



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

August 10, 2017

Mr. Edward D. Halpin
Senior Vice President
and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

**SUBJECT: DIABLO CANYON POWER PLANT – NRC INTEGRATED INSPECTION
REPORT 05000275/2017002 and 05000323/2017002**

Dear Mr. Halpin:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Diablo Canyon Power Plant, Units 1 and 2. On July 11, 2017, the NRC inspectors discussed the results of this inspection with Mr. J. Welsch, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. Additionally, NRC inspectors documented two Severity Level IV (SL-IV) violations with no associated findings. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement; and the NRC resident inspector at the Diablo Canyon Power Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC resident inspector at the Diablo Canyon Power Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Mark S. Haire, Branch Chief
Project Branch A
Division of Reactor Projects

Docket Nos. 05000275 and 05000323
License Nos. DPR-80 and DPR-82

Enclosure:
Inspection Report 05000275/2017002 and
05000323/2017002

w/ Attachments:

1. Supplemental Information
2. RFI for Inservice Inspection
3. RFI for Occupational Radiation Safety Inspection

cc w/ enclosure:

DIABLO CANYON POWER PLANT – NRC INTEGRATED INSPECTION REPORT
05000275/2017002 and 05000323/2017002 – August XX, 2017

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REGION IV

Docket: 05000275; 05000323

License: DPR-80; DPR-82

Report: 05000275/2017002; 05000323/2017002

Licensee: Pacific Gas and Electric Company

Facility: Diablo Canyon Power Plant, Units 1 and 2

Location: 7 ½ miles NW of Avila Beach
Avila Beach, CA

Dates: April 1 through June 30, 2017

Inspectors: C. Newport, Senior Resident Inspector
J. Reynoso, Resident Inspector
J. Choate, Acting Resident Inspector
I. Anchondo, Reactor Inspector
T. Farina, Senior Operations Engineer
C. Osterholtz, Senior Operations Engineer
C. Steely, Operations Engineer
L. Carson II, Sr. Health Physicist
J. O'Donnell, CHP, Health Physicist
G. George, Senior Reactor Inspector, Engineering Branch 1, Lead
S. Makor, Reactor Inspector, Engineering Branch 2
C. Stott, Reactor Inspector, Engineering Branch 1

Approved By: Mark S. Haire
Chief, Project Branch A
Division of Reactor Projects

SUMMARY

IR 05000275/2017002, 05000323/2017002; 04/01/2017 – 06/30/2017; Diablo Canyon Power Plant; inservice inspection activities, licensed operator requalification program and licensed operator performance, refueling and other outage activities

The inspection activities described in this report were performed between April 1 and June 30, 2017, by the resident inspectors at Diablo Canyon Power Plant and inspectors from the NRC's Region IV office. Two findings of very low safety significance (Green) are documented in this report. These findings involved violations of NRC requirements. Additionally, NRC inspectors documented two Severity Level IV violations with no associated findings. The significance of inspection findings is indicated by their color (i.e., Green, greater than Green, White, Yellow, or Red), determined using Inspection Manual Chapter 0609, "Significance Determination Process," dated April 29, 2015. Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of the licensee's risk-informed inservice inspection program (which is their alternative to portions of the ASME Code, Section XI inservice inspection program approved in accordance with 10 CFR 50.55a(z)) for the failure to properly expand the scope of additional welds to inspect. Specifically, a rejectable flaw on a pipe weld in the pressurizer spray line was identified during refueling outage 1R19 while performing an ultrasonic examination. The licensee expanded the inspection scope by four additional welds, but failed to select those assigned with the same degradation. For immediate corrective actions, the licensee identified and intended to inspect four additional welds assigned to the same degradation mechanism as required by the risk-informed inservice inspection program. This issue was entered into the licensee's corrective action program as Notification 50920222.

The licensee's failure to properly expand the weld examination scope as required by the risk-informed inservice inspection program was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to select additional welds that were susceptible to the same degradation mechanism as weld WIB-378 placed the plant at an increased risk due to the potential of having an active degradation mechanism that could affect additional components. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined the finding screened as having very low significance (Green) because: (1) it was not a design deficiency; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and (4) did not result in the loss of a high safety-significant non-technical specification train. This finding had a cross-cutting aspect in the area of human performance associated with

change management because leaders failed to use a systematic process for evaluating and implementing the change to a risk-informed inservice inspection program. The implementing procedure failed to include the reference to “degradation mechanism” allowing for a misinterpretation of weld expansion requirements once a flaw was identified in a weld WIB-378 [H.3]. (Section 1R08)

- SL-IV. The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 55.21, “Medical Examination,” for the licensee’s failure to ensure that a medical examination by a physician to determine satisfaction of 10 CFR 55.33(a)(1) requirements was conducted every 2 years for two licensed senior operators. Specifically, one licensed senior operator exceeded the two-year medical examination requirement by approximately 16 months between November 27, 2015, and April 6, 2017. A second licensed senior operator exceeded the 2-year medical examination requirement by 4 months between November 19, 2016, and April 6, 2017. As a corrective action, the licensee has conducted the required medical examination for one senior operator and initiated a license termination request for the other senior operator. This issue was entered into the licensee’s corrective action program as Notification 50912407.

The failure of the facility licensee to conduct required biennial medical examinations for two licensed senior operators was a performance deficiency. This issue was evaluated using the traditional enforcement process because it negatively impacted the NRC’s ability to perform its regulatory oversight function. Specifically, the failure to comply with medical testing requirements for two operators compromised the facility licensee’s ability to assure conformance to medical standards, detect non-conforming medical conditions, and report non-conformances to the NRC. This performance deficiency was determined to be Severity Level IV because it fits the Severity Level IV example of Enforcement Policy Section 6.4.d.1, “Violation Examples: Licensed Reactor Operators.” This section states, “Severity Level IV violations involve, for example ... (b) an individual operator who did not meet the American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.4,” “Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants,” Section 5, “Health Requirements and Disqualifying Conditions,” as certified on NRC Form 396, “Certification of Medical Examination by Facility Licensee,” required by 10 CFR 55.23, Certification, but who did not perform the functions of a licensed operator or senior operator while having a disqualifying medical condition.” No cross-cutting aspect was assigned because the violation was processed using traditional enforcement. (Section 1R11.3)

- SL-IV. The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 55.25, “Incapacitation Because of Disability or Illness,” for the licensee’s failure to notify the NRC within 30 days of a change to one licensed senior operator’s medical condition. Specifically, the licensed senior operator developed a permanent medical condition which caused him to permanently leave the site on December 1, 2014, and transition into a long-term disability program on April 23, 2015. The licensee did not notify the NRC of this change in medical condition. As a corrective action, the licensee initiated a license termination request for the affected operator, effective April 6, 2017. This issue was entered into the licensee’s corrective action program as Notification 50912407.

The failure of the facility licensee to notify the NRC within 30 days of a change in a licensed senior operator’s medical condition was a performance deficiency. This issue was evaluated using the traditional enforcement process because it negatively impacted the NRC’s ability to perform its regulatory oversight function. Specifically, the failure to report

changes in a licensed senior operator's medical condition prevented the NRC from taking action to issue either a license amendment or termination, as appropriate. This performance deficiency was determined to be Severity Level IV because it fits the Severity Level IV example of Enforcement Policy Section 6.4.d.1, "Violation Examples: Licensed Reactor Operators." This section states, "Severity Level IV violations involve, for example (b) an individual operator who did not meet the American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.4," "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," Section 5, "Health Requirements and Disqualifying Conditions," as certified on NRC Form 396, "Certification of Medical Examination by Facility Licensee," required by 10 CFR 55.23, Certification, but who did not perform the functions of a licensed operator or senior operator while having a disqualifying medical condition." No cross-cutting aspect was assigned because the violation was processed using traditional enforcement. (Section 1R11.3)

- Green. The inspectors reviewed a self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because PG&E personnel failed to follow the requirements of AD7.ID14, "Assessment of Integrated Risk," Revision 11. Specifically, PG&E personnel failed to obtain shift manager permission, conduct a protected equipment briefing, and document shift manager approval prior to performing work on protected equipment. This resulted in a loss of flow of cooling water to one of two in-service shutdown cooling residual heat removal heat exchangers and subsequent perturbation in reactor coolant system temperature during refueling outage 1R20.

The inspectors determined that PG&E's failure to follow AD7.ID14, "Assessment of Integrated Risk," Section 5.14 "Performing Work on Posted Protected Equipment," was a performance deficiency within PG&E's ability to foresee and correct. This performance deficiency was considered to be more than minor because it impacted the configuration control attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the loss of cooling flow to the RHR heat exchanger while in shutdown cooling mode resulted in a perturbation in RCS temperature of approximately 8 degrees Fahrenheit. The finding was evaluated in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," and determined to be of very low safety significance (Green) since it did not represent a loss of system safety function of at least a single train for greater than four hours. The finding had a cross-cutting aspect in the area of human performance associated with conservative bias because PG&E personnel did not use decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, despite being authorized to close component cooling water cross connect valves by the work control process, PG&E personnel did not question the impact of their actions on shutdown cooling [H.14]. (Section 1R20)

PLANT STATUS

Units 1 and 2 began the inspection period at full power.

On April 23, 2017, Unit 1 was shut down for a planned refueling outage. On June 21, 2017, Unit 1 returned to operation and began a controlled power ascension; it returned to full power on June 27, 2017.

Units 1 and 2 operated at or near full power for the remainder of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

Summer Readiness for Offsite and Alternate AC Power Systems

a. Inspection Scope

On June 23, 2017, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors walked down the switchyard to observe the material condition of equipment providing off-site power sources. The inspectors assessed corrective actions for identified degraded conditions and verified that the licensee had considered the degraded conditions in its risk evaluations and had established appropriate compensatory measures.

The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walk-Down

a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- April 6, 2017, Unit 2, safety injection system
- April 24, 2017, Unit 1, residual heat removal system
- May 1, 2017, Unit 1, reactor vessel refueling level indication system
- June 14-15, 2017, Unit 1, containment ventilation and air system
- June 21, 2017, Unit 2, containment spray system

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems were correctly aligned for the existing plant configuration.

These activities constituted five partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

.2 Complete Walk-Down

a. Inspection Scope

On June 29, 2017, the inspectors performed a complete system walk-down inspection of the Unit 1, containment fan cooling unit system. The inspectors reviewed the licensee's procedures and system design information to determine the correct system lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders, open condition reports, in-process design changes, temporary modifications, and other open items tracked by the licensee's operations and engineering departments. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on five plant areas important to safety:

- April 20, 2017, Units 1 and 2, auxiliary building fire areas located on the 64 foot elevation
- April 25, 2017, Unit 1, containment building fire areas located on the 140 foot elevation
- April 25, 2017, Unit 1, containment building fire areas located on the 91 foot elevation
- May 4, 2017, Unit 1, containment building fire areas located on the 117 foot elevation
- June 28, 2017, Units 1 and 2, auxiliary building fire areas located at the 73 foot elevation

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted five quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On April 27, 2017, the inspectors completed an inspection of underground bunkers susceptible to flooding. The inspectors selected underground vaults that contained risk-significant or multiple-train cables whose failure could disable risk-significant equipment:

- April 27, 2017, Units 1 and 2, auxiliary salt water vault BPO44

The inspectors observed the material condition of the cables and splices and looked for evidence of cable degradation due to water intrusion. The inspectors verified that the cables and vaults met design requirements.

These activities constituted completion of one bunker/manhole sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On June 26, 2017, the inspectors completed an inspection of the readiness and availability of risk-significant heat exchangers. The inspectors reviewed the data from performance tests for the Unit 1 component cooling water heat exchangers. Additionally, the inspectors walked down the heat exchangers to observe their performance and material condition.

These activities constituted completion of one heat sink performance annual review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

The activities described in subsections 1 through 4 below constitute completion of one inservice inspection (ISI) sample, as defined in Inspection Procedure 71111.08.

.1 Non-destructive Examination Activities and Welding Activities

a. Inspection Scope

The inspector directly observed the following nondestructive examinations:

| <u>SYSTEM</u> | <u>WELD/COMPONENT IDENTIFICATION</u> | <u>EXAMINATION TYPE</u> |
|-----------------------|--|-------------------------|
| Residual Heat Removal | Line 109 (Weld WIB-228) | Ultrasonic |
| Reactor Vessel | Inlet Nozzle to DM Weld @ 67° (Weld WIB-RC-2-20-SE) | Ultrasonic |
| Reactor Vessel | Inlet Nozzle to DM Weld @ 113° (Weld WIB-RC-3-18-SE) | Ultrasonic |

The inspector reviewed records for the following nondestructive examinations:

| <u>SYSTEM</u> | <u>WELD/COMPONENT IDENTIFICATION</u> | <u>EXAMINATION TYPE</u> |
|---------------|--------------------------------------|-------------------------|
| Pressurizer | Spray Line 15-4 (Weld WIB-378) | Ultrasonic |

| <u>SYSTEM</u> | <u>WELD/COMPONENT IDENTIFICATION</u> | <u>EXAMINATION TYPE</u> |
|-----------------------|--|-------------------------|
| Residual Heat Removal | Line 109 (Weld WIB-228) | Ultrasonic |
| Reactor Vessel | Inlet Nozzle to DM Weld @ 293° (Weld WIB-RC-1-18-SE) | Ultrasonic |
| Reactor Vessel | Inlet Nozzle to DM Weld @ 247° (Weld WIB-RC-4-18-SE) | Ultrasonic |
| Various | Various (ASME Class 1 boundary) | Visual (VT-2) |
| Various | Test #8 (ASME Class 2 boundary) | Visual (VT-2) |

During the review and observation of each examination, the inspector observed whether activities were performed in accordance with the ASME Code requirements and applicable procedures. The inspector reviewed two indications that were previously examined, and observed whether the licensee evaluated and accepted the indications in accordance with the ASME Code. The inspector also reviewed the qualifications of all nondestructive examination technicians performing the inspections to determine whether they were current.

The inspector directly observed a portion of the following welding activities:

| <u>SYSTEM</u> | <u>WELD IDENTIFICATION</u> | <u>EXAMINATION TYPE</u> |
|------------------------------|----------------------------|--------------------------|
| Containment Fan Cooling Unit | Weld No. 38 & 40 | Gas Tungsten Arc Welding |

The inspector reviewed whether the welding procedure specifications and the welders had been properly qualified in accordance with ASME Code, Section IX requirements. The inspector also determined that essential variables were identified, recorded in the procedure qualification record, and formed the bases for qualification of the welding procedure specifications.

b. Findings

Green. The inspector identified a non-cited violation of the licensee's risk-informed inservice inspection program (which is their alternative to portions of the ASME Code, Section XI inservice inspection program approved in accordance with 10 CFR 50.55a(z)) for the failure to properly expand the scope of additional welds to inspect. Specifically, a rejectable flaw on a pipe weld in the pressurizer spray line was identified during refueling outage 1R19 while performing an ultrasonic examination. The licensee expanded the inspection scope by four additional welds but failed to select those assigned with the same degradation mechanism.

Description. On November 8, 2001, the licensee received NRC approval to implement a risk-informed inservice inspection program for ASME Code, Class 1 and 2 piping welds. The risk-informed inservice inspection program was developed in accordance with Electric Power Research Institute (EPRI) Topical Report TR-112657, "Revised

Risk-Informed Inservice Inspection Evaluation,” Revision B-A. During refueling outage 1R19, the licensee was completing the remaining inspections for the third 10-year ISI interval as required by ASME Code, Section XI. During an ultrasonic examination, a rejectable flaw was identified in the pressurizer spray line, weld WIB-378. The results and corrective actions were documented in Notification 50809162.

The risk-informed inservice inspection program assigns a risk profile of each Class 1 and 2 piping weld based on risk significance, consequence of failure, and failure potential. The purpose of assigning a failure potential is to differentiate welds that are affected by a specific degradation mechanism. Topical Report TR-112657 provides the guidance to assign a degradation mechanism. Welds that do not meet the specific criteria are assigned to a failure potential without a degradation mechanism. When a flaw is identified, additional examinations are required to be performed to determine if an active degradation mechanism exist.

Procedure ISI ADD SUCCESS, “Additional, Supplemental, and Successive Inspections,” Revision 6, implements the guidance of additional inspections per Topical Report TR-112657. Section 4.2.6, states the following:

“All other examinations performed on piping welds per the risk-informed ISI Program Plan that detect flaws or relevant conditions require additional examinations on elements in segments subject to the same root cause conditions. The number of additional examinations shall be equivalent to the number examined initially for the current refueling outage, and shall include high risk-significant as well as medium risk-significant elements (if needed) to reach the required number of additional elements.”

The inspector noted that the term “elements” referred to selected welds per EPRI guidance. The inspector also noted that this procedural requirement was missing the reference to “degradation mechanism” in addition to “root cause conditions” as provided by Topical Report TR-112657.

Notification 50809162 documents that a flaw was identified in weld WIB-378. Per the risk-informed inservice inspection program, this weld has a failure potential assigned to the degradation mechanism of Thermal Stratification, Cycling, and Striping (TASCS). The licensee expanded the inspection scope to four additional examinations as required by Section 4.2.6 of Procedure ISI ADD SUCCESS. The inspector checked whether the selected welds had the same degradation mechanism as Weld WIB-378 and identified that none of them had been assigned with TASCS as a degradation mechanism per their failure potential designation. The inspector concluded that although the licensee had correctly expanded the number of weld examinations it had failed to select those susceptible to TASCS.

Analysis. The licensee’s failure to properly expand the weld examination scope as required by the risk-informed inservice inspection program was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to select additional welds that were susceptible to the same degradation mechanism as weld WIB-378 placed the plant at an increased risk due to the potential of having an active degradation mechanism that could affect

additional components. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspector determined the finding screened as having very low significance (Green) because: it was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant, non-technical specification train. This finding had a cross-cutting aspect in the area of Human Performance associated with Change Management because leaders failed to use a systematic process for evaluating and implementing the change to a risk-informed inservice inspection program. The implementing procedure failed to include the reference to "degradation mechanism" allowing for a misinterpretation of weld expansion requirements once a flaw was identified in weld WIB-378 [H.3].

Enforcement. Title 10 CFR 50.55a(z), states in part, that alternatives to the requirements of this section must be submitted and authorized prior to implementation. The licensee received prior approval to implement a risk-informed inservice inspection process developed based on the EPRI Topical Report TR-112657, Revision B-A, as an alternative to applicable requirements of Section XI of the ASME Code. The risk-informed inservice inspection process requires that when flaws or relevant conditions are detected, additional examinations on elements in segments subject to the same root cause conditions or degradation mechanism are required. Contrary to the above, from November 1, 2015, until May 17, 2017, the licensee failed to conduct the required additional examinations on elements in segments subject to the same root cause conditions or degradation mechanism after flaws or relevant conditions were detected. Specifically, the licensee completed ultrasonic examinations of four additional pipe welds, but failed to select those that were assigned the same degradation mechanism as pipe weld WIB-378. As part of their corrective actions, the licensee, at the time of the inspection, identified and intended to inspect four additional welds assigned to the same degradation mechanism as required by the risk-informed inservice inspection program. Because the violation was of very low safety significance and it was entered into the corrective action program as Notification 50920222, this violation is being treated as a non-cited violation consistent with Section 2.3.2a of the NRC Enforcement Policy. NCV 05000275/2017002-01, "Inadequate Expansion Scope of Risk-Informed Welds"

.2 Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

No vessel upper head penetration inspection activities were scheduled for Diablo Canyon Power Plant, Unit 1, during Outage 1R20.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control Inspection Activities

a. Inspection Scope

The inspector reviewed the licensee's implementation of its boric acid corrosion control program for monitoring degradation of those systems that could be adversely affected by boric acid corrosion. The inspectors reviewed the documentation associated with the licensee's boric acid corrosion control walk-down as specified in Procedure ER1.ID2, "Boric Acid Corrosion Control Program," Revision 7. The inspector determined that the visual inspections emphasized locations where boric acid leaks could cause degradation of safety-significant components, and that engineering evaluations used corrosion rates applicable to the affected components and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity. The inspector observed that corrective actions taken were consistent with the ASME Code, and 10 CFR 50, Appendix B requirements.

b. Findings

No findings were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

No steam generator tube inspection activities were scheduled for Diablo Canyon Power Plant, Unit 1, during Outage 1R20.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed 13 condition reports which dealt with inservice inspection activities and found the corrective actions for inservice inspection issues were appropriate. From this review the inspector concluded that the licensee has an appropriate threshold for entering inservice inspection issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry inservice inspection operating experience.

The inspector also performed a review of licensee evaluations and corrective actions related to recent operating experience with degraded reactor vessel internal baffle-former bolts. Specifically, Diablo Canyon Power Plant, Unit 1, is a Tier 1a plant as identified in Nuclear Safety Advisory Letter (NSAL)-16-1 "Baffle-Former Bolts." For a Tier 1a plant, the following actions were recommended:

- Complete ultrasonic inspection of the baffle-former bolts at the next schedule outage (1R20).
- Consider developing an acceptable bolting pattern analysis.

- Replace any baffle-former bolts with visible damage or ultrasonic indications prior to starting up.

The inspector reviewed the licensee's evaluations and corrective action to determine if they were consistent with recommendations identified in NSAL-16-1 and other applicable industry operating experience related to degraded baffle-former bolts. The inspectors observed portions of the ultrasonic examinations and baffle-former bolt inspection activities. Specific documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On June 27, 2017, the inspectors observed simulator scenarios for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the simulator training scenario.

These activities constituted completion of one quarterly licensed operator requalification program sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity. The inspectors observed the operators' performance of the following activities:

- April 23, 2017, Unit 1, reactor shutdown for refueling outage 1R20
- May 1, 2017, Unit 1, reactor coolant system drain down for reactor head removal
- June 12, 2017, Unit 1, reduced inventory operations for vacuum refill of the reactor coolant system

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure and other operations department policies.

These activities constituted completion of one quarterly licensed operator performance sample, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.3 Biennial Review of Regualification Program

Every year, either an annual review or a biennial review is performed on the licensed operator requalification program. For 2017, the biennial review was completed and the annual review was performed as part of this review.

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators are administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

a. Inspection Scope

To assess the performance effectiveness of the licensed operator requalification program, the inspectors reviewed both the written examination and operating test quality and observed licensee administration of an annual requalification test while on-site. The operating tests observed included multiple administrations of four job performance measures and two scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content and to determine if feedback of performance analyses into the requalification training program was being accomplished.

On April 20, 2017, the licensee informed the inspectors of the completed cycle results for Diablo Canyon Power Plant for both the written examinations and the operating tests:

- 16 of 17 crews passed the simulator portion of the operating test
- 84 of 91 licensed operators passed the simulator portion of the operating test
- 90 of 91 licensed operators passed the job performance measure portion of the operating test
- 87 of 91 licensed operators passed the written examination

The individuals that failed a portion of the examination were remediated, retested, and passed their retake examinations.

The inspectors observed examination security measures in place during administration of the exams (including controls and content overlap) and reviewed remedial training and re-examinations, as available. The inspectors also reviewed medical records of 10 licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for 11 operators.

The inspectors reviewed simulator performance for fidelity with the actual plant and the overall simulator program of maintenance, testing, and discrepancy correction.

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

- (1) Introduction. The inspectors identified a Severity Level IV (SL-IV) non-cited violation (NCV) of 10 CFR 55.21, "Medical Examination," for the licensee's failure to ensure that a medical examination by a physician to determine satisfaction of 10 CFR 55.33(a)(1) requirements was conducted every two years for two licensed senior operators.

Description. On April 5, 2017, an NRC inspector identified that a currently licensed senior operator last had a 10 CFR 55.21 required medical examination on November 27, 2013, a span of 40 months.

On March 12, 2014, the facility licensee informed the NRC by letter that this operator had developed a "temporary medical condition," and had been administratively removed from engaging in licensed activities. On December 1, 2014, the individual left the site permanently, ultimately transitioning into the licensee's long-term disability program on April 23, 2015. Following the notification of March 12, 2014, no further communication was submitted to the NRC regarding this operator's status until the date of this inspection, and his license remained active. Following NRC identification, the licensee issued Notification 50911467 on April 6, 2017, to initiate termination of the operator's license. No licensed duties were performed by the operator subsequent to the expiration of his 2-year medical examination on November 26, 2015.

On April 13, 2017, the facility licensee informed the inspectors that during an Extent of Condition review, a second licensed senior operator was identified who had exceeded two years between 10 CFR 55.21 required medical examinations. The individual received a medical examination on November 19, 2014, but did not receive a subsequent biennial medical examination until April 6, 2017, a period of two years and four months. During this time, the operator was periodically evaluated for a medical condition which approached, but did not yet exceed, the threshold for a disqualifying condition under ANSI/ANS-3.4/2013, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," to which the facility licensee is committed to follow. When subsequently evaluated on April 6, 2017, the facility licensee determined that a license amendment was necessary for the previously conforming medical condition. The operator was administratively suspended from engaging in licensed activities on July 13, 2016, and remained so as of the date of the on-site inspection. No licensed duties were performed by the operator subsequent to the expiration of his 2-year medical examination on November 19, 2016.

Analysis. The failure of the licensee to conduct required biennial medical examinations for two licensed senior operators was a performance deficiency that was reasonably within the licensee's ability to foresee and prevent. This issue was evaluated using the traditional enforcement process because it negatively impacted the NRC's ability to perform its regulatory oversight function. Specifically, the failure to comply with medical testing requirements for two licensed senior operators compromised the facility licensee's ability to assure conformance to medical standards, detect non-conforming medical conditions, and report non-conformances to the NRC. In the case of one senior

operator, it prevented the facility licensee from documenting and reporting an adverse medical condition which had transitioned from temporary to permanent in nature, thereby requiring either a license amendment or termination. In the case of the other senior operator, it prevented the facility licensee from evaluating the need for a license amendment for a medical condition which had previously approached, but not yet exceeded, the threshold for a disqualifying condition under ANSI/ANS-3.4/2013. This performance deficiency was determined to be SL-IV because it fits the SL-IV example of Enforcement Policy Section 6.4.d.1, "Violation Examples: Licensed Reactor Operators." This section states the following:

"Severity Level IV violations involve ... : A non-willful compromise ... of an application, test, or examination required by 10 CFR Part 55. For example ... (b) an individual operator who did not meet the American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," Section 5, "Health Requirements and Disqualifying Conditions," as certified on NRC Form 396, "Certification of Medical Examination by Facility Licensee," required by 10 CFR 55.23, Certification, but who did not perform the functions of a licensed operator or senior operator while having a disqualifying medical condition."

This example fits the first identified non-conforming senior operator, for whom a subsequent medical examination would have required documentation of a new permanent medical condition, submittal of a new NRC Form 396, and issuance of a license amendment or termination. The second identified non-conforming senior operator is also similar to this example, except that he was periodically assessed for a medical condition which approached, but did not yet exceed the threshold for a disqualifying condition under ANSI/ANS-3.4/2013. When subsequently evaluated on April 6, 2017, the facility licensee determined that a license amendment was necessary for the previously conforming medical condition.

This finding is being treated as a NCV because: (1) the facility licensee placed the violation into the corrective action program as Notification 50912407; (2) the facility licensee restored compliance within a reasonable period of time by requesting termination of one license, and re-examining the holder of another license; (3) the violation was non-repetitive as determined by a search on NRC databases for prior violations issued to the facility licensee; and (4) the violation did not involve willfulness. There is no cross-cutting aspect associated with this violation because it was processed using traditional enforcement.

In accordance with Inspection Manual Chapter 0612, Appendix B, "Issue Screening," the performance deficiency was also evaluated for significance under the Reactor Oversight Process. Licensed operators are treated as Mitigating Systems under the Reactor Oversight Process regulatory framework. Since the facility licensee administratively suspended both operators' qualifications prior to expiration of their biennial medical examination periods, neither operator was able to perform licensed duties while either diagnosed as medically unfit or after expiration of the medical exam. As a result, there was no adverse effect on the Mitigating Systems Cornerstone objective of the Reactor Oversight Process, and therefore no more-than-minor Reactor Oversight Process violation existed.

Enforcement. Title 10 CFR 55.21 requires, in part, that, a licensee (licensed senior operator) shall have a medical examination by a physician every two years to determine that the licensed senior operator meets the requirements of 10 CFR 55.33(a)(1). Contrary to the above, between November 27, 2015, and April 6, 2017, licensed senior operators failed to have a medical examination by a physician every two years to determine that the licensed senior operator met the requirements of 10 CFR 55.33(a)(1), as evidenced by two examples. Specifically, one licensed senior operator exceeded the 2-year medical examination requirement by approximately 16 months between November 27, 2015, and April 6, 2017. The facility licensee subsequently initiated action to terminate the operator's license. The second licensed senior operator exceeded the 2-year medical examination requirement by four months, between November 19, 2016, and April 6, 2017, before the licensed senior operator was re-examined. Because this finding is of very low safety significance and was entered into the corrective action program as Notification 50912407, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. NCV 05000275/2017002-02; 05000323/2017002-02, "Failure to Conduct Required Biennial Medical Examinations Within Two Years"

- (2) Introduction. The inspectors identified a Severity Level IV non-cited violation of 10 CFR 55.25, "Incapacitation Because of Disability or Illness," for the facility licensee's failure to notify the NRC within 30 days of changes to one licensed senior operator's medical condition.

Description. On April 5, 2017, an NRC inspector identified that the facility licensee failed to inform the NRC within 30 days that a currently licensed senior operator had developed a permanent medical condition which had prevented the senior operator from engaging in licensed activities since March 12, 2014. On March 12, 2014, the facility licensee informed the NRC by letter that this senior operator had developed a "temporary medical condition," and had been administratively removed from engaging in licensed activities. On December 1, 2014, the senior operator left the site permanently, ultimately transitioning into the facility licensee's long-term disability program on April 23, 2015. Following the letter of March 12, 2014, no further communication was submitted to the NRC regarding this senior operator's status until the date of this inspection, and his license remained active. Following NRC identification, the facility licensee issued Notification 50911467 on April 6, 2017, to initiate termination of the senior operator's license. No licensed activities were performed by the senior operator subsequent to the facility licensee's initial diagnosis of a temporary medical condition on March 12, 2014.

The facility licensee endorsed ANSI/ANS-3.4-2013, "medical certification and monitoring of personnel requiring operator licenses for nuclear power plants," on March 26, 2015. ANSI/ANS-3.4-2013 defines a "temporary medical condition" as follows:

"When an operator does not meet the specific minimum requirements in this standard but is expected to meet those requirements (without exception) again in the future, the operator's condition/disability is considered temporary and does not need to be reported to the NRC. The facility licensee is expected to administratively restrict the operator's activities, as appropriate, during the term of the condition/disability. It is up to the licensee's examining physician to evaluate each operator's situation and assess whether the operator will be capable of meeting the requirements within 90 days."

ANSI/ANS-3.4-2013 defines a “permanent medical condition” as follows:

“An injury or condition that impairs the physical and/or mental ability of an operator to meet the specific minimum requirements in this standard and is, as evaluated by the examining physician, expected to extend beyond 90 days.”

Based on the above definitions, the facility licensee was expected to recognize that the operator’s medical condition had become permanent in nature, by extending well beyond 90 days such that the operator was required to leave the site permanently and transition into a long-term disability program.

Analysis. The failure of the facility licensee to notify the NRC within 30 days of changes in a licensed senior operator’s medical condition was a performance deficiency that was reasonably within the facility licensee’s ability to foresee and prevent. This issue was evaluated using the traditional enforcement process because it negatively impacted the NRC’s ability to perform its regulatory oversight function. Specifically, the failure to report changes in a licensed senior operator’s medical condition prevented the NRC from taking action to issue either a license amendment or termination, as appropriate. This performance deficiency was determined to be SL-IV because it fits the SL-IV example of Enforcement Policy Section 6.4.d.1, “Violation Examples: Licensed Reactor Operators.” This section states the following:

“Severity Level IV violations involve ... : A non-willful compromise ... of an application, test, or examination required by 10 CFR Part 55. For example ... (b) an individual operator who did not meet the American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.4, “Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants,” Section 5, “Health Requirements and Disqualifying Conditions,” as certified on NRC Form 396, “Certification of Medical Examination by Facility Licensee,” required by 10 CFR 55.23, Certification, but who did not perform the functions of a licensed operator or senior operator while having a disqualifying medical condition.”

This example fits the non-conforming senior operator, who would have required either a license amendment or termination for the unreported permanent medical condition, but who did not engage in licensed activities from the time that a license amendment or termination was required.

This finding is being treated as a NCV because: (1) the facility licensee placed the violation into the corrective action program as Notification 50912407, (2) the facility licensee restored compliance within a reasonable period of time by requesting termination of the license, (3) the violation was non-repetitive as determined by a search on NRC databases for prior violations issued to the facility licensee, and (4) the violation did not involve willfulness. There is no cross-cutting aspect associated with this violation because it was processed using traditional enforcement.

In accordance with Inspection Manual Chapter 0612, Appendix B, “Issue Screening,” the performance deficiency was also evaluated for significance under the Reactor Oversight Process. Licensed operators are treated as mitigating systems under the Reactor Oversight Process regulatory framework. Since the facility licensee administratively suspended the senior operator’s qualifications prior to the need for a license amendment or termination, the operator was unable to perform licensed duties while diagnosed as

medically unfit. As a result, there was no adverse effect on the Mitigating Systems Cornerstone objective of the Reactor Oversight Process and, therefore, no more-than-minor Reactor Oversight Process violation exists.

Enforcement. Title 10 CFR 55.25 requires, in part, that, if the licensee (licensed senior operator) develops a permanent physical condition that causes the licensed senior operator to fail to meet the requirements of 10 CFR 55.21, the facility licensee shall notify the Commission, within 30 days of learning of the diagnosis, in accordance with 10 CFR 50.74(c). Contrary to the above, from May 23, 2015, to April 6, 2017, the facility licensee failed to notify the Commission, within 30 days of learning of the diagnosis, in accordance with 10 CFR 50.74(c), that a licensed senior operator developed a permanent physical condition that caused the licensed senior operator to fail to meet the requirements of 10 CFR 55.21. Specifically, a licensed senior operator permanently left the site on December 1, 2014, and transitioned into a long-term disability program on April 23, 2015. The facility licensee subsequently initiated action to terminate the senior operator's license, effective April 6, 2017. Because this finding is of very low safety significance and was entered into the CAP as Notification 50912407, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. NCV 05000275/2017002-03; 05000323/2017002-03, "Failure to Report a Permanent Medical Condition Within 30 Days"

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed two instances of degraded performance or condition of safety-significant structures, systems, and components (SSCs):

- June 16, 2017, Units 1 and 2, emergency diesel generator fuel injection shaft spalling
- June 21, 2017, Units 1 and 2, containment fan cooling units

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of two maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed four risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- April 10, 2017, Unit 1, vital battery charger 132, maintenance outage
- April 26, 2017, Unit 1, vital bus F, maintenance outage
- May 30 – June 1, 2017, Units 1 and 2, single source of off-site power for planned switchyard outage
- June 12, 2017, Unit 1, reactor coolant system mid loop operations for vacuum fill

The inspectors verified that these risk assessments were performed in a timely manner and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

Additionally, on May 2, 2017, the inspectors observed portions of one emergent work activity, Unit 1, residual heat removal pump 1-2, troubleshooting and repair of a failed lower bearing thermocouple, that had the potential to affect the functional capability of mitigating systems. The inspectors verified that the licensee appropriately developed and followed a work plan for this activity. The inspectors verified that the licensee took precautions to minimize the impact of the work activity on unaffected SSCs.

These activities constituted completion of five maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed five operability determinations that the licensee performed for degraded or nonconforming SSCs:

- April 27, 2017, Unit 1, volume control tank outlet isolation valve LCV-112B, failure to open following integrated safeguards test
- April 28, 2017, operability determination of Unit 1, Loop 4, residual heat removal suction line weld WIB-228 indication
- May 17-18, 2017, operability determination of Unit 1, safety injection valves SI-1-8923A and SI-1- 8802B anomalous behavior

- May 25, 2017, operability determination of Unit 1, baffle-former bolt replacement
- June 15-16, 2017, operability determination of Unit 1, emergency diesel generator 1-3, radiator leak following maintenance

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluations. Where the licensee determined the degraded SSC to be operable, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability of the degraded SSC.

These activities constituted completion of five operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R17 Evaluations of Changes, Tests, and Experiments (71111.17T)

Evaluations of Changes, Tests, and Experiments

a. Inspection Scope

The inspectors reviewed 7 evaluations performed pursuant to 10 CFR 50.59, to determine whether the evaluations were adequate and that prior NRC approval was obtained as appropriate. The inspectors also reviewed 12 screenings and/or applicability determinations, where licensee personnel had determined that a 10 CFR 50.59 evaluation was not necessary. The inspectors reviewed these documents to:

- verify that evaluations were performed in accordance with 10 CFR 50.59 when changes, tests, or experiments were made;
- verify that the licensee has appropriately concluded that the change, test or experiment can be accomplished without obtaining a license amendment;
- verify that safety issues related to the changes, tests, or experiments have been resolved; and
- verify that the licensee's conclusions were correct and consistent with 10 CFR 50.59 for the changes, tests, or experiments that the licensee determined that evaluations were not required

The inspectors used, in part, Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1, to determine acceptability of the completed evaluations and screenings. The NEI document was endorsed by the NRC in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000. The list of evaluations, screenings, and/or applicability determinations reviewed by the inspectors is included as an attachment to this report.

These activities constituted 19 reviews of evaluations, screenings, and/or applicability determinations as defined in Inspection Procedure 71111.17T.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

On May 3-17, 2017, the inspectors reviewed a permanent modification to the Units 1 and 2, NFPA 805 fire detection SSCs, Work Order 68041843. The inspectors reviewed the design and implementation of the modification. The inspectors verified that work activities involved in implementing the modification did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability of the SSC as modified.

These activities constituted completion of one sample of permanent modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed six post-maintenance testing activities that affected risk-significant SSCs:

- April 5, 2017, Unit 2, safety injection pump 2-1 oil change, clean, and inspect, post maintenance testing, Work Order 64114156
- April 18, 2017, Unit 1, residual heat removal pump 1-2, 4 kV breaker 52HH11, post maintenance testing, Work Order 60093452
- May 2, 2017, Unit 1, residual heat removal pump 1-2, repairs to lower thermocouple, post maintenance testing, Work Order 60100221
- May 10, 2017, Unit 2, turbine driven auxiliary feedwater pump, post maintenance testing, Work Order 64170321
- June 16, 2017, Unit 1, emergency diesel generator 1-3, piston liner inspection, post maintenance testing, Work Order 64180314
- June 22-23, 2017, Unit 1, containment fan cooling unit 1-5 replacement, post maintenance testing, Work Order 68034821

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the

performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constituted completion of six post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the station's Unit 1 refueling outage (1R20) that concluded on June 21, 2017, the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan prior to the outage
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of reduced-inventory and mid-loop activities
- Observation and review of fuel handling activities
- Monitoring of heat-up and startup activities

These activities constituted completion of one refueling outage sample, as defined in Inspection Procedure 71111.20.

b. Findings

Introduction. The inspectors identified a Green, self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because PG&E personnel failed to follow the requirements of AD7.ID14, "Assessment of Integrated Risk," Revision 11. Specifically, PG&E personnel failed to obtain shift manager permission, conduct a protected equipment briefing, and document shift manager approval prior to performing work on protected equipment. This resulted in a loss of flow of cooling water to one of two in service shutdown cooling residual heat removal (RHR) heat exchangers and subsequent perturbation in reactor coolant system (RCS) temperature during refueling outage 1R20.

Description. During plant shutdown conditions, both train A and train B of the RHR system are used in the shutdown cooling mode to remove decay heat generated from the nuclear fuel. The component cooling water (CCW) system is used to provide cooling flow to the RHR heat exchangers which are used as part of the shutdown cooling system. As part of the normal shutdown cooling system alignment, CCW header A provides cooling water flow to the train A, RHR heat exchanger and CCW header B provides cooling water flow to the train B, RHR heat exchanger. CCW header C is not normally aligned to provide cooling flow to a RHR heat exchanger. While preparing for

maintenance on the Unit 1, CCW header C, motor-operated flow control valve FCV-355, PG&E operations personnel closed CCW cross tie valves CCW-23 and CCW-24. At the time of the cross tie valve closures, CCW heat exchanger 1-1 was removed from service for maintenance. Flow to CCW header A was being supplied from CCW header B via valves CCW-23 and CCW-24. The closure of the cross tie valves removed CCW cooling flow from CCW header A and accordingly to one of the two operating trains of RHR shutdown cooling. Due to the subsequent imbalance of flowrates through the CCW headers, RCS temperature fluctuated by approximately 8 degrees Fahrenheit prior to the CCW normal lineup being restored approximately 10 minutes later. Train B of RHR shutdown cooling remained in service throughout the event and was sufficient to prevent an uncontrollable increase in RCS temperature and the onset of core boiling. Time to boil in the RCS during the event was 154 minutes. PG&E determined that the causes of the loss of flow of CCW to the RHR heat exchanger included failure to follow protected equipment postings, improper operations turnover, inadequate situational awareness, and improper outage work planning logic. PG&E entered the event into their corrective action program and conducted a barrier analysis to determine the causes of the event and to identify corrective actions. PG&E initiated actions to prevent future recurrence including evaluating changes to training and work practices. The inspectors reviewed PG&E's actions to identify and correct the cause of the event.

Analysis. The inspectors determined that PG&E's failure to follow AD7.ID14, "Assessment of Integrated Risk," Section 5.14 "Performing Work on Posted Protected Equipment," was a performance deficiency within PG&E's ability to foresee and correct. This performance deficiency was considered to be more than minor because it impacted the configuration control attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the loss of cooling flow to the RHR heat exchanger while in shutdown cooling mode resulted in a perturbation in RCS temperature of approximately 8 degrees Fahrenheit. The finding was evaluated in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," and determined to be of very low safety significance (Green) since it did not represent a loss of system safety function of at least a single train for greater than four hours. The finding had a cross-cutting aspect in the area of human performance associated with conservative bias because PG&E personnel did not use decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, despite being authorized to close CCW cross connect valves by the work control process, PG&E personnel did not question the impact of their actions on shutdown cooling [H.14].

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. PG&E procedure AD7.ID14, "Assessment of Integrated Risk," Revision 11, Section 5.14 requires that personnel obtain shift manager permission, conduct a protected equipment briefing, and document shift manager approval prior to performing work on protected equipment. Contrary to the above, PG&E maintenance and operations personnel conducted work on the Unit 1, CCW system without obtaining shift manager permission, conducting a protected equipment briefing, and documenting shift manager permission – actions designed to prevent unnecessary protected system equipment impacts. These actions resulted in a loss of flow of cooling water to one of two in service shutdown cooling RHR

heat exchangers and subsequent perturbation in RCS temperature during refueling outage 1R20. After the issue was identified, PG&E entered the issue into their corrective action program as Notification 50915907 and initiated a barrier review. Additionally, PG&E initiated actions to prevent future recurrence including evaluating changes to training and work practices. Because this violation is of very low safety significance (Green) and PG&E entered the issue into their corrective action program, this violation is being treated as a NCV consistent with the NRC Enforcement Policy. NCV 05000275/2017002-04, "Failure to Follow Procedures Results in Partial Loss of Cooling Flow to Shutdown Cooling"

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed six risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- April 18, 2017, Unit 1, main steam safety valve testing of RV-4, per procedure STP M-77

Containment isolation valve surveillance tests:

- May 11, 2017, Unit 1, containment isolation valve testing of penetration 54 associated with instrument air valves, per procedure STP V-654
- May 24, 2017, Unit 1, containment isolation valve testing of penetration 59C associated with safety injection accumulator instrument line, per procedure STP V-659C

Other surveillance tests:

- April 6, 2017, Unit 1, reactor coolant system, loop 3, flow channel FT-434 calibration, per procedure STP I-7-F434
- April 24, 2017, Unit 1, 4 kV bus H non-SI auto transfer test, per procedure STP M-13H
- May 10-11, 2017, Unit 1, leakage testing of systems outside containment, per procedure STP M-86G

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constituted completion of six surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

a. Inspection Scope

The inspectors evaluated the licensee's performance in assessing the radiological hazards in the workplace associated with licensed activities. The inspectors assessed the licensee's implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, performed independent radiation dose rate measurements, and observed postings and physical controls. The inspectors reviewed licensee performance in the following areas:

- Radiological hazard assessment, including a review of the plant's radiological source terms and associated radiological hazards. The inspectors also reviewed the licensee's radiological survey program to determine whether radiological hazards were properly identified for routine and non-routine activities and assessed for changes in plant operations.
- Instructions to workers, including radiation work permit requirements and restrictions, actions for electronic dosimeter alarms, changing radiological condition, and radioactive material container labeling.
- Contamination and radioactive material control, including release of potentially contaminated material from the radiologically controlled area, radiological survey performance, radiation instrument sensitivities, material control and release criteria, and control and accountability of sealed radioactive sources.
- Radiological hazards control and work coverage. During walk downs of the facility and job performance observations, the inspectors evaluated ambient radiological conditions, radiological postings, adequacy of radiological controls, radiation protection job coverage, and contamination controls. The inspectors also evaluated dosimetry selection and placement as well as the use of dosimetry in areas with significant dose rate gradients. The inspectors examined the licensee's controls for items stored in the spent fuel pool and evaluated airborne radioactivity controls and monitoring.
- High radiation area and very high radiation area controls. During plant walk downs, the inspectors verified the adequacy of posting and physical controls, including areas of the plant with the potential to become risk-significant high radiation areas.
- Radiation worker performance and radiation protection technician proficiency with respect to radiation protection work requirements. The inspectors determined if workers were aware of significant radiological conditions in their

workplace, radiation work permit controls/limits in place, and electronic dosimeter dose and dose rate set points. The inspectors observed radiation protection technician job performance, including the performance of radiation surveys.

- Problem identification and resolution for radiological hazard assessment and exposure controls. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the seven required samples of radiological hazard assessment and exposure control program, as defined in Inspection Procedure 71124.01.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors evaluated whether the licensee controlled in-plant airborne radioactivity concentrations consistent with ALARA principles and that the use of respiratory protection devices did not pose an undue risk to the wearer. During the inspection, the inspectors interviewed licensee personnel, walked down various areas in the plant, and reviewed licensee performance in the following areas:

- Engineering controls, including the use of permanent and temporary ventilation systems to control airborne radioactivity. The inspectors evaluated installed ventilation systems, including review of procedural guidance, verification the systems were used during high-risk activities, and verification of airflow capacity, flow path, and filter/charcoal unit efficiencies. The inspectors also reviewed the use of temporary ventilation systems used to support work in contaminated areas such as high-efficiency particulate air (HEPA)/charcoal negative pressure units. Additionally, the inspectors evaluated the licensee's airborne monitoring protocols, including verification that alarms and set points were appropriate.
- Use of respiratory protection devices, including an evaluation of the licensee's respiratory protection program for use, storage, maintenance, and quality assurance of National Institute for Occupational Safety and Health (NIOSH) certified equipment, air quality and quantity for supplied-air devices and self-contained breathing apparatus (SCBA) bottles, qualification and training of personnel, and user performance.
- Self-contained breathing apparatus for emergency use, including the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions, hydrostatic testing of SCBA bottles, status of SCBA staged and ready for use in the plant including vision correction, mask sizes, etc., SCBA surveillance and maintenance records, and personnel qualification, training, and readiness.

- Problem identification and resolution for airborne radioactivity control and mitigation. The inspectors reviewed audits, self-assessments, and corrective action documents to verify problems were being identified and properly addressed for resolution.

These activities constitute completion of the four required samples of in-plant airborne radioactivity control and mitigation program, as defined in Inspection Procedure 71124.03.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

40A1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (MS05)

a. Inspection Scope

For the period of April 1, 2016 through March 31, 2017, the inspectors reviewed licensee event reports (LERs), maintenance rule evaluations, and other records that could indicate whether safety system functional failures had occurred. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, to determine the accuracy of the data reported.

These activities constituted verification of the safety system functional failures performance indicator for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 1, 2016 through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for emergency ac power systems for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of April 1, 2016 through March 31, 2017, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for high pressure injection systems for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness (OR01)

a. Inspection Scope

The inspectors verified that there were no unplanned exposures or losses of radiological control over locked high radiation areas and very high radiation areas during the period of June 1, 2016, to April 30, 2017. The inspectors reviewed a sample of radiologically controlled area exit transactions showing exposures greater than 100 mrem. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the occupational exposure control effectiveness performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (PR01)

a. Inspection Scope

The inspectors reviewed corrective action program records for liquid or gaseous effluent releases that occurred during the period of June 1, 2016, to April 30, 2017, and were reported to the NRC to verify the performance indicator data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the RETS/ODCM radiological effluent occurrences performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected two issues for an in-depth follow-up:

- On May 19, 2017, Anchor-Darling double disc gate valve wedge pin failure operating experience.

The inspectors reviewed the status of PG&Es efforts to address operating experience (OE) concerning Anchor-Darling double disc gate valve wedge pin failures. As part of the inspection, the inspectors assessed PG&E's response to industry OE including reviewing extent of condition evaluations, valve diagnostic traces, observing valve inspection activities, and interviewing PG&E engineering and maintenance personnel.

- On June 30, 2017, Units 1 and 2, NFPA fire impairments.

The inspectors conducted an in-depth review of the licensee's fire transient combustible permit program and change management issues related to transitioning to new NFPA 805 program requirements. Specifically, the inspectors reviewed the training, planning, and requirements associated with the licensee NFPA 0805 implementation related to transient combustible permit program. The inspectors assessed the licensee's problem identification threshold, interim, and compensatory actions. The inspectors verified that the licensee appropriately

prioritized the corrective actions and these actions were adequate to correct the conditions associated with transient combustible permit process.

These activities constituted completion of two annual follow-up samples as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On May 12, 2017, the inspectors presented the radiation safety inspection results (Sections 2RS1, 2RS3, 4OA1.4, and 4OA1.5) to Ms. P. Gerfen, Senior Director Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On May 17, 2017, the inspectors presented the ISI inspection results (Section 1R08) to Mr. J. Welsch, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On May 17, 2017, the inspectors presented the results of the licensed operator requalification program inspection (Section 1R11.3) to Ms. P. Gerfen, Senior Director Plant Manager, and other members of the licensee's staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On June 23, 2017, the inspectors presented the evaluations of changes, tests and experiments inspection results (Section 1R17) to J. Welsch, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

On July 11, 2017, the resident inspectors presented the quarterly inspection results to J. Welsch, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

T. Baldwin, Director, Nuclear Site Services
K. Bych, Manager, Engineering
D. Cortina, Manager, Chemistry
D. Evans, Director, Security & Emergency Services
R. Fortier, Lead Exam Writer
R. Gagne, Supervisor, Hazardous Waste
P. Gerfen, Senior Director Plant Manager
M. Ginn, Manager, Emergency Planning
D. Gonzalez, Supervisor, Inservice Inspection
S. Guess, Manager, Operations
E. Halpin, Sr. Vice President, Chief Nuclear Officer Generation
H. Hamzehee, Manager, Regulatory Services
M. Hayes, Supervisor, Radiation Protection
A. Heffner, NRC Interface, Regulatory Services
J. Hill, Engineer
J. Hinds, Director, Quality Verification
K. Hinrichsen, Supervisor, Radiation Protection
L. Hopson, Director Maintenance Services
T. Irving, Manager, Radiation Protection
K. Johnston, Director of Operations
K. Kaminski, Supervisor, Operations
R. Kelley, Supervisor, Radiation Protection
B. Lopez, Engineer, Regulatory Services
D. Madsen, NRC Interface, Regulatory Services
M. McCoy, NRC Interface, Regulatory Services
J. Morris, Senior Advising Engineer
C. Murry, Director Nuclear Work Management
C. Neary, Welding Engineer
E. Nelson, Director, Regulatory Projects
J. Nimick, Senior Director Nuclear Services
P. Nugent, Director, Quality Verification
L. Parker, Supervisor, STARS
A. Peck, Director, Nuclear Engineering
D. Peterson, Director, Learning Services
M. Sarantos, Supervisor, Radiation Protection
B. Sawyer, Simulator Support
L. Sewell, Principal Health Physicist, Radiation Protection
M. Sharp, Manager, Design Engineering
B. Simpson, Manager (Acting), Operations Training
J. Skov, Senior Advisor, Regulatory Services
C. Sutton, Supervisor, Radiation Protection
P. Vobork, Manager, Outage Work Week
R. Waltos, Assistant Director, Engineering
A. Warwick, Supervisor, Emergency Planning
J. Welsch, Site Vice President
D. Williams, Operations

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---------------------|-----|---|
| 05000275/2017002-01 | NCV | Inadequate Expansion Scope of Risk-Informed Welds (Section 1R08) |
| 05000275/2017002-02 | NCV | Failure to Conduct Required Biennial Medical Examinations Within Two Years (Section 1R11.3) |
| 05000323/2017002-02 | | |
| 05000275/2017002-03 | NCV | Failure to Report a Permanent Medical Condition Within 30 Days (Section 1R11.3) |
| 05000323/2017002-03 | | |
| 05000275/2017002-04 | NCV | Failure to Follow Procedures Results in Partial Loss of Cooling Flow to Shutdown Cooling (Section 1R20) |

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| O-23 | System Dispatch Instruction | 3 |
| OM1.ID4 | Interface Requirements for Transmission & Distribution Facilities at DCPD | 8A |
| OP J-2:VIII | Guidelines for Reliable Transmission Service for DCPD | 29 |

Miscellaneous

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| | PG&E 2016 Electric Transmission Reliability Assessment Study Report | |
| DCM No. S-61B | 500-kV and 230-kV Systems | 18 |

Drawing

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 502110, Sh. 1 | Single Line Diagram 500/230/25/12/4.16 kV Systems | 19 |

Notifications

50910524 50918072

Work Order

64138637

Section 1R04: Equipment Alignment

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| | D CPP units 1 & 2 FSAR Update | 22 |
| AD8.DC54 | Containment Closure | 15 |
| AR PK01-21 | Containment Fan Coolers Annunciator Response | 14 |
| MP I-2.28 | Activation and Deactivation of the Reactor Vessel Refueling Level Indication System (RVRLIS) | 27 |
| OP A-2:II | Reactor Vessel – Draining the RCS to the Vessel Flange- With Fuel in Vessel | 47 |
| OP A-2:X | RVRLIS Alignments for Refueling Outages | 9 |
| OP B-2:V | U1, RHR – Place In Service | 37 |
| OP B-3A:I | Safety Injection System – Make Pumps Available | 14A |
| OP H:2 | Containment Fan Coolers | 5 |
| OP H-2:I | Containment Fan Cooler Units – Make Available and System Operation | 37A |
| OP H-2:I-A | Containment Fan Coolers – Alignment Checklist | 0 |
| OP H-2:II | Containment Fan Coolers – Shutdown, Placing in Standby, and Clearing | 15 |
| OP H-4:I-A | Containment Ventilation Alignment | 1 |
| OP H-8:II | Containment Hydrogen Purge System | 7 |
| STP M-93A | Refueling Interval Surveillance – Containment | 37 |
| STP P-CSP-21 | Routine Surveillance Test of Containment Spray Pump | 16 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50037574 | 50588046 | 50919186 | 50926817 | 50926908 |
| 50863370 | 50531848 | 50925753 | 50921384 | 50917148 |
| 50919190 | 50917156 | 50917147 | | |

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| 106707 | RVRLIS, Sheet 6 | 56 |
| 106710 | OVID Unit 1 Residual Heat Removal System | 42 |
| 106714 | Vital CCW Header 'A' Components, Sheet 9 | 57 |

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 106714 | Vital CCW Header 'B' Components, Sheet 4 | 59 |
| 106723 | Containment Air Circulation Sheet 4 | 130 |
| 106723 | Containment Air Circulation, Sheet 4 | 100 |
| 107709 | Safety Injection, Sheet 4 | 52 |
| 107712 | Containment Spray, Sheet 2 | 22 |
| 437591 | Electrical Schematic Diagram, Residual Heat Removal Pumps | 25 |
| 437592 | Electrical Schematic Diagram, Residual Heat Removal Flow Control Valves | 38 |
| 437600 | Containment Fan Coolers, Sheet 1 | 41 |
| 437600 | Containment Fan Coolers, Sheet 2 | 3 |

Section 1R05: Fire Protection

Procedure

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| OM8.ID4 | U1&2, Control of Flammable and Combustible Materials | 26 |

Work Orders

| | | | | |
|----------|----------|----------|----------|----------|
| 64133836 | 50861947 | 50930030 | 50930022 | 50930031 |
| 50930033 | | | | |

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| RA-1 | RCA Elevation 54 feet & 64 feet | 8 |
| RA-26 | Containment Building Elevation 91 feet | 4 |
| RA-27 | Containment Building Elevation 117 feet | 1 |
| RA-29 | Containment Building Elevation 140 feet | 4 |
| RA-3 | RCA Elevation 73 feet | 8 |

Section 1R06: Flood Protection Measures

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| PG&E Spec No. 1950 | Specification for Furnishing and Delivering 5 kV and 15 kV Medium Voltage Power Cable for the Diablo Canyon Nuclear Plant Units 1 & 2 | 3N |

Notifications

50915611 50915711

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| 500817 | Conduit and Lighting Layout Intake Structure Plan, Sheet 1 | 19 |
| 500820 | Electrical Pull Boxes & Duct Runs, Sheet 1 | 10 |
| 57682 | General Arrangement of Electrical Pull Boxes and Duct Runs, Sheet 1 | 22 |
| 57683 | General Arrangement of Electrical Pull Boxes and Duct Runs, Sheet 1 | 16 |

Section 1R07: Heat Sink Performance

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--------------------|-----------------|
| OP F-2 | CCW System | 8A |
| OP F-2: I | CCW Make Available | 44 |

Drawing

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--------------|-----------------|
| 106714 | CCW System | 59 |

Miscellaneous

| <u>Number</u> | <u>Title</u> |
|---------------|--|
| 420DC-17.17 | DCPP CCW 1-1 and 1-2 Heat Exchanger Tests Pre-1R20 |

Section 1R08: Inservice Inspection Activities

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|-------------------------|---|-----------------|
| AD4.ID2 | Plant Leakage Evaluation | 12 |
| ER1.ID2 | Boric Acid Corrosion Control Program | 7 |
| GWS-ASME | Nuclear Welding Control Manual – ASME General Welding Standard | 17 |
| NDE PDI-UT-2 | Ultrasonic Examination of Austenitic Piping | 11 |
| NDE PDI-UT-3 | Ultrasonic Through-wall Sizing in Pipe Welds | 3 |
| NDE VT 2-1 | Visual Examination During Section XI System Pressure Test | 3 |
| NDE VT 3-1 | Visual Examination of Components and Piping Supports | 2 |
| OM7.ID12 | Operability Determination | 36 |
| OP B-1A:IX | CVCS – Alignment Verification for Plant Startup | 46 |
| PDI-ISI-254-SE-NB | Remote Inservice Inspection of Reactor Vessel Nozzle to Safe end, Nozzle to Pipe, and Safe end to Pipe Welds using Nozzle Scanner | 3 |
| TR-112657 | Revised Risk-Informed Inservice Inspection Evaluation Procedure (PWRMRP-05) | B-A |
| WDI-PJF-1316964-EPP-001 | Examination Program Plan (Scan Plan) | 2 |
| WDI-TJ-1062 | Technical Justification for the Ultrasonic Inspection of Internal Hex Head Baffle-Former-Bolts with Welded Lock Bars | 2 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50809162 | 50812896 | 50809285 | 50810309 | 50817283 |
| 50853442 | 50852155 | 50835829 | 50818962 | 50817922 |
| 50914916 | 68044521 | 68046924 | 60083971 | 68044523 |

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|------------------|---|------------------------|
| EP G-2 | Interim Emergency Response Organization Training Aid | 50 |
| E-Plan Section 4 | Diablo Canyon Power Plant Emergency Plan Conditions | 4.5 |
| OM10.DC1 | Emergency Planning Drills and Exercise use | 8 |
| OM10.ID1 | Maintaining Emergency Preparedness | 16 |
| OM14.ID2 | Medical Examinations | 10 |
| OP AP-14 | Tank Rupture | 19 |
| OP1.DC10 | Conduct of Operations | 47 |
| OP1.DC10 | Conduct of Operations | 48 |
| TQ1.DC28 | Simulator Testing | June 4, 2015 |
| TQ2.DC15 | Licensed Operator Annual/Biennial Exam Development and Administration | 8 |
| TQ2.DC3 | Licensed Operator Continuing Training Program | 29 |
| TQ2.ID4 | Training Program Implementation | 45 |

Documents

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|---------------|---|------------------------|
| | Open Modification Report | March 14, 2017 |
| | R1516 Exam Plan (2) | |
| | Simulator Security Checklist | |
| | Total Simulator Differences Report | March 14, 2017 |
| | Week 0 RO/SRO Written Exam | February 16, 2017 |
| Form 69-20394 | RO License Reactivations 2015-2017 | February 15, 2017 |
| Form 69-20395 | SRO License Reactivations 2015-2017 | February 15, 2017 |
| Form 69-20642 | Remediation Training Record (19) | February 25, 2015 |
| JPM LJC-259 | Transfer Vital 4 kV Buses from Aux to S/U | 0 |
| JPM LJC-262 | SSPS MSL Actuation Failure | 0 |
| JPM LJP-083 | Align AFW to Raw Water | 25 |
| JPM LJP-138 | Oper Low Press Cardox | 11 |

Documents

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|-------------------|---|------------------------|
| JPM-LJC-027 | Trans to CLR | 1 |
| JPM-LJC-063 | Est Emerg Boration | 26 |
| JPM-LJC-120 | Start a Reactor Coolant Pump | 5 |
| JPM-LJC-122 | Init Feed and Bleed | 17 |
| JPM-LJC-253 | RCP Seal Failure | 0 |
| JPM-LJC-257 | Restore Temp Core Cooling | 26 |
| JPM-LJC-265 | Energize Vital Buses From 230 kV Sys | 19 |
| JPM-LJE-002 | Classify Loss of Offsite Power | 2 |
| JPM-LJE-008 | Classify Loss of Inventory, MODE 6 | 2 |
| JPM-LJE-019 | Classify a Security Condition | 1 |
| JPM-LJE-028 | Classification of a LOCA w/Core Damage | 2 |
| JPM-LJP-004 | Oper Recombiners | 27 |
| JPM-LJP-007 | Align 480V from HSP | 18 |
| JPM-LJP-079 | Transfer Pzr Htr group 13 to BU pwr | 29 |
| JPM-LJP-091 | Isol Rupture VCT | 16 |
| JPM-LJP-099 | Shed Non-Essent. DC Loads | 16 |
| JPM-LJP-159 | Perform MG Emergency Purge | 20 |
| JPM-LJP-211 | CCW Alternate CST Makeup | 10 |
| JPM-LJP-224 | Isolate Spray Additive Tk | 1 |
| JPM-LJP-225 | RWST Makeup from the Blender | 1 |
| Post Event Test | Post Event Simulator Test – Output Breaker IY-14 Trip | October 22, 2015 |
| SN-E2ECA21-A | Faulted Steam Generator | 2 |
| SN-E3ECA33-B | SGTR | 22 |
| SN-ECA1112-D | LOCA/Loss ECR | 10 |
| SN-ECA1112-E | Seismic/Loss of ECR/LOCA | 0 |
| SN-ES1213-A | LOCA | 22 |
| SN-FRH1-A | Loss of Heat Sink | 22 |
| SN-FRH1-C | Loss of Heat Sink | 16 |
| SN-FRS1-B | ATWS | 22 |
| Steady State Test | Steady State Plant Comparison 50 Percent Power | June 6, 2016 |

Documents

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|------------------|--|------------------------|
| Transient Test 4 | Simultaneous Trip of all Reactor Coolant Pumps | April 11, 2016 |
| Transient Test 5 | Trip of Any Single Reactor Coolant Pump | April 11, 2016 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50850885 | 50866481 | 50854475 | 50856328 | 50847218 |
| 50857244 | 50911532 | 50907386 | 50860968 | 50859647 |
| 50911526 | 50911467 | 50706314 | 50848729 | 50911574 |
| 50911538 | 50856994 | 50849284 | 50911534 | 50911539 |
| 50858734 | 50856327 | 50824129 | 50862488 | 50862785 |
| 50862538 | 50911349 | | | |

Simulator Change Requests

| | | | | |
|----------|----------|----------|----------|----------|
| 2015-173 | 2015-159 | 2016-124 | 2015-130 | 2013-012 |
| 2016-093 | 2011-044 | 2015-128 | 2016-025 | 2016-127 |
| 2015-131 | 2015-109 | | | |

Section 1R12: Maintenance Effectiveness

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| AD7.DC6 | On-Line Maintenance Risk management | 24 |
| MA1.ID17 | Maintenance Rule Monitoring Program | 31 |
| OP1.DC17 | Control of Equip Required by Technical Specifications | 31A |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50923729 | 50925377 | 50925192 | 50924878 | 50924915 |
| 50924758 | 50924160 | 50924193 | 50926214 | 50880385 |
| 50882616 | 50896037 | 50861196 | | |

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| AD7.DC6 | On-Line Maintenance Risk Management | 24 |
| AD7.ID14 | Assessment of Integrated Risk | 9 |
| AD7.ID14 | Assessment of Integrated Risk | 11 |
| AD7.ID14 | Assessment of Integrated Risk | 11 |
| AD8.DC51 | Outage Safety Management Control of Off-Site Power Supplies to Vital Buses | 17 |
| AD8.DC55 | Outage Safety Scheduling | 39 |
| AD8.DC55 | Outage Safety Scheduling | 39 |
| AWP E-028 | PRA Model Maintenance and Upgrades | 3 |
| OP O-36 | Protected Equipment Postings | 13A |
| OP O-36 | Protected Equipment Postings | 15 |
| TS3.NR1 | Probabilistic Risk Assessment (PRA) | 8 |

Notifications

50916729 50912379 50912479 50912553 50923133

Work Order

60100221

Drawing

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|-----------------------------|-----------------|
| 437639 | 125 Volt DC System, Sheet 1 | 28 |

Miscellaneous

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|--------------------|------------------------------------|------------------------|
| | 1R20 Outage Schedule Safety Review | 0 |
| DCPP Form 69-20423 | Roving Fire Watch Checklist | April 10, 2017 |

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| AD7.ID14 | Assessment of Integrated Risk | 11 |
| AD8.DC55 | Outage Safety Management Control of Off-site Power Supplies to Vital Buses | 17 |
| STP V-3K12 | Exercising VCT Outlet Isolation Valves LCV-112B and LCV-112C | 2 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50519598 | 50919001 | 50918918 | 50919214 | 50915871 |
| 50855785 | 50915941 | 50926995 | 50925730 | 50915509 |
| 50504168 | | | | |

Work Orders

| | |
|----------|----------|
| 60099918 | 64119083 |
|----------|----------|

Miscellaneous

| <u>Number</u> | <u>Description</u> | <u>Revision</u> |
|----------------|---|-----------------|
| 1.4-10 | Diablo Canyon Power Plant Inservice Examination Isometric | 5 |
| 102032- Sh 30B | Unit 1 Electrical Schematic | 128 |
| 106707 | Reactor Coolant System, Sheet 2 | 54 |

Drawings

| <u>Number</u> | <u>Description</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 106708 | Chemical and Volume Control System, Sheet 5 | 146 |
| 106709 | Safety Injection System, Sheet 3 | 63 |

Section 1R17: Evaluations of Changes, Tests, and Experiments

10 CFR 50.59 Screenings

| <u>Number</u> | <u>Description or Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| 1000024939 | 480 Volt Bus 2G Vital Cubicle Replacements | 1 |
| 1000024981 | Early Warning System Upgrade | 0 |
| 1000024998 | 125V DC Panel SD13 Modification | 0 |

10 CFR 50.59 Screenings

| <u>Number</u> | <u>Description or Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| 1000025000 | PORV N2 Accumulator Resize | 0 |
| 1000025001 | U1 CFCU Inlet Damper | 0 |
| 1000025082 | Make TMOD 60072583(EDT 4*1115 rev. 0) permanent. | 0 |
| 1000025110 | 125V DC Panel SD23 Modifications | 0 |
| 1000025188 | Activate ERFDS signals from Train A for Containment Isolation Phase A and B in the ERFDS database. | 0 |
| 1000025261 | CCW 2-2 Replace Circuit G12H14 | 0 |
| 1000025287 | Replacement of 1-FCV-901 | 0 |
| 1000025314 | HELB / Fire Roll-up Door 142-2 Replacement | 0 |
| 1000025381 | Reduce steam generator snubber torque values. | 0 |

10 CFR 50.59 Evaluations

| <u>Number</u> | <u>Description or Title</u> | <u>Revision / Date</u> |
|---------------|--|------------------------|
| 2009-011 | DDP 1000000263 | 0 |
| 2014-009 | Revise SI Load Sequence Timing | 0 |
| 2014-015 | Install RCP Shut Down Seal | 0 |
| 2015-003 | Exchange Primary and Backup Reactor Protection Trips | CR W |
| 2015-006 | Spurious SI for PZR Filling Reanalysis / CN-TA-12-67 | 0 |
| 2015-008 | Replace SSPS Circuit Boards | 0 |
| 2015-016 | Disable Loop 3 Thot Input to RVLIS & SCMM/Order 60079651 | 0 |
| 2015-018 | UFSAR 8.2 | June 16, 2015 |
| 2016-009 | Control Rod Insertion after Cold Leg LOCA, WCAP-16231-P | 1 |

Calculations

| <u>Number</u> | <u>Description or Title</u> | <u>Revision / Date</u> |
|---------------|--|------------------------|
| 9000027559 | Verify Adequate Volume and Pressure in Backup Air or Nitrogen Supply Tanks | 0 |
| CN-CRA-12-5 | Diablo Canyon Power Plant Containment Integrity Reanalysis to Address CFCU Fan Flow and NSAL-11-5 Issues | 0 |

Calculations

| <u>Number</u> | <u>Description or Title</u> | <u>Revision / Date</u> |
|---------------|--|------------------------|
| CN-CRA-14-6 | Diablo Canyon Power Plant Units 1 & 2, Delay in CFCU Start and a Decrease in Containment Heat Removal Capability | 0 |
| CN-CRA-14-7 | Diablo Canyon Power Plant Units 1 & 2 – Steamline Break Containment Response for Revised CFCU and CS | 0 |
| CN-TA-12-29 | Diablo Canyon Power Plant Units 1 and 2 Complete Loss of Flow Reanalysis without Undervoltage & Underfrequency Reactor Trips | 0 |
| CN-TA-12-67 | Spurious Safety Injection Analysis for Pressurizer Filling | 0 |
| CN-TA-87-59 | Diablo Canyon Power Plant – Vantage 5- Loss of Flow and Locked Rotor | September 1, 1987 |
| MA 30609 | Steam Generator Snubber Capacity | B |
| MA 31118 | Torque Analysis for Steam Generator Snubbers | B |
| N-011 | HELB Consideration for Doors | 6 |
| STA-274 | GDC 17 Evaluation of a Delayed Offsite Power Source | 1 |
| WCAP-16231-P | Control Rod Insertion Following a Cold Leg LOCA | 1 |

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| CF3.ID4 | Design Calculations | 23A |
| MP E-60.2HG12 | Circuit Function Test – 4 kV Cubicle HG12 (CCWP22) | 5 |
| TS3.ID2 | Licensing Basis Impact Evaluations | 43A |
| TS5.ID5 | Design Calculation Program Governance | 1A |

Drawings

| <u>Number</u> | <u>Description</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 064576 | Mechanical Closed Position Strut Assembly for CFCU Inlet Dampers, Sheet 4 | 4 |
| 064576 | Mechanical Open Position Strut Assembly for CFCU Inlet Dampers, Sheet 5 | 4 |
| 495845 | Functional Logic Diagram Primary Coolant System Trip Signals, Sheet 1 | 5 |

Correspondence

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|---|-------------------|
| DCL-11-038 | License Amendment Request 11-03 | March 28, 2011 |
| DCL-12-016 | Response to NRC Request for Additional Information Regarding License Amendment Request 11-03 | February 5, 2012 |
| DCL-13-025 | Withdrawal of License Amendment Request 09-07, "Delayed Access Offsite Power Circuit Conformance with GDC 17" | March 14, 2013 |
| DCL-13-120 | Revision to Regulatory Commitment – Generator Circuit Breakers License Amendment Request Submittal Date | December 18, 2013 |
| DCL-14-067 | Revision to Regulatory Commitment – Generator Circuit Breakers License Amendment Request Submittal Date | July 28, 2014 |
| DCL-15-079 | Revision to Regulatory Commitment – Generator Circuit Breakers License Amendment Request, Commitment Withdrawal | June 30, 2015 |
| DCL-16-046 | Summary Report of 10 CFR 50.59, "Changes, Tests, and Experiments," for the Period of January 1, 2014, through December 31, 2015 | April 18, 2016 |
| LTR-TA-14-82 | IGOR 1.8.2 Software Release Notification, User's Input Manual, and Error Reports | October 6, 2014 |

Miscellaneous

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|------------------|--|------------------------|
| CN-TA-04-126 | IGOR 1.6.0 Software Requirements Specification | 1 |
| CN-TA-04-152 | Software Change Specification for IGOR 1.6.0 | 0 |
| CN-TA-05-22 | IGOR Generation of LOFTRAN Deck Validation and Verification | 0 |
| DCM S-63 | 4.16-kV System | 20 |
| L-SHW-PGE-000166 | Contract No. 4600018139 – Licensing Basis Verification Project Purchase Order 3500962653 – AST Project | October 10, 2013 |
| SAS 13.1 | Loss of Flow and Frequency Decay, All Loops in Service | 2 |
| SAS 13.1 | Loss of Flow and Frequency Decay | 7 |
| SAS 19.0 | IGOR Base Deck | 5 |
| TB-04-22 | Reactor Coolant Pump Seal Performance and Appendix R Compliance | November 17, 2004 |

Miscellaneous

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|--|---|----------------------------|
| TB-06-02 | Aging Issue and Subsequent Operating Issues for Breakers That are at Their 20 Year Design/Qualified Lives; UL Certification/Testing Issues Update | March 10, 2006 |
| TR-FSE-14-1-P | Use of Westinghouse SHIELD® Passive Shutdown Seal for FLEX Strategies | 1 |
| Westinghouse Technical Bulletin TB-04-22 | Reactor Coolant Pump Seal Performance and Appendix R Compliance | November 17, 2004 |

Notifications

50928173 50927896 50228928 50429495

Work Order

68030028

Section 1R18: Plant Modifications

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|----------------|---|-----------------|
| STP i-18-IFD.A | Incipient Fire Detection System Operability and Channel Functional Test | 1 |
| STP M-70D | Inspection of Rated Fire Assemblies | 21 |

Notifications

50919090 50919039 50927314 50927265 50922602
50915739 50919090 50918975

Work Orders

68042180 68016662 68041843 68044946

Drawings

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|--------------------|
| DDP 25244-00 | Incipient Detection License Basis Evaluation | September 21, 2016 |
| DDP 25255-00 | Fire Protection Program Change Evaluation | September 19, 2016 |

Section 1R19: Post-Maintenance Testing

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| MP E-35.1 | Verification of Plant Equipment Temperature Indication | 10 |
| MP M-21.12 | Diesel Engine Cylinder Head Replacement | 14 |
| MP M-21.LINER | Diesel Engine Piston Liner Maintenance | 0 |
| MP M-21-RTS.1 | Return Diesel Engine to Service Following Outage Maintenance | 15 |
| MP M-21-SCH | Diesel Engine Inspections – General Procedure | 12 |
| MP M-9-SIP.1 | Safety Injection Pump Maintenance | 3 |
| STP I-65 | Containment Fan Cooler Collection Monitoring System Calibration | 11 |
| STP P-AFW-21 | Routine Surveillance test of Turbine-Driven Auxiliary Feedwater Pump 2-1 | 29A |
| STP P-RHR-12 | Routine Surveillance Test of RHR Pump 1-2 | 26 |
| STP P-SIP-21 | Routine Surveillance of Safety Injection Pump 2-1 | 27 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50037574 | 50588046 | 50913972 | 50916729 | 50868957 |
| 50906088 | 50918389 | 50916246 | 50703535 | 50701571 |
| 50918455 | 50925730 | 50924160 | 50923794 | 50925192 |
| 50924147 | 50923729 | 50924940 | 50924130 | 50944878 |
| 50923918 | | | | |

Work Orders

| | | | | |
|----------|----------|----------|----------|----------|
| 64114156 | 64148859 | 64167439 | 60100221 | 60093452 |
| 64170321 | 64121920 | 68034821 | 68045043 | 68034263 |
| 64180314 | | | | |

Drawing

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|------------------------------|-----------------|
| 102010 – SH 3 | Residual Heat Removal System | 52 |

Section 1R20: Refueling and Other Outage Activities

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| AD4.ID9 | Containment Housekeeping and Materials Controls | 10 |
| AD8.DC54 | Containment Closure | 15 |
| AD8.DC55 | Outage Safety Checklists | 39 |
| MP I-2.28 | Activation and Deactivation of the Reactor Vessel Refueling Level Indication System (RVRLIS) | 27 |
| MP I-28-M.1 | RHR Valves 8701/8702 Interlock Jumper Installation and Removal | 2 |
| OM7.ID12 | Operability Determination | 36 |
| OM7.ID13 | Technical Evaluation | 6 |
| OP A-2:II | Reactor Vessel – Draining the RCS to the Vessel Flange – With Fuel in Vessel | 48 |
| OP A-2:III | Reactor Vessel –Draining to Half Loop/Half Loop Operations With Fuel in Vessel | 52 |
| OP A-2:IX | Reactor Vessel – Vacuum Refill of the RCS | 22 |
| OP A-2:X | RVRLIS Alignments for Refueling Outages | 9 |
| OP H-2:I | Containment Fan Cooler Units – Make Available | 37A |
| OP H-2:I-A | Containment Fan Coolers – Alignment Checklist | 0 |
| OP H-8:II | Containment Hydrogen Purge System – Alignment Verification Checklist for Plant Startup | 7 |
| OP L-1 | Plant Heatup From Hot Shutdown to Hot Standby | 94 |
| OP L-2 | Hot Standby to Startup Mode | 43 |
| OP L-5 | Plant Cooldown From Minimum Load to Cold Shutdown | 105 |
| OP O-36 | Protected Equipment Postings | 15 |
| OP1DC17 | Control of Equipment Required by Technical Specifications | 32 |
| STP M-45A | Containment Inspection Prior to Establishing Containment Integrity | 33 |
| STP M-45A | Containment Inspection Prior to Establishing Containment Integrity | 33 |
| STP M-45B | Containment Inspection when Containment Integrity is Establish-Unit 1 | 20B |
| STP M-45C | Outage Management Containment Inspection | 10A |
| STP R-30 | Reload Cycle Initial Criticality | 19 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50916750 | 50917156 | 50916707 | 50917158 | 50879634 |
| 50918397 | 50915722 | 50918420 | 50918418 | 50918123 |
| 50917306 | 50922602 | 50896213 | 50923624 | 50928005 |
| 50921415 | 50914469 | 50915091 | 50915398 | 50915519 |
| 50915663 | 50916508 | 50916661 | 50924880 | 50926165 |
| 50928450 | 50928903 | 50929344 | 50930022 | 50930032 |
| 50930033 | 50930039 | | | |

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|-----------------------------------|-----------------|
| 106708-5 | One Line Diagram Safety Injection | 146 |
| 106709-3 | One Line Diagram RWST | 69 |
| 106714 | Containment Fan Coolers Vital CCW | 75 |

Other

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|---------------|--|----------------------------|
| | 1R20 Outage Safety Plan | 0 |
| 1C20 R-09-004 | Equipment Tag Out 4 kV Safety Injection pump 1-2 | May 20, 2017 |
| 1C20 R-21-008 | Equipment Tag Out Instrument Air | May 10, 2017 |
| 1C20 R-23-016 | Equipment Tag Out Containment Fan Cooler | April 26, 2017 |

Work Orders

| | | |
|----------|----------|----------|
| 68046360 | 68006572 | 68046520 |
|----------|----------|----------|

Section 1R22: Surveillance Testing

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| MP M-4.18A | Check of Main Steam Safety Valve Lift Point with the Furmanite Trevitest | 13 |
| STP I-7-F434 | Reactor Coolant System Loop 3 Flow Channel FT-434 Calibration | 8 |

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| STP M-13H | 4 kV Bus H Non-SI Auto Transfer Auto Transfer Test | 45 |
| STP M-77 | Safety and Relief Valve Testing | 39 |
| STP M-86G | NUREG 0737: Charging System Leak Reduction Testing | 42 |
| STP V-654 | Penetration 54 Containment Isolation Valve Leak Testing | 19 |
| STP V-659C | Penetration 59C Containment Isolation Valve Leak Testing | 12 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50920297 | 50919430 | 50919514 | 50918719 | 50915268 |
| 50703393 | 50915268 | 50915091 | | |

Work Orders

| | | | | |
|----------|----------|----------|----------|----------|
| 64114257 | 64063128 | 64148341 | 64008863 | 64063128 |
| 64114432 | | | | |

Drawings

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 106704 | High Pressure Turbine West Side Main Steam Supply | 105 |
| 106708 | Unit 1 Containment Penetration 36 Safety Injection System, Sheet 5 | 146 |
| 106709 | Unit 1 Containment Penetration 34 Charging and Safety Injection System, Sheet 3 | 69 |
| 437627 | 4160 Volt Bus Section H Automatic Transfer | 38 |
| 458865 | 4160 Volt Bus Section H Automatic Transfer | 15 |

Other

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------------|--|----------------|
| Cal Report 42676 | Leak Rate Monitor Calibration 09137AFL | March 14, 2017 |

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| RCP D-211 | Using Remote Monitoring Technology for Remote Continuous Coverage | 5A |
| RCP D-220 | Control of Access to High, Locked High, and Very High Radiation Areas | 50 |
| RCP D-240 | Radiological Posting | 25 |
| RCP D-500 | Routine and Job Coverage Surveys | 43 |
| RCP D-620 | Radioactive Source Control Program | 13 |
| RCP D-923 | Thermo SAM-12 Small Articles Monitor Operation | 16 |
| RP1 | Radiation Protection | 8 |
| RP1.DC6 | Radiation Protection Code of Conduct | 4 |
| RP1.ID14 | Radioactive Material Control | 7 |
| RP1.ID15 | Radiological Risk Assessment | 4 |
| RP1.ID16 | Radiation Worker Expectations | 8 |
| RP1.ID9 | Radiation Work Permits | 13 |

Audits and Self-Assessments

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|------------------|
| 162030014 | Quality Verification of Radiation Protections' Anticipation of Changing Conditions | July 26, 2016 |
| 50828675 | High Radiation Area Controls Self-Assessment | July 7, 2016 |
| 50828676 | Internal and External Dosimetry Self-Assessment | October 26, 2016 |
| 50910632 | Quick Hit Self-Assessment for NRC Pre-Inspection on Radiological Hazard Assessment and Exposure Controls | April 7, 2017 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50849024 | 50849592 | 50850918 | 50852206 | 50855881 |
| 50862395 | 50862513 | 50869731 | 50873736 | 50874792 |
| 50887239 | 50903344 | 50903417 | 50908063 | 50911333 |
| 50911791 | 50912405 | 50912440 | 50917653 | 50917654 |

Radiation Work Permits

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| 1020 | 1R20 Reactor Disassembly, Reassembly, and Rx Head Maintenance | 1 |
| 1050 | 1R20 RCP Maintenance | 1 |
| 1061 | 1R20 Ctmt Valves and Breaches | 1 |
| 1088 | 1R20 Permanent Cavity Seal | 3 |
| 1090 | 1R20 Baffle Bolt Inspection | 1 |

Radiation Surveys

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|---|-----------------|
| 39436 | Downpost I&C Hot Shop from RA | January 2, 2017 |
| 53919 | U-1 SFP Transfer Canal Inspection | April 18, 2017 |
| 54133 | U1 Rx Head Flange Grinding | April 24, 2017 |
| 54963 | 1R20 Lower Internals Core Barrel in Stand as left conditions Containment Dow Posted from LHRA | May 10, 2017 |
| 54967 | Survey of RHR Pump 1-1 Area | May 9, 2017 |
| 54978 | U-1 RHR 1-1 Install Pump Motor Impeller | May 10, 2017 |
| 54995 | U-1 CTMT140 Manipulator Crane Following Core Barrel Move | May 10, 2017 |
| 55032 | Unit 1 140 Containment Shiftly days | May 11, 2017 |

Miscellaneous Documents

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|-------------------|
| | Source Leak Test List | April 5, 2017 |
| | LHRA / Downgraded VHRA Keys | May 5, 2017 |
| C140-51 | RP Instruction: Reactor Lower Internals (Core Barrel) Movement | May 10, 2017 |
| RP# 06.25.7 | SAM-12 Calibration Data Sheet | October 26, 2016 |
| W/O 64152367 | STP G-19 Radioactive Source Leak Testing | September 1, 2016 |
| W/O 64160942 | STP G-19 Radioactive Source Leak Testing | February 22, 2017 |

Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| AD8.DC56 | Containment Outage Ventilation Planning and Operation | 5 |
| OM6.ID10 | Respiratory Protection Program | 8 |
| RCP D-202 | RP Work Instructions | 14 |
| RCP D-410 | Issuing Respiratory Protective Equipment | 19 |
| RCP D-645 | HEPA Integrity Testing | 3 |
| RCP D-646 | Portable HEPA Ventilation Units | 1 |
| RCP D-707 | MSA Firehawk M7 (NFPA) Self-Contained Breathing Apparatus Inspection | 0 |
| RCP D-707A | MSA Firehawk (NIOSH) Self-Contained Breathing Apparatus Inspection | 1A |
| RCP D-712 | MAXAIR Powered Air Purifying Respirator | 1 |
| RCP D-732 | Respirator Fit Testing | 26 |
| RCP D-772 | UNICUS TCOM-25 Trailer Cylinder Recharging Station Operation | 1 |
| RCP D-772 | UNICUSIII Cylinder Recharging Station Operation | 4 |
| RCP D-781 | Use of Reactor Plant Services Model SP 500/700 Series cfm HEPA Units | 2 |
| RCP D-810 | Use & Operation of the Eberline SPING 3A Continuous Air Monitor | 12 |
| RCP D-821 | Use and Operation of the Eberline AMS-4 Continuous Air Monitor | 9 |
| STP MA-3A | Auxiliary Building Ventilation DOP & Halide Penetration Testing | 13 |
| STP MA-41 | Fuel Handling Building Ventilation DOP & Halide Penetration Testing | 20 |

Audits and Self-Assessments

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|------------------|
| 152930028 | 2016 Radiation Protection Programs Audit Report | February 8, 2016 |
| 50910632 | Quick Hit Self-Assessment for NRC Pre-Inspection on Radiological Hazard Assessment and Exposure Controls | April 7, 2017 |

Audits and Self-Assessments

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|--|--|-------------------|
| 50911933 | Quick Hit Self-Assessment Report for NRC Inspection Procedure 71124-03, In-Plant Airborne Radioactivity Control and Mitigation | April 6, 2017 |
| NUPIC Audit/Survey Number: 24179 | Reed National Air Products Group | February 26, 2016 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50811196 | 50838399 | 50863871 | 50890798 | 50913423 |
| 50849024 | 50888276 | | | |

Miscellaneous

| <u>Title</u> | <u>Date</u> |
|---|-------------------|
| Respirator Model Types | March 13, 2017 |
| SCBA Inspection Records | October 15, 2016 |
| SCBA Inspection Records | December 16, 2016 |
| SCBA Qualification Records | March 31, 2017 |
| SCBA Qualification Records Ops & Fire Brigade | March 13, 2017 |

Respirator Testing, Inspection, and Inventory Record

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|---------------------------------------|
| RCP D-410 | Monthly E-Plan SCBA Quantity & Airline Calibration Inventory | December 16, 2016 thru March 23, 2017 |

Engineered System, HEPA, and Charcoal Filter Test Records

| <u>Number</u> | <u>Title</u> | <u>Date</u> |
|---------------|--|--------------------|
| RCP D-645 | HEPA Integrity Testing | May 9, 2017 |
| STP MA-3A | Auxiliary Building Ventilation DOP & Halide Penetration Testing Unit-1 | September 28, 2015 |
| STP MA-3A | Auxiliary Building Ventilation DOP & Halide Penetration Testing Unit-2 | May 14, 2016 |
| STP MA-41 | Fuel Handling Building Ventilation DOP & Halide Penetration Testing | January 4, 2017 |

Compressed Air System Testing Records

| <u>Title</u> | <u>Date</u> |
|-----------------|-------------------|
| ACCPP1 BAC | November 21, 2016 |
| ACCPP1 BAC | March 13, 2017 |
| ACCPP2 BAC | November 21, 2016 |
| Fire Engine Bay | February 15, 2016 |
| Fire Engine Bay | November 10, 2016 |
| TCOM Trailer 2 | March 13, 2017 |

Miscellaneous Documents

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|---------------|--|----------------------------|
| | Respirator Qualified for RWP-1053 | April 19, 2017 |
| RTTJ23J | Operate the UNICUS III Breathing Air Compressor | 2C |
| RTTJ23J | Qualified Operators: UNICUS III Breathing Air Compressor | May 9, 2017 |

Section 40A1: Performance Indicator Verification

Procedures

| <u>Number</u> | <u>Title</u> | <u>Revision / Date</u> |
|---------------|--|----------------------------|
| AWP O-002 | NRC Performance Indicators: Occupational Exposure Control Effectiveness | 12 |
| AWP O-003 | NRC Performance Indicator: RETS/ODCM Radiological Effluent Occurrences | 14 |
| CD-Entry 4.0 | Unit 1, Consolidated Data Entry 4.0 MSPI Derivation Report High Pressure Injection System (Unavailability Index) | March 31, 2017 |
| CD-Entry 4.0 | Unit 2, Consolidated Data Entry 4.0 MSPI Derivation Report High Pressure Injection System (Unavailability Index) | March 31, 2017 |
| MSPI Basis | Mitigating Systems Performance Index Basis Document | 10 |
| XI1.ID5 | Collection and Submittal of NRC Performance Indicators | 0 |

Notifications

50855643 50855734

Section 40A2: Problem Identification and Resolution

Procedure

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|--|-----------------|
| AD4.ID4 | Temporary Storage Process | 1 |
| MP E-53.20V1 | MOV Diagnostic Testing | 17 |
| OM8 | Fire Protection Program | 5A |
| OM8.ID4 | Control of Flammable and Combustible Materials | 26 |

Miscellaneous

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------|--|-----------------|
| BWROG-TP-13-006 | Recommendations to Resolve Flowserve 10CFR Part 21 Notification Affecting Anchor Darling Double Disc Gate Valve Wedge Pin Failures | 1 |

Drawing

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---------------------------------|-----------------|
| 106709 | Reactor Coolant System, Sheet 4 | 60 |

Notifications

| | | | | |
|----------|----------|----------|----------|----------|
| 50928019 | 50921421 | 50921352 | 50920931 | 50970739 |
| 50922237 | 50920706 | 50919976 | 50919598 | 50919047 |
| 50918918 | 50918733 | 50911551 | 50865550 | 50820987 |
| 50545214 | 50532173 | 50922614 | 50922750 | 50922740 |
| 50922409 | 50922179 | 50922094 | 50918209 | 50918396 |
| 50917355 | 50922490 | 50922491 | | |

LIST OF ACRONYMS

| | |
|----------|--|
| 10 CFR | Title 10 of the <i>Code of Federal Regulations</i> |
| ADAMS | Agencywide Document Access and Management System |
| ALARA | as low as reasonably achievable |
| ANSI/ANS | American National Standards Institute / American Nuclear Society |
| ASME | American Society of Mechanical Engineers |

| | |
|--------|---|
| CAP | corrective action program |
| CCW | component cooling water |
| DCPP | Diablo Canyon Power Plant |
| EPRI | Electric Power Research Institute |
| HEPA | high-efficiency particulate air |
| IMC | Inspection Manual Chapter |
| NCV | non-cited violation |
| NEI | Nuclear Energy Institute |
| NFPA | National Fire Protection Association |
| NIOSH | National Institute for Occupational Safety and Health |
| NSAL | Nuclear Safety Advisory Letter |
| PG&E | Pacific Gas and Electric Company |
| RCS | reactor coolant system |
| RFI | Request for Information |
| RHR | residual heat removal |
| SCBA | self-contained breathing apparatus |
| SL-IV | Severity Level IV |
| SSC | structure, system, and component |
| TASCS | Thermal Stratification, Cycling, and Striping |
| RVRLIS | Reactor Vessel Refueling Level Indication System |

PAPERWORK REDUCTION ACT STATEMENT

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Information Request

March 15, 2017

Notification of Inspection and Request for Information

Diablo Canyon Nuclear Power Plant

NRC Inspection Report 05000275/2017002

On May 8, 2017, reactor inspectors from the Nuclear Regulatory Commission's (NRC) Region IV office will perform the baseline inservice inspection at Diablo Canyon, Unit 1, using NRC Inspection Procedure 71111.08, "Inservice Inspection Activities." Experience has shown that this inspection is a resource intensive inspection both for the NRC inspectors and your staff. In order to minimize the impact to your onsite resources and to ensure a productive inspection, we have enclosed a request for documents needed for this inspection. These documents have been divided into two groups. The first group (Section A of the enclosure) identified information to be provided prior to the inspection to ensure that the inspectors are adequately prepared. The second group (Section B of the enclosure) identifies the information the inspectors will need upon arrival at the site. It is important that all of these documents are up to date and complete in order to minimize the number of additional documents requested during the preparation and/or the onsite portions of the inspection.

We have discussed the schedule for these inspection activities with your staff and understand that our regulatory contact for this inspection will be Mr. Mike McCoy of your licensing organization. The tentative inspection schedule is as follows:

Preparation week: May 1, 2017

Onsite weeks: May 8 through May 19, 2017

Our inspection dates are subject to change based on your updated schedule of outage activities. If there are any questions about this inspection or the material requested, please contact the lead inspector Isaac Anchondo at (817) 200-1152 (isaac.anchondo@nrc.gov).

A.1 ISI/Welding Programs and Schedule Information

- a) A detailed schedule (including preliminary dates) of:
 - i. Nondestructive examinations planned for ASME Code Class Components performed as part of your ASME Section XI, risk-informed (if applicable), and augmented inservice inspection programs during the upcoming outage.

Please include the ASME Examination Category (i.e., B-A) and Item Number (i.e., B1.10) of each component within the format that this information will be provided.

- ii. Examinations planned for Alloy 82/182/600 components that are not included in the Section XI scope (If applicable)
 - iii. Examinations planned as part of your boric acid corrosion control program (Mode 3 walkdowns, bolted connection walkdowns, etc.)
 - iv. Welding activities that are scheduled to be completed during the upcoming outage (ASME Class 1, 2, or 3 structures, systems, or components)
- b) A copy of ASME Section XI Code Relief Requests and associated NRC safety evaluations applicable to the examinations identified above.
 - i. A list of ASME Code Cases currently being used to include the system and/or component the Code Case is being applied to.
- c) A list of nondestructive examination reports which have identified recordable or rejectable indications on any ASME Code Class components since the beginning of the last refueling outage. This should include the previous Section XI pressure test(s) conducted during start up and any evaluations associated with the results of the pressure tests.
- d) A list including a brief description (e.g., system, code class, weld category, nondestructive examination performed) associated with the repair/replacement activities of any ASME Code Class component since the beginning of the last outage and/or planned this refueling outage.
- e) If reactor vessel weld examinations required by the ASME Code are scheduled to occur during the upcoming outage, provide a detailed description of the welds to be examined and the extent of the planned examination. Please also provide reference numbers for applicable procedures that will be used to conduct these examinations.
- f) Copy of any 10 CFR Part 21 reports applicable to structures, systems, or components within the scope of Section XI of the ASME Code that have been identified since the beginning of the last refueling outage.
- g) A list of any temporary noncore repairs in service (e.g., pinhole leaks).
- h) Please provide copies of the most recent self-assessments for the inservice inspection, welding, and Alloy 600 programs.
- i) Copy of the procedures for welding techniques and NDE that will be used during the outage.

A.2 Boric Acid Corrosion Control Program

- a) Copy of the procedures that govern the scope, equipment and implementation of the inspections required to identify boric acid leakage and the procedures for boric acid leakage/corrosion evaluation.
- b) Please provide a list of leaks (including code class of the components) that have been identified since the last refueling outage and associated corrective action documentation. If during the last cycle, the unit was shut down, please provide documentation of containment walkdown inspections performed as part of the boric acid corrosion control program.

A.3 Baffle-former Bolt Inspections

- a) Please provide a detailed schedule of associated baffle-former bolt inspection activities.
- b) Provide documents governing inspection activities including:
 - i. Visual and Volumetric inspection procedures to be used (include equipment calibration procedures if separate).
 - ii. Bolt removal and replacement procedures.
 - iii. Contingency plans if any edge bolts are found to be degraded (if applicable).
 - iv. Provide material safety data sheets for the replacement baffle-former bolts. Include bolt drawings showing design measurements.
 - v. Copy of applicable revision of MRP-227.

A.4 Additional Information Related to all Inservice Inspection Activities

- a) A list with a brief description of inservice inspection, and boric acid corrosion control program related issues (e.g., Condition Reports) entered into your corrective action program since the beginning of the last refueling outage. For example, a list based upon data base searches using key words related to piping such as: inservice inspection, ASME Code, Section XI, NDE, cracks, wear, thinning, leakage, rust, corrosion, boric acid, or errors in piping examinations.
- b) Please provide names and phone numbers for the following program leads:

Inservice inspection (examination, planning)

Containment exams

Reactor pressure vessel head exams

Snubbers and supports

Repair and replacement program

Licensing

Site welding engineer

Boric acid corrosion control program

Steam generator inspection activities (site lead and vendor contact)

B. Information to be Provided Onsite to the Inspector(s) at the Entrance Meeting (May 8, 2017):

B.1 Inservice Inspection / Welding Programs and Schedule Information

- a) Updated schedules for inservice inspection/nondestructive examination activities, including planned welding activities, and schedule showing contingency repair plans, if available.
- b) For ASME Code Class welds selected by the inspectors from the lists provided from section A of this enclosure, please provide copies of the following documentation for each subject weld:
 - i. Weld data sheet (traveler).
 - ii. Weld configuration and system location.
 - iii. Applicable Code Edition and Addenda for weldment.
 - iv. Applicable Code Edition and Addenda for welding procedures.
 - v. Applicable welding procedures used to fabricate the welds.
 - vi. Copies of procedure qualification records (PQRs) supporting the weld procedures from B.1.b.v.
 - vii. Copies of welder's performance qualification records (WPQ).
 - viii. Copies of the nonconformance reports for the selected welds (If applicable).
 - ix. Radiographs of the selected welds and access to equipment to allow viewing radiographs (if radiographic testing was performed).
 - x. Copies of the preservice examination records for the selected welds.
 - xi. Readily accessible copies of nondestructive examination personnel qualifications records for reviewing.
- c) For the inservice inspection related corrective action issues selected by the inspectors from section A of this enclosure, provide a copy of the corrective actions and supporting documentation.
- d) For the nondestructive examination reports with relevant conditions on ASME Code Class components selected by the inspectors from Section A above, provide a copy

of the examination records, examiner qualification records, and associated corrective action documents.

- e) A copy of (or ready access to) most current revision of the inservice inspection program manual and plan for the current interval.
- f) For the nondestructive examinations selected by the inspectors from section A of this enclosure, provide a copy of the nondestructive examination procedures used to perform the examinations (including calibration and flaw characterization/sizing procedures). For ultrasonic examination procedures qualified in accordance with ASME Code, Section XI, Appendix VIII, provide documentation supporting the procedure qualification (e.g. the EPRI performance demonstration qualification summary sheets). Also, include qualification documentation of the specific equipment to be used (e.g., ultrasonic unit, cables, and transducers including serial numbers) and nondestructive examination personnel qualification records.

B.2 Boric Acid Corrosion Control Program

- a) Please provide boric acid walk down inspection results, an updated list of boric acid leaks identified so far this outage, associated corrective action documentation, and overall status of planned boric acid inspections.
- b) Please provide any engineering evaluations completed for boric acid leaks identified since the end of the last refueling outage. Please include a status of corrective actions to repair and/or clean these boric acid leaks. Please identify specifically which known leaks, if any, have remained in service or will remain in service as active leaks.

B.4 Codes and Standards

- a) Ready access to (i.e., copies provided to the inspector(s) for use during the inspection at the onsite inspection location, or room number and location where available):
 - i. Applicable Editions of the ASME Code (Sections V, IX, and XI) for the inservice inspection program and the repair/replacement program.
- b) Copy of the performance demonstration initiative (PDI) generic procedures with the latest applicable revisions that support site qualified ultrasonic examinations of piping welds and components (e.g., PDI-UT-1, PDI-UT-2, PDI-UT-3, PDI-UT-10, etc.).
- c) Boric Acid Corrosion Guidebook Revision 1 – EPRI Technical Report 1000975.

The following items are requested for the
Occupational Radiation Safety Inspection

Diablo Canyon

**Inspection Dates May 8–12, 2017
Integrated Report 2017002**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **April 20, 2017.**

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1- A," applicable organization charts in file/folder "1- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact **Louis C. Carson II at (817) 200-1221 or Louis.Carson@nrc.gov.**

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1. **Radiological Hazard Assessment and Exposure Controls (71124.01) and Performance Indicator Verification (71151)**

Date of Last Inspection: **May 9, 2016**

- A. List of contacts and telephone numbers for the Radiation Protection Organization Staff and Technicians
- B. Applicable organization charts
- C. ALL radiation protection related licensee assessments and audits, all independent or third party radiation protection related assessments and audits, all radiation protection related self-assessments, and all radiation safety related LERs, including but not limited to radiation monitoring instrumentation and radioactive effluents, releases and / or spills, written since **May 2016**.
- D. Procedure indexes for the radiation protection procedures
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Radiation Protection Program Description
 - 2. Radiation Protection Conduct of Operations
 - 3. Personnel Dosimetry Program
 - 4. Posting of Radiological Areas
 - 5. High Radiation Area Controls
 - 6. RCA Access Controls and Radiation Worker Instructions
 - 7. Conduct of Radiological Surveys
 - 8. Radioactive Source Inventory and Control
 - 9. Declared Pregnant Worker Program
- F. List of corrective action documents (including corporate and sub-tiered systems) since **May 2016**.
 - a. Initiated by the radiation protection organization
 - b. Assigned to the radiation protection organization

NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

If not covered above, a summary of corrective action documents since **May 2016** involving unmonitored releases, unplanned releases, or releases in which any dose limit or administrative dose limit was exceeded (for Public Radiation Safety Performance Indicator verification in accordance with IP 71151)

Additionally, a copy of ALL radiation protection AND chemistry department root cause evaluations, apparent cause evaluation, and condition evaluations performed since **May 2016**.

- G. List of radiologically significant work activities scheduled to be conducted during the inspection period (If the inspection is scheduled during an outage, please also include a

list of work activities greater than 1 rem, scheduled during the outage with the dose estimate for the work activity.)

- H. List of active radiation work permits
- I. Radioactive source inventory list
 - a. All radioactive sources that are required to be leak tested
 - b. All radioactive sources that meet the 10 CFR Part 20, Appendix E, Category 2, and above threshold. Please indicate the radioisotope, initial and current activity (w/assay date), and storage location for each applicable source.
- J. The last two leak test results for the radioactive sources inventoried and required to be leak tested. If applicable, specifically provide a list of all radioactive source(s) that have failed its leak test within the last two years
- K. A current listing of any non-fuel items stored within your pools, and if available, their appropriate dose rates (Contact / @ 30cm)
- L. Computer printout of radiological controlled area entries greater than 100 millirem since the previous inspection to the current inspection entrance date. The printout should include the date of entry, some form of worker identification, the radiation work permit used by the worker, dose accrued by the worker, and the electronic dosimeter dose alarm set-point used during the entry (for Occupational Radiation Safety Performance Indicator verification in accordance with IP 71151).

3. In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

Date of Last Inspection: **October 12, 2015**

- A. List of contacts and telephone numbers for the following areas:
 - 1. Respiratory Protection Program
 - 2. Self-contained breathing apparatus
- B. Applicable organization charts
- C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support (SCBA), and LERs, written since date of last inspection related to:
 - 1. Installed air filtration systems
 - 2. Self-contained breathing apparatuses
- D. Procedure index for:
 - 1. Use and operation of continuous air monitors
 - 2. Use and operation of temporary air filtration units
 - 3. Respiratory protection
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
 - 1. Respiratory protection program
 - 2. Use of self-contained breathing apparatuses

3. Air quality testing for SCBAs
 4. Use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the Airborne Monitoring program including:
1. Continuous air monitors
 2. Self-contained breathing apparatuses
 3. Respiratory protection program
- NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.
- G. List of SCBA qualified personnel - reactor operators and emergency response personnel
- H. Inspection records for self-contained breathing apparatuses (SCBAs) staged in the plant for use since date of last inspection.
- I. SCBA training and qualification records for control room operators, shift supervisors, STAs, and OSC personnel for the last year.
- A selection of personnel may be asked to demonstrate proficiency in donning, doffing, and performance of functionality check for respiratory devices
- J. List of respirators (available for use) by type (APR, SCBA, PAPR, etc.), manufacturer, and model.