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## **Diablo Canyon 2 – Quarterly Plant Inspection Findings**

### **2Q/2017 – Plant Inspection Findings**

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#### **Initiating Events**

#### **Mitigating Systems**

**Significance:** G Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Follow Maintenance Procedure Resulted in Improper Configuration of Safety Related Equipment**

The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the failure to follow Procedure AD7.ID16, "Tool Pouch and Minor Maintenance Program," Revision 2. Specifically, the licensee failed to screen work on the safety-related rupture restraint as acceptable to be worked as tool pouch work or minor maintenance. As a result, a safety-related main steam line rupture restraint (MS-41RR) was not properly returned to service and left in an inoperable condition following maintenance. As corrective actions, the licensee returned MS-41RR to an operable condition and initiated a review of the maintenance database to ensure that work performed on main steam line rupture restraints is completed in accordance with appropriate written inspections. The licensee entered the issue into their corrective action program as Notifications 50872133, 50872056, and 50872789.

The failure to properly preplan and perform maintenance affecting the performance of safety-related equipment was a performance deficiency. The inspectors determined that the finding was more than minor because it was associated with the configuration control attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesired consequences. Specifically, because of not following maintenance procedures, a safety-related main steam rupture restraint was left in a disengaged or inactive configuration such that following a postulated line break, the main steam line would be unrestrained. This resulted in a potential of high-energy pipe impacting structures and components designed to be protected from high-energy pipe whip. Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding was of very low safety significance (Green) because the finding did not represent an actual loss of function of a mitigating system. Specifically, the single restraint condition would only affect a very limited range of breaks and no

risk significant systems would be adversely impacted. The inspectors concluded that this finding affected the cross cutting area of human performance, documentation, because the licensee did not maintain up to date documentation to ensure work planning on safety related equipment are complete, thorough, accurate, and current such that main steam pipe restraints are maintained within design requirements [H.7].

Inspection Report# : 2016004 (*pdf*)



**Significance:** Sep 12, 2016

Identified By: NRC

Item Type: VIO Violation

**Failure to Establish Adequate Work Instructions for Installation of Namco Snap Lock Limit Switches**

The inspectors identified a preliminary White finding associated with an apparent violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to develop adequate instructions for the installation, adjustment, and testing of Namco Model EA170 snap lock limit switches. Specifically, the licensee failed to provide site-specific instructions for limiting the travel of these external limit switches when installed in safety-related motor operated valves. Consequently, the lever switch actuator for valve RHR-2-8700B, residual heat removal pump 2-2 suction from the refueling water storage tank, was installed such that the limit switch was operated repeatedly in an over-travel condition resulting in a sheared internal roll pin that ultimately caused the limit switch to fail. Following identification of this issue, the licensee replaced the limit switch for valve RHR-2-8700B and implemented actions to modify maintenance procedures for installing, calibrating, and testing motor-operated valve external limit switches. The licensee entered this issue into their corrective action program as Notification 50852345.

The performance deficiency is more than minor, and therefore a finding, because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, maintenance procedure MP E-53.10R, "Augmented Stem Lubrication for Limitorque Operated Valves," used to perform limit switch adjustments on the Unit 2 valve RHR-2-8700B, did not provide adequate acceptance criteria to prevent overtravel of the limit switch actuating lever. This resulted in a subsequent failure of the limit switch, preventing the open permissive signal for valve SI-2-8982B, residual heat removal pump 2-2 suction from the containment recirculation sump, used during the emergency core cooling system (ECCS) recirculation mode. The inspectors evaluated the finding using the Attachment 0609.04, "Initial Characterization of Findings," worksheet to Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," issued June 19, 2012. The attachment instructs the inspectors to utilize IMC 0609, Appendix A, "Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding required a detailed risk evaluation because it represented an actual loss of function of the train B ECCS for greater than its technical specification allowed outage time. A senior reactor analyst performed a detailed risk evaluation in accordance with IMC 0609, Appendix A, Section 6.0, "Detailed Risk Evaluation." The calculated increase in core damage frequency was dominated by small and medium loss of coolant accident initiators with failures of the opposite train of ECCS or related support systems. The analyst did not evaluate the large early release frequency because this performance deficiency would not have challenged the containment. The NRC preliminarily determined that the increase in core damage frequency for internal and external initiators was 7.6E-06/year, a finding of low to moderate risk significance (White). The inspector did not identify a cross-cutting aspect with this finding because it was not reflective of current performance. The inadequate procedure was developed in 2011 and did not reflect the licensee's current performance related to procedure development.

(IR 05000275; 05000323/2016010, dated October 3, 2016, ML16277A340)

(FIRST UPDATE)

The finding was determined to be of low-to-moderate safety significance (White), because the NRC's calculated lower

and upper estimations of the increase in core damage frequency of the performance deficiency were both greater than 1.0E-6 per year but less than 1.0E-5 per year. The NRC concluded that the preliminary significance determination change in core damage frequency result of 7.6E-6 per year represents the upper range of the increase in core damage frequency associated with the performance deficiency. Based on the information provided by the licensee at the November 15, 2016 regulatory conference, the NRC adjusted a number of assumptions used in the preliminary significance determination. Specifically, the NRC lowered the common cause alpha factors and adjusted several assumptions related to medium break loss-of-coolant accidents. The NRC also performed a variety of human error probability calculations to determine the likelihood of recovering the functionality of valve SI-2-8982B. The results of these calculations, which removed much of the conservatism from the assumptions used in the preliminary risk assessment, predicted a high likelihood of success (96.4 percent success) for recovering valve SI-2-8982B. Using these assumptions, the NRC concluded the lower range of increase in core damage frequency associated with the performance deficiency to be 1.3E-6 per year.

(Letter to E. Halpin from K. Kennedy, dated December 28, 2016, ML16363A429)

Inspection Report# : 2016010 (*pdf*)

**Significance:** G Jul 14, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

**Inadequate Maintenance Procedure affected the Performance of Safety-Related Emergency Diesel Generator**

The inspectors assessed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to implement properly preplanned maintenance procedures that affected the performance of safety-related equipment. Specifically, two maintenance procedures associated with the emergency diesel generators' fuel injectors lacked adequate details on specific key mechanical parameters (capscrew bolt torque setup and fuel injection pump alignment) to ensure that maintenance activities were performed in a manner adequate to the circumstances. In both examples, the licensee entered the issues into the corrective action program and corrected the condition to restore the emergency diesel generators to an operable status.

This finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At Power," issued June 19, 2012, the inspectors determined the finding was of very low safety significance (Green) because the finding did not represent the loss of a system or function, the loss of a train of a technical specification safety system for greater than its allowed outage time, or the loss of a non-technical specification high-safety-significant system for greater than 24 hours. This finding had a cross-cutting aspect in the area of human performance associated with work management - "organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority." Specifically, work on the emergency diesel generators fuel oil system components was not effectively planned and executed by incorporating conditions to ensure a successful outcome [H.5].

Inspection Report# : 2016009 (*pdf*)

**Barrier Integrity**

**Emergency Preparedness**

**Occupational Radiation Safety**

**Public Radiation Safety**

**Security**

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The

Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

## **Miscellaneous**

Current data as of : August 03, 2017

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