023. The NRC approved the content of the submittal as ready for their review.

2023 NRC inspections were as follows:

INSPECTIONS	DATE
1 st Quarter Resident Inspector Integrated Inspection	1Q
Material Control & Accountability	February 6
Security Access Auth .01 and Access Control .02 + PIV + Plan Change .09	February 27
Commercial Grade Dedication	March 27
2 nd Quarter Resident Inspector Integrated Inspection	2Q
Licensed Operator Requal (BRQ)	June 4
3 rd Quarter Resident Inspector Integrated Inspection (including assist visit)	3Q
Security FFD	July 24
Security Protective Strategy .05	September 11
EP Program Inspection	September 18
4 th Quarter Resident Inspector Integrated Inspection & Resident Assist inspection on maintenance optimization	4Q
RP	October 9
License Renewal	October 9
1R24 ISI	October 9-20 Subject to activities selected by inspector

DCPD 2023 Submittals to NRC were as follows:

- DCPD ISFSI License Renewal Application - 3/9/23
- TSTF-505 (Risk-Informed Completion Times) License Amendment Request (LAR) – 7/13/23
- 50.69, Application to Adopt Risk Categorization and Treatment of SSC's LAR – 9/27/23
- DCPD License Renewal Application (LRA) – 11/7/23

- DCPD Request for Exemption from Enhanced Weapons, Firearms Background Checks, and Security Event Notifications Implementation – 12/14/23

Conclusions: The year 2023 was a typical NRC regulatory year with the exception of the DCPD License Amendment Request for License Renewal. All NRC Performance Indicators for DCPD were Green.

Recommendations: None.

3.8 Post-Refueling Outage 1R24 Reactor Physics

The DCISC Fact-finding Team met with Ryan West, Director, Nuclear Engineering, and Dan Blount, Manager, Reactor Engineering Supervisor, to review DCPD's new reactor physics testing used when starting up a unit following a refueling outage. The testing is required to confirm reactor physics parameters for the updated reactor fuel core. The DCISC last reviewed this item in October 2006 (Reference 6.8), concluding the following:

DCPD's new reactor physics testing procedure accurately measures core parameters, saves over 17 hours of outage time, and permits measuring Technical Specification-required reactor core parameters without removing any reactor protection inputs, resulting in a safer configuration.

Technical Specification-required that control rod worth, subcritical negative reactivity, and Moderator Temperature Coefficient (MTC) testing be performed during each start-up from a refueling outage in which fuel changes are routinely made, i.e., approximately one-third of the core is replaced with new fuel. Typically, testing has been performed at hold points during power ascension requiring approximately 24 hours of outage time. A new 2006 process developed by Westinghouse shortened the required outage time to approximately 7.5 hours or less for an outage savings of about 17.5 hours. Control Rod drop testing is still required.

The new reactor physics tests used in Refueling Outage 1R24, the Alternate Rod Worth Verification, replaces the former Dynamic Rod Worth test with the following lower-risk tests, which are performed during the required rod drop tests:

- Alternate Rod Worth Verification Test
- Subcritical Inverse Count Rate Test Using BEACON, which is a Westinghouse-developed analytical tool for predicting the power distribution in a reactor core.

In addition to providing lower risk, the new tests save approximately six-to-eight hours of outage time. In addition to the new tests, monthly and quarterly physics surveillance testing is performed using the Movable In-Core Detection System.

Conclusion: DCPD's improved post-refueling outage reactor physics testing not only provides lower risk testing, but also saves six-to-eight hours of startup time.

Recommendations: None

3.9 Intake Cove Dredging Update

The DCISC FFT met with Donna Wells, Manager, Employee Concerns Program, for an update on DCPD dredging operations in the Intake Cove. The DCISC last reviewed this dredging operation in December 2023 (Reference 6.9), when it concluded the following:

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

The following was reported in the December 2023 DCISC Fact-finding report:

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 DCPD 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.*

As stated in the above conclusion, this January Fact-finding Meeting follow-up was to discuss actions taken by the DCPD Employee Concerns Program (ECP) Office.

Ms. Wells reported that the ECP Office performed an extensive search of its database for the following key words: "dredging", "retaliation", "intake cove", and "anonymous" in an effort to

see if the allegation had been reported in the ECP. There was nothing actionable found as a result of this search.

The diving teams used in this dredging were all commercial businesses, and not PG&E employees. The ECP Office met with the diving teams in a “Listening and Learning Session;” however, no new information on the dredging operation or new concerns were brought out.

Conclusions: The DCISC investigation into the anonymous dredging allegation revealed no improprieties regarding the dredging operation itself, permitting, legality, or nuclear safety. An investigation by the DCPPEmployee Concerns Program Office found no evidence of this issue having been reported to it.

Recommendations: None.

3.10 Observe Reactor Operator Continuing Simulator Training

The DCISC Fact-finding Team met with Brian Sawyer, DCPPEmployee Simulator Specialist, to observe a Licensed Operator Continuing Training class entitled “Faulted Steam Generator.” The DCISC last reviewed operator simulator training in April 2023 (Reference 6.10), when it concluded the following:

A Licensed Operator Continuing Training simulator session was well prepared, contained appropriate objectives, and was professionally conducted by the Training staff. Operators performed well in responding to the simulated off-normal events.

The FFT accompanied Mr. Sawyer in the Simulator Operating Booth as he operated the Simulator for the training class. The operations crew and an instructor were down on the Simulator floor operating the simulated control room in their response to the scenario. The crew had previously gone through classroom training on the Faulted Steam Generator scenario. This scenario began with the unit at full power operation and consisted of several minor failures before a simulated steam line break inside Containment, which caused the Steam Generator to blow down to a dry secondary side condition and its steam and energy imparted to Containment.

The training was successful in that the operations crew correctly responded to all simulated failures as well as the faulted Steam Generator condition. Additionally, the crew exhibited good human performance attributes such as three-way communication, clear and concise group updates, use of alpha-numeric terminology, and proper procedure use.

Conclusions: The continuing operations simulator training session for the faulted steam generator scenario was successful in that the operations crew responded correctly to all simulated failures as well as the faulted Steam Generator condition. Additionally, the crew exhibited good human performance attributes such as three-way communication, clear and concise group updates, use of alpha-numeric terminology, and proper procedure use.

Recommendations: None

3.11 Air- and Motor-Operated Valve Programs

The DCISC FFT met with Ryan West, Director, Nuclear Engineering; Jack Cheek, Engineering Supervisor and Air Operated Valve (AOV) Program Owner; and Chad Sorenson, Valve Component Engineering Motor Operated Valve (MOV) Program Owner for an update on these two programs. The DCISC last reviewed these programs in December 2020 (Reference 6.11), concluding the following:

The DCPD Air- and Motor-Operated Valve Programs appear to be sound and to be implemented satisfactorily.

DCPD's "Program for the Verification, Monitoring, and Trending of Air and Hydraulically Operated Valve Performance" is controlled by Procedure MA1.ID16, Revision 13. There are several other procedures for the Valve Packing Program, AOV and Associated Device Calibration, and AOV Testing Using the Crane VIPER Diagnostic System. DCPD has changed in 2014 (Refueling Outage 1R18) to the VOTES Infinity diagnostic system, which is an improved version of the VIPER valve operator diagnostic system. VIPER will be available as a backup. The MOV Program is similar.

The purpose of the program is to test and maintain AOVs and MOVs to assure that these valves will achieve required reliability when operated under anticipated system conditions. The program was developed in the mid-1990s as part of an industry effort in response to NRC concerns about the operability of AOVs and MOVs. An industry Joint Owners' Group (JOG) was formed in the late 1990s. DCPD personnel participate in the JOG.

The DCPD AOV/MOV Program organizes valves into the following four categories:

Category 1 – safety-related valves with an active safety function and high safety significance (six AOVs – three per unit), which are the Pressurizer Power Operated Relief Valves.

Category 2 – active safety-related valves, which do not have high safety significance. Examples are as follows:

- Auxiliary Feedwater Pump Discharge Header Level Control
- Steam Generator Main Feedwater Supply
- Steam Generator 10% Atmosphere Dump
- Reactor Coolant Pump Seal Outlet
- Charging Line to RCS Loop Cold Leg
- Letdown Heat Exchanger
- Excess Letdown Flow Control
- Containment Fire Water Isolation
- Containment Excess Pressure Outlet

Category 3 - Valves outside Categories 1 and 2, which affect plant efficiency and electricity-generation capacity, or whose maintenance history indicates the need for increased surveillance. There are several hundred valves in this category.

Category 4 – Any remaining valves not included in the above three categories.

There are approximately 1900 AOVs and MOVs in the program with 96 high priority valves tested each outage. The AOV/MOV Program Team determines which valves are assigned to each category. For each valve, a design basis reconstitution is performed to determine operational parameters, which are used as the basis for test acceptance criteria. Additionally, valve capability and operator sizing calculations are performed to assure that the valve/operator combination is acceptable for its specific application. Baseline, periodic, and post-maintenance testing are performed on each AOV and MOV depending on its category. Records and trends are maintained for each AOV and MOV. Any problems are documented and tracked on an Action Request in the Corrective Action Program. Valve test data include the following parameters:

- Valve travel distance
- Valve travel time
- Air supply pressure
- Actuator Pressure
 - Valve starts to open
 - Valve fully open
 - Valve starts to close
 - Valve fully closed
- Stem friction
- Spring rate
- Seat force
- Valve time and pressure trace diagrams

Maintenance performs the actual VOTES tests, and the Program Owner verifies and approves the test results. During Refueling Outage 1R24, AOVs and MOVs were tested with satisfactory results.

Overall, both AOV and MOV Program health indicators are Green. The Program Owners participate actively in industry AOV/MOV Program activities. They develop both a Long-Range Plan for the Program and a Life Cycle Management Plan for DCP's valves. The former plan is addressing the issue of obsolete AOV/MOV parts, and the second addresses the testing budget as well as future valve/actuator replacements.

Conclusions: The DCP programs for Air- and Motor-Operated Valves were rated in Green Health and appeared to be appropriately managed and implemented. The program owners were experienced in their roles and exhibited good knowledge of their programs.

Recommendations: None

3.12 Emergency Diesel Generator Update

The DCISC FFT met with Jim Wiggin, Emergency Diesel Generator (EDG) System Engineer for an update on system performance and a tour of an EDG. The DCISC last reviewed this topic in November 2022 (Reference 6.12), when it concluded the following:

The health of DCP's Emergency Diesel Generators (EDGs) was rated as Green (Healthy) on Unit 1 and White (Needing Improvement) on Unit 2. The White (Needing Improvement) rating on Unit 2 was driven by continuing actions being taken in response to a fuel oil leak that occurred during maintenance testing in 2021. EDG reliability and availability have been good over the past two years.

The EDGs are safety-related pieces of equipment whose functions are as follows:

- To furnish sufficient electric power to mitigate a design basis accident in one unit and safely bring the other unit to cold shutdown when both the 230kV and 500kV offsite power sources are unavailable.
- To act as a backup source of power to enable the reactor to continue to produce power for 72 hours whenever there is no accident condition, but one of the two offsite power sources is inoperable.
- To furnish power sufficient for an emergency shutdown of the plant whenever the offsite power sources are not available.

The EDG Fuel Oil Supply system has enough fuel capacity to provide seven days of onsite power generation: (a) in order to operate the minimum required Engineering Safety Features equipment following a design basis Loss-of-Coolant Accident for one unit, and the equipment in the second unit is in either the hot or cold shutdown condition, or (b) when the equipment for both units is in either the hot or cold shutdown condition. Each nuclear operating unit is supported by three EDGs dedicated to the respective unit, and the EDGs can be cross connected to the other unit using temporary cables. The EDGs are each rated to deliver approximately 2,600 kW on a continuous basis and are designed to start automatically when needed.

Mr. Wiggin reviewed the latest system health reports for the three Unit 1 and three Unit 2 EDGs with the FFT as follows:

Unit 1

Unit 1's EDGs were classified as Green (Healthy) with the following issues challenging system health:

- Fuel oil day tank level switches, indicators, and priming system design result in repeat testing failures and challenges. Replacement requests are to be taken to Plant Health Committee first quarter 2024.

Final

- GQD panel alarm relay modules are obsolete with no spares in stock. DCPD will need to procure 15 replacement modules through end of plant life. Replacement requests are to be taken to Plant Health Committee first quarter 2024.

Unit 2

Unit 2's EDGs were classified as Green (Healthy). The following issues were challenging system health:

- Fuel oil day tank level switches, indicators, and priming system design result in repeat testing failures and challenges. Replacement requests are to be taken to Plant Health Committee first quarter 2024.
- GQD panel alarm relay modules are obsolete with no spares in stock. DCPD will need to procure 15 replacement modules through end of plant life. Replacement requests are to be taken to Plant Health Committee first quarter 2024.
- The electronic governor replacement project was not yet implemented on EDG 2-2 and 2-3. The project needs approval by Plant Health Committee and will be submitted in the first quarter 2024.

The original EDG control system components (Woodward motor-operated potentiometer governors) were no longer available and considered obsolete. Modifications to upgrade the governors were completed on four of the six EDGs. An alternative plan was approved that canceled replacement of the governors on EDGs 2-1 and 2-3. Instead, portions of the old governor systems were retained, evaluated by Engineering, and approved for use as replacements on EDGs 2-1 and 2-3, should future problems occur. With the proposal to extend power operations beyond 2025, Mr. Wiggin expected that the project to replace the two remaining governors would need to be restarted.

Mr. Wiggin confirmed that EDG reliability and unavailability numbers remained good and well within established goals. He confirmed that there were no recent start failures, with the last start failure having occurred on EDG 1-1 in September 2015.

Mr. Wiggin led Consultant Wardell on a tour of the EDG 1-2 room. The room and EDG were in excellent condition and orderly. There were several tags hung for minor corrective actions.

Conclusions: The DCPD Emergency Diesel Generators for both units are rated in Green Health (Healthy) with a few challenges in fuel oil day tank level instruments and panel alarm relay modules. Satisfactory plans for these challenges are underway.

Recommendations: None.

4.0 CONCLUSIONS

4.1 The January 24, 2024 Plant Health Committee meeting was canceled due to a conflict

with an Emergency Preparedness exercise. The DCISC should observe a Plant Health Committee Meeting at one of its future fact-finding meetings.

- 4.2 DCPD has aggressive plans for Outage 2R24, a 50-day outage planned for Spring 2024. Planning for the outage appeared appropriate.
- 4.3 The meeting with the NRC Senior Resident Inspector was beneficial, and the DCISC should continue the meetings.
- 4.4 The DCPD 2023 Operating Plan goals were all met, most importantly to the DCISC that for safety. The 2024 Operating Plan is essentially the same as that for 2023. The 2024 Goals are the same as those for 2023. The DCISC should continue to monitor DCPD's Operating Plan.
- 4.5 The results of the review by PG&E for possible errors or omissions in the draft DCISC Reactor Embrittlement reports by DCISC Consultant Dr. Mark Kirk were editorial changes and other minor corrections, which had no substantive effect on the reports.
- 4.6 DCPD will resume transferring spent fuel from its Unit 1 and 2 Spent Fuel Pools to its existing Holtec dry cask Independent Spent Fuel Storage Installation (ISFSI) in July 2024 and concluding in October 2024. Plans call for the transfer of 384 spent fuel assemblies in 12 transfer campaigns. The new Orano System will be available in 2030, pending seismic qualifications. DCPD's plans and actions in preparation for these campaigns appear appropriate.
- 4.7 The year 2023 was a typical NRC regulatory year with the exception of the DCPD License Amendment Request for License Renewal. All NRC Performance Indicators for DCPD were Green.
- 4.8 DCPD's improved post-refueling outage reactor physics testing not only provides lower risk testing, but also saves six-to-eight hours of startup time.
- 4.9 The DCISC investigation into the anonymous dredging allegation revealed no improprieties regarding the dredging operation itself, permitting, legality, or nuclear safety. An investigation by the DCPD Employee Concerns Program Office found no evidence of this issue having been reported to it.
- 4.10 The continuing operations simulator training session for the faulted steam generator scenario was successful in that the operations crew responded correctly to all simulated failures as well as the faulted Steam Generator condition. Additionally, the crew exhibited good human performance attributes such as three-way communication, clear and concise group updates, use of alpha-numeric terminology, and proper procedure use.

- 4.11 The DCPD programs for Air- and Motor-Operated Valves were rated in Green Health and appeared to be appropriately managed and implemented. The program owners were experienced in their roles and exhibited good knowledge of their programs.**
- 4.12 The DCPD Emergency Diesel Generators for both units are rated in Green Health (Healthy) with a few challenges in fuel oil day tank level instruments and panel alarm relay modules. Satisfactory plans for these challenges are underway.**

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.3, Section 3.3, “Observe Plant Health Prioritization Committee Meeting.”
- 6.2 Ibid., Exhibit D.5, Section 3.1, “Refueling Outage 1R24 Results.”.”
- 6.3 Ibid., Exhibit D.5, Section 3.15, “Meet with Nuclear Regulatory Commission (NRC) Senior Resident Inspector.”
- 6.4 Diablo Canyon Independent Safety Committee Thirty-Second 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 B.6, “DCPD 2022 Operating Plan Results and 2023 Operating Plan.”
- 6.5 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.5, Section 3.6, “Unit 1 Reactor Vessel Embrittlement and Attempts to Remove Specimen B.”
- 6.6 Ibid, Exhibit D.3, Section 3.1, “Spent Fuel Management.”
- 6.7 Ibid., Exhibit B.3, “Update on the Status of NRC Performance Indicators, Licensee Event Reports, NRC Inspection Reports, NRC Current Issues.”
- 6.8 Diablo Canyon Independent Safety Committee Thirty-Third Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2006 – June 30, 2007,” Approved October 13, 2007, Volume II, Exhibit D.3, Section 3.1, “New Control Rod Worth Tests.”

- 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.5, Section 3.5, “Intake Cove Maintenance and Dredging Project Update.”
- 6.10 Diablo Canyon Independent Safety Committee Thirty-Second 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 3.4, “Licensed Operator Continuing Training Observation.”
- 6.11 Diablo Canyon Independent Safety Committee Thirty-Fourth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2020 – June 30, 2021,” Approved October 15, 2021, Volume II, Exhibit D.5, Section 3.2, “Motor- and Air-Operated Valve Testing Programs.”
- 6.12 Diablo Canyon Independent Safety Committee Thirty-Second 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.5, Section 3.5, “Emergency Diesel Generators.”