



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

April 24, 2018

Mr. James M. Welsch
Vice President Nuclear Generation
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 INSPECTION REPORT
05000275/2018001, 05000323/2018001, and 07200026/2018001**

Dear Mr. Welsch:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Diablo Canyon Power Plant Units 1 and 2. On April 18, 2018, the NRC inspectors discussed the results of this inspection with you 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. One of these findings involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance of this NCV, 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 or a finding not associated with a regulatory requirement 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.

J. Welsch

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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, Chief
Project Branch A
Division of Reactor Projects

Docket Nos. 50-275, 50-323, and 72-026
License Nos. DPR-80, DPR-82, and
SNM-2511

Enclosure:

Inspection Report 05000275/2018001,
05000323/2018001, and 07200026/2018001

w/ Attachments:

1. Documents Reviewed
2. RFI for Resident Inspection – 1st Quarter
3. RFI for Occupational Radiation Safety
Inspection

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000275, 05000323, and 07200026

License Numbers: DPR-80, DPR-82, and SNM-2511

Report Numbers: 05000275/2018001, 05000323/2018001, and 07200026/2018001

Enterprise Identifier: I-2018-001-0001

Licensee: Pacific Gas and Electric Company

Facility: Diablo Canyon Power Plant, Units 1 and 2, and associated Independent Spent Fuel Storage Installation (ISFSI)

Location: Avila Beach, California

Inspection Dates: January 1, 2018 to March 31, 2018.

Inspectors: C. Newport, Senior Resident Inspector
J. Reynoso, Resident Inspector
W. Sifre, Senior Reactor Inspector (ISI)
L. Brookhart, Senior ISFSI inspector, FCDB (ISFSI)
N. Greene, PhD, Senior Health Physicist (Radiation Safety)
J. O'Donnell, CHP, Health Physicist (Radiation Safety)

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

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Diablo Canyon Power Plant Units 1 and 2 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. Findings and violations being considered in the NRC’s assessment are summarized in the table below.

List of Findings and Violations

Improper Troubleshooting Results in Reactor Trip Signal and Loss of Source Range Nuclear Instrument Power			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000323/2018001-001 Closed	H.5 – Human Performance – Work Management	71111.20 – Refueling and Other Outage Activities
<p>The inspectors reviewed a Green, self-revealed non-cited violation of Technical Specification 5.4.1.a “Procedures,” because PG&E personnel failed to follow the requirements of MA1.DC54, “Conduct of Maintenance,” Revision 15. Specifically, on March 20, 2018, with the reactor in Mode 3 during informal troubleshooting of high background count rate on source range nuclear instrument (NI) NI-32, PG&E personnel caused a short in NI cabinet B resulting in a blown fuse and the loss of power to the cabinet. This resulted in the loss of power to power range NI-42, intermediate range NI-36, source range NI-32, a reactor trip signal, a turbine trip signal, and all associated reactor protection interlocks. Power was automatically removed from the remaining source range NI due to reactor protection interlock P-10, resulting in no safety-related source range NI indication being available for control room operators.</p>			

Failure to Follow Operating Experience Procedures Results in Inadequate Screen of Operating Experience Report			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000323/2018001-02 Closed	None	71152 – Problem Identification and Resolution
<p>The inspectors identified a finding of very low safety significance (Green) because PG&E personnel failed to follow the requirements of OM4.ID3, “Operating Experience Program,” Revision 20. Specifically, PG&E personnel failed to screen relevant operating experience relating to a safety-related centrifugal charging pump (CCP) journal bearing failure due to non-metallic anti-rotation pin shear failure. This operating experience notice was received by PG&E September 2011 and was not screened per OM4.ID3, “Operating Experience Program,” preventing actions from being identified and implemented that could have eliminated</p>			

vulnerabilities and prevented a similar event from occurring at DCP. On November 11, 2017, CCP 2-1 was declared inoperable and determined to be non-functional due to a damaged journal bearing caused by non-metallic, anti-rotation pin shear failure.

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
URI	07200026/2016001-01	Applicability of required NDE inspections on the Lift Yoke in accordance with ANSI N14.6	60855.1 – Operation of an ISFSI at Operating Plants	Closed

PLANT STATUS

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

On February 11, 2018, Unit 2 was shut down for a planned refueling outage. On March 20, 2018, Unit 2 returned to operation and began a controlled power ascension; it returned to full power on March 26, 2018.

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

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions following heavy rains and high winds on January 9, 2018.

71111.04 - Equipment Alignment

Partial Walkdown (5 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 2, Mode 6 boration flowpath on March 2, 2018
- (2) Unit 2, containment spray on March 7, 2018
- (3) Unit 2, auxiliary feedwater on March 18, 2018
- (4) Unit 2, safety injection on March 23, 2018
- (5) Unit 2, spent fuel cooling on March 29, 2018

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the Unit 2, residual heat removal system on March 22, 2018.

71111.05AQ - Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Unit 1, auxiliary building 64 foot elevation on January 4, 2018
- (2) Unit 2, containment 140 foot elevation on February 13, 2018
- (3) Unit 2, containment 117 foot elevation on February 15, 2018
- (4) Unit 2, containment 91 foot elevation on February 22, 2018
- (5) Units 1 and 2, saltwater intake on March 2, 2018

71111.06 - Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections associated with the Units 1 and 2, circulating water and saltwater systems on March 20, 2018.

Cables (1 Sample)

The inspectors evaluated cable submergence protection in the following areas:

- (1) auxiliary saltwater pump vaults on February 17, 2018

71111.07 - Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated Unit 2, component cooling water heat exchanger 2-1 performance on March 1, 2018.

71111.08 - Inservice Inspection Activities (1 Sample)

The inspectors evaluated pressurized water reactor non-destructive testing by reviewing the following examinations from February 22 to March 1, 2018:

- (1) Ultrasonic Examinations
 - a) residual heat removal line 45 (Weld RB-45-3-04)
 - b) residual heat removal line 45 (Weld RB-45-2)
 - c) residual heat removal line 45 (Weld RB-45-6)
 - d) residual heat removal line 45 (Weld RB-45-7)
 - e) residual heat removal line 46 (Weld RB-46-4)
 - f) residual heat removal line 46 (Weld RB-46-7)
 - g) residual heat removal line 46 (Weld RB-46-8)

(2) Dye Penetrant Examinations

- a) centrifugal charging pump discharge header line S6-1456-6 (welded lug attachments 23-36R)
- b) main steam valve FCV-41 replacement weld
- c) main steam MS-2-1018 socket weld
- d) main steam MS-2-2016 socket weld

(3) Phased Array Ultrasonic Examination

- a) residual heat removal line 46 (266373-TR-002 structural weld overlay)

(4) Visual (VT-3)

- a) containment liner penetration 67, equipment hatch bolting

(5) Gas Tungsten Arc Weld – Machine

- a) residual heat removal line 46 (266373-TR-002 structural weld overlay)

The Inspectors evaluated the licensee's boric acid control program performance.

71111.11 - Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated a crew of licensed operators in the plant's simulator during training on refueling outage testing activities on February 5, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated operator performance during the following activities:

- (1) Units 1 and 2, auxiliary saltwater cross flow test procedure to determine the capability to provide auxiliary saltwater flow to opposite units on January 22, 2018
- (2) Unit 2, entering coast down procedure, including the pre-job briefing, on January 22, 2018
- (3) Unit 1, test procedure to stroke and verify position of emergency core cooling system valve 8700B on January 25, 2018
- (4) Unit 2, reactor coolant system drain down for reactor head removal on February 14, 2018

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated

with the following equipment and/or safety significant functions:

- (1) Unit 2, 2R20 motor operated valve maintenance
- (2) Units 1 and 2, auxiliary building ventilation fans and dampers

71111.13 - Maintenance Risk Assessments and Emergent Work Control (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Unit 2, vital battery charger 2-1, inspection and maintenance outage on January 17, 2018
- (2) Unit 2, reactor coolant system, reduced reactor coolant inventory window of 2R20 refueling outage on February 13-14, 2018
- (3) Unit 2, reactor coolant system, yellow risk during drain down for reactor head installation on March 6, 2018
- (4) Unit 2, reactor protection system, seismic trigger protection set 2, maintenance and calibration on March 30, 2018

71111.15 - Operability Determinations and Functionality Assessments (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Unit 1, auxiliary feedwater level control valve position indicator LCV-113 output failure on January 16-17, 2018
- (2) Unit 2, containment nitrogen system on January 24-25, 2018
- (3) Unit 2, auxiliary building ventilation system back damper M-20 stuck open on February 12, 2018
- (4) Unit 2, reactor coolant pump 2-1 failure to stop on demand from control room on February 12, 2018
- (5) Unit 2, auxiliary feedwater valve LCV-115 output failure on February 26, 2018
- (6) Unit 2, main steam insulation valve FCV-44 excessive wear on check valve disc on March 12, 2018

71111.18 - Plant Modifications (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Short duration modification on Unit 2, fuel transfer up-ender position switch inside containment on February 16, 2018
- (2) Emergency core cooling system valve external NAMCO limit switch removal on March 6, 2018

71111.19 - Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Unit 2, containment spray pump 2-1, outboard bearing anti-rotation pin replacement on January 5, 2018
- (2) Units 1 and 2, replacement of fire suppression solenoid valve SV-103 on January 10, 2018
- (3) Unit 2, auxiliary saltwater pump 2-1, motor and pump replacement on February 21, 2018
- (4) Unit 2, safety injection pump 2-1, shaft coupling inspection and high vibration on March 7-8, 2018
- (5) Unit 1, centrifugal charging pump 1-2, testing following maintenance of 4 kV breaker and relays on March 27, 2018

71111.20 - Refueling and Other Outage Activities (1 Sample)

The inspectors evaluated refueling outage 2R20 activities from February 11, 2018 to March 21, 2018.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (3 Samples)

- (1) Units 1 and 2, flow control valve FCV-601, auxiliary saltwater cross-tie valve flow test per STP M-26A on January 22, 2018
- (2) Unit 2, integrated test of engineered safeguards and diesel generators per procedure STP M-15 on February 13, 2018
- (3) Unit 2, rod drop measurement testing per procedure STP R-1B on March 19, 2018

In-service (1 Sample)

- (1) Unit 2, main steam lead 1, safety and relief valve testing per procedure STP M-77 on February 6, 2018

Containment Isolation Valve (2 Samples)

- (1) Leakage testing on containment isolation valves associated with Unit 2, penetration 51 per STP V-651B on February 28, 2018
- (2) Unit 2, containment integrated leak rate testing per procedure STP M-7 on March 12, 2018

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

71124.02 - Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

Implementation of ALARA and Radiological Work Controls (1 Sample)

The inspectors reviewed ALARA practices and radiological work controls by reviewing the following activities and/or their ALARA plans:

- (1) RWP 17-2024, "2R20 Guide Cards"
- (2) RWP 17-2050, "2R20 RCP Maintenance"
- (3) RWP 17-2070, "2R20 RHR Weld Overlay"

Radiation Worker Performance (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification (8 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) IE01: Unplanned Scrams per 7000 Critical Hours Sample (01/01/2017–12/31/2017)
[1 sample per unit]

- (2) IE03: Unplanned Power Changes per 7000 Critical Hours Sample (01/01/2017–12/31/2017) [1 sample per unit]
- (3) IE04: Unplanned Scrams with Complications (USwC) Sample (01/01/2017–12/31/2017) [1 sample per unit]
- (4) OR01: Occupational Exposure Control Effectiveness Sample (05/01/2017–12/31/2017)
- (5) PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Occurrences (RETS/ODCM) Sample (05/01/2017–12/31/2017)

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (2 Samples)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issues:

- (1) Diablo Canyon Power Plant (DCPP) safety related 4 kV motor journal bearing degradation, including centrifugal charging pump 2-1 outboard journal bearing damage caused by bearing rotation and 2-1 containment spray pump outboard journal bearing minor rotation, on February 13, 2018.
- (2) The inspectors performed an in-depth review of the licensee’s evaluation and corrective actions related to personnel not adhering to procedures or standards. The inspectors’ primary focus centered on Unit 2 refueling activities beginning February 1 through March 21, 2018, during which the licensee relied on vendor or temporary additional workers to help with scheduled maintenance activities. The basis for this inspection focused on a review of corrective action program issues which were documented associated with the Unit 2 refueling outage.

71153 - Follow-up of Events and Notices of Enforcement Discretion

Events (2 Samples)

- (1) The inspectors evaluated a steam leak at the suction line of main feedwater pump 2-2 and the licensee’s response on January 16, 2018.
- (2) The inspectors evaluated a screen wash pump motor fire and the licensee’s response on January 25, 2018.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation (ISFSI)

The inspectors closed an Unresolved Item (URI) from a routine ISFSI inspection conducted in September of 2016 (see Inspection Results).

INSPECTION RESULTS

Improper Troubleshooting Results in Reactor Trip Signal and Loss of Source Range Nuclear Instrument Power			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000323/2018001-01 Closed	H.5 – Human Performance – Work Management	71111.20 – Refueling and Other Outage Activities
<p>The inspectors reviewed a Green, self-revealed non-cited violation of Technical Specification (TS) 5.4.1.a “Procedures,” because PG&E personnel failed to follow the requirements of MA1.DC54, “Conduct of Maintenance,” Revision 15. Specifically, on March 20, 2018, with the reactor in Mode 3 during informal troubleshooting of high background count rate on source range nuclear instrument (NI) NI-32, PG&E personnel caused a short in NI cabinet B resulting in a blown fuse and the loss of power to the cabinet. This resulted in the loss of power to power range NI-42, intermediate range NI-36, source range NI-32, a reactor trip signal, a turbine trip signal, and all associated reactor protection interlocks. Power was automatically removed from the remaining source range NI due to reactor protection interlock P-10, resulting in no safety-related source range NI indication being available for control room operators.</p>			
<p><u>Description:</u></p> <p>On March 20, 2018, with the plant in Mode 3 at normal operating temperature and pressure, source range detector high voltage alignment of the NI-32 source range instrument could not be achieved during performance of STP I-4B4, “Determination of Source Range Detector Characteristic Curves.” This alignment is performed to establish appropriate baseline NI channel settings prior to reactor startup. An informal troubleshooting plan was subsequently developed to diagnose the source of potential electronic noise within the electronic circuitry that could be impacting the alignment. The informal troubleshooting plan consisted of installing an insulating metallic Faraday blanket around NI-32 power cables in the vicinity of the filter. The plan did not meet the requirements of MA1.DC54, “Conduct of Maintenance,” which requires, in part, that “all work on plant systems, structures, or components (SSCs) should be performed using appropriate documentation such as work orders, notifications, procedures, or design drawings.” No work order or work package was developed prior to the installation of the Faraday blanket. During installation of the Faraday blanket, the blanket inadvertently made contact with an exposed terminal causing a short in NI cabinet B and the main power fuse to fail, removing power from the cabinet. The loss of power to the cabinet resulted in the loss of power to power range NI-42, intermediate range NI-36, and source range NI-32. A second power range NI (NI-44) was already out of service at the time of the event. The loss of power to two of four power range NIs resulted in the two out of four coincidence logic being met for the reactor protection system (RPS) power range high flux trip, hi power trip, and low power trip. As a result, the reactor trip breakers opened, and the main turbine tripped. At the time of the event, all control rods were unlatched and fully inserted. Additionally, the coincidence logic was made up for interlocks P-10, P-9, and P-8 resulting in power being removed from both source range NIs. Source range NIs are safety-related instruments relied upon in Mode 3 to protect against rod withdrawal accidents (source range hi flux RPS trip), inadvertent criticality from unanticipated reactor coolant system (RCS) dilution, and to provide indication to plant operators. As a result of the event and in accordance with</p>			

applicable TS action statements, PG&E personnel stopped all activities that could add positive reactivity to the RCS, verified shutdown margin, and verified that the reactor trip breakers were open. For the duration of loss of power to the source range NIs, PG&E personnel were able to rely upon non-safety-related, post-accident monitoring NIs to provide indication of neutron activity with the core. Power was restored to one of the two safety-related source range NIs after approximately 4 hours. Additional troubleshooting and engineering evaluations allowed PG&E personnel to restore power to NI cabinet B and complete STP I-4B4.

Corrective Actions: After the issue occurred, PG&E initiated corrective actions including replacement of the blown fuse and additional troubleshooting in accordance with applicable procedures.

Corrective Action References: Notification 50971776

Performance Assessment:

Performance Deficiency: The inspectors determined that PG&E's failure to follow MA1.DC54, "Conduct of Maintenance," Revision 15, when diagnosing high background count rate on source range NI-32, was a performance deficiency within PG&E's ability to foresee and correct.

Screening: The performance deficiency was considered to be more than minor because it impacted the equipment performance 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, improper troubleshooting of source range NI-32 resulted in the loss of power to NI cabinet B and a subsequent reactor trip signal, associated interlocks, and a loss of power to both source range NIs which were required to be in service by TS at the time of the event.

Significance: Because the plant was in Mode 3 at normal operating temperature and pressure with decay heat removal secured, the finding was evaluated in accordance with Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings-At-Power," dated June 19, 2012. The inspectors determined that the finding screened to Green because it did not result in an actual loss of safety function of at least a single train for greater than its TS allowed outage time.

Cross-cutting Aspect: This finding is related to the cross-cutting area of Human Performance – Work Management [H.5] because PG&E personnel did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, during troubleshooting, PG&E personnel failed to develop an appropriate work order or instruction that would protect against inadvertently causing electrical transients within the NI cabinet.

Enforcement:

Violation: TS 5.4.1.a, "Procedures," requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. RG 1.33, Appendix A requires, in

part, that “maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.” Procedure MA1.DC54, “Conduct of Maintenance,” requires, in part, that “all work on plant systems, structures, or components (SSCs) should be performed using appropriate documentation such as work orders, notifications, procedures, or design drawings.”

Contrary to the above, on March 20, 2018, no work order or work package was developed prior to the installation of a Faraday blanket in NI cabinet B. During installation of the Faraday blanket, the blanket inadvertently made contact with an exposed terminal causing a short in NI cabinet B and the main power fuse to actuate, removing power from the cabinet and causing an RPS reactor trip actuation, turbine trip, and loss of power to both safety-related source range NI channels. After the issue occurred, PG&E entered it into the corrective action program as Notification 50971776 and initiated corrective actions including replacement of the blown fuse and additional troubleshooting.

Disposition: This violation is being treated as a non-cited violation consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Follow Operating Experience Procedures Results in Inadequate Screen of Operating Experience Report

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000323/2018001-02 Closed	None	71152 – Problem Identification and Resolution

The inspectors identified a finding of very low safety significance (Green) because PG&E personnel failed to follow the requirements of OM4.ID3, “Operating Experience Program,” Revision 20. Specifically, PG&E personnel failed to screen relevant operating experience relating to a safety-related centrifugal charging pump (CCP) journal bearing failure due to non-metallic anti-rotation pin shear failure. This operating experience notice was received by PG&E September 2011 and was not screened per OM4.ID3, “Operating Experience Program,” preventing actions from being identified and implemented that could have eliminated vulnerabilities and prevented a similar event from occurring at DCP. On November 11, 2017, CCP 2-1 was declared inoperable and determined to be non-functional due to a damaged journal bearing caused by non-metallic, anti-rotation pin shear failure.

Description:

On September 7, 2011, PG&E received an external operating experience report describing the failure of CCP outboard and inboard motor bearings caused by a non-metallic anti-rotation pin age-related failure. The failure of the anti-rotation pin allowed the journal style bearings to rotate resulting in the oil “slinger” ring being prevented from adequately lubricating the bearing. This lack of bearing lubrication subsequently caused bearing damage and failure. The applicable PG&E operating experience procedure in place at the time, OM4.ID3, “Operating

Experience Program,” Revision 20, required that operating experience reports received by the site be screened per applicability per Section 5.3, “Screening and Disseminating OPEX Documents.” Section 5.3 required that relevant operating experience is screened by subject matter experts and appropriate corrective actions assigned to eliminate vulnerabilities and prevent a similar event from occurring at DCP. When questioned, PG&E personnel were unable to identify any record of operating experience screening or corrective action documents generated as a result of the receipt of external operating experience report.

On November 7, 2017, a CCP 2-1 outboard motor bearing alarm was received in the DCP Unit 2 control room. Further investigation revealed erratic bearing temperature indications and oil slinger ring movement, and a lack of oil present in the outboard bearing sight glass or tube while the motor was running. CCP 2-1 was subsequently secured and declared inoperable and an investigation was commenced. Upon disassembly of the outboard motor bearing for CCP 2-1, the bearing non-metallic anti-rotation pin was found broken in two pieces and the bearing was found shifted approximately 25 degrees. The bearing babbitt lining surface was damaged due to rotor-to-bearing contact. A PG&E cause evaluation determined that shear failure of the non-metallic, anti-rotation pin allowed the outboard motor bearing to rotate in the bearing housing, impinging the bearing on the oil slinger ring and preventing it from lubricating the pump shaft adequately. This resulted in damage to the bearing and CCP 2-1 being declared inoperable and unavailable for use for a period of approximately 4 days. Prior to the November 7, 2011, CCP 2-1 start and subsequent bearing failure, CCP 2-1 was last operated on September 18, 2017.

Corrective Actions: After the issue was identified by the inspectors, PG&E entered the issue into the corrective action program and initiated corrective actions including replacement of the CCP 2-1 outboard bearing, periodic inspection of all safety-related pump motors with susceptible bearings to verify that bearings have not rotated, and scheduled replacement of all bearing anti-rotation pins susceptible to a similar failure mechanism. The licensee determined that the Operating Experience coordinator position had been vacant between approximately December 15, 2011, and February 9, 2012, and that over 300 operating experience reports were received by the site which were not appropriately screened during this time period. Each of these reports will be properly screened for relevance to the site.

Corrective Action References: Notifications 50949662 and 50958899

Performance Assessment:

Performance Deficiency: The inspectors determined that PG&E’s failure to screen relevant operating experience relating to a safety-related CCP journal bearing failure in accordance with OM4.ID3, “Operating Experience Program,” Revision 20, was a performance deficiency within PG&E’s ability to foresee and correct.

Screening: This performance deficiency was considered to be more than minor because it impacted the equipment performance 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 failure to appropriately screen operating experience prevented the implementation of actions that could have

prevented a subsequent outboard journal bearing failure of safety-related CCP 2-1 and resulted in the pump being declared inoperable and non-functional.

Significance: The finding was evaluated in accordance with Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings-At-Power," dated June 19, 2012. The inspectors determined that a detailed risk evaluation by an NRC senior reactor analyst was required since the finding was associated with a loss of function of at least a single train of safety-related equipment for greater than its TS allowed outage time.

The regional senior reactor analyst performed a Phase 3 SDP analysis for the finding. The analyst used the DCPD 1 & 2 SPAR model, Version 8.54, to evaluate the risk of the finding. The analyst noted that there was a difference between the success criteria in the Plant Information e-Book and the Fault Tree FAB, "Feed and Bleed," regarding the success of the charging system during feed and bleed operations. The e-Book suggested that any single High Pressure Safety Injection or Charging Pump could be used to successfully complete the function. However, the Fault Tree FAB failed the feed and bleed function if the charging pumps failed, regardless of the availability of the safety-injection pumps. Personnel from Idaho National Laboratory informed the analyst that the change to the model was made at all PWRs based on the NUREG/CR-2187, "Confirmatory Thermal-Hydraulic Analysis to Support Specific Success Criteria in the Standardized Plant Analysis Risk Models-Byron Unit 1," evaluation of Byron. In this study, the MELCOR runs suggested that feed and bleed would fail for scenarios with a single safety-injection pump and a single pressurizer pilot-operated relief valve. The analyst noted that DCPD had three pressurizer PORVs and the licensee had MAPP runs showing successful feed and bleed with a single safety-injection pump. Therefore, for this evaluation, the analyst used the plant-specific information to modify the SPAR model to show feed and bleed success for a single safety-injection pump.

Using the modified SPAR model, the analyst quantified a new baseline core damage frequency of 6.15×10^{-6} /year and a case conditional core damage probability of 6.43×10^{-6} over a 1-year period. As a bounding assumption, the analyst used an exposure time of 133 days, which represented the time over which the pump had been tested and accumulated a run time of 24 hours. The resulting incremental conditional core damage probability was 1.02×10^{-7} . The analyst identified two items that, if fully evaluated, would reduce this probability further. Specifically, early in the exposure time, the charging pump would have functioned for many hours providing time for recovery of other components and reducing the decay heat load. Also, at the time of discovery, the pump was still functioning and would have continued to run for some unknown period of time had it been the last defense against core damage. As a result, the analyst determined, qualitatively, that the incremental conditional core damage probability was less than 1.0×10^{-7} (Green).

Cross-cutting Aspect: A cross-cutting aspect was not assigned to the finding since the finding did not represent current licensee performance. The performance deficiency occurred when operating experience was received and improperly dispositioned by PG&E in September 2011.

Enforcement:

Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement.

Unresolved Item (Closed)	Applicability of required NDE inspections on the Lift Yoke in accordance with ANSI N14.6 URI 07200026/2016001-01	60855.1 – Operation of an ISFSI at Operating Plants
<p><u>Description:</u></p> <p>During the routine ISFSI inspection conducted on September 19-24, 2016, a URI was identified and documented Inspection Report 05000275/2016011, 05000323/2016011, and 07200026/2016001 (ADAMS Accession No ML16323A110).</p> <p>After spent fuel is loaded into a Multi-Purpose Canister (MPC), DCPD utilizes a lift yoke to lift the Holtec HI-TRAC transfer cask and MPC from the spent fuel pool to a cask wash-down pit. The MPC is then welded and dried before moving the MPC to the ISFSI for storage.</p> <p>DCPD's lift yoke is designated as a special lifting device and is classified as Important to Safety (ITS). The DCPD ISFSI Final Safety Analysis Report (FSAR) Section 4.4.1.3.1 states: "The transfer-cask-lifting trunnions and the lift yoke are designed, fabricated, inspected, maintained, and tested in accordance with NUREG-0612, 'Control of Heavy Loads,' to ensure that structural failures of these items are not credible."</p> <p>NUREG-0612 Section 5.1(4) states: Special lifting devices should satisfy the guidelines of American National Standards Institute (ANSI) N14.6, "Radioactive Materials - Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds or More."</p> <p>ANSI N.14.6 (1993 version), Section 6.3.1 stated that each special lifting device shall be subjected annually to load testing and a visual inspection; or if the load testing is omitted, to dimensional testing, visual inspection, and nondestructive examination (NDE) of major load-carrying welds and critical areas.</p> <p>During the routine ISFSI inspection conducted in September 2016, it was identified that DCPD had been performing dimensional and visual inspections on its lift yoke in accordance with the ANSI standard during annual inspections, but had not been performing the NDE inspections on critical areas of the lift yoke. The inspectors found that DCPD had been following Holtec (the cask vendor) guidance that stated the lift yoke did not have any critical areas and that NDE inspections of the lift yoke were not required. Holtec provided DCPD with Response to Request for Technical Information 2655-2 which documented the vendor's position of why no critical areas existed and as such the NDE was not required. This position to not perform NDE on the lift yoke as part of the annual maintenance was identified by NRC Region IV inspectors as differing from other Region IV sites that utilize the Holtec systems. Other sites in Region IV do perform NDE inspections on their lift yokes in accordance with the ANSI standard on an annual basis. Since this appeared to be a non-conservative approach and it did not match the maintenance activities associated with other Region IV Holtec system users, the inspectors forwarded the information in a Technical Assistance Request (TAR) to NRC Headquarters' Division of Spent Fuel Management (DSFM) for their assistance in this review and opened a URI to document the resolution of the issue.</p> <p>The DSFM staff noted in the TAR response, dated November 7, 2017, that the term "critical area" was not explicitly defined in the ANSI N14.6 (1993) standard. For guidance, DSFM re-examined the definition of a critical load in Section 3.4 of ANSI N14.6 which states: "Any lifted load whose uncontrolled movement or release could adversely affect any safety-related system when such system is required for unit safety or could result in potential off-site</p>		

exposures.”

Therefore, to avoid any uncontrolled movement of the critical load, those components of the lift yoke which could induce an uncontrolled movement if they fail (fracture critical members where redundancy is not provided) were viewed by the DSFM staff as “critical areas.” The components that were determined to contain critical areas came from the drawing titled, “Diablo Canyon HI-TRAC Lift Yoke Ancillary #702.” The drawing, on page 11 of 13, tabulates 27 components that make up the lift yoke. Of these, components 1, 5, 6, 16, and 17 are fracture critical components. Holtec designated these as being ITS Category A. The DSFM determined that these items shall be maintained in accordance with the ANSI N14.6 standard Section 6.3.1 to perform NDE inspections on the items on an annual basis.

Federal regulation 10 CFR 72.146 states, in part, that licensee’s shall establish measures to ensure that applicable regulatory requirements and the design basis, as specified in the license for those structures, systems, and components to which this section applies, are correctly translated into specifications, drawings, procedures, and instructions.

Since the lift yoke is classified as an Important-to-Safety component, the licensee’s FSAR Section 4.4.1.3.1 required the lift yoke be maintained in accordance with the NUREG 0612 which invoked the ANSI standard, and the DSFM staff has interpreted that the lift yoke does contain critical areas, the licensee is required to perform annual NDE inspections on the lift yoke. Contrary to the above, DCP’s Work Order 64125530 “Lift Yoke Annual Inspection,” only required dimensional and visual inspection on the lift yoke and not NDE testing of critical areas as required by the ANSI N14.6 standard.

Closure Basis:

Since the DCP had been performing the visual and dimensional testing in accordance with the ANSI N14.6 standard, entered the issue into their corrective action program (Notifications 50872940 and 50882291), and subsequently performed the NDE examination on the lift yoke and did not find any indications nor discrepancies on the critical areas of the lift yoke, the NRC has determined this failure to perform annual NDE inspections on the critical areas of the lift yoke in accordance with 10 CFR 72.146 requirements constitutes a minor violation that is not subject to enforcement action in accordance with Section 2 of the NRC’s Enforcement Policy.

Inspectors confirmed that the licensee had initiated the appropriate change of the lift yoke’s Preventative Maintenance Plan MP 25358 per Notification 50953427 to include NDE on the critical areas of the lift yoke for future annual maintenance activities.

Corrective Action References: Notifications 50872940, 50882291, and 50953427

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

On February 27, 2018, the inspector presented the URI results from the 2016 routine ISFSI inspection to Ms. Paula Gerfen, Station Director, and other members of the licensee staff.

On March 1, 2018, the inspectors presented the occupational radiation protection inspection results to Mr. J. Welsch, Vice President Nuclear Generation and Chief Nuclear Officer, and other members of the licensee staff.

On March 1, 2018, the inspector presented the Inservice inspection results to Mr. J. Welsch, and other members of the licensee staff.

On April 18, 2018, the resident inspectors presented the quarterly resident inspector inspection results to Mr. J. Welsch and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01: Adverse Weather Protection

Notifications

50957352 50958613

Work Order

64030635

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AD4.ID4	Temporary Storage Process	3
OP K-2C	Fire Protection – Network Operations	45A

71111.04: Equipment Alignment

Notifications

50965347	50965742	50932504	50887271
50842872	50842873	50849878	50887203
50849758	50449163		

Work Orders

60081257	60097453	60096938
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP B-3A:II	Safety Injection System Alignment Verification for Plant Startup	23B
OP B-7:I	SFP- Make Available and Place in Service	24A
OP K-10D	Auxiliary Feedwater System Alignment Checklist	19
OP L-0	Mode 4 to 3 Transition Checklist	82
STP I-1D	Routine Monthly Checks Required by Licenses	76
STP P-CSP-A21	Comprehensive Testing of Containment Spray Pump 2-1	13A

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
106716-17	Unit 2, Condensate Water Supply	180
106716-11	Unit 1 and 2 Raw Water System	181
106709		60
106718-6	Firewater System One Line Diagram	176
106720		36
107703-3	Unit 2, Auxiliary Feedwater System One Line Diagram	69
107709	Safety Injection System, Sheet 4	52
107710	Containment Spray System OVID	36
107710	Residual Heat Removal System, Sheet 2	29
107713	Spent Fuel Pool System	39

Other

<u>Number</u>	<u>Description</u>	<u>Revision</u>
DCM S-9	Safety Injection System	37
DCM S-10	Residual Heat Removal System	8

71111.05: Fire Protection

Notifications

50964085	50964087	50964089
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OM8.ID4	Control of Flammable and Combustible Materials	27A

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
PA-2	Fire Drawing: Intake Structure	5
RA-1	Fire Drawing: Radiological Control Area 54' & 64'	5
RA-31	Fire Drawing: Containment Building Elev. 91'	4
RA-32	Fire Drawing: Containment Building Elev. 117'	5
RA-33	Containment Building Elev. 91' & 117'	3

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
RA-33	Containment Building Elev. 91' & 117'	3
RA-34	Fire Drawing: Containment Building Elev. 140'	4

71111.06: Flood Protection Measures

Notifications

50872132	55774132	50836858	50888596
50916439	50934115		

Work Orders

64101202	64103254
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-17.9	Auxiliary Saltwater Maintenance	32

Other

<u>Number</u>	<u>Description</u>	<u>Revision</u>
M-988	ASW flows, temperatures and pressure	7

71111.07: 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

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
106714	CCW System	59
663212	CCW Mechanical Heat Exchanger Tube Plugging Map, Sheet 1	67

Other

<u>Number</u>	<u>Description</u>	<u>Date</u>
26139	Component Cooling Water Heat Exchangers CCW 2-1 and CCW 2-2 Eddy Current Report	2/2018

71111.08: Inservice Inspection

Notifications

50965970	50966007	50963737	50963849
50688241	50965369	50852155	50915871
50852586	50884077	50919783	50864574
50890899	50861150	50889754	50545275
50546153	50853443	50909260	50683435

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
266373-TR-001	RHR SWOL Repair, Common Prerequisites and Closure	0
266373-TR-002	RHR Structural Weld Overlay Repair	1
AD4.ID2	Plant Leakage Evaluation	12
NDE PDI-UT-1	Ultrasonic Examination of Ferritic Piping	7
NDE PDI-UT-2	Ultrasonic Examination of Austenitic Piping	12
NDE PDI-UT-3	Ultrasonic Through-Wall Sizing in Pipe Welds	4
NDE PT-1	Liquid Dye Penetrant Examination Procedure	6
NDE UT-BMSPRD	Ultrasonic Beam Spread Determination	0
NDE VT 3-L	VT-3 Visual Examination of the Containment Liner	1
WPS 11	Welding of P8 Materials with GTAW and/or SMAW	8
WPS 5	Welding of P1 Materials with GTAW and/or SMAW	8

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
50601807	Quick HIT Self-Assessment for Reactor Coolant System Materials Degradation Management Program (RCS MDMP) and Steam Generator Management Program (SGMP)	11/6/2013
50688241	DCPP Inservice Inspection Program Self-Assessment 2015	5/20/2015

Miscellaneous Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
DCL-17 -095	Response to NRC Request for Additional Information Regarding "Request for Approval of Alternative for Application of Full Structural Weld Overlay, REP-RHRSWOL, Units 1 and 2"	11/20/2017
DCL-17-083	Request for Approval of Alternative for Application of Full Structural Weld Overlay, REP-RHR-SWOL. Units 1 and 2	9/26/2017

71111.11: Licensed Operator Requalification Program and Licensed Operator Performance

Notification

50959163

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP1.DC10	Conduct of Operations	47
STP M-15	Integrated Test of Engineered Safeguards and Diesel Generators	68
STP M-26A	FCV-601, ASW Unit 1 and 2 Cross-tie Dividing Valve Flow Test	13
STP M-9D2	Diesel Generator Partial Load Rejection Test	26
STP V-2D2B	Exercising and Position Verification of ECCS Valve 8700B	3A

71111.12: Maintenance Effectiveness

Notifications

50967198	50963220	50963637	50966575
50852067	50860985	50967447	50966553
50966889	50966552	50967030	50948544
50966584	50966402		

Work Orders

60090369	68048760	60108699
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CF3.ID9	Design Change Notice	0
MA1.ID17	Maintenance Rule Monitoring Program	31
PEP V-7B	Test of ECCS Valve Interlocks	11

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
502648	Sheet 1	30
502650	Sheet 2	19
502675	Sheet 34	22

71111.13: Maintenance Risk Assessments and Emergent Work Control

Notification

50973413

Work Orders

50968047 50968076 50968640

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AD7.DC51	Outage Safety Management Control of Off-Site Power Supplies to Vital Buses	18
AD7.DC6	On-Line Maintenance Risk Management	25
AD7.ID14	Assessment of Integrated Risk	15
AD7.ID17	PRA Significant Component Management	0A
AD8.DC54	Containment Closure	15
AD8.ID4	Outage Fire Risk Mitigation	0
MP M-45.1	Containment Hatch Door Closure	14
OM10.ID6	Equipment Important to Emergency Response	6
OP O-36	Protected Equipment Postings	16

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision / Date</u>
	Unit 2 Refueling Outage Safety Schedule -2R20	12/14/17
495888	Functional Diagram Seismic Trip	2

71111.15: Operability Determinations and Functionality Assessments

Notifications

50662149	50870033	50952407	50958526
50958614	50962232	50959948	50959757
50959829	50963116	50963109	50967066
50966370	50966501	50857028	50963639
50963548	50683856	50857018	

Work Orders

60093787	60076383
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OM7.ID1	Corrective Action Program	51
OM7.ID12	Operability Determination	36
OM7.ID7	Emerging Issues and Event Investigations	19
OP C-2:III	Main Steam and Steam Dump Systems	13
OP O-2	Operation of Process Hand Controllers	23
RCP D-230	Radiological Control for Containment Entry	22
STP M-15	Integrated Test of Engineering Safeguards	68
STP V-2U4D	Exercising SG 1-4 AFW Supply Valves LCV-113	12
STP V-3P6B	Exercising Valves LCV-113	29

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
106703	Auxiliary Feedwater, Sheet 3	71
107704	Unit 2-One line Diagram of Main Steam System	83
109803	Functional Loop Diagram LC-89	2

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
441305	Reactor Coolant Pumps Electrical, Sheet 1	19
663049-1	Mechanical Assembly of MSIV	47
663165	Wiring Diagram NH91 Electric Actuator	2

71111.18: Plant Modifications

Notifications

50963670	50971609	50967447	50966553
50966889	50966552	50948544	50966584
50966402			

Work Orders

60108120	60108122	68048760	60108699
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CF3.ID9	Design Change Notice	0
CF4.ID10	Design Change Development	53
CF4.ID7	Temporary Alteration	30
PEP V-7B	Test of ECCS Valve Interlocks	11

Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
502648	Sheet 1	30
502650	Sheet 2	19
502675	Sheet 34	22

71111.19: Post-Maintenance Testing

Notifications

50956906	50946587	50920677	50968083
50968647	50968145	50973096	50963712

Work Orders

64030635	64103254	64136640	64077703
64161423			

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
M-17.9	Auxiliary Saltwater Pump Maintenance	32
OPE-5:1	Alignment ASW Pump 1	0
STP M-39D	Routine Surveillance Test of Carbon Dioxide Hose Reels	17
STP P-CCP-12	Routine Surveillance Test of Centrifugal Charging Pump 1-2	31
STP P-CSP-21	Routine Surveillance Test of Containment Spray Pump 2-1	17
STP P-SIP-A21	Comprehensive Test of Safety Injection Pump 21	9

71111.20: Refueling and Other Outage Activities

Notifications

50857018	50890593	50957240	50958945
50959693	50960202	50960259	50960914
50962645	50964023	50968609	50968632
50968640	50968705	50968707	50968708
50968721	50970403	50971046	50971833
50971885	50972015	50972054	

Work Orders

60101827	64136443	64175744	64136008
64136218			

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AD8.DC51	Outage Safety Management Control of Off-Site Power Supplies to Vital Buses	18
AD8.DC54	Containment Closure	15
ER1.ID2	Boric Acid Corrosion Control Program	7

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MP I-2.28	Activation and Deactivation of the Rx Vsl Refueling Lvl Indication System (RVRLIS)	28
MP M-45.1	Containment Equipment Hatch Door Opening and Closing	14
OM14.ID1	Fatigue Management Rule Program	27
OM6.ID7	Activities Near High Voltage Equipment	10
OP A-2:II	Reactor Vessel – Draining the RCS to the Vessel Flange – With Fuel in Vessel	53
OP A-2:IX	Reactor Vessel – Vacuum Refill of the RCS	30
OP A-2:X	RVRLIS Alignments for Refueling Outages	8A
OP B-2:V	RHR – Place in Service	36
OP B-8DS2	Core Loading	61
OP L-0	Mode Transition Checklists	82
OP L-4	Normal Operation at Power	77
OP L-5	Plant Cooldown From Minimum Load to Cold Shutdown (unit 2)	86
OP2.ID1	Clearances	40
STP M-45A	Containment Inspection Prior to Establishing Containment Integrity	34
STP R-30	Reload Cycle Initial Criticality	19A
STP R-6	Low Power Reload Physics Tests	17
STP R-8C	Containment Walk down for Evidence of Boric Acid Leakage	10

Other

<u>Number</u>	<u>Description</u>	<u>Revision / Date</u>
2C20 R-17-002B	Circulating Water Pump 2-1 Clearance	2/13/2018
2C20 R-17-023A,	Auxiliary Saltwater Pump 2-1 Clearance	2/14/2018
AD8.DC55 (Section 5.2)	2R20 Outage Safety Plan	0
EMPCenter 2018	Manager Time Entry Data Base	4/2018 and 3/2018

71111.22: Surveillance Testing

Notifications

50962900	50963118	50963045	50963034
50970198	50964023	50963720	50965673

Work Orders

64134469	64130743	64135924	64136578
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Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MP M-4.18A	Check of Main Steam Safety Valve Lift Point With the Trevitest System	14
STP M-15	Integrated Test of Engineered Safeguards and Diesel Generators	68
STP M-26	ASW System Flow Monitoring	32
STP M-26A	FCV-601, ASW Unit 1 and 2 Cross-Tie Dividing Valve, Flow Test	13
STP M-7	Integrated Leak Rate Test (ILRT) Type A	14
STP M-77	Safety and Relief Valve Testing	39
STP M-7E	Containment Penetration Valve Lineup for the Integrated Leakage Rate Test (ILRT)	7
STP M-7W	Containment Structural Integrity Inspection	5
STP R-1B	Rod Drop Measurement	37A
STP V-651B	Penetration 51B Containment Isolation Valve Leak Testing	19

Calculations

<u>Number</u>	<u>Description</u>	<u>Revision</u>
663199-122-3	Digital Rod Position Indication system vendor manual	
C-M-26-1	ASW Flow Sensor Uncertainty	1
M-988	Evaluation of ASW Bypass Piping	7

Other

<u>Number</u>	<u>Description</u>	<u>Date</u>
ANSI/ANS-56.8-2002	Containment System Leakage Testing Requirements	

Other

<u>Number</u>	<u>Description</u>	<u>Date</u>
MRP 54 Cal Data	Leak Rate Monitor Calibration Data	1/12/2018

71124.01: Radiological Hazard Assessment and Exposure Controls

Notifications

50919030	50921983	50923635	50924825
50924826	50926292	50934918	50944790
50954298	50958712	50960955	50961004

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RCP D-220	Control of Access to High, Locked High, and Very High Radiation Areas	52
RCP D-240	Radiological Posting	25, 26
RCP D-310	RCA Access Control	26
RCP D-330	Personnel Dosimetry Evaluations	11
RCP D-335	Radiation Exposure Reporting	5
RCP D-500	Routine and Job Coverage Surveys	43
RCP D-620	Radioactive Source Control Program	13
RP1	Radiation Protection (Program Directive)	8
RP1.DC6	RP Code of Conduct	4
RP1.ID10	Embryo-Fetus Protection Program	9
RP1.ID16	Radiation Worker Expectations	10
RP1.ID6	Personnel Dose Limits and Monitoring Requirements	15

Audits and Self-Assessments

<u>Number</u>	<u>Description</u>	<u>Date</u>
50943634	Rad Risk Assessment Benchmark	10/16/2017
50958040	NRC Pre-Inspection on Radiological Hazard Assessment and Exposure Controls	1/19/2018
50960956	ANI Nuclear Liability Insurance Inspection	1/29/2018
173330010	Quality Performance Assessment Report	12/19/2017

Radiation Work Permits

<u>Number</u>	<u>Description</u>	<u>Revision</u>
2002	2R20 Scaffold Work	0
2031	2R20 Regen HX Room Work	0
2050	2R20 Reactor Coolant Pump Work	0
2061	2R20 Containment Valves and Breaches	0
2070	2R20 RHR Weld Overlay (WIB 245)	0

Radiation Surveys

<u>Number</u>	<u>Description</u>	<u>Date</u>
59137	64 Quarterly	1/29/2018
59511	Unit 2 140 Open QOTTC and Cart Inspection	2/12/2018
59529	Containment 91 IS Bio-Shield at RCP 2-3 & 2-4. Post Forced O2 Procedure	2/12/2018
59612	R 8 C Walkdowns Install Barrier in Letdown Orifice Room and Downpost to HRA	2/13/2018
59789	2R20 91 Scaffold	2/15/2018
59811	Unit 2 140 Containment Remove Drive Shafts from Internals to DSSR	2/16/2018
59960	2R20 Move SLD2 from upper internals to lower internals	2/19/2018
60003	Regen Hx Pre-Job Scaffold Survey	2/19/2018
60110	Remove CVCS-2-5505	2/20/2018
60186	Scaffold 2R20 115 Ctmt	2/21/2018
60446	2R20 Tri-Nuke Replacement	2/27/2018

Air Sample Surveys

<u>Number</u>	<u>Description</u>	<u>Date</u>
59697	2R20 Breach PZR Relief Valve 8010B	2/14/2018
59905	2R20 LWS-2-33 Valve Cutout RCDT Room	2/18/2018
59969	U2 CTMT RHR Weld Overlay 91 2-4 Area	2/19/2018
60110	Remove CVCS-2-5505	2/20/2018
60446	2R20 Tri-Nuke Replacement	2/27/2018

Miscellaneous Documents

<u>Number</u>	<u>Description</u>	<u>Date</u>
	NSTS Annual Inventory Reconciliation Report	1/10/2018
Unit 1	Spent Fuel Pool Inventory – Non-Fuel Items	2/1/2018
Unit 2	Spent Fuel Pool Inventory – Non-Fuel Items	2/1/2018
52944	Sealed Source Leak Test – 1st Quarter 2017	2/6/2017
57108	Sealed Source Leak Test – 2nd Quarter 2017	8/9/2017
59154	Sealed Source Leak Test – 1st Quarter 2018	1/29/2018

71124.02: Occupational ALARA Planning and Controls

Notifications

50617408	50839148	50839149	50846171
50848759	50849592	50850918	50855741
50864083	50877280	50914066	50924222

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
RCP D-200	Writing RWPs and ALARA Processes	57
RCP D-202	RWP Work Instructions	15
RP1.ID1	ALARA Program	10
RP1.ID9	Radiation Work Permits	13

Audits and Self-Assessments

<u>Number</u>	<u>Description</u>	<u>Date</u>
50905151	Formal Self-Assessment Effectiveness Review: Unit 1 Radiation Dose Control	7/11/2017
50958659	Quick Hit Self-Assessment Report: 71124.02 Occupational ALARA Planning and Controls	1/22/2018

ALARA Planning, In-Progress Reviews, and Post-Job Reviews

<u>Number</u>	<u>Description</u>	<u>Date</u>
16-0032B	2R20 ISFSI: Spent Fuel Outage Campaign SFP Purification Required for Work in the SFP	2/14/2018
1066	1R20 Emergent Work	7/7/2017

ALARA Planning, In-Progress Reviews, and Post-Job Reviews

<u>Number</u>	<u>Description</u>	<u>Date</u>
1090	1R20 Baffle Bolt Inspection	7/12/2017
2024	2R20 Guide Cards	2/22/2018
2050	2R20 RCP Maintenance	2/8/2018
2070	2R20 RHR Weld Overlay (WIB 245)	2/8/2018

Miscellaneous Documents

<u>Number</u>	<u>Description</u>	<u>Date</u>
	1R20 Post Outage ALARA Report	
	2R19 Outage ALARA Report	
	DCPP Dose Reduction Strategy	2018
	Radiation Protection Section Annual Review - 2015	9/7/2016
	Radiation Protection Section Annual Review – 2016	5/5/2017
	Unit 2 LD Filter Dose & D/P, RCS Co-58 & Co-60	1/25/2018

71151: Performance Indicator Verification

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AWP L-001	NRC Performance Indicators Initiating Events, SSFFs, and MOR	9
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
XI1.ID2	Regulatory Reporting Requirements	42B
XI1.ID5	Collection and Submittal of NRC Performance Indicators	1

71152: Problem Identification and Resolution

Notifications

50954496	50958899	50949938	50949531
50961430	50949662	50958984	50970395
50966193	50970650	50958547	50960208
50960047	50964614	50966876	50920007
50922188	50961014	40970426	5094717
50946885	50948215	50951450	50951534

50951986	50951539	50951891	50951894
50963245	50964323	50964036	50966150
50965966	50969293	50966459	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AD2.ID1	Procedure and Work Plan Use Adherence	26
MP E-8.1	Centrifugal Charging Pump Motor Overhaul	9
OM4.ID14	Notification Review Team	30A
OM4.ID3	Operating Experience Program	20
OP O-35	Bumped Component Protection Program	13

71153: Follow-up of Events and Notices of Enforcement Discretion

Notifications

50960279	50960218	50958544
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Drawings

<u>Number</u>	<u>Description</u>	<u>Revision</u>
047237	Mechanical Design Standard Piping Specification K12	16
663055	Feedwater Pump Outline, Sheet 41	2

Other

<u>Number</u>	<u>Description</u>	<u>Date</u>
EN# 53184	Diablo Canyon Power Plant Unit 1 and 2 Event Notification	1/25/2018

60855.1: Operation of an Independent Spent Fuel Storage Installation (ISFSI)

Notifications

50882891	50872940	50953469	50953427
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**Request for Information for
Resident Inspection at
Diablo Canyon Power Plant -
1st Quarter 2018**

Please provide the following documents (use “date range of document request” unless otherwise noted):

1. Summary listing of all root and apparent cause evaluations performed on this system
2. Summary listing of all condition reports written on this system, sorted by category type
3. Summary listing of OE screening and dispositioning reviews
4. Summary listing of all corrective maintenance work orders, with description of work, performed on this system
5. List of all work orders, with description of work, planned within the next 6 months (from start of applicable quarter).
6. List of maintenance rule functional failure assessments – regardless of the result – performed on this system for previous two years. Include condition report numbers for each item on the list
7. Summary list of system design calculations
8. Summary list of fire impairments associated with this system
9. List of completed engineering changes and planned engineering changes (within the next six months of start of applicable quarter) associated with this system.
10. Schedule of system surveillance and work activities for the planned quarter of interest.
11. Summary listing of temporary and permanent modifications associated with the system completed within the last two years
12. Summary listing of 50.59 screenings and evaluations related to the system
13. Maintenance rule scoping and basis documents
14. Maintenance rule expert panel meeting minutes for meetings related to system
15. Current UA hours and UR data tracking documents (system health report)

1st Quarter 2018

System: Residual Heat Removal

IMS Upload Date Requested By: December 25, 2017

Date Range of Document Request: January 1, 2016 – Current

**The following items are requested for the
Occupational Radiation Safety Inspection
Diablo Canyon
February 26 – March 2, 2018
Integrated Report 2018001**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **February 9, 2018**.

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 John O'Donnell at (817) 200-1441 or john.odonnell@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

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

Date of Last Inspection: **May 8, 2017**

- A. List of contacts and telephone numbers for the Radiation Protection Organization Staff and Technicians
- B. Applicable organization charts
- C. Audits, self-assessments, and LERs written since date of last inspection, related to this inspection area
- 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 date of last inspection
 - 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 date of last inspection 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)

- 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).

2. Occupational ALARA Planning and Controls (71124.02)

Date of Last Inspection: **July 31, 2017**

- A. List of contacts and telephone numbers for ALARA program personnel
- B. Applicable organization charts
- C. Copies of audits, self-assessments, and LERs, written since date of last inspection, focusing on ALARA
- D. Procedure index for ALARA Program
- 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. ALARA Program
 - 2. ALARA Committee
 - 3. Radiation Work Permit Preparation
- F. A summary list of corrective action documents (including corporate and sub-tiered systems) written since date of last inspection, related to the ALARA program. In addition to ALARA, the summary should also address Radiation Work Permit violations, Electronic Dosimeter Alarms, and RWP Dose Estimates

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 work activities greater than 1 rem, since date of last inspection, Include original dose estimate and actual dose.
- H. Site dose totals and 3-year rolling averages for the past 3 years (based on dose of record)
- I. Outline of source term reduction strategy
- J. If available, provide a copy of the ALARA outage report for the most recently completed outages for each unit
- K. Please provide your most recent Annual ALARA Report.

DIABLO CANYON POWER PLANT – NRC INSPECTION REPORT 05000275/2018001, 05000323/2018001, and 07200026/2018001

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Electronic Distribution for Diablo Canyon Power Plant

ADAMS ACCESSION NUMBER: ML18114A835

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