

Fermi 2

2Q/2013 Plant Inspection Findings

Initiating Events

Significance: G Jun 14, 2013

Identified By: NRC

Item Type: FIN Finding

Failure to Implement Foreign Material Exclusion Procedure Requirements Adversely Affected the Reliability of the Main Turbine Generator and Caused a Reactor Scram

A finding of very low safety significance was self-revealed from an event that resulted in a reactor scram. The licensee failed to correctly implement its foreign material exclusion procedure following a reactor scram on September 30, 2009. The scram was caused by a turbine trip which was caused by the presence of a very small metallic particle (foreign material) that had bored into a main generator stator bar over time and created a hole that allowed hydrogen cooling gas to leak into the stator cooling water system. The ineffective corrective actions resulted in a second reactor scram for the same cause on November 7, 2012. Because the main turbine generator is not safety-related, no violation of regulatory requirements was identified. The licensee implemented appropriate mitigation actions until a permanent corrective action involving replacement of the generator or a modification to the existing stator design can be implemented.

The finding was of more than minor significance because this issue was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, inadequate foreign material exclusion controls coupled with a stator design that allows magnetized particles to be trapped in between the stator bars resulted in a reactor scram following development of a hydrogen leak through a stator bar. The finding was of very low safety significance because the issue: (1) did not involve a loss-of-coolant accident initiator; (2) did not cause a reactor trip AND the loss of mitigation equipment; (3) did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event AND affect mitigation equipment; and (4) did not increase the frequency of a fire or internal flooding initiating event. The inspector did not identify a cross-cutting aspect related to this finding.

Inspection Report# : [2013009](#) (*pdf*)

Significance: G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Implementation of Overhaul Post-Maintenance Testing and Operation of South Reactor Feed Pump Turbine

. A self-revealed finding of very low safety significance and associated NCV of Technical Specification 5.4.1.a was identified for the licensee's failure to establish and implement procedures recommended by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Specifically, the licensee failed to control the three factors identified by the root cause evaluation team within their refueling outage (RF)-15 south reactor feed pump turbine (SRFPT) overhaul maintenance instructions and post-maintenance testing instructions; and within the operating procedures for the reactor feed pumps during synchronizing the main generator to the electrical grid following recovery from repairs performed on main unit transformer 2B. The south reactor feed pump (SRFP) catastrophically failed, and as a result, the reactor was shut down because of decreasing condenser vacuum.

The inspectors determined the failure to control the presence of three factors in concert: (1) no turbine diaphragm alignment with tight clearances; (2) automatic admission of steam with challenging thermal properties; and (3) less than adequate post-maintenance testing, was a performance deficiency that required evaluation using the SDP. The inspectors determined this finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability. This finding was determined to be of very low safety significance because, following IMC 0609, Table 4a, "Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones," the inspectors concluded the finding did not require quantitative assessment. Therefore, the finding was determined to be of very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, supervisory and management oversight aspect because the licensee failed to appropriately oversee the overhaul of the SRFPT by a vendor, and the post maintenance testing and operation of the SRFPT during and after RF-15 (H.4 (c)). (Section 40A3.1)

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inspection Procedure for Reactor Pressure Vessel Head Strongback and Steam Dryer/Separator Lifting Device Omitted Testing Requirements

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified by the NRC inspectors. Specifically, the licensee failed to perform dimensional testing of the reactor pressure vessel head strongback and the steam dryer/steam separator lifting device required by American National Standards Institute (ANSI) N14.6-1978. In addition, the license failed to perform nondestructive testing of steam dryer/steam separator lifting device major load carrying welds and critical areas required by ANSI N14.6-1978. These issues were entered into the licensee's corrective action program.

The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the purpose of the dimensional testing of reactor pressure vessel head strongback and steam dryer/steam separator lifting device and nondestructive testing of the steam dryer/steam separator lifting device major load carrying welds and critical areas is to limit the likelihood of a reactor pressure vessel head strongback or steam dryer/steam separator lifting device structural component failure, and hence, to ensure safe load handling of heavy loads over the reactor core or over safety-related systems, structures and components. The inspectors determined the finding was of very low safety significance following a qualitative significance determination process review performed by the Region III Senior Risk Analyst. The inspector did not identify a cross-cutting aspect associated with this finding because the concern was related to licensing basis established in the 1980s, and thus was not necessarily indicative of current licensee performance.

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Evaluation of Steam Dryer/Steam Separator Lifting Device

A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the NRC inspectors for the failure to ensure the adequacy of the steam dryer/steam separator lifting device design. Specifically, the inspectors identified four examples where the licensee failed to perform adequate evaluations of the structural elements and structural connections in accordance with ANSI

N14.6 requirements as defined in Updated Final Safety Analysis Report section 9.1.4.4. These issues were entered into the licensee's corrective action program.

The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the purpose of the lifting device design requirements was to limit the likelihood of a structural component failure, and hence, to ensure safe load handling of heavy loads over the reactor core or over safety-related systems. The inspectors determined the finding was of very low safety significance following a qualitative significance determination process review performed by the Region III Senior Risk Analyst. The inspector did not identify a cross-cutting aspect associated with this finding because the concern was related to a calculation from the 1980s, and thus was not necessarily indicative of current licensee performance.

Inspection Report# : [2012004](#) (*pdf*)

Mitigating Systems

Significance: G Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

Failure of E4150F002

A finding of very low safety significance was self-revealed for failing to adequately inspect and identify, and then correct severe degradation of the motor operator for E4150F002 [HPCI turbine steam supply inboard containment isolation valve], which failed on July 23, 2012, when operators were attempting to place the high pressure coolant injection (HPCI) system into standby. The failure analysis of the motor identified the severe degradation. The apparent cause evaluation team identified three apparent and contributing causes for the severe degradation: first, prolonged moisture from steam leaks or other water sources; second, improper end ring coatings; and third, failing to identify a degraded condition during a video probe inspection.

The inspectors determined the failure to adequately inspect and identify, and then correct severe degradation of the motor operator for E4150F002 was a performance deficiency that required an SDP evaluation. The inspectors determined this finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and impacted the cornerstone objective of ensuring the capability of systems to prevent undesirable consequences (i.e., core damage). This finding was determined to be of very low safety significance because, following IMC 0609, Appendix E, Table 4a, "Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones," all questions were answered 'no.' Therefore, the finding was determined to be of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, appropriate corrective actions aspect because the licensee failed to adequately inspect and identify, and then correct severe degradation of the motor operator for E4150F002 (P.1 (d)). (Section 1R12.1)

Inspection Report# : [2012005](#) (*pdf*)

Significance: G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform ASME Inservice Testing Comprehensive Pump Test

A finding of very low safety significance and an associated NCV of 10 CFR 50.55a(f), "Inservice testing

requirements,” and 10 CFR Part 50, Appendix B, Criteria V, “Instructions, Procedures, and Drawings,” was identified by the NRC inspectors. Specifically, the licensee failed to perform a required comprehensive pump test for division 1 and 2 emergency equipment cooling water makeup pumps within 2 years of the start of the third inservice testing interval. The third inservice testing interval commenced on February 17, 2010, and included a requirement to perform a comprehensive pump test for the division 1 and 2 emergency equipment cooling water makeup pumps within two years and every two years thereafter. The required comprehensive pump tests were not performed prior to February 17, 2012.

The finding was determined to be more than minor because the finding was associated with the configuration control attribute of the Mitigating Systems Cornerstone and impacted the cornerstone objective of ensuring the capability of systems to prevent undesirable consequences (i.e., core damage). This finding was determined to be of very low safety significance because, following IMC 0609, Appendix E, Table 4a, “Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones,” all questions were answered “no.” This finding has a cross-cutting aspect in the area of Human Performance, Decision Making, supervisory and management oversight aspect because the licensee failed to appropriately oversee the development and implementation of the comprehensive pump testing

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure of Control Rod 10-35 to Fully Scram during Scram Time Testing

A self-revealed finding of very low safety significance and an associated NCV of 10 CFR 50 Appendix B, Section V, “Instructions, Procedures, and Drawings,” was identified for the failure to adequately prevent foreign material from entering the hydraulic control unit for control rod 10-35, which caused control rod 10-35 to fail to fully insert on October 24, 2010. Subsequently, on November 18, 2011, control rod 10-35 again failed to fully insert during scram time testing. The root cause team identified the presence of foreign organic material and concluded it had been present for a long time, i.e., at least since or prior to 2006, and this material was the cause of the deficient operation of control rod 10-35 in October 2010 and November 2011.

The inspectors determined this finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and impacted the cornerstone objective of ensuring the capability of systems to prevent undesirable consequences (i.e., core damage). This finding was determined to be of very low safety significance because, following IMC 0609, Appendix E, Table 4a, “Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones,” all questions were answered “no.” There was no cross-cutting aspect for this finding and NCV because the foreign material entered hydraulic control unit 10-35 sometime prior to 2006; and, therefore, the foreign material exclusion program inadequacies do not represent current performance.

Inspection Report# : [2012004](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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