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## **Perry 1 – Quarterly Plant Inspection Findings**

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

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### **Initiating Events**

**Significance:** G Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

#### **RCS Pressure Boundary Leakage Operation Prohibited by TSs**

A finding of very low safety significance and an associated non-cited violation (NCV) of Technical Specification (TS) 3.4.5, "RCS Operational Leakage," was self-revealed when the licensee operated with reactor coolant system (RCS) pressure boundary leakage as a result of the failure of the weld connecting the root appendage of the vent line on the recirculation loop 'A' discharge valve, between January 19, 2016, and January 24, 2016, which is a condition prohibited by TS. The licensee entered this issue into the Corrective Action Program (CAP) as Condition Report (CR) 2016-01071 and performed a significant condition adverse to quality root cause evaluation due to a principal safety barrier being seriously degraded, replaced the vent line appendage on the recirculation loop 'A' discharge valve with a more robust pipe and cap, and developed plans to replace ten additional vent and drain line appendages on the reactor recirculation loops prior to the end of the 1R17 refueling outage in 2019.

The inspectors determined that the licensee's operation with RCS pressure boundary leakage, a condition prohibited by TSs, was a performance deficiency requiring evaluation. The inspectors determined that the finding was more than minor because it adversely impacted the Initiating Events cornerstone attribute of equipment performance-barrier integrity, and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined this finding was of very low safety significance because the leak would not have exceeded the RCS leak rate for a small loss-of-coolant accident (LOCA) and would not have likely affected other systems used to mitigate a LOCA resulting in a total loss of their function. The inspectors concluded that this finding had no additional cross-cutting aspects than what was discussed in Inspection Report 0500440/2016001.

Inspection Report# : 2016004 (*pdf*)

## **Mitigating Systems**

**Significance:** TBD Apr 27, 2017

Identified By: NRC

Item Type: AV Apparent Violation

### **Division 2 Diesel Generator Failure to Start due to a Failed Diode in the 125 VDC Control Power Circuit**

The inspectors identified a finding preliminarily determined to be of low to moderate safety significance (White), and an associated apparent violation of Title 10 of the Code of Federal Regulations (10 CFR) 50, Criterion III, "Design Control," for the licensee's failure to implement measures for the selection and review for suitability of application of voltage suppression diodes installed in the control circuitry for the Division 2 Standby Diesel Generator, which was a component subject to the requirements of 10 CFR Part 50, Appendix B. Specifically, Engineering Change Package 04-00049 failed to consider the effects of a shorted diode on the control circuitry for the Division 2 Standby Diesel Generator, and instead, introduced new components (diodes) into the control circuitry that resulted in the eventual failure of this safety-related equipment. This rendered the standby diesel generator inoperable and unable to start for longer than its technical specification allowed outage time, which was a violation of Technical Specification 3.8.1, "AC Sources-Operating." The licensee documented the issue in CR 2016-13183, and subsequently replaced the failed component and then modified circuitry to remove the replacement diode and the remaining diodes from similar components.

The inspectors determined that the licensee's failure to evaluate the effects of voltage suppression diode failure on the Standby Diesel Generator control circuit was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion III and a performance deficiency which was within the licensee's ability to foresee and prevent. The inspectors determined that the performance deficiency was of more than minor significance because it was associated with the design control 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, the design of the Division 2 Standby Diesel Generator control circuit resulted in the inoperability and unavailability of the Division 2 Standby Diesel Generator from April 2, 2015, to November 8, 2016, when the failed diode was replaced. A Significance and Enforcement Review Panel, using IMC 0609, Appendix A, "Significance Determination Process for Findings At-Power," dated June 19, 2012, preliminarily determined the finding to be of low-to-moderate safety significance. The inspectors did not identify any cross-cutting aspects associated with this finding because the condition had existed since at least 2007, when the diodes were originally installed in the DC control power circuits, and therefore, was not indicative of current plant performance.

Inspection Report# : 2017009 (*pdf*)

**Significance:**  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Implement Procedures for Combating a Loss of Shutdown Cooling**

A finding of very-low safety significance and associated NCV of TS 5.4, "Procedures," was identified by the inspectors for the failure to implement procedures for combating a loss of shutdown cooling (SDC). Specifically, the licensee failed to implement its procedure for combating a loss of SDC resulting from emergency service water (ESW) inoperability and during high decay heat load. This finding was entered into the licensee's Corrective Action Program to perform analyses for various conditions to identify available alternate methods of decay heat removal and provide associated procedural guidance.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of

mitigating systems to respond to initiating events to prevent undesirable consequences. The finding screened as very-low safety significance (Green) because it did not impact the operability or Probabilistic Risk Assessment functionality of any mitigating structures, systems, and components. The inspectors did not identify a cross-cutting aspect associated with this finding because it did not reflect current performance due to the age of the performance deficiency.

Inspection Report# : 2017001 (*pdf*)

**Significance:**  Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **ECC 'B' Heat Exchanger Flow Root Valves Out of Position**

A finding of very-low safety significance and associated NCV of TS 5.4.1, "Procedures," was self-revealed for the licensee's failure to follow valve lineup procedure restoration requirements after an emergency service water (ESW) pump 'B' and valve operability test. Specifically, incorrect valve manipulations of the root valves for 1P42R043B and 1P42R043A flow indicators caused the emergency closed cooling (ECC) heat exchanger B flow to read zero with flow through the heat exchanger. The incorrect flow indication rendered the remote shutdown panel inoperable. The licensee subsequently re-positioned the root valves, 1P42R043B and 1P42R043A, and restored the remote shutdown panel to operable. The licensee entered this issue into the CAP as CR 2016-12935.

The inspectors determined that the performance deficiency for failure to follow procedure was more than minor and thus a finding because it was associated with the Mitigating Systems cornerstone attribute of human performance. The performance deficiency adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding has a cross-cutting aspect in the area of human performance, avoid complacency because the licensee failed to ensure that individuals follow processes, procedures, and work instructions. Specifically the individual performing the surveillance did not utilize all the required human performance tools to prevent the error [H.12].

Inspection Report# : 2016004 (*pdf*)

**Significance:**  Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Modifications to Underdrain and Gravity Discharge System Manhole Covers Without a 10 CFR 50.59 Safety Evaluation**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.59(d)(1), "Changes, Test, and Experiments," and an associated finding, for the licensee's failure to perform a written evaluation which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee made a change pursuant to 10 CFR 50.59(c) with the installation of grated manhole covers, replacing the rubber gasket, watertight manhole covers for the underdrain and gravity discharge systems and did not provide a basis for the determination that this change would not result in a more than a minimal increase in the likelihood of occurrence of a malfunction of a system structure or component important to safety.. The licensee entered this issue into the CAP as CR 2016-11864 and performed a prompt operability determination to show that the underdrain and gravity drain systems remained functional while the engineering change package was developed to support the change and bring the underdrain and gravity discharge systems into compliance with the design basis.

The performance deficiency was determined to be more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and adversely affected the

cornerstone attribute of protection against external factors 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). Per IMC 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was screened against the Mitigating Systems Screening Questions and determined to be of very low safety significance (Green) because the finding did not cause the underdrain and gravity discharge systems to become inoperable or non-functional.

Traditional enforcement applied to this finding because it involved a violation that impacted the regulatory process. The inspectors determined it to be of Severity Level IV because it resulted in a condition evaluated by the SDP as having very low safety significance (Enforcement Policy example 6.1.d.2). The inspectors determined that the finding had a cross-cutting aspect in the area of human performance, procedure adherence, in that individuals did not follow processes, procedures, and work instructions. Specifically, a design engineer authorized the permanent modification to be made without the required 50.59 evaluation being completed [H.8].

Inspection Report# : 2016004 (*pdf*)

**Significance:** N/A Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Notify the NRC Within Eight Hours of a Non-emergency Event that Could Have Prevented the Fulfillment of a Safety Function**

The inspectors identified a Severity Level IV NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.72(b)(3)(v)(A) and (D), for the licensee's failure to report an event or condition that could have prevented the fulfillment of a safety function to the NRC within eight hours. The licensee's evaluation of this condition, where both trains of the standby liquid control (SLC) system had been inoperable simultaneously, determined that it was not a reportable event. However, the inspectors determined that as described in NUREG 1022, "Event Reporting Guidelines 50.72 and 50.73," Revision 3, Section 3.2.7, the licensee had failed to make a non-emergency eight hour report as required by 10 CFR 50.72(b)(3)(v)(A) and (D). The licensee submitted the eight-hour report on December 30, 2016, and entered this issue into the corrective action program (CAP) as CR 2017-00098.

The failure to make an applicable non-emergency eight-hour event notification report within the required time frame was determined to be a performance deficiency. The inspectors determined that traditional enforcement was applicable to this issue because it impacted the NRC's regulatory process. In accordance with Section 2.2.2.d, and consistent with the examples included in Section 6.9.d.9 of the NRC Enforcement Policy, this violation was screened as a Severity Level IV violation that was more than minor. In accordance with IMC 0612, because this violation involved traditional enforcement and does not have an underlying technical violation that would be considered more-than-minor, a cross-cutting aspect was not assigned to this violation.

Inspection Report# : 2016004 (*pdf*)

**Significance:**  Aug 12, 2016

Identified By: NRC

Item Type: FIN Finding

**Failure to Implement a Periodic Replacement Program for FLEX Hoses**

Green. A finding of very low safety significance was identified by the inspectors for failing to establish a periodic replacement program for the high-temperature rated hoses used during a mitigating strategy for suppression pool cooling. Specifically, the licensee failed to create a periodic replacement program for high temperature FLEX hoses based on the vendor recommendation of a six year shelf-life or justify deviation from the recommendation. The licensee entered this issue into the corrective action program as CR-2016-09776 with an action to generate the

appropriate repetitive task for periodic replacement of the high-temperature rated hose. No violation of NRC requirements were identified.

This performance deficiency was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects 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), and is therefore a finding. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," appendix M, "Significance Determination Process using Qualitative Criteria," informed by draft appendix O, "Significance Determination Process for Mitigating Strategies and Spent Fuel Pool Instrumentation (Orders EA-12-049 and EA-12-051)." The finding screened as very low safety significance, Green, because the inspectors answered no to all Appendix O questions. This finding had a cross-cutting aspect of Procedure Adherence in the area of Human Performance because the licensee failed to follow procedural guidance to replace hoses based on vendor recommendations. (H.8)

Inspection Report# : 2016009 (*pdf*)

## **Barrier Integrity Emergency Preparedness**

**Significance:**  Aug 12, 2016

Identified By: NRC

Item Type: FIN Finding

### **Failure to Establish a Periodic Maintenance Program for Communications Equipment Associated with FLEX**

Green. A finding of very low safety significance was identified by the inspectors for failing to establish period tasks to check the operation of recently installed FLEX related communications equipment in accordance with the Perry Nuclear Power Plant FLEX Final Integrated Plan Report. The licensee entered this issue into the corrective action program as CR-2016-09746 and 2016-09747 to develop the appropriate periodic maintenance tasks.

The finding was determined to be more than minor because it was associated with the Emergency Preparedness Cornerstone Attribute of Facilities and Equipment which includes Maintenance Surveillance and Testing of Facilities, Equipment and Communications Systems. Specifically, communications equipment, particularly batteries, degrade over time and without periodic checks to verify functionality, the equipment might not be available for response to a potential accident. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," appendix M, "Significance Determination Process using Qualitative Criteria," informed by draft appendix O, "Significance Determination Process for Mitigating Strategies and Spent Fuel Pool Instrumentation (Orders EA-12-049 and EA-12-051)." The finding screened as very low safety significance, Green, because the inspectors answered no to all Appendix O questions. This finding has a cross-cutting aspect in the area of Human Performance, Work Management because a task to create the activities was initiated, but the completion date was postponed well past the date at which the licensee declared compliance with mitigating systems orders. (H.5)

Inspection Report# : 2016009 (*pdf*)

## **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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