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Fermi 2 – Quarterly Plant Inspection Findings

4Q/2017 – Plant Inspection Findings

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Initiating Events

Mitigating Systems

Significance: G Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Inadequate Work Instructions for Maintenance on EDG 14

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when plant operators were not able to shut down emergency diesel generator (EDG) 14 using the manual emergency stop button during surveillance testing.

Consequently, operators shut down the engine and removed it from service. The licensee failed to have work instructions for maintenance on the safety-related EDG appropriate to ensure the emergency overspeed switch (EOS) oil seal was properly installed to prevent oil intrusion into the switch housing. The licensee entered this violation into its corrective action program for evaluation and identification of appropriate corrective actions. The licensee replaced the EOS and revised the maintenance procedure and work order guidance for proper oil seal installation on the EOS.

The finding was of more than minor safety significance because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the EOS failure during surveillance testing due to oil intrusion resulted in unplanned inoperability and unavailability of an onsite emergency power source. The finding was determined to be of very low safety significance because it did not represent an actual loss of function of a single train for greater than its Technical Specification (TS) allowed outage time nor did it represent a loss of function of a non-TS train designated as high safety significant in accordance with the licensee's Maintenance Rule Program. The inspectors concluded this finding affected the cross-cutting area of human performance and the cross-cutting aspect of documentation. Plant activities are governed by comprehensive, high-quality, programs, processes and procedures. In this case, the licensee determined its maintenance procedure and work order guidance were not adequate to ensure the EOS oil seal and upper air start distributor gasket

were properly installed to prevent oil leakage from the air start distributor from getting into the EOS housing.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 23, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Correct a Design Deficiency that Mis-Quantified Unidentified Leakage

The inspectors identified a finding of very low safety significance with an associated NCV of Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the licensee's failure to correct a design deficiency that mis-quantified unidentified leakage from reactor coolant system (RCS) pressure boundary. Specifically, in April 2007, the licensee identified that the driver mount drain for the reactor recirculation pump could potentially drain leakage from nearby pipe cracks to the identified leakage collection point. However, the licensee had not corrected this design deficiency as of the start of this inspection. The licensee documented this issue into the CAP as Condition Assessment Resolution Document (CARD) 17-25489 and developed a night order to direct the operators how to calculate unidentified leakage. The licensee also planned to revise procedure 24.000.02 as an interim measure until the modification was implemented.

The inspectors determined that the licensee's failure to correct the design deficiency that mis-quantified unidentified leakage is a performance deficiency that is reasonably within the licensee's ability to foresee and correct. The inspectors determined that this issue is more than minor because if left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern. Specifically, leakage that would normally be collected and measured as unidentified leakage could be collected and measured as identified leakage, leading to a potential violation of the TS unidentified leakage rate. Because the finding did not represent a loss of system or function, or represent an actual loss of function of at least a single train for greater than its Technical Specification (TS) Allowed Outage Time, or represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in the licensee's Maintenance Rule Program, it was screened as very low safety significance. The inspectors did not identify a cross-cutting aspect since the issue originated more than three years ago.

Inspection Report# : 2017007 (*pdf*)

Significance:  Jun 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Account for Internal Heat Rise for Protective Devices Settings (Section 1R21.3.b(1))

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that the protective devices installed in Motor Control Centers (MCCs) would not spuriously trip during design basis events. Specifically, the licensee did not account for 18 degrees Fahrenheit (F) heat rise inside the MCCs. Protective devices inside MCCs located in harsh environment were evaluated and sized for a maximum elevated temperature up to 156 degrees F instead of 174 degrees F. The licensee captured the inspectors' concern into their Corrective Action Program (CAP) as CARD 17-24412.

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 of very-low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems. Specifically, as an immediate corrective action, the licensee performed a preliminary evaluation that reasonably concluded the overcurrent protection devices within the scope of DC-6475

would not spuriously trip. The finding did not have a cross-cutting aspect associated with it because it was not representative of current performance. (Section 1R21.3.b(1))

Inspection Report# : 2017010 (*pdf*)

Significance:  Jun 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Correctly Calculate the Post Accident Operating Time (Section 1R21.3.b(2))

Green. The inspectors identified a finding of very-low safety significance (Green) and an associated NCV of 10 CFR 50.49, Paragraph (e) (1), "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants," for the licensee's failure to include the correct time-dependent temperature for EQ components in their EQ Program. Specifically, the inspectors identified two examples where the licensee's EQ files failed or incorrectly calculated the Loss of Coolant Accident Post Accident Operating Time for EQ components. The licensee captured the inspectors' concern into their CAP as CARD 17-24760 and 17-24619.

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 of very-low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems. Specifically, as an immediate corrective action, the licensee performed a preliminary assessment and calculated the Loss of Coolant Accident Post Accident Operating Time for these two EQ components and determined that the equipment remained qualified for the environmental conditions. The finding did not have a cross-cutting aspect associated with it because it was not representative of current performance. (Section 1R21.3.b(2))

Inspection Report# : 2017010 (*pdf*)

Significance:  Jun 15, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Translate Environmental Qualification Requirements into Maintenance Procedures (Section 1R21.3.b(3))

Green. The inspectors identified a finding of very-low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failure to translate Environmental Qualification Requirements into Maintenance Procedures. Specifically, the licensee failed to ensure that the Environmental Qualification requirement to replace the top cover gasket on NAMCO EA740 Series Limit Switches was translated to the associated maintenance procedure. In addition, the licensee also failed to ensure that the Environmental Qualification requirement to inspect MCC gaskets was translated to the associated maintenance procedure. The licensee captured the inspectors' concern into their CAP as CARD 17-24629 and 17-24444.

The performance deficiency was determined to be more-than-minor because it was associated with the Mitigating Systems cornerstone attribute of procedure 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 of very-low safety significance (Green) because it did not result in the loss of operability or functionality of any structure, system, or component. The finding did not have a cross-cutting aspect associated with it because it was not representative of current performance. (Section 1R21.3.b(3))

Inspection Report# : 2017010 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Inadequate Work Instructions for Maintenance on Emergency Diesel Generator 14

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when plant operators discovered a thick white smoke plume coming from the emergency diesel generator (EDG) 14 engine exhaust manifold during surveillance testing. Consequently, operators shut down the engine and removed it from service. The licensee failed to have work instructions for maintenance on the safety-related EDG appropriate to ensure insulation blankets on the engine's exhaust manifold were replaced with insulation blankets conforming to the approved engineering design. The licensee entered this violation into its corrective action program for evaluation and identification of appropriate corrective actions. The licensee replaced the insulation blankets with insulation blankets conforming to the approved engineering design.

The finding was of more than minor safety significance because it was related to the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators shutdown the engine after discovering a thick white smoke plume coming from the engine's exhaust manifold, which resulted in unplanned inoperability and unavailability of this onsite emergency power source. The finding was determined to be of very low safety significance because it did not represent an actual loss of function of a single train for greater than its Technical Specification (TS) allowed outage time nor did it represent a loss of function of a non-TS train designated as high safety significant in accordance with the licensee's Maintenance Rule Program. The inspectors concluded this finding affected the cross-cutting area of human performance and the cross-cutting aspect of documentation. Plant activities are governed by comprehensive, high-quality, programs, processes and procedures. Design documentation, procedures, and work packages are complete, thorough, accurate, and current. In this case, the licensee's process for implementing and maintaining engineering configuration control of the newly designed EDG exhaust manifold insulation blankets was inadequate because it did not follow the licensee's formal engineering configuration management process.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Maintain Adequate Standby Liquid Control Storage Tank Boron Concentration

A finding of very low safety significance with an associated Non-Cited Violation of TS 3.1.7, "Standby Liquid Control (SLC) System," was self-revealed when the licensee measured the boron concentration in the SLC storage tank and discovered the concentration was below the minimum requirement of 8.5 percent. Specifically, the licensee failed to adequately monitor and identify a decreasing trend in SLC storage tank sodium pentaborate concentration concurrent with known dilution of the SLC storage tank during pump and valve testing. The licensee entered this violation into its corrective action program for evaluation and identification of appropriate corrective actions and restored the SLC sodium pentaborate concentration to within TS limits.

The finding was of more than minor safety significance because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

Specifically, a lower than allowable sodium pentaborate concentration affected the SLC system's ability to shut down the reactor during a design basis event. The finding was determined to be a licensee performance deficiency of very low safety significance during a detailed Significance Determination Process review since the delta core damage frequency was determined to be less than 1.0E-6/year. The inspectors concluded this finding affected the cross cutting area of human performance and the cross-cutting aspect of resources. Specifically, the licensee failed to ensure equipment and procedures were adequate to support nuclear safety. This issue would have been avoided if the system monitoring plan was trending tank level via a pressure indicator. Also, chemistry had no administrative limits in their procedure to add boron prior to the minimum TS limit was reached and the system engineer was not a reviewer on the routine surveillance procedure and was not trending the concentration as a backup.

Inspection Report# : 2017001 (*pdf*)

Barrier Integrity

Significance: **G** Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Unacceptable Preconditioning of High Pressure Coolant Injection System Air Operated Valve Prior to Stroke Time Test Measurement

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The licensee failed to establish an adequate procedure to perform required stroke time testing for high pressure coolant injection (HPCI) turbine barometric condenser condensate drain line inboard isolation valve E4100-F026. The surveillance test procedure resulted in unacceptable preconditioning of the valve prior to the stroke time test measurement. The licensee entered this issue into its corrective action program for evaluation and initiated a corrective action to revise the test procedure.

The finding was of more than minor significance because it was associated with the Procedure Quality attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, cycling the air-operated valve prior to performing the stroke time measurement masked the actual as-found condition of the valve, invalidating the test results. Because the preconditioning altered the as-found condition of the valve, the data collected through the performance of the surveillance test was not fully indicative of the true valve performance trend. Therefore, this performance deficiency had a direct effect on the licensee's ability to trend as-found data for the purpose of assessing the reliability of the air-operated valve. The finding was a licensee performance deficiency of very low safety significance because it represented only a degradation of the radiological barrier function provided for the auxiliary building and was not an actual loss of the barrier function provided by the HPCI system pressure boundary as a closed system outside containment. The inspectors concluded this finding affected the cross-cutting area of problem identification and resolution, in particular the cross-cutting aspect of resolution. The organization takes effective corrective actions to address issues in a timely manner, commensurate with their safety significance. Corrective actions resolve and correct the identified issues, including causes and extent of condition. In this case, corrective actions for the previous inspector-identified preconditioning issue did not effectively address the extent of condition involving potential preconditioning of other HPCI system air-operated valves in other surveillance testing procedures.

Inspection Report# : 2017002 (*pdf*)

Emergency Preparedness

Significance: **W** Feb 24, 2017

Identified By: NRC

Item Type: TE Traditional Enforcement w/o associated F

Failure to Maintain the Effectiveness of the Site's Emergency Plan.

An NRC identified 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) 50.54(q)(2) and 10 CFR 50.47(b)(9) was identified for the licensee's failure to maintain the effectiveness of its emergency plan and use adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency. Specifically, the licensee failed to maintain the ability to accurately declare an Emergency Action Level (EAL) classification, RG-1.1, and develop and issue accurate protective action recommendations (PARs) during the implementation of the site's Emergency Plan in response to a rapidly progressing accident. The licensee inaccurately analyzed the effect of increasing background radiation on the site's Standby Gas Treatment System accident range radiation monitor (AXM) indications based on the installed configuration of the AXM. As configured, the AXM could provide inaccurate indications of radioactive releases that are used as the licensee's basis for determining EAL classification and development of PARs.

The licensee documented the issue in the corrective action program as CR-16-29230, and actions were completed to restore the accuracy of the indications provided by the AXM.

The inspectors determined that the licensee's failure to maintain the effectiveness of its emergency plan and use adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency was a performance deficiency; the cause was reasonably within the licensee's ability to foresee and correct; and should have been prevented. The inspectors determined the issue was more than minor because it adversely affected the emergency preparedness cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the finding would result in the potential over classification of an emergency event and the potential issuance of unnecessary or early PARs.

The inspectors applied Inspection Manual Chapter (IMC) 0609, Appendix B, Section 5.9. to screen this finding, and determined the licensee failed to maintain the risk significant planning standard (RSPS) identified in 10 CFR 50.47(b) (9) by ensuring adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. Using Table 5.9-1, the inspectors determined the site's dose assessment process was incapable of providing technically adequate estimates of radioactive material releases to the environment or projected offsite doses in some cases (specifically a rapidly progressing accident scenario). This significance example corresponds to a Degraded RSPS Function, which is a finding of low to moderate safety significance (White).

The inspectors determined no cross-cutting aspects were associated with the performance deficiency.

Inspection Report# : 2017009 (*pdf*)

Inspection Report# : 2017011 (*pdf*)

Significance: **W** Jan 25, 2017

Identified By: NRC

Item Type: VIO Violation

Failure to Maintain the Effectiveness of the Site's Emergency Plan

An NRC identified finding 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) 50.54(q)(2) and 10 CFR 50.47(b)(9) was identified for the licensee's failure to maintain the effectiveness of its emergency plan and use adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency. Specifically, the licensee failed to maintain the ability to accurately declare an Emergency Action Level (EAL) classification, RG-1.1, and develop and issue accurate protective action recommendations (PARs) during the implementation of the site's Emergency Plan in response to a rapidly progressing accident. The licensee inaccurately analyzed the effect of increasing background radiation on the site's Standby Gas Treatment System accident range radiation monitor (AXM) indications based on the installed configuration of the AXM. As configured, the AXM could provide inaccurate indications of radioactive releases that are used as the licensee's basis for determining EAL classification and development of PARs.

The licensee documented the issue in the corrective action program as CR-16-29230, and actions were completed to restore the accuracy of the indications provided by the AXM.

The inspectors determined that the licensee's failure to maintain the effectiveness of its emergency plan and use adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency was a performance deficiency; the cause was reasonably within the licensee's ability to foresee and correct; and should have been prevented. The inspectors determined the issue was more than minor because it adversely affected the emergency preparedness cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the finding would result in the potential over classification of an emergency event and the potential issuance of unnecessary or early PARs.

The inspectors applied Inspection Manual Chapter (IMC) 0609, Appendix B, Section 5.9. to screen this finding, and determined the licensee failed to maintain the risk significant planning standard (RSPS) identified in 10 CFR 50.47(b) (9) by ensuring adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. Using Table 5.9-1, the inspectors determined the site's dose assessment process was incapable of providing technically adequate estimates of radioactive material releases to the environment or projected offsite doses in some cases (specifically a rapidly progressing accident scenario). This significance example corresponds to a Degraded RSPS Function, which is a finding of low to moderate safety significance (White).

The inspectors determined no cross-cutting aspects were associated with the performance deficiency.

Inspection Report# : 2017009 (*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 : February 01, 2018

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