

## Fermi 2

### 2Q/2015 Plant Inspection Findings

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#### Initiating Events

**Significance:** G Mar 09, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Temporary Change Notice Administrative Conduct Manual MGA04 Deficiency (Section 1R17.1.b.(2))**

The inspectors identified a finding of very-low safety significance and an associated Non-Cited Violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to have adequate procedural guidance when performing Temporary Change Notices (TCNs). Specifically, Procedure MGA04, "TCNs," Revision 18 allowed plant personnel 14 days to perform a 10 CFR 50.59 applicability review after the TCN had been approved or/and implemented. The licensee entered this finding into their corrective action program as CARD 15-20935, and issued a memo to all site personnel discussing the inaccurate statement in MGA04, and started the process to revise Manual MGA04.

Inspection Report# : [2015008](#) (*pdf*)

**Significance:** G Dec 31, 2014

Identified By: NRC

Item Type: FIN Finding

**Potential Missile Hazards from Unrestrained Equipment near the 345-Kilovolt and 120-Kilovolt Switchyards**

The inspectors identified a finding of very low safety significance for the licensee's failure to adequately control loose materials near the 345-kilovolt and 120-kilovolt switchyards. Specifically, on September 10, 2014, the inspectors identified numerous loose items, including a flatbed of unrestrained wood, loose wooden pallets, construction cones, and other debris in and around the areas of the switchyards. This condition did not meet licensee-established expectations in its severe weather guidance. Once the condition was identified, the licensee removed the material from the 345-kilovolt switchyard; however, the removal of items near the 120-kilovolt switchyard was not completed until after severe weather had entered the area, including a tornado watch being initiated at the site. No violation of regulatory requirements was identified.

The finding was of more than minor safety significance because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the loose items could affect proper operation of the switchyard during periods of high winds, potentially causing a loss of the switchyard and a reactor scram. The finding was a licensee performance deficiency of very low safety significance because it: (1) was not a loss of coolant accident initiator; (2) did not cause a reactor trip AND the loss of mitigation equipment relied upon to transition the plant to a stable shutdown; (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 affected mitigation equipment; and, (4) did not increase the likelihood of a fire or internal flooding event. The inspectors determined this finding affected the cross-cutting area of human performance and the avoid complacency aspect due to the licensee's failure to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, long term projects increased the number of loose materials near the switchyards, and the complacency thereof, to a point where licensee personnel did not identify these items as potential missile hazards.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Sep 30, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Failure to Incorporate Operating Experience into Preventive Maintenance Activities**

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” was self-revealed on March 18, 2014, when the failure of a reactor protection system (RPS) power contactor caused an invalid half-scam due to loss of power and the resultant closure of several containment isolation valves during the Cycle 16 refueling outage. The licensee failed to incorporate operating experience into its preventive maintenance practices and implement preventive maintenance activities to inspect and replace RPS power contactors susceptible to age-related degradation and failure. The licensee replaced the failed contactor and initiated a corrective action to create preventive maintenance activities for inspecting and replacing the two RPS power contactors.

The finding was of more than minor safety significance because if left uncorrected it would have the potential to lead to a more significant safety concern. Under different plant operating conditions, the RPS power contactor failure and loss of power could have resulted in a reactor scram or loss of shutdown cooling event. In addition, the finding was sufficiently similar to Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” Appendix E, “Examples of Minor Issues,” Example 7(c), in that this violation of 10 CFR 50.65(a)(3) had a consequence “...such as equipment problems attributable to failure to take industry operating experience into account when practicable.” The finding was determined to be a licensee performance deficiency of very low safety significance during a detailed quantitative Significance Determination Process review since the delta core damage frequency was determined to be much less than 1.0E-6/year. The inspectors concluded this finding affected the cross cutting area of problem identification and resolution. Specifically, in the area of operating experience, the licensee did not appropriately evaluate and implement relevant external operating experience in a timely manner. A licensee review of preventive maintenance activities for RPS logic relays was performed following an RPS response time test failure in November 2010, during which the licensee identified that preventive maintenance activities to replace the two RPS power contactors were never created in response to operating experience it had received in 1990. Corrective actions from the November 2010 evaluation to perform the RPS power contactor replacements were still open when the event occurred in March 2014. The licensee completed two refueling outages in the interim, which would have afforded opportunities to replace the RPS power contactors. Inspection Report# : [2014004](#) (*pdf*)

## **Mitigating Systems**

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: FIN Finding

### **Failure to Correct a Nonconforming Condition Adversely Affecting Plant Safety With the Reactor Building Steam Tunnel Floor Drain**

The inspectors identified a finding of very low safety significance for the licensee’s failure to correct, as specified in a plant procedure, a nonconforming condition adversely affecting plant safety. On January 24, 2012, the licensee identified the Reactor Building Steam Tunnel floor drain was clogged and failed to correct the condition during the Cycle 15 refueling outage, which concluded on May 5, 2012. The nonconforming condition was not appropriately documented in the licensee’s corrective maintenance and corrective action processes during the Cycle 15 refueling outage and evaluated. Subsequent boroscope inspection during the following Cycle 16 refueling outage in 2014 revealed a buildup of what appeared to be cement or compacted dust/dirt blocking the line. No violation of regulatory requirements was identified because the floor drain was not a safety-related component. The licensee entered this

finding into its corrective action program to complete an investigation and implement corrective actions.

The finding was of more than minor safety significance because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to promptly correct the nonconforming condition adversely affected a design basis function credited with mitigating the consequences of internal flooding affecting safety-related plant equipment; in this case, water removal from the Reactor Building Steam Tunnel during high and moderate energy line break accident conditions. The finding was a licensee performance deficiency of very low safety significance because although the floor drain was not functional, the licensee subsequently evaluated the nonconforming condition and concluded adequate water removal capability existed such that safety-related structures, systems, or components in the area would remain operable or functional. This finding affected the cross-cutting area of human performance and the field presence aspect due to the licensee's failure to ensure supervisory and management oversight of work activities, including contractors and supplemental personnel, such that nuclear safety was supported.

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Perform Functionality Assessments for Degraded and Nonconforming Plant Conditions**

The inspectors identified a finding of very low safety significance for the licensee's failure to follow its procedural guidance to assess the effects of degraded and nonconforming conditions involving plant structures, systems, or components (SSCs) not specifically covered by the plant's Technical Specifications and to correctly document a functionality assessment when the conditions affected functions described in the current licensing basis (CLB). No violation of regulatory requirements was identified because the examples of degraded and/or nonconforming conditions involved non-safety-related plant SSCs. The licensee entered this finding into its corrective action program to identify a functionality assessment process did not exist within its procedures and to investigate recommended process and procedure improvements.

The finding was of more than minor safety significance because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to recognize conditions that could adversely affect functions described in the CLB and to perform functionality assessments could reasonably result in an unrecognized condition of a SSC failing to fulfill a safety-related or design basis function; for example, water removal from areas in the Reactor Building during high and moderate energy line break accident conditions. The finding was a licensee performance deficiency of very low safety significance because, although individual floor drains were not functional, the licensee subsequently evaluated the nonconforming conditions and concluded adequate water removal capability existed such that safety-related SSCs in the areas would remain operable or functional. The inspectors determined this finding affected the cross-cutting area of human performance and the resources aspect due to the licensee's failure to ensure procedures and other resources were available and adequate to support nuclear safety. Specifically, the licensee's processes and procedures lacked appropriate guidance to enable licensed senior reactor operators to perform functionality assessments for degraded and/or nonconforming conditions affecting functions described in the CLB.

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

#### **Operation Above the Licensed Thermal Power Limit**

A finding of very low safety significance with an associated Non-Cited Violation of the Fermi 2 Facility Operating License (NPF-43), Condition 2.C (1), "Maximum Power Level," was self-revealed on March 10, 2015. Licensed reactor operators in the Control Room failed to appropriately monitor and control reactor power during a Xenon

transient following manual reactivity manipulations and allowed reactor power to exceed the licensed thermal power limit for 16 minutes. Upon receiving an annunciator that alerted reactor operators of the over-power condition, they promptly reduced reactor power to below 100 percent. The licensee entered this violation into its corrective action program to investigate the cause and identify appropriate corrective actions.

The finding was of more than minor safety significance because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, operation above the licensed power limit reduced the analyzed margins to fuel cladding failure and could result in unanalyzed consequences during an initiating event. The finding was a licensee performance deficiency of very low safety significance because the inappropriate monitoring and control of reactor power during the Xenon transient did not result in exceeding the two percent reactor thermal power allowance contained in the safety analysis. Therefore, assumptions contained in the safety analysis remained bounded for this event. The inspectors determined this finding affected the cross-cutting area of human performance and the procedure adherence aspect due to the licensee's failure to ensure individuals follow processes, procedures, and work instructions. Specifically, the licensee did not effectively communicate expectations of procedural compliance in that licensed reactor operators did not appropriately monitor and control reactor power during a Xenon transient following manual reactivity manipulations.

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Mar 09, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Test the Electrical Characteristics for Control Power Transformers to Verify the Degraded Voltage Calculations Results (Section 1R17.2.b(1))**

The inspectors identified a finding of very-low safety significance and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure that design parameters for Structures, Systems, and Components (SSCs) installed in the plant were bounded by the design calculations.

Specifically, the licensee failed to verify by testing that the turn ratio, and the impedance for the control power transformers (CPTs) used to supply control power to several SSCs installed in the plant were less than or equal to the values used in the degraded voltage calculations. The licensee entered this finding into their corrective action program as CARD 15-21129, and determined that there was reasonable assurance that the CPTs installed in the field are capable of performing their design function.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the capability and reliability of systems that respond to initiating events. The finding screened as of very-low safety significance because the finding did not result in the loss of operability or functionality of any affected SSCs. The inspectors determined this finding had an associated cross-cutting aspect, Conservative Bias, in the Human Performance cross-cutting area because of the licensee failure to use decision making practices that emphasize prudent choices over those that were simply allowable.

Inspection Report# : [2015008](#) (*pdf*)

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Perform an Operability Determination for Partially Submerged EDG Cables**

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," for the licensee's failure to complete an operability determination as required by Procedures MQA-11, "Condition Assessment Resolution Document," Revision 38, and ODE 11, "CARD Operability/Reportability Determination Expectations," Revision 15. Specifically,

the licensee failed to perform an operability determination for Condition Assessment Resolution Document 14-27704 that identified water on September 30, 2014, in a manhole partially submerging safety-related Division 1 emergency diesel generator (EDG) cables. The licensee subsequently completed an operability evaluation that supported continued operability of the safety-related EDG cables.

The finding was of more than minor safety significance because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to perform an operability determination for submerged safety-related EDG cables could potentially lead to one or more failed cables and inoperable onsite emergency power sources without the licensee's knowledge. The finding was a licensee performance deficiency of very low safety significance because it: (1) was not a deficiency affecting the design or qualification of a mitigating Structure, System, and Component (SSC), (2) did not represent a loss of system and/or function, (3) did not represent an actual loss of function of at least a single train for greater than its Technical Specification (TS) allowed outage time OR two separate safety systems out-of-service for greater than its TS allowed outage time, and (4) did not represent an actual loss of function of one or more non-TS trains or equipment designated as high safety significant in accordance with the licensee's Maintenance Rule Program for greater than 24 hours. The inspectors determined this finding affected the cross-cutting area of problem identification and resolution and the evaluation aspect due to the licensee's failure to thoroughly evaluate the issue to ensure that resolutions address causes and extent of conditions commensurate with their safety significance.

Inspection Report# : [2014005](#) (*pdf*)

**Significance:** G Sep 30, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

#### **Failure to Promptly Correct a Condition Adverse to Quality on EDG 11**

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was self-revealed on March 20, 2014, when operators manually shut down emergency diesel generator (EDG) 11 while it was running for surveillance testing during the Cycle 16 refueling outage. A fire had ignited due to oil pooling underneath insulation on the engine exhaust manifold from a gasket leak on the front engine cover. The licensee failed to take timely corrective action after increased smoke was previously observed coming from underneath the exhaust manifold insulation on December 12, 2012. As immediate corrective actions, the licensee replaced insulation on the exhaust manifolds of all 4 EDGs with a different configuration to eliminate the seam that was located right under the corner of the front cover, retightened the bolts on the front engine covers of all four EDGs, and applied sealant to the area of the leak on the EDG 11 front engine cover until the gasket could be replaced.

The finding was of more than minor 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 (i.e., core damage). Specifically, the failure to promptly initiate corrective action when a degraded condition was identified on EDG 11 resulted in a fire, manual engine shutdown, and an Alert emergency declaration during a surveillance test run. The finding was a licensee performance deficiency of very low safety significance because it: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, (2) did not represent a loss of system safety function, (3) did not represent an actual loss of safety function of at least a single train for greater than its Technical Specification (TS)-allowed outage time, (4) did not represent an actual loss of safety function of one or more non TS trains of equipment designated as risk significant for greater than 24 hours during shutdown with the reactor cavity flooded, (5) did not degrade a functional auto-isolation of residual heat removal on low reactor vessel level, and (6) did not screen as potentially risk significant due to a fire, seismic, flooding, or severe weather initiating event. The inspectors determined this finding affected the cross-cutting area of human performance due to the licensee's failure to implement a process of planning, controlling, and executing work activities such that safety is the overriding priority. The work management process includes the identification and management of risk commensurate

to the work; however, due to complacency and failure to appropriately apply operating experience involving EDG exhaust manifold fires on Fairbanks-Morris engines, the licensee did not appropriately manage the risk associated with delaying corrective action for the adverse condition identified about 1½ years prior to the event.

Inspection Report# : [2014004](#) (pdf)

**Significance:**  Sep 12, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Incorrect Valve Location in Procedure**

The inspectors identified a finding of very low safety significance (Green) and associated NCV of Technical Specifications (TS) Section 5.4.1.a for the licensee's failure to maintain Procedure 20.000.23, "High RPV [Reactor Pressure Vessel] Water Level" to address an RPV overfill event. Specifically, the licensee provided an incorrect location of a manual valve in the Standby Feedwater (SBFW) system. The procedure described the valve as being located in the turbine building basement, while the valve was actually located in a locked high radiation area in the north heater room. The licensee revised the procedure to include the correct location of the valve.

The inspectors determined that the issue was more than minor because a reactor overfill event could impair the RCIC and HPCI systems during a fire in fire zone RW. The finding affected the Mitigating Systems cornerstone. The finding was determined to be of very low safety significance based on a detailed risk-evaluation. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not take effective corrective actions to address a potential reactor pressure vessel overfill event.

Inspection Report# : [2014007](#) (pdf)

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## **Barrier Integrity**

**Significance:**  Mar 09, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Translate TS 3.7.4 Requirements Correctly into Plant Procedures (Section 1R17.1.b.(1))**

The inspectors identified a finding of very-low safety significance, and an associated Non-Cited Violation of Title 10, Code of Federal Regulations Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure instructions in plant procedures met the requirements as specified in the Technical Specifications (TSs). Specifically, the licensee failed to ensure that the caution statements as specified in the system operating procedures regarding the operability of the control center chillers when their associated Emergency Equipment Cooling Water temperature control valve was not in AUTO incorporated all the applicability modes for TS 3.7.4. The licensee entered this finding into their corrective action program as CARD 15-20790, and intended to revise the affected procedures to accurately translate TS 3.7.4 mode and plant conditions applicability requirements.

Inspection Report# : [2015008](#) (pdf)

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## **Emergency Preparedness**

## Occupational Radiation Safety

**Significance:**  Dec 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

### **Failure to Maintain Radiation Exposure ALARA During RF-16.**

A finding of very low safety significance was self-revealed due to the licensee having unplanned and unintended occupational collective radiation dose because of deficiencies in the licensee's Radiological Work Planning and Work Control Program. Specifically, the licensee failed to properly incorporate As-Low-As-Is-Reasonably-Achievable (ALARA) strategies and insights while planning and executing work activities on Reactor Building Level 5 (RB-5) during the refueling outage RF-16. Radiation Work Permit (RWP) 145002 was written to perform refuel activities on RB-5, including core alterations, bridge repair, local power range monitor (LPRM) replacement, fuel sipping, and radiation protection support. The initial dose estimate for this work was 3.710 person-rem. However, 15.329 actual person-rem of dose was received. The licensee performed a Job Progress ALARA Review where it became apparent to the licensee that the percentage of work completed was not tracking with original dose estimates. The licensee identified some of the reasons for the increased dose for the work activity included equipment reliability, work quality, and human performance errors. The licensee has entered this issue into its corrective action program as Condition Assessment Resolution Document (CARD) 14-23433.

The finding was more than minor because it was associated with the program and process attribute of the Occupation Radiation Safety Cornerstone. Additionally, this issue adversely affected the cornerstone objective of ensuring adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Additionally, the finding is very similar to Manual Chapter 0612 Appendix E, "Examples of Minor Issues," Example 6.i. This example provides guidance that an issue is not minor if the actual collective dose exceeded 5 person-rem and exceeded the planned intended dose by more than 50 percent. The licensee's current collective 3-year rolling average was 65.077 person-rem (2011 2013). This is less than the 240 person-rem/unit referenced within Manual Chapter 0609 Appendix C, Occupational Radiation Safety Significance Determination Process. The inspectors determined that this finding affected the cross-cutting area of human performance and the field presence aspect, in that leaders were not commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations were not corrected promptly. Senior managers did not ensure supervisory and management oversight of work activities, including contractors and supplemental personnel.

Inspection Report# : [2014005](#) (*pdf*)

## 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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