



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD
ARLINGTON TX 76011-4511

October 1, 2015

EA-15-040

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 05000275/2015002 and 05000323/2015002 ERRATA

Dear Mr. Halpin:

On August 7, 2015, the U.S. Nuclear Regulatory Commission (NRC) issued NRC Inspection Report 05000275/2015002 and 05000323/2015002 (ADAMS Accession Number ML15219A599), documenting inspection activities at Diablo Canyon Power Plant during the 2nd Quarter of Calendar Year 2015.

The purpose of this letter is to correct the documentation in Section 4OA2.4 of the inspection report which incorrectly indicated the inspection activities in the section constituted completion of one semiannual trend review sample, as defined by Inspection Procedure 71152. These activities, in fact, constituted completion of one selected in-depth review sample, as defined by Inspection Procedure 71152. Refer to page 25 of the enclosure where this change is reflected. No other aspects of the inspection report were revised with this change.

As described in Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," issued January 24, 2013, the NRC is reissuing the revised inspection report in its entirety. This report will be made available with the originally issued inspection report in the Public Electronic Reading Room (as noted below).

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's

E. Halpin

- 2 -

Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA R.Alexander for/

Richard Smith, Acting Branch Chief
Projects Branch A
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000275/2015002 and
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ML15274A524

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DATE	9/30/15	9/30/15	9/30/15

Letter to Edward D. Halpin from Richard Smith dated October 1, 2015

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REPORT 05000275/2015002 and 05000323/2015002 ERRATA

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000275; 05000323
License: DPR-80; DPR-82
Report: 05000275/2015002; 05000323/2015002
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, 2015
Inspectors: T. Hipschman, Senior Resident Inspector
J. Reynoso, Resident Inspector
R. Alexander, Senior Project Engineer
T. Buchanan, Operations Engineer
M. Hayes, Operations Engineer
M. Kennard, Operations Engineer
Approved By: Thomas Hipschman, Acting Chief
Projects Branch A
Division of Reactor Projects

SUMMARY

IR 05000275/2015002, 05000323/2015002; 04/01/2015 – 06/30/2015; Diablo Canyon Power Plant; Fire Protection, Licensed Operator Requalification, Problem Identification and Resolution, Follow-up of Events and Notices of Enforcement Discretion

The inspection activities described in this report were performed between April 1 and June 30, 2015, by the resident inspectors at Diablo Canyon Power Plant and inspectors from the NRC's Region IV office. Six findings of very low safety significance (Green) are documented in this report. Five of these findings involved violations of NRC requirements, and one was determined to be Severity Level IV under the traditional enforcement process. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." 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."

Cornerstone: Initiating Events

- Green. The inspectors identified a Green, non-cited violation of 10 CFR 50.65(b)(2) for the licensee's failure to appropriately scope the 230 kV switchyard in the Maintenance Rule monitoring program. Specifically, from the inception of the facilities' monitoring program through May 18, 2015, the licensee failed to properly scope or evaluate the 230 kV switchyard to include the entire switchyard up through the first inter-tie circuit breakers CB262 and CB282 into the Maintenance Rule program. Electrical faults within the 230 kV switchyard can cause loss of offsite power which is relied upon to mitigate accidents and cause an actuation of a safety-related systems, such as, emergency diesel generators, and should have been included into its Maintenance Rule program. This issue was entered into the licensee's corrective action program as Notifications 50702970 and 50703118.

The inspectors determined that the licensee's failure to scope the 230 kV offsite power source including the switchyard up through the first breakers from the transmission system into the Maintenance Rule program was contrary to the requirements of 10 CFR 50.65 and therefore a performance deficiency. The performance deficiency was determined to be more than minor because it is associated with the initiating events attribute of protections against external factors and adversely affected the cornerstone objective, in that, a 230 kV switchyard failure can upset plant stability and challenge critical safety functions during shutdown as well as power operations. Failure to monitor the performance or condition of 230 kV offsite power source (including the switchyard up through the first breakers from the transmission system) in a manner sufficient to provide reasonable assurance the offsite power was capable of fulfilling the intended functions affected the reliability of the plant equipment to perform their safety function. The inspectors determined if the 230 kV switchyard was properly scoped into the Maintenance Rule program the loss of offsite power due to the flash over event may have been prevented. However the direct cause of the event has been identified as untimely corrective actions associated with an ineffective corrective action program. As such, improper Maintenance Rule scoping was not the direct cause. Therefore, the inspectors determined the finding could be evaluated using the significant determination process in accordance using IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening

Questions.” The inspectors determined that the finding was of very low safety significance (Green) because the finding was determined not to be the cause of the actual 230 kV failure such that all of the screening questions in Exhibit 1 could be answered “no.” The inspectors determined that since the scoping of the switchyard systems had occurred more than 3 years ago, and the opportunity to reevaluate system scoping had not recently occurred, the finding did not represent current licensee performance and therefore a cross-cutting aspect was not assigned. (Section 40A3.4.b.(1))

- Green. The inspectors reviewed a self-revealing, Green finding for the licensee’s failure to adequately implement procedure OM7.ID1, Problem Identification and Resolution, to prevent a high voltage insulator flashover event in the 230 kV switchyard that occurred on October 31, 2014. Specifically, corrective actions from three previous root cause evaluations were not effective to prevent a loss of the 230 kV start-up power and subsequent auto start of all of the safety standby emergency diesel generators (EDGs). This issue was entered into the licensee’s corrective action program as Notification 50699230.

The licensee’s failure to adequately implement procedure OM7.ID1, Problem Identification and Resolution was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, this failure resulted in another high-voltage insulator flashover, which resulted in loss of 230 kV offsite startup power and activation of all safety-related EDGs, on October 31, 2014. In accordance with IMC 0609.04, “Initial Characterization of Findings,” the inspectors determined that the impact of the finding on Unit 1 should be evaluated using Exhibit 1 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings at Power,” and further determined that this finding required a detailed risk evaluation by the regional senior risk analyst because the finding involved a partial loss of offsite power, a support system that contributes to the likelihood of an initiating event and affected mitigation equipment.

The risk analyst determined that, with the 230 kV system de-energized, any plant transient would result in a plant-centered loss of offsite power. Therefore, the risk analyst calculated the incremental conditional core damage probability for an exposure period of 9 hours to be 2.09×10^{-7} , which is lower than the 1×10^{-6} threshold in the significance determination process; this finding is of very low safety significance (Green) for Unit 1. In accordance with IMC 0609.04, “Initial Characterization of Findings,” the inspectors determined that the impact of the finding on Unit 2 should be evaluated using IMC 0609, Appendix G, “Shutdown Operations Significance Determination Process,” because the finding pertained to operations, an event, or a degraded condition while the plant was shut down. Unit 2 was shutdown in a refueling outage when the event occurred on October 31, 2014. Because of the shutdown configuration of Unit 2, the loss of 230 kV support system did not impact the ability to continue to provide decay heat removal for the unit. Therefore, the analyst determined qualitatively that this finding is also of very low safety significance (Green) for Unit 2. This finding has a cross-cutting aspect of work management, in the area of human performance, for failing to implement a process of planning, controlling, and executing work activities such that nuclear safety is an overriding priority. Specifically the licensee failed to effectively plan and coordinate preventative maintenance strategies associated with root causes from previous high-voltage insulators flashover or failures since 2008 to prevent the loss of offsite 230 kV and the transient on October 31, 2014 [H.5]. (Section 40A3.4.b.(2))

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green, non-cited violation of Technical Specification 5.4.1 involving the failure to appropriately pre-plan and implement written procedures associated with configuration control of the hazard barrier hydrogen guard piping in the proximity and impacting safety-related equipment. This issue was entered into the licensee corrective action program as Notification 50778755.

The inspectors determined that the failure to consider the impact to the fire hazard analysis and the seismic configuration of the hydrogen guard pipe was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems (i.e. hazard barriers) that respond to initiating events, such as fires, to prevent undesirable consequence. Though there were no actual consequences, the breaching of the seismically qualified hydrogen guard piping removed a designed hazard barrier and has the potential to vent hydrogen into rooms containing safety related equipment. Using IMC 0609, Appendix F, "Fire Protection Significance Determination Process, Phase 1 Worksheet," the finding was determined to be of very low safety significance (Green) because it represented a low degradation of fire prevention and administrative controls element of the plant combustible material controls program, and the breaching of the hydrogen guard piping would not have prevented the safe shutdown of the plant. This finding has a cross-cutting aspect of design margins associated with the human performance area. Specifically, the most significant contributor for the performance deficiency was the licensee did not have an adequate work process that focused on maintaining defense in depth related to a fire hazard barrier, such as a hydrogen guard piping, during maintenance activities. Breaching hydrogen guard piping impacts defense in depth and design margins used to protect safety-related equipment, and special attention is required to carefully guard and change the configuration with great thought and care [H.6]. (Section 1R05)

- Green – Severity Level IV. The inspectors reviewed a self-revealing, Severity Level IV non-cited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," and an associated Green finding for the licensee's failure to provide adequate examination security measures during administration of the 2015 biennial requalification examination. On May 26, 2015, a licensed operator was able to obtain plant computer information that led to the discovery of specific plant events contained on the NRC-required annual operating test. The licensee entered this issue into the corrective action program as Notification 50704195 and retested the crew with a new scenario.

The failure of the licensee to provide adequate measures for examination security for the biennial requalification examinations was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance attribute of the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets (issue date June 19, 2012); and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," Flowchart Block #10 (issue date December 6, 2011), the finding was determined to have very low safety significance (Green). Although the 2015 finding resulted in a compromise of the integrity of biennial

dynamic simulator examinations had no compensatory actions been taken, the equitable and consistent administration of the biennial dynamic simulator examination was not actually affected by this compromise. The traditional enforcement violation was determined to be a Severity Level IV violation consistent with Section 6.4.d of the Enforcement Policy. This finding has a cross-cutting aspect in the resources component of the human performance cross-cutting area because the licensee failed to ensure the procedures are adequate to ensure nuclear safety [H.1]. (Section 1R11)

- Green. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to ensure credited design features, such as flow vent paths, protect safety-related systems, from temperature and pressure effects of a high-energy line break (HELB) in the auxiliary building. Specifically, the licensee allowed obstruction of a credited flow path with acrylic glass plates not qualified in the original design and not verified to function under a HELB scenario. The licensee entered this issue into the corrective action program as Notifications 50697910 and 50698102, and took immediate actions to remove the acrylic glass plates from the vent path doors in the auxiliary building.

The performance deficiency was determined to be more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control and adversely affected the cornerstone objective of ensuring the reliability, availability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not have adequate measures in place to ensure that qualified components were available to mitigate the consequences of a HELB in the auxiliary building. The finding screened as of very low safety significance (Green) because the finding did not affect the design or qualification of mitigating structures, systems, and components; the finding did not represent a loss of system and/or function; the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time; the finding did not represent an actual loss of a function of one or more non-TS trains of equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding was not assigned a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. (Section 4OA2.4)

- Green. The inspectors reviewed a self-revealing Green, non-cited violation of Technical Specification 3.3.4 "Remote Shutdown System," for the licensee's failure to maintain adequate configuration control of fuses associated with an emergency diesel generator (EDG). The licensee's failure to maintain adequate configuration control by not verifying that fuses were properly installed, and adequate post maintenance testing was performed, following maintenance activities was a performance deficiency. Specifically, following the 1R17 refueling outage, from approximately June 13, 2013 until November 22, 2013, EDG 1-3 would not have been able to perform its remote shutdown function due to not being able to be adequately operated at the local EDG control cubicle. The licensee entered this issue into the corrective action program as Notification 50595473, and took prompt actions to restore the fuses to the correct position and verify the positions of the fuses in the other EDG output breaker cubicles.

The failure to properly install fuses in the local manual operation circuitry of EDG 1-3 was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent

undesirable consequences. Specifically, it affected the ability to reach and maintain safe shutdown conditions in case of a fire causing a control room abandonment. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013. Because it affected the ability to reach and maintain safe shutdown conditions in case of a fire that led to control room evacuation, the Phase 2 methodology of Inspection Manual Chapter 0609, Appendix F, was not appropriate for this finding. Therefore, the senior reactor analyst performed a Phase 3 evaluation to determine the risk significance. The analyst determined that the performance deficiency only increased the risk of the plant as it related to the need to locally control EDG 1-3 following a postulated control room evacuation. The Senior Risk Analyst determined that the change in core damage frequency was less than 1×10^{-6} , and the finding was not significant with respect to large, early release frequency. The analyst determined that this finding was of very low risk significance (Green). This finding had a cross-cutting aspect in the area of human performance associated with the work practices component, because the licensee did not ensure supervisory and management oversight of work activities, such that nuclear safety was supported [H.5]. (Section 4OA3.3)

Licensee-Identified Violations

Violations of Severity Level IV that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and associated corrective action tracking numbers (notifications) are listed in Section 4OA7 of this report.

PLANT STATUS

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

REPORT DETAILS

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On April 7, 2015, the inspectors completed an inspection of the station's readiness for impending adverse weather conditions. The inspectors reviewed plant design features, the licensee's procedures to respond to high winds and heavy rains, and the licensee's implementation of these procedures. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant.

These activities constituted one sample of readiness for impending adverse weather conditions, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

.2 Readiness to Cope with External Flooding

a. Inspection Scope

On May 13, 2015, the inspectors completed an inspection of the station's readiness to cope with external flooding. After reviewing the licensee's flooding analysis, the inspectors chose two plant areas that were susceptible to flooding:

- 230 kV switchyard
- 500 kV switchyard

The inspectors reviewed plant design features and licensee procedures for coping with flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether credited operator actions could be successfully accomplished.

These activities constituted one sample of readiness to cope with external flooding, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

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

- May 12, 2015, Unit 1, component cooling water
- May 14, 2015, Unit 2, auxiliary salt water system
- May 22-23, 2015, Unit 2, emergency diesel generator 2-2, fuel oil system alignment

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 three partial system walk-down samples 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 16, 2015, Unit 1 and 2, auxiliary building 85 foot elevation radiological control area
- April 22, 2015, Units 1 and 2, cable spreading rooms
- May 12, 2015, Unit 1, component cooling water heat exchanger room
- May 22-23, 2015, Unit 2, turbine building areas located 104 foot elevation
- June 23, 2015, Unit 2, emergency diesel generator rooms

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

Introduction. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1 involving the failure to appropriately pre-plan and implement written procedures associated with configuration control of the hazard barrier hydrogen guard piping in the proximity and impacting safety-related equipment. This issue was entered into the licensee corrective action program as Notification 50778755.

Description. On January 29, 2015, inspectors observed planned work activity associated with replacement of Unit 1, volume control tank hydrogen pressure-regulator and pressure control valve PCV 955. Work Order WO 60075528, temporary work procedure TP TO-15001, and clearance 1C19-D-08-025 were procedures for planning and implementing the maintenance activity. The scope of the work directed the replacement of the hydrogen regulator and required removal of hydrogen guard piping cover plates to facilitate isolation of the volume control tank (VCT) hydrogen supply.

The current licensing bases at Diablo Canyon permit hydrogen supply pipes routed in areas containing safety-related equipment only if the piping remains enclosed with a seismically qualified guard pipe. The seismic design guard pipe is vented to the outside and is required to be leak tight. The design allows an adequate vent path for the hydrogen gas to minimize hazards from a hydrogen explosion.

The inspectors noted the Unit 1 hydrogen guard piping is routed in areas of the auxiliary-control building which contained safety-related equipment. The work had breached sealed cover plates used to maintain the venting path of the hydrogen gas to minimize hazards from a hydrogen explosion. The inspector contacted the operations shift manager to determine if the fire department was aware of the guard piping breach. The shift manager was not aware of any notification that had been made to the fire department and documented the inspector concerns in Notification 50684755.

Work Order 60075528 "Replacing Unit 1 volume control tank regulator PCV 955," stated in the Precautions and Limitations: "hydrogen gas is present in system which constitutes an 'explosive atmosphere' hazard." The risk assessment, in accordance with station procedure AD7 ID14, was evaluated on the impact to primary coolant chemistry, but not with hazard barrier impact associated with fire hazard analysis. The work procedures provided hazard material precautionary steps that included testing for hydrogen and use of non-spark tooling.

On March 19, 2015, in response to the inspector's follow-up concerns on the fire hazard and seismic configuration control, the licensee concluded the guard pipe was seismically qualified to provide an additional level of defense in depth to prevent a potential hydrogen build up in safety-related rooms or rooms with safe shutdown equipment. The licensee also concluded the guard pipe is credited as a level hazard mitigation by the Final Safety Analysis Report Update (FSARU) and other supporting documentation, however, it is not considered a fire protection impairment per station procedure O8.ID2 which covers fire protection system barriers, suppression, detection, hose reels,

emergency lightings, etc. The licensee concluded that breaching of the system could introduce a potential hazard if the hydrogen line itself failed and the excess flow shutoff valves did not actuate.

On March 26, 2015, following the inspectors questions on the licensing basis of the hydrogen guard piping, the licensee concluded the guard pipe is a unique plant feature credited in the fire hazards analysis, but because it is not a fire barrier, it is not classified as part of the Diablo Canyon fire protection system. This conclusion is documented in Notification 50694348. In response to the licensee assessment of the function of the hydrogen guard pipe, the inspectors determined the hydrogen guard piping is a hazard barrier as described in the DCPD Units 1 and 2, FSARU Chapter 9.5A, "Fire Hazard Analysis." The hydrogen line in safety-related areas is design to be protected with a guard pipe and is associated with in situ combustible materials as part of a system to vent highly combustible hydrogen gas away from safety-related equipment.

On April 14, 2015, in response to the inspector's concerns regarding the seismic configuration and controls related to Work Order WO 60075528, Notifications 50697654 and 50697655 were written to ensure requirements of the licensee's seismic induced system interactions program and seismic configuration control program were appropriately evaluated.

Procedure AD7.DC8, "Work Planning," Revision 45, which provides requirements for the planning of maintenance, states in part:

- Section 8.45.2, A fire protection engineer shall review orders for work on the fire protection system or for work requiring planned impairments of the fire protection system
- Section 8.45.5, A piping engineer shall review orders that require dismantling piping, piping components
- Section 8.64, "Seismic Configuration Control," states, in part, "engineering structural review is required on equipment within the seismic configuration control program," such as the hydrogen guard piping, to ensure personnel do not invalidate seismic qualification through engineering, construction, maintenance or procurement activities
- Section 8.65, "Seismic Induced Systems Interaction Program (SISIP)," has requirements for planning work to ensure compliance with the SISIP.

Procedure AD4.ID3, "Seismic induced system interaction program (SISIP) Housekeeping Activities," Revision 14, states, in part:

- Maintenance activities that create potential seismic induced system interactions such as parts resulting from equipment disassembly (i.e., removing cover plates from hydrogen guard piping) are required to be identified and evaluated.

Procedure OM8, "Fire Protection Program," provides elements to ensure the design of systems, components and structures shall minimize consequences and provide for safe shutdown in case of fire. The fire protection program brings together diverse elements in order to meet the goal of "defense in depth" fire safety. As stated in Section 4.4, "Design and Modification Control," fire protection program will:

- “Preclude modifications to plant design which adversely affect fire detection/suppression equipment, fire-rated barriers and the fire hazards analysis.”

The inspectors determined that the hydrogen guard piping, because it is documented in the fire hazard analysis section of Diablo Canyon FSARU section 9.5.1, and fire protection systems are based on known configurations that include both active and the passive fire protection element (such as hydrogen guard), is integral to the licensee’s “defense in depth” design to assure safe shutdown following a design basis fire.

The inspectors also determined that hydrogen guard piping represents a component with a certain design margin as equipment important to both roles as a fire hazard barrier and its seismic configuration. When maintenance is not properly performed, this design margin is changed which may impact safety-related equipment.

The licensee documented evaluation of NRC Generic Letter 93-06, “Highly Combustible Gas in Vital Areas,” in Action Request A0332316; dated December 13, 1995, which states, in part:

“The Guard Pipe is really a ventilation duct which routes any leak in the guarded hydrogen pipe to outside the building.”

In the same response, the licensee evaluation stated, “To further minimize hazards from a hydrogen explosion, hydrogen lines will be rerouted out of certain areas containing safety-related equipment and will be enclosed within a guarded pipe where its runs in any areas containing safety-related equipment.” The guard pipe will be vented to the outdoors and will be pressure tested to verify that it is leak tight. Based on this assessment, the inspectors concluded the hydrogen guard pipe represents a fire hazard barrier since safety evaluation (SER #8) approved by the NRC on November 15, 1978, required fire zones containing hydrogen lines be provided with seismic Category I Guard Pipes installed around these hydrogen lines prior to plant operations.

Analysis. The inspectors determined that the failure to consider the impact to the fire hazard analysis and the seismic configuration of the hydrogen guard pipe was a performance deficiency. The inspectors evaluated the performance deficiency in accordance with Inspection Manual Chapter 0612, Appendix B, “Issue Screening.” The performance deficiency was more than minor because it was associated with the protection against external events attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems (i.e., hazard barriers) that respond to initiating events, such as fires, to prevent undesirable consequence. Though there were no actual consequences, the breaching of the seismically qualified hydrogen guard piping removed a designed hazard barrier and has the potential to vent hydrogen into rooms containing safety-related equipment. Using IMC 0609, Appendix F, “Fire Protection Significance Determination Process, Phase 1 Worksheet,” the finding was determined to be of very low safety significance (Green) because it represented a low degradation of fire prevention and administrative controls element of the plant combustible material controls program, and the breaching of the hydrogen guard piping would not have prevented the safe shutdown of the plant.

This finding has a cross-cutting aspect of design margins associated with the human performance area. Specifically, the most significant contributor for the performance

deficiency was the licensee did not have an adequate work process that focused on maintaining defense in depth related to a fire hazard barrier, such as a hydrogen guard piping, during maintenance activities. Breaching hydrogen guard piping impacts defense in depth and design margins used to protect safety-related equipment, and special attention is required to carefully guard and change the configuration with great thought and care [H.6].

Enforcement. Technical Specification 5.4.1.a, states, in part, that “Written procedures shall be established, implemented, and maintained covering the following activities: the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.” Regulatory Guide 1.33, Appendix A, Section 9, states, in part, “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 AD7.DC8 “Work Planning,” requires planning of maintenance to consider areas such as fire protection hazards, seismic induced system interactions, and changes to seismic configuration of plant components. Contrary to the above, on January 29, 2015, the licensee failed to properly pre-plan and perform appropriate evaluation prior to maintenance on equipment that can affect the performance of safety-related equipment in accordance with the requirements of Procedure AD7.DC8 “Work Planning.” Specifically, the licensee directed operators to perform work on hydrogen guard piping that did not properly evaluate the impact of the hydrogen guard piping hazard barrier breach. The violation did not result in any actual consequences, but breaching of the hydrogen guard piping can introduce a potential fire hazard if the non-seismic hydrogen line leaks. Corrective actions included revision to work instructions to include notification of fire department of the breach of the hydrogen guard piping. In addition, work-planning procedures were revised to ensure properly preplanning and coordination between fire protection and civil engineering prior to conducting maintenance activities on hydrogen piping.

Because this violation was of very low safety significance and it was entered into the licensee’s corrective action program as Notification 50778755, this violation is being treated as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000275/2015002-01, “Failure to Appropriately Pre-plan and Perform Maintenance on Hydrogen Guard Piping.”

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On April 16, 2015, the inspectors completed an inspection of the station’s ability to mitigate flooding due to internal causes. After reviewing the licensee’s flooding analysis, the inspectors chose one plant area containing risk-significant structures, systems, and components that were susceptible to flooding:

- April 14-16, 2015, Unit 1 and 2, auxiliary building 85 foot elevation

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constitute completion of one flood protection measures sample, as defined in Inspection Procedure 71111.06.

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 18, 2015, the inspectors observed a portion of an annual requalification exam for a licensed operating crew. The inspectors assessed the simulator and licensed operator performance during an exam scenario and the corresponding evaluator's critique following the exam scenario. The inspectors also assessed a portion of an annual requalification test for licensed operators and evaluated a simulator scenario performed by an operating crew.

These activities constitute 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:

- May 6, 2015, Unit 2, down power and ascension to full power for turbine valve testing
- June 29, 2015, Unit 1, alarm response due to failed power supply IY-19

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

These activities constitute completion of two quarterly licensed operator performance samples, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.3 Biennial Review of Requalification Program

The licensed operator requalification program involves two training cycles that are conducted over a two-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 conducted personnel interviews, reviewed both the operating tests and written examinations, and observed ongoing operating test activities.

The inspectors reviewed operator performance on the written exams and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included 22 job performance measures and 3 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. The inspectors also reviewed medical records of 11 licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for 8 operators.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity, and existing logs of simulator deficiencies.

On June 10, 2015, the licensee informed the inspectors of the completed cycle results for Unit 1 and 2 for both the written examinations and the operating tests:

- 14 of 16 crews passed the simulator portion of the operating test
- 81 of 87 licensed operators passed the simulator portion of the operating test
- 84 of 85 licensed operators passed the job performance measure portion of the operating test
- 85 of 85 licensed operators passed the written examination

The individuals that failed the simulator scenario and/or job performance measure portions of the operating test were remediated, retested, and passed their retake examinations prior to returning to licensed duties. Individuals who did not complete the requalification examination during the requalification cycle were administratively restricted from performing licensed duties until they had successfully completed a requalification examination.

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

b. Findings

Introduction. The inspectors reviewed a self-revealing Severity Level IV, non-cited violation of 10 CFR 55.49, "Integrity of Examinations and Tests," and an associated Green finding for the licensee's failure to provide adequate examination security measures during administration of the 2015 biennial requalification examination. On May 26, 2015, a licensed operator was able to obtain plant computer information that led to the discovery of specific plant events contained on the NRC-required annual operating test. The licensee entered this into their corrective action program as Notification 50704195 and retested the crew with a new scenario.

Description. The licensee was in the process of administering the dynamic simulator portion of the 2015 biennial requalification examination. The scenario was to be administered to three separate crews during the day. The first crew performed the scenario and during the course of the evaluation created plant trends for plant parameters that were needed to monitor the plant for specific events using the plant computer. The first run of the scenario was completed and the simulator was reset using the guidance in Procedure TQ2.ID4, "Training Program Implementation." The second crew entered the simulator and commenced their board walkdowns. During the board walkdowns, a licensed operator was setting plant computer screens to monitor desired parameters during the upcoming session. The operator discovered that the plant parameters and range values that the previous crew had established during the first run of the simulator scenario were visible and was able to determine the likely plant events that were going to be on his examination. Upon being notified of the possible examination security compromise, the licensee took immediate corrective action, invalidated the scenario for the affected crew, and administered an alternate scenario. The licensee also provided interim guidance to modify the exam security for the simulator plant computer to ensure that type of information is not available in the future. The examination security compromise was entered into the licensee's corrective action program as Notification 50704195.

The licensee evaluated the examination security for the entire biennial examination cycle to determine the effect on the equitable and consistent administration of the examination and previous examinations. This evaluation was submitted to the NRC on June 10, 2015. The evaluation consisted of interviews that randomly selected two members of every R147 Biennial NRC examination simulator group, with one member from the management team and one member from the bargaining unit population of licensed operators. The interviews were used to determine if, during board walkdowns, they had encountered any indications such as plant computer screens, inappropriately filed procedures, or various forms of control board flagging that allowed them to

determine any events in the scenarios given. The result was that no licensed operator had encountered any such information. The plant computer vulnerability was determined to have exist since 2008 when the plant computer was upgraded. An independent review of the past 10 years of annual and biennial inspections was conducted by NRC staff and there was no indication of changes in examination performance since the specific vulnerability was introduced in 2008. Based on this review and the interview results provided by the facility, the inspectors determined there is no indication that the exam security vulnerability introduced in 2008 had an actual effect on the results of the current or previous NRC-required examinations.

Analysis. The failure of the licensee to provide adequate measures for examination security for the biennial requalification examinations was a performance deficiency. The failure also constitutes a violation of 10 CFR 55.49, which was evaluated through the traditional enforcement process. The significance determination process, which was used to evaluate this performance deficiency, does not specifically consider a performance deficiency's impact on the regulatory process. Thus, although related to a common regulatory concern, it is necessary to address both the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated performance deficiency.

The performance deficiency was more than minor, and therefore a finding, because it adversely affected the human performance attribute of the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the performance deficiency could have become more significant in that allowing licensed operators to return to the control room without valid demonstration of appropriate knowledge on the biennial written examinations could be a precursor to a more significant event. Using NRC Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, Tables 1 and 2 worksheets (dated June 19, 2012); and the corresponding Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," Flowchart Block #10 (dated December 6, 2011), the finding was determined to have very low safety significance (Green). Although the 2015 finding resulted in a compromise of the integrity of biennial dynamic simulator examinations had no compensatory actions been taken, the equitable and consistent administration of the biennial dynamic simulator examination was not actually affected by this compromise.

The failure of the licensee to meet 10 CFR 55.49 requirements was determined to be a Severity Level IV (SL-IV) violation. This is based on the failure to fully delete trend parameter and range information from the simulated plant computer being a non-willful compromise of an examination required by 10 CFR Part 55, that did not contribute to the NRC making an incorrect regulatory decision. This is consistent with Section 2.2.4 and Section 6.4.d of the NRC Enforcement Policy (issued June 7, 2012).

This finding has a cross-cutting aspect in the resources component of the human performance cross-cutting area because the licensee failed to ensure the procedures are adequate to ensure nuclear safety. After a licensee procedure review was conducted, the licensee concluded that a programmatic issue existed in that the simulator examination security checklist in TQ2.ID4, "Training Program Implementation," did not provide sufficient information to ensure the simulated plant computer was fully cleared of plant trend parameters and range. [H.1]

Enforcement. Title 10 of the Code of Federal Regulations (10 CFR) 55.49, “Integrity of Examinations,” requires, in part, that facility licensees shall not engage in any activity that compromises the integrity of any application, test, or examination. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected or, but for detection, would have affected the equitable and consistent administration of the test or examination. Contrary to the above, from 2008 to May 26, 2015, the licensee engaged in an activity that compromised the integrity of the examination administered on May 26, 2015. Specifically, an operator discovered plan parameters and range values that the previous crew had established and was able to determine the likely plant events that were going to be used in simulator examination. Upon discovery of the compromised examination, the licensee invalidated the scenario for the affected crew and administered an alternate scenario.

The inspectors determined that the compromise of the 2015 biennial simulator examination did not result in an actual effect on the equitable and consistent administration of the examination. Because this finding is of very low safety significance and has been entered into the licensee’s corrective action program as Notification 50704195 to address recurrence, this violation is being treated as a non-cited violation consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000275/2015002-02; 05000323/2015002-02, “Failure to Maintain Operator Licensing Examination Integrity.”

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- April 18-22, 2015, Unit 2, emergency diesel generator (2-2) programmable controller timer failure
- April 20-22, 2015, Unit 2, emergency diesel generator cap screws replacement
- June 30, 2015, 230 kV and 500 kV equipment reliability activities

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 three 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 three 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 28-30, 2015, Unit 1 and 2, 230 kV switchyard activities for planned maintenance on high voltage insulators and site startup power
- May 11, 2015, Unit 2, auxiliary salt water screen replacement
- June 29, 2015, Unit 2, emergency diesel generator 2-2 planned maintenance

The inspectors verified that these risk assessment were performed timely 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.

The inspectors also observed portions of three emergent work activities that had the potential to cause an initiating event, or to affect the functional capability of mitigating systems:

- April 22-23, 2015, Unit 1 and 2, clearance of carbon dioxide fire suppression system for hose reel replacement
- May 20, 2015, Unit 2, power operated relief valve downstream tailpipe temperature setpoint change
- June 21-22, 2015, Unit 1, emergency diesel generator 1-2 planned maintenance

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected structures, systems, and components (SSCs).

These activities constitute completion of six 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 six operability determinations that the licensee performed for degraded or nonconforming structures, systems, or components (SSCs):

- April 1-3, 2015, operability determination of Unit 1, plant vent normal range radiation monitor RM-24, incorrect input to source term data to emergency plan management system
- April 6-8, 2015, operability determination of Unit 2, auxiliary feedwater pump 2-3, discharge header piping wear
- April 16-17, 2015, operability determination of reactor coolant leak detection monitoring
- April 23, 2015, Unit 2, operability determination of high pressure turbine reheat steam leakage
- May 18, 2015 Unit 2 operability determination of pressurizer relief tank pressurization
- May 26, 2015, operability determination of emergency diesel generator hurricane barrier corrosion

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 constitute completion of six operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed two temporary plant modifications that affected risk-significant structures, systems, and components (SSCs):

- May 12, 2015, Unit 1, auxiliary salt water system screen replacement
- May 20, 2015, Unit 2, power operation relief valve downstream tailpipe temperature setpoint change

The inspectors verified that the licensee had installed these temporary modifications in accordance with technically adequate design documents. The inspectors verified that these modifications did not adversely impact the operability or availability of affected SSCs. The inspectors reviewed design documentation and plant procedures affected by the modifications to verify the licensee maintained configuration control.

These activities constitute completion of two samples of temporary 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 five post-maintenance testing activities that affected risk-significant structures, systems, or components (SSCs):

- April 30, 2015, Unit 1, pressurizer heater group 1-2 supply breaker and control switch maintenance testing description
- May 12-13, 2015, Unit 1 and 2, test of diesel fuel oil transfer pump following transfer switch maintenance
- May 19, 2015, Unit 1, auxiliary salt water system following screen replacement
- May 27-28, 2015, Unit 1, containment cooling unit fan 1-5 relay replacement
- June 30, 2015, Unit 2, emergency diesel generator following maintenance

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 constitute completion of five post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19.

b. Findings

No findings were identified.

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 structures, systems, and components (SSCs) were capable of performing their safety functions:

In-service tests:

- April 9, 2015, Unit 1, auxiliary saltwater pump 1-1, comprehensive testing
- May 6, 2015, Unit 2, turbine valve testing

Reactor coolant system leak detection tests:

- May 14, 2015, Unit 2, power operated relief and block valve leakage determination

Other surveillance tests:

- April 1, 2015, Unit 1, train B, solid state protection system actuation logic and safety injection reset timer slave relay K602 testing
- April 22, 2015, Unit 1, protection set 3 channel operational test
- May 22-23, 2015, Unit 2, emergency diesel generator 2-2, biennial 24-hour load and hot test

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 constitute completion of six surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on June 10, 2015, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the Technical Support Center and Operations Support Center, and reviewed the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06.

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 January 1, 2014 through March 31, 2015, 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 January 1, 2014 through March 31, 2015, 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 January 1, 2014 through March 31, 2015, 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.

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. 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 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, system health reports, and other documentation to identify trends that might indicate the existence of a more significant safety issue. The inspectors reviewed the Licensing Basis Verification Project (LBVP) to assess whether this project was continuing to identify and resolve historical conflicts in the licensing basis documentation.

These activities constitute completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations

The LBVP is a significant initiative that PG&E committed to the NRC in order to identify and resolve numerous historical conflicts in the licensing basis documentation. The licensee's expansion of the LBVP to include reviewing the licensing bases of Diablo Canyon's Emergency Preparedness Program to identify weaknesses and potential non-

conformances is appropriate in light of the White finding (Final Significance Determination of White Finding and Notice of Violation; Diablo Canyon Nuclear Power Plant - NRC Emergency Preparedness Inspection Report 05000275/2015502 and 05000323/2015502). At the close of the inspection period, the licensee had not completed the project.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected one issue for an in-depth follow-up:

- May 29, 2015, Unit 2, power operated relief valve and block valve leakage

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to for continued operation with degraded valves in accordance with technical specification requirements.

These activities constitute completion of one annual follow-up sample as defined in Inspection Procedure 71152.

b. Findings

No findings were identified.

.4 Selected Issue Follow-up Inspection

a. Inspection Scope

The inspectors reviewed the licensee's fire barrier, doors and high-energy line break (HELB) program including the corrective action program to identify trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address identified adverse trends related to fire doors and barriers. Specifically, the inspectors noted that signage on doors were missing and not correct.

These activities constitute completion of one in-depth review sample, as defined in Inspection Procedure 71152.

b. Observations

The inspectors completed numerous plant inspections during the first half of 2015 evaluating fire doors and barriers. The inspectors also reviewed the licensee high energy line break program which is integral to the licensee fire door program. Following several observations by the inspectors it was identified that some HELB vent flow paths

were being obstructed. The licensee took immediate actions to remove the obstruction and remove erroneous door signs.

c. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," involving the licensee's failure to ensure credited design features, such as flow vent paths, protect safety-related systems, from temperature and pressure effects of a HELB in the auxiliary building. Specifically, the licensee allowed obstruction of a credited flow path with acrylic glass plates not qualified in the original design and not verified to function under a HELB scenario.

Description. On April 16, 2015, the inspectors, on a plant tour in the auxiliary building, observed various fire protection doors were not consistently labelled. In addition, the inspectors noted certain HELB vent-type doors, such as grated doors to letdown and seal injection heat exchanger rooms, were designated as vent paths. These vent path doors, located on the 85 foot elevation, were specifically designed with grated-style panels so a continuous vent path is maintain between rooms in the auxiliary building. The door signage on these vent path doors was incorrect because it stated that the grated door was a HELB boundary door and should remain closed. However, the inspectors found the doors open. The inspectors also identified that all of the grated-style doors to rooms in the auxiliary building were covered with one-quarter-inch thick acrylic glass plates that were firmly attached to the grating with plastic tie-wraps. The inspectors reported these issues and requested additional information regarding the engineering analysis that allowed the grated doors, a credited design vent path, to be blocked with acrylic glass plates. The inspectors' concerns with incorrect signage were documented in Notification 50697910, and concerns regarding the blocked HELB vent doors were documented in Notification 50698102. Immediate actions were taken to remove the acrylic glass plates and incorrect signage from the vent path doors in the auxiliary building.

On April 20, 2015, the inspectors' concerns were evaluated further in Notification 50698455. The licensee response identified that a design change was added using design change package DCP M-49919, dated November 27, 2007. Part of this design change establishes the potential reduction of HELB compartment vent flow areas due to panel installations at the grated doors but assumed grated door were covered with plastic sheets. The design change assumed these plastic sheets would blow off during a HELB event. However, the licensee analysis on covering and blocking the grated vent doors was qualitative and did not describe specific requirements and limitations for the plastic sheets. On July 6, 2015, the licensee identified the equipment functional location information contained in the design technical notes was erroneous. Notification 50710846 documented this as a contributing factor for allowing a door configuration outside the design requirements. The technical note, dated October 5, 2007, states, in part, "it is acceptable to have a plastic cover on this doors." The note also refers to a design change and evaluation which was determined to be inadequate.

The inspectors determined DCCP FSAR Update, Revision 22, Section 3.6.4.3, "High-Energy Piping Breaks Outside Containment," and Section 3.11, "Environmental Design of Mechanical and Electrical Equipment," provides design requirements to protect safety-related structures, systems and components (SSCs) from the dynamic

effects of a HELB and the equipment qualification requirements for SSCs in a harsh environment. In addition, pressurization of compartments with grated doors was part of the analysis and was included in design calculation M-493, "Areas H & K Pressures and Temperatures in Auxiliary Building due to Pipe Breaks." Following a HELB, the rapid introduction of steam increases the pressure and temperature in the compartment. These conditions will propagate from the break through available flow paths. The inspectors determined that the safety function of the grated doors, as a credited flow path out of the heat exchanger rooms and to relieve the break flow and maintain pressure and temperature, was actually invalidated by the obstruction of acrylic glass plates.

Because of the inspectors concerns on the adequacy of the design, the licensee performed a past operability evaluation which was documented in Notification 50698455.

The licensee identified: "The [HELB] analysis was potentially invalidated by obstructions on two credited flow paths out of the heat exchanger room (Doors 176A&B (U1) and Doors 184A&B (U2)). Although placing plastic "sheet" on the outside of these doors was evaluated to blow out by engineering judgement, there were no design details that provided design requirements or limitations."

The inspectors determined that, in November 2007, engineering judgement was used that allowed the grated doors to be obstructed with plastic tarp materials; it was judged to be acceptable, but the inspectors determined that a qualified engineering analysis was not done for placement of the one-quarter-inch thick acrylic glass plates using plastic tie-wraps.

On May 13, 2015, because of the inspectors' concerns, the licensee performed extensive in-situ testing and determined that acrylic covers held with plastic tie-wraps would not have invalidated the HELB analysis found in design calculations M-493.

Analysis. The inspectors determined that the failure to ensure credited design features, such as flow vent paths, protect safety-related systems, from temperature and pressure effects of a HELB in the auxiliary building was a performance deficiency. The performance deficiency was determined to be more than minor because it affected the Mitigating Systems Cornerstone attribute of Design Control and adversely affected the cornerstone objective of ensuring the reliability, availability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not have adequate measures in place to ensure that qualified components were available to mitigate the consequences of a HELB in the auxiliary building

Using IMC 0609, Appendix A, issued June 19, 2012, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of mitigating structures, systems, and components; the finding did not represent a loss of system and/or function; the finding did not represent an actual loss of a function of a single train for greater than the technical specification (TS) allowed outage time; the finding did not represent an actual loss of a function of one or more non-TS trains of equipment; and did not screen as potentially risk-significant due to a seismic, flooding, or severe-weather initiating event. Specifically, the licensee performed an analysis that concluded the environmental qualifications of the safety-related

equipment in the auxiliary building would not be exceeded by a HELB in the auxiliary building.

The finding was not assigned a cross-cutting aspect since the performance deficiency is not indicative of current plant performance.

Enforcement. Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by performance of a suitable testing program. Contrary to the above, from November 27, 2007, until April 20, 2015, Design Calculation Package C-47451 used non-conservative assumptions, which did not appropriately verify the obstruction to HELB compartment vent flow path would have maintained the environmental qualification of safety-related equipment in the auxiliary building. The licensee validated the condition by performing an in-situ analysis of the glass plate and tie-wraps in order to determine whether the acrylic glass panels would have blown off during a HELB and, therefore, would not have resulted in impact to environmental qualification assumptions. Because this finding is of very low safety significance (Green) and was entered into the licensee's corrective action program as Notification 50698455, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC's Enforcement Policy: NCV 05000275/2015002-03; 05000323/2015002-03, "Inadequate Design Control for High-Energy Line Break Vent Flow Path."

40A3 Follow-up of Events and Notices of Enforcement Discretion (71153)

- .1 (Closed) Licensee Event Report (LER) 05000275; 05000323/2014-003-02: Unanalyzed Condition Affecting Unit 1 and 2 Emergency Diesel Generators, Tornado Missiles

On March 6, 2014, as part of the LBVP, the licensee identified an unanalyzed condition where the EDG exhaust plenums and exhaust piping were not adequately protected from tornado missiles. This is a nonconforming condition with DCPD licensing basis requirements. The licensee reported this unanalyzed condition to the NRC in Event Notification Number 49879. Subsequent questions from the NRC resident inspector prompted an evaluation of the DCPD licensing basis for tornado missiles. This evaluation identified that the licensing basis requirements for EDG ventilation systems and exhaust pipes require protection from tornado missiles.

The inspectors dispositioned the unanalyzed condition as a Green finding in Section 1R15 of NRC Integrated Inspection Report 05000275/2014002 and 05000323/2014002.

No additional deficiencies were identified during the review of this licensee event report.

This licensee event report is closed.

- .2 (Closed) LER 05000275; 05000323/2012-005-01: Unanalyzed Condition due to Nonconservative Change in Atmospheric Dispersion Factor

On July 5, 2012, as part of the LBVP, the licensee identified a non-conservative change in the DCPD Final Safety Analysis Report Update (FSARU) Chapter 15, "Accident Analyses," control room atmospheric dispersion factor (X/Q) methodology, made in

Revision 2 of the DCPD FSARU in 1986. The cause of this event was determined to be an inadequate design control process in 1986, whereby the analysis change was made without evaluating the change in accordance with 10 CFR 50.59 to determine whether or not prior NRC review and approval was required. The corrective actions included: (1) revising the X/Qs used in the analyses and incorporating them into the DCPD licensing basis, and (2) submitting License Amendment Request 15-03 on June 17, 2015, to request approval from the NRC to adopt the alternate source term as allowed by 10 CFR 50.67.

The inspectors dispositioned the unanalyzed condition as a Green finding in Section 1R15 of NRC Integrated Inspection Report 05000275/2012005 and 05000323/2012005.

No additional deficiencies were identified during the review of this licensee event report.

This licensee event report is closed.

.3 (Closed) LER 05000275/2013-008-00: Technical Specification 3.3.4 Not Met Due to Inoperable Remote Shutdown System Function

a. Inspection Scope

The inspectors checked the accuracy and completeness of the LER and the appropriateness of the licensee's corrective actions. The licensee failed to properly reinstall fuses that affected local manual operation of emergency diesel generator (EDG) 1-3.

b. Findings

Introduction. The inspectors reviewed a self-revealing Green, non-cited violation of Technical Specification 3.3.4 "Remote Shutdown System," for the licensee's failure to maintain adequate configuration control of fuses associated with an EDG. The licensee failure to maintain adequate configuration control by not verifying that fuses were properly installed, and adequate post maintenance testing was performed, following maintenance activities was a performance deficiency. Specifically, following the 1R17 refueling outage from approximately June 13, 2013 until November 22, 2013, EDG 1-3 would not have been able to perform its remote shutdown function due to not being able to be adequately operated at the local EDG control cubicle.

Description. On November 19, 2013, DCPD maintenance technicians were conducting relay testing on EDG 1-3 Output Breaker 52HF7, and discovered the breaker could not be closed locally. Maintenance personnel found the US fuses in the 52HF7 cubicle in the OFF position. With the US fuses in the OFF position, operators would not be able to close EDG 1-3 output breaker at the breaker cubicle unless they opened the breaker cubicle and manually closed the breaker. This manual operation was not proceduralized, so successful performance of this task could not be guaranteed. Local breaker closure capability is required to satisfy Technical Specification 3.3.4 remote shutdown functionality in the event operation from the control room is not available. Licensee personnel determined the US fuses in the 52HF7 cubicle were installed during refueling outage maintenance activities in the incorrect position, and therefore failed to maintain adequate configuration control of the EDG remote shutdown function as

required by technical specifications. Maintenance technicians restored the US fuses to the correct position on November 22, 2013, and verified the positions of the US fuses in the other EDG output breaker cubicles.

Licensee personnel determined that a human error by vendor maintenance technicians was the most probable cause. A failure to maintain adequate configuration control of the US fuses in the 52HF7 cubicle following the Unit 1 Refueling Outage 17 maintenance activities most likely allowed the fuses to be reinstalled in the incorrect position. Licensee personnel additionally determined that return to service testing following maintenance activities was inadequate, in that it did not verify remote shutdown functionality.

Analysis. The failure to properly install fuses in the local manual operation circuitry of EDG 1-3 was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, it affected the ability to reach and maintain safe shutdown conditions in case of a fire causing a control room abandonment. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013. Because it affected the ability to reach and maintain safe shutdown conditions in case of a fire that led to control room evacuation, the Phase 2 methodology of Inspection Manual Chapter 0609, Appendix F, was not appropriate for this finding. Therefore, the senior reactor analyst performed a Phase 3 evaluation to determine the risk significance.

The analyst determined that the performance deficiency only increased the risk of the plant as it related to the need to locally control EDG 1-3 following a postulated control room evacuation. The analyst reviewed Abnormal Operating Procedure OP AP-8A, "Control Room Inaccessibility – Establishing Hot Standby," and determined that EDG 1-3 was only needed in the event of a control room evacuation that also included a loss of offsite power. According to plant procedures, control room evacuations could be initiated by fires in either the main control room or the cable spreading room.

The Senior Risk Analyst determined that the change in core damage frequency was less than 1×10^{-6} and the finding was not significant with respect to large, early release frequency. In accordance with the guidance in Inspection Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004, the senior reactor analyst screened the performance deficiency for its potential risk contribution to large early release frequency because the bounding change in core damage frequency provided a risk significance estimate greater than 1×10^{-7} per year. Given that DCPD has a large, dry containment and that control room evacuation sequences do not include steam generator tube ruptures or intersystem loss of coolant accidents, the analyst determined that this finding was not significant with respect to large, early release frequency. Therefore, the analyst determined that this finding was of very low risk significance (Green).

This finding had a cross-cutting aspect in the area of human performance associated with the work practices component, because the licensee did not ensure supervisory and management oversight of work activities, such that nuclear safety was supported [H.5].

Enforcement. Technical Specification 3.3.4 “Remote Shutdown System,” requires, in part, that the EDG control function to be operable in modes 1, 2 and 3. Contrary to the above, from June 13, 2013 until November 22, 2013, the licensee failed to ensure the remote shutdown function was available. As a result, the availability of EDG 1-3 could have been adversely impacted if the remote shutdown function was required. Because the licensee entered the issue into its corrective action program as Notification 50595473, and the finding is of very low safety significance (Green), this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000275/2015002-04, “Technical Specification 3.3.4 Not Met Due to Inoperable Remote Shutdown System Function.”

This licensee event report is closed.

.4 (Closed) LER 05000275; 05000323/1-2014-004-00 and -01: Actuation of Six Emergency Diesel Generators due to Loss of Offsite Power

a. Inspection Scope

On October 31, 2014, during a medium to heavy rain, the 230 kV offsite power source at Diablo Canyon was lost due to an insulator flashover in the 230 kV switchyard resulting in a valid actuation of all Unit 1 and 2 EDGs. As a result, the primary offsite power source was lost, but the safety-related EDGs were available to provide vital buses if there was a loss of main auxiliary buses.

b. Findings

- (1) Introduction. The inspectors identified a Green, non-cited violation of 10 CFR 50.65(b)(2) for the licensee’s failure to appropriately scope the 230 kV switchyard in the maintenance rule monitoring program. Specifically, from the inception of the facilities’ monitoring program through May 18, 2015, the licensee failed to properly scope or evaluate the 230 kV switchyard to include the entire switchyard up through the first inter-tie circuit breakers CB262 and CB282 into the Maintenance Rule program. Electrical faults within the 230 kV switchyard can cause loss of offsite power which is relied upon to mitigate accidents and cause an actuation of a safety-related systems, such as, EDGs, and should have been included into its Maintenance Rule program. This issue was entered into the licensee’s corrective action program as Notifications 50702970 and 50703118.

Description. On April 28, 2015, during their review of the licensee’s root cause investigation into the 230 kV flashover and loss of startup power documented in Notification 50669932, the inspectors identified that this event had occurred while the 230 kV switchyard was in Maintenance Rule (a)(1) maintenance monitoring status. The inspectors identified concerns related to the Maintenance Rule evaluation of the 230 kV switchyard electrical distribution equipment. Following their evaluation, the inspectors determined that the licensee had failed to appropriately scope the 230 kV offsite power source to include the entire switchyard up through the first inter-tie circuit breakers CB262 and CB282.

The inspectors determined the maintenance activities that occur in the switchyard can directly affect plant operations and electrical components out to the first inter-tie circuit

breakers and therefore should have been considered for inclusion in the Maintenance Rule. The following NRC requirements were reviewed by the inspectors:

Title 10 of the Code of Federal Regulations (10 CFR) 50.65(b) specifies:

(b) The scope of the monitoring program specified in paragraph (a)(1) of this section shall include safety-related and non-safety-related structures, systems, and components (SSCs), as follows:

(1) Safety-related SSCs that are relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate consequences of accidents that could result in potential offsite exposure comparable to the guidelines in Sec. 50.34(a)(1), Sect. 50.67(b)(2), or sec. 100.11 of this chapter, as applicable.

(2) Non-safety-related structures, systems, or components:

(i) That are relied upon to mitigate accidents or transients or are used in plant emergency operating procedures (EOPs); or

(ii) Whose failure could prevent safety-related structures, systems, and components from fulfilling their safety-related function; or

(iii) Whose failure could cause a reactor scram or actuation of a safety-related system.

The inspectors determined 10 CFR 50.65(b)(2) items (i) and (iii) are applicable for the DCCP 230 kV offsite power source including the switchyard up through the first breakers from the transmission system. Specifically, electrical faults within the 230 kV switchyard can cause loss of offsite power which is relied upon to mitigate accidents and cause an actuation of safety-related systems, such as EDGs. Inspectors discussed these results with the Office of Nuclear Reactor Regulation (NRR), and NRR staff acknowledged the issues and concurred on this inspection conclusion. In response to the inspector's concerns, the licensee initiated Notification 50703118 to evaluate the need to include the 230 kV switchyard into its Maintenance Rule program. On May 18, 2015, following discussions with inspectors, the licensee completed an evaluation of the maintenance rule program and documented in Notification 50702970, the following conclusion:

"A 230 kV switchyard bus fault of either Bus 1 or Bus 2 can cause a loss of the entire 230 kV switchyard as the bus fault will cause all switchyard breakers to open to clear the bus fault. This type of event would cause a loss of function for which the 230 kV system is scoped into the Maintenance Rule".

The licensee also concluded the Maintenance Rule scoping for the 230 kV offsite power source failed to include the switchyard out to the offsite inter-tie breakers or up through the first breakers from the transmission system.

Analysis. The inspectors determined that the licensee's failure to scope the 230 kV offsite power source including the switchyard up through the first breakers from the transmission system into the Maintenance Rule program was contrary to the requirements of 10 CFR 50.65 and therefore a performance deficiency. The

performance deficiency was determined to be more than minor because it is associated with the initiating events attribute of protections against external factors and adversely affected the cornerstone objective, in that, a 230 kV switchyard failure can upset plant stability and challenge critical safety functions during shutdown as well as power operations. Failure to monitor the performance or condition of 230 kV offsite power source (including the switchyard up through the first breakers from the transmission system) in a manner sufficient to provide reasonable assurance the offsite power was capable of fulfilling the intended functions affected the reliability of the plant equipment to perform their safety function.

The inspectors determined that had the 230 kV switchyard been properly scoped into the Maintenance Rule program, the loss of offsite power due to the flash over event may have been prevented. However the direct cause of the event was identified as untimely corrective actions associated with an ineffective corrective action program. As such, improper Maintenance Rule scoping was not the direct cause. Therefore, the inspectors determined the finding could be evaluated using the significant determination process in accordance using IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions." The inspectors determined that the finding was of very low safety significance (Green) because the finding was determined not to be the cause of the actual 230 kV failure such that all of the screening questions in Exhibit 1 could be answered "no."

The inspectors determined that since the scoping of the switchyard systems had occurred more than 3 years ago, and the opportunity to reevaluate system scoping had not recently occurred, the finding did not represent current licensee performance and therefore a cross-cutting aspect was not assigned.

Enforcement. Title 10 of the Code of Federal Regulations (10 CFR) 50.65(b)(2) requires, in part, that the scope of the monitoring program specified in paragraph (a)(1) of 10 CFR 50.65 shall include non-safety-related SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function. Contrary to the above, from the inception of the facilities' monitoring program through May 18, 2015, the licensee failed to include a non-safety-related system and component whose failure could prevent safety-related SSCs from fulfilling their safety-related functions in a maintenance monitoring program. Specifically, the inspectors identified the 230 kV offsite power source, including the switchyard up through the first inter-tie circuit breakers, were not included in the maintenance monitoring program. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as Notifications 50702970 and 50703118, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000275/2015002-05; 05000323/2015002-05, "Failure to Appropriately Scope 230 kV Switchyard into the Maintenance Rule Monitoring Program."

- (2) Introduction: The inspectors reviewed a self-revealing, Green finding for the licensee's failure to adequately implement procedure OM7.ID1, Problem Identification and Resolution, to prevent a high voltage insulator flashover event in the 230 kV switchyard that occurred on October 31, 2014. Specifically, corrective actions from three previous root cause evaluations were not effective to prevent a loss of the 230 kV start-up power and subsequent auto start of all of the safety standby EDGs.

Description: As documented in the licensee's corrective action program trending process, the licensee recognized increased susceptibilities to high-voltage insulator flashovers were attributed to inadequate high voltage insulation design and preventative maintenance strategies at Diablo Canyon. Over an extended period, the licensee evaluated numerous high-voltage insulation failures, starting in August 2008, when Unit 2 main bank transformer C-phase experienced a failure of the high voltage bushing. The licensee's corrective actions for the 2008 event included changes to bushing materials to prevent reoccurrence. On October 11, 2012, the A-phase high voltage insulator flashed over in light rain, which resulted in a Unit 2 reactor trip from full power.

Subsequent root cause evaluations recognized concerns with heavy contamination deposition rates on high-voltage insulators. On June 23, 2013, during heavy fog, multiple high voltage flashover events were experienced in the offsite switchyard in Morro Bay, resulting in loss of 230 kV startup power to Diablo Canyon. Again, the licensee recognized combined contamination levels and weather were factors in this event. On July 10, 2013, hot washing of the Unit 2, high voltage insulators resulted in overspray that caused the Unit 2 A-phase high-voltage insulator on the lightning arrester flashover. Because of these numerous high voltage insulator flashover events the licensee conducted a common cause evaluation and implemented long term corrective changes to high voltage insulators to increase design margin. On February 2, 2014, during light rain, another flashover of a Unit 2, B-phase high voltage insulator, resulted in a Unit 2 reactor trip. As a result, interim corrective actions included cleaning/washing lightning arrestors and high voltage insulators every three months. Furthermore, on September 18, 2014, arcing in the 230 kV switchyard at Diablo Canyon was observed. In that event, it was determined that cleaning of susceptible high-voltage insulators in the switchyard was limited and was not completed on all of the 230 kV switchyard high-voltage insulators.

However, an opportunity to clean the remaining high-voltage insulators was missed on October 29, 2014. As a result three days later, on October 31, 2014, during heavy rainfall, a high-voltage insulator flashover occurred in the Diablo Canyon 230 kV switchyard resulting in a loss of startup power and subsequent start of all safety-related EDGs.

Analysis: The licensee's failure to adequately implement station procedure OM7.ID1, Problem Identification and Resolution was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. Specifically, this failure resulted in another high-voltage insulator flashover, which resulted in loss of 230 kV offsite startup power and activation of all safety-related EDGs, on October 31, 2014.

Unit 1 Risk Impact

In accordance with IMC 0609.04, "Initial Characterization of Findings," the inspectors determined that the impact of the finding on Unit 1 should be evaluated using Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," because all questions in Table 3, "SDP Appendix Router," were answered NO directing the user to Appendix A. The inspectors determined that this finding required a detailed risk evaluation by the regional senior risk analyst because the finding involved a

partial loss of 230 kV offsite power, a support system that contributes to the likelihood of an initiating event (loss of offsite power) and affected mitigation equipment (EDGs).

The risk analyst determined that, with the 230 kV system deenergized, any plant transient would result in a plant-centered loss of offsite power. Therefore, the incremental conditional core damage probability (ICCDP) can be calculated as follows, given the exposure period (EXP), the conditional core damage probability (CCDP) and the total transient initiation frequency (λ_{Trans}):

$$\text{ICCDP} = \lambda_{\text{Trans}} * \text{CCDP} * \text{EXP}$$

The analyst utilized the Standardized Plant Analysis Risk (SPAR) Model for Diablo Canyon Units 1 & 2, Version 8.23 to calculate the total λ_{Trans} of 1.1775/year. Additionally, the analyst quantified the SPAR for a plant-centered loss of offsite power to obtain the CCDP of 1.73×10^{-4} . Given that the 230 kV support system was unavailable from 17:40 on October 31, 2014 until 02:29 on November 1, 2014, the total exposure period was approximately 9 hours. The analyst then calculated the ICCDP as follows:

$$\begin{aligned} \text{ICCDP} &= 1.18/\text{year} * 1.73 \times 10^{-4} * 9 \text{ hours} \div 8760 \text{ hours/year} \\ &= 2.09 \times 10^{-7} \end{aligned}$$

Given that the incremental conditional core damage probability is less than the 1×10^{-6} threshold in the significance determination process, this finding is of very low safety significance (Green) for Unit 1.

Unit 2 Risk Impact

In accordance with IMC 0609.04, "Initial Characterization of Findings," the inspectors determined that the impact of the finding on Unit 2 should be evaluated using IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," because the finding pertained to operations, an event, or a degraded condition while the plant was shut down. Unit 2 was shutdown in a refueling outage when the event occurred on October 31, 2014. Appendix G is used to evaluate findings that: (1) increase the likelihood or cause an event, or (2) affect the ability to mitigate an event. Because of the shutdown configuration of Unit 2, the loss of the 230 kV support system did not impact the ability to continue to provide decay heat removal for the unit. The only direct effect on the unit was the anticipatory start of the three Unit 2 diesel generators. Therefore, the analyst determined qualitatively that this finding is also of very low safety significance (Green) for Unit 2.

This finding has a cross-cutting aspect of work management, in the area of human performance, for failing to implement a process of planning, controlling, and executing work activities such that nuclear safety is an overriding priority. Specifically the licensee failed to effectively plan and coordinate preventative maintenance strategies associated with root causes from previous high-voltage insulators flashover or failures since 2008 to prevent the loss of offsite 230 kV and the transient on October 31, 2014 [H.5].

Enforcement: This finding does not involve enforcement action because no violation of a regulatory requirement was identified. The licensee took corrective actions to update interface requirements for transmission and distribution facilities at Diablo Canyon, and implement a comprehensive time based preventative maintenance washing program.

The licensee entered this finding into their corrective action program as Notification 50699230. Because this finding does not involve a violation of regulatory requirements and is of very low safety or security significance, it is identified as a FIN 05000275/2015002-06; 05000323/2015002-06, "High Voltage Insulator Flashover Resulted in Loss of 230 kV Offsite Power and Start of Emergency Diesel Generators."

.5 (Closed) Unresolved Item 05000275/2014004-05 Notice of Enforcement Discretion 14-4-001 for a Loss of Both Required Offsite Power Circuits

a. Inspection Scope

As discussed in detail in Inspection Report 05000275; 05000323/2014004, Section 40A3.4, the NRC telephonically granted at 3:07 p.m. on August 15, 2014, Notice of Enforcement Discretion (NOED) 14-4-001 for Pacific Gas & Electric, to allow an additional 3 hours to restore compliance with Technical Specification 3.8.1, "AC Sources – Operating," Condition H. However, one of the two inoperable EDGs was restored to operable status at 6:31 p.m. on August 15, 2014, which was within the original technical specification required action completion time. Therefore, the additional time granted by the NOED was no longer necessary. Nonetheless, the inspectors performed a review of the circumstances associated with the granting of NOED 14-4-001, verified the licensee's oral assertions, including the likely cause and compensatory measures, and verified the notice of enforcement discretion request was consistent with the staff's policy and guidance.

b. Findings

No findings were identified.

These activities constitute completion of five event follow-up samples, as defined in Inspection Procedure 71153.

40A6 Meetings, Including Exit

Exit Meeting Summary

The inspectors debriefed Ms. Gerfen, Director, Operations Services; Mr. Petersen, Director, Learning Services; and other members of the licensee's staff of the results of the licensed operator requalification program inspection on May 21, 2015, and telephonically exited with Mr. Welsch, Site Vice President, and other staff members on June 16, 2015. The licensee representatives acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On July 7, and July 28, 2015, the resident inspectors presented the inspection results 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.

40A7 Licensee-Identified Violations

The following Severity Level IV violations were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations.

- .1 Title 10 of the Code of Federal Regulations (10 CFR) 50.9, "Completeness and accuracy of information," Section (a) states, in part, that information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the applicant or the licensee shall be complete and accurate in all material respects. License Condition 2.C.(5) for Unit 1 and 2.C.(4) for Unit 2, "Fire Protection," require, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as discussed in its Final Safety Analysis Report Update. Final Safety Analysis Report Update Appendix 9.5H, "Inspection and Testing Requirements and Program Administration," addresses control of combustible materials in Special Consideration E, "Combustible Materials in Safety-Related Areas." Special Consideration E states, in part, "Use of combustibles in safety-related areas is to be strictly controlled and is the responsibility of the area or work supervisor. Specific controls are delineated in plant procedures." Procedure OM8.ID4, "Control of Flammable and Combustible Materials," provides the specific administrative controls required to keep bulk transient combustible materials within the plant Fire Hazards Analysis design basis. Step 5.6.4(i) of Procedure OM8.ID4 requires transient combustible permits to be walked down by the job supervisor or designee once the permit is in place and every week thereafter until the transient control permit is removed. Walk downs are documented and any deficiencies noted on DCP Form 69-13206, Procedure OM8.ID4, Attachment 3, "Transient Combustible Inspection."

Contrary to the above, on April 8, 2014, June 18, 2014, and July 16, 2014, the licensee failed to complete the walkdowns for the transient combustible permits required by procedure though they were documented as completed. Specifically, an employee of the licensee deliberately documented the completion of the transient combustible permit inspections (walkdowns) within the radiological control area per Procedure OM8.ID4, when, in fact, he had not completed the inspections. This caused the licensee to be in violation of License Conditions 2.C.(5) and 2.C.(4) of licenses DPR-80 and DPR-82, respectively. This is material to the NRC because the review of transient combustible permit inspections, and associated records, are reviewed as part of the NRC's inspection of the licensee's fire protection program. The licensee identified the violation, entered the issue into the corrective action program as Notification 50710885, and took appropriate corrective actions. These included completing confirmatory walkdowns on July 16, 2014, of the transient combustible permits in question, and performing an internal corporate investigation as to the cause. Using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," the violation was determined to be of very low safety significance because the reactors were able to reach and maintain a safe shutdown condition. Traditional enforcement applied to this finding because it involved a violation that impacted the regulatory process. Assessing the violation in accordance with Enforcement Policy, the violation was determined it to be of Severity Level IV (SL-IV) because it resulted in a condition evaluated by the Significance Determination Process as having very low safety significance (Enforcement Policy example 6.1.d.2).

In accordance with Section 2.3.2.a of the Enforcement Policy, and with the approval of the Director, Office of Enforcement, this issue has been characterized as a non-cited violation, because (1) the licensee entered the issue into its corrective action program; (2) the licensee promptly restored compliance after identification of the issue; and (3) the violation was not repetitive as a result of inadequate corrective action. Additionally, though the violation was willful, (1) the violation was identified by the licensee; (2) the violation involved the act of an individual, who would not have been considered a licensee official with oversight of regulated activities as defined in the Enforcement Policy; (3) the violation did not involve a lack of management oversight and was the isolated action of the former employee; and (4) significant remedial action commensurate with the circumstances was taken by the licensee. (EA-15-040)

- .2 Title 10 of the Code of Federal Regulations (10 CFR) 50.74(c) requires, in part, that licensees shall notify the appropriate Regional Administrator within 30 days of a permanent disability of a licensed operator as described in 10 CFR 55.25. Contrary to the above, from 2009 to March 4, 2013, the licensee failed to notify the appropriate Regional Administrator when a licensed operator was diagnosed with a permanent disability. The licensee documented this issue in DA 50540600. This violation was determined to impact the regulatory process and was evaluated using Section 2.2.2 of the NRC Enforcement Policy. In accordance with Section 6.4.d of the NRC Enforcement Policy, this violation was determined to be a Severity Level IV violation because of the failure to report a medical condition that would have required a license restriction to maintain medical qualifications.