



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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January 28, 2015

Mr. Paul Fessler
Senior Vice President and
Chief Nuclear Officer
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Fermi 2 - 210 NOC
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Newport, MI 48166

SUBJECT: FERMI POWER PLANT, UNIT 2 - NRC INTEGRATED INSPECTION
REPORT 05000341/2014005

Dear Mr. Fessler:

On December 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2. On January 7, 2015, the NRC inspectors discussed the results of this inspection with Mr. V. Kaminskis and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

The NRC inspectors documented three findings of very low safety significance (Green) in this report. One of these findings involved a violation of NRC requirements. The NRC is treating this violation as a Non-Cited Violation (NCV) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Fermi Power Plant.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Fermi Power Plant.

P. Fessler

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In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael A. Kunowski, Chief
Branch 5
Division of Reactor Projects

Docket No. 50-341
License No. NPF-43

Enclosure:
IR 05000341/2014005
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-341

License No: NPF-43

Report No: 05000341/2014005

Licensee: DTE Electric Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: October 1 through December 31, 2014

Inspectors: T. Briley, Acting Senior Resident Inspector
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Enclosure

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SUMMARY OF FINDINGS

Inspection Report 05000341/2014005; 10/01/2014 – 12/31/2014; Fermi Power Plant, Unit 2; Adverse Weather Protection, Operability Determinations and Functionality Assessments, and Occupational ALARA Planning and Controls.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings, one of which had an associated non-cited violation (NCV) of the NRC regulations, were identified. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated February 2014.

Cornerstone: Initiating Events

- Green. 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 (H.12) 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. (Section 1R01.1)

Cornerstone: Mitigating Systems

- Green. 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 (P.2) 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. (Section 1R15)

Cornerstone: Occupational Radiation Safety

- Green. 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 (H.2), 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. (Section 2RS2.3)

REPORT DETAILS

Summary of Plant Status

Fermi Power Plant, Unit 2, was operated at or near 100 percent power during the inspection period with the following exceptions:

- On October 13, the licensee reduced power to approximately 64 percent to remove the north reactor feedwater pump from service for maintenance. The unit was returned to 100 percent on October 16.
- On December 7, the licensee reduced power to about 55 percent to identify and plug main condenser tube leaks, replace a high pressure turbine control valve unitized actuator, replace four hydraulic control units (HCUs), and perform a control rod pattern adjustment. The unit was returned to 100 percent on December 13.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Adverse Weather Condition – Sustained High Winds

a. Inspection Scope

Sustained high winds were forecast in the vicinity of the plant during this inspection period on November 24, 2014. The inspectors reviewed the licensee's overall preparations for the expected conditions, including Abnormal Operating Procedure 20.000.01, "Acts of Nature," Revision 48, and severe weather guidelines in Operations Department Expectation (ODE)-3, "Communications," Revision 53; to assess the adequacy of the licensee's response to sustained high winds conditions. The inspectors toured the plant grounds in the vicinity of the 120-kilovolt and 345-kilovolt switchyards and main power transformers to look for loose materials and debris, which, if present, could become missiles during high wind conditions. During the inspection, the inspectors focused on plant-specific design features and the licensee's preparations for the impending adverse weather conditions.

This inspection constituted one readiness for impending adverse weather condition inspection sample as defined in Inspection Procedure (IP) 71111.01.

b. Findings

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

(Closed) Unresolved Item (URI) 05000341/2014004-01: Potential Missile Hazards from Unrestrained Equipment Near the 345-Kilovolt and 120-Kilovolt Switchyards

Introduction: 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, the inspectors identified numerous loose items, including a flatbed of unrestrained wood, loose wooden pallets, construction cones, and other debris in and around the switchyards. Once this 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.

Description: On September 10, 2014, operator logs documented the shift manager notified station leaders of the implementation of severe weather guidelines per ODE-3, "Communications," Revision 53. Plant walkdowns by operators were performed in the morning and no issues of concern were documented for the impending inclement weather.

The inspectors subsequently conducted a walkdown of the vicinity surrounding the 345-kilovolt and 120-kilovolt switchyards. During the walkdown, the inspectors noted numerous loose items, including a flatbed of unrestrained wood, loose wooden pallets, construction cones, and other material in and around the switchyards. The inspectors concluded the loose materials combined with high velocity winds increased the potential for the loss of offsite power sources because the materials could become missiles and damage switchyard equipment. The inspectors brought the issues to the attention of the licensee. Operations personnel initiated two CARDS (14-27157 for the 345-kilovolt switchyard and 14-27160 for the 120-kilovolt switchyard) to document the inspectors' concerns and assigned details to remove or restrain the material in accordance with station procedures. The 345-kilovolt switchyard was addressed promptly by licensee staff prior to the arrival of inclement weather. However, CARD 14-27160 indicated the light-weight material identified by the inspectors in the vicinity of the 120-kilovolt switchyard was not addressed until September 19. The inspectors discussed this issue with the licensee and opened URI 05000341/2014004-01 pending additional review of the items identified and follow-up on switchyard cleanup activities and corrective actions.

On November 24, 2014, the inspectors again conducted a walkdown of the switchyards due to impending sustained high winds for the vicinity of the plant. During this walkdown, the inspectors identified a cart with small items left unattended near the 345-kilovolt switchyard. These items posed a potential missile hazard due to the sustained winds of greater than 40 miles-per-hour.

Both procedure MOP-21, "Housekeeping," Revision 6, Section 2.1.9, and procedure ODE-3, "Communications," Revision 53, state: "outside areas near switchyards should be kept free of waste materials that could become missiles potentially impacting the switchyards. If any staged/stored material is discovered within 50 feet of the switchyard fence that cannot be removed within 3 days then the requirements for restraints in MOP-23 must be complied with." Contrary to this, material near the 120-kilovolt switchyard was not removed prior to the arrival of inclement weather on September 10. Also, prior to the inspectors' walkdown, material around the 345-kilovolt switchyard had accumulated to a point that numerous items were found near the switchyard fence contrary to the requirements in licensee procedures. Additional potential missiles were identified by the inspectors on November 24 prior to expected high winds. The loss of either switchyard would have produced a transient on the plant resulting in a reactor scram.

Analysis: The inspectors determined the licensee's failure to adequately control loose material near the 345-kilovolt and 120-kilovolt switchyards was a performance deficiency warranting a significance evaluation. The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," dated August 11, 2009, and found no similar examples. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined the performance deficiency was of more than minor safety significance because if left uncorrected, the performance deficiency has 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.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 3, "SDP Appendix Router," the inspectors determined this finding affected the Initiating Events Cornerstone, specifically the Transient Initiator contributor, and would require review using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," and determined this finding was a licensee performance deficiency of very low safety significance (Green) 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 (H.12) 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.

Enforcement: No violation of regulatory requirements was identified. The licensee's failure to adhere to its procedure for control of loose material did not affect 10 CFR 50, Appendix B, components; therefore, no violation of regulatory requirements occurred. The licensee entered this finding into its corrective action program as CARDS 14-27157 and 14-27160 (**FIN 05000341/2014005-01, Failure to Adequately Control Loose Materials Near the Switchyards**).

URI 05000341/2014004-01 is closed.

.2 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk significant systems was reviewed to ensure these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors

focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified operator actions were appropriate as specified by plant specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather problems:

- Condensate Storage Tank, including the Heat Trace System; and
- Circulating Water (Cooling Towers) System.

The inspectors also verified adverse weather protection problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify corrective actions were appropriate and implemented as scheduled. This inspection constituted one winter seasonal readiness preparations inspection sample as defined in IP 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk significant systems:

- Standby Liquid Control (SLC) while protected during planned maintenance on EDG 11;
- Reactor Core Isolation Cooling (RCIC) (single train risk significant system);
- Electric Fire Pump during Diesel Fire Pump maintenance; and
- Division 1 Residual Heat Removal (RHR)/Residual Heat Removal Service Water (RHRSW) during Division 2 RHR/RHRSW maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones. The inspectors reviewed operating procedures, system diagrams, TS requirements, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and were available. The inspectors observed operating parameters and examined the material condition of the equipment to verify there were no obvious deficiencies.

In addition, the inspectors verified equipment alignment problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify corrective actions were appropriate and implemented as scheduled.

This inspection constituted four partial system walkdown inspection samples as defined in IP 71111.04.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown (71111.04S)

a. Inspection Scope

On November 28 through December 1, 2014, the inspectors performed a complete system alignment inspection of the Control Center Heating, Ventilating and Air Conditioning (CCHVAC) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure system equipment alignment problems were being identified and appropriately resolved.

These activities constituted one complete system walkdown inspection sample as defined in IP 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk significant plant areas:

- Circulating Water Pumphouse;
- RHR Complex – EDG 11 and EDG 12 First Floor;
- Auxiliary Building Third Floor, Division 1 and Division 2 Battery Rooms and Direct Current (DC) Motor Control Center Area;
- Reactor Building Sub-Basement & Basement, Division 1 Core Spray (CS) and RCIC Pump Room; and
- Reactor Building Second Floor, Division 1 Emergency Equipment Cooling Water.

The inspectors reviewed these fire areas to assess if the licensee had implemented a Fire Protection Program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's Fire Protection Plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events Report with later additional insights, their potential to impact equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. The inspectors verified fire hoses and extinguishers were in their designated locations and available for immediate use; fire detectors and sprinklers were unobstructed; transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition.

In addition, the inspectors verified fire protection related problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify corrective actions were appropriate and implemented as scheduled.

This inspection constituted five quarterly fire protection inspection samples as defined in IP 71111.05AQ.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On November 14, 2014, the inspectors observed fire brigade activation for a fire drill in the DC Motor Control Center Area. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified the licensee identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

This inspection constituted one annual fire protection drill inspection sample as defined in IP 71111.05AQ.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Annual Operating Test administered by the licensee from October 27, 2014 through December 5, 2014, required by 10 CFR 55.59(a). The results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Regualification Significance Determination Process (SDP)," dated December 6, 2011, to assess the overall adequacy of the licensee's Licensed Operator Regualification Training (LORT) Program to meet the requirements of 10 CFR 55.59. (02.02)

This inspection constituted one annual licensed operator regualification examination results inspection sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the week of November 3, 2014, to assess: (1) the effectiveness and adequacy of the licensee's implementation and maintenance of its systems approach to training (SAT) based LORT Program put into effect to satisfy the requirements of 10 CFR 55.59; (2) conformance with the requirements of 10 CFR 55.46 for use of a plant referenced simulator to conduct operator licensing examinations and for satisfying experience requirements; and (3) conformance with the operator license conditions specified in 10 CFR 55.53.

- Licensee Regualification Examinations (10 CFR 55.59(c); SAT Element 4 as Defined in 10 CFR 55.4): The inspectors reviewed the licensee's program for development and administration of the LORT biennial annual operating tests to assess the licensee's ability to develop and administer examinations that are acceptable for meeting the requirements of 10 CFR 55.59(a).
 - The inspectors conducted a detailed review of two Job Performance Measure (JPM) and three dynamic simulator scenarios to assess content, level of difficulty, and quality of the operating test materials. (02.04)
 - The inspectors observed the administration of an annual operating test to assess the licensee's effectiveness in conducting the examination(s), including the conduct of pre-examination briefings, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of two simulator crews in parallel with

the facility evaluators during three dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of one JPM. (02.05)

- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors conducted an assessment of the licensee's processes related to examination physical security and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors reviewed the facility licensee's examination security procedure, and observed the implementation of physical security controls (e.g., access restrictions and simulator input/output controls) and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the partial inspection period. (02.06)
- Problem Identification and Resolution (10 CFR 55.59(c); SAT Element 5 as Defined in 10 CFR 55.4): The inspectors assessed the licensee's ability to identify, evaluate, and resolve problems associated with licensed operator performance (a measure of the effectiveness of its LORT Program and its ability to implement appropriate corrective actions to maintain its LORT Program up-to-date). The inspectors reviewed documents related to licensed operator performance issues (e.g., recent examination and licensee condition/problem identification reports including documentation of issues during this annual requalification exam). (2.10)

Observations

Examination Security: Two items were observed during the inspection related to exam security. Neither of the issues compromised the examination and, therefore, there was no finding.

- Potential loss of at Least One Physical Barrier: During the administration of the in-plant JPMs, the inspector observed that the candidate passed through the Radiologically Controlled Area (RCA) barrier quickly and the evaluator was having difficulty passing the turnstile. The inspector was already past the turnstile when the candidate walked down the corridor and started to enter the turbine building. The inspector stopped the candidate and told him to wait until the evaluator was able to join them. The evaluator was attempting to enter the plant through the turnstile and was not watching the candidate. This is contrary to Fermi 2, Nuclear Training Work instruction, Section 1.0, Administration, Instruction 1.16, Revision 33, Step 6.2.1, "At least one physical barrier to exam materials shall be maintained at all times. Direct physical control by an authorized individual constitutes a physical barrier." Had the candidate gone through the door and been out of sight of the inspector and the evaluator, there would have been potential for an exam compromise. Since the inspector was watching the candidate, there was no potential exam compromise.
- Use of Color Paper: Fermi 2, Nuclear Training Work Instruction, Section 1.0, Administration, Instruction 1.16, Revision 33, Step 7.1.2 requires the use of a different color paper for the material that will be given to the examinee as another means to control exam material. During the administration of simulator JPMs, the inspector noted the paper that was being given to the candidates for the initial

conditions was the same color as the paper the examiner was using instead of the color of the material that was being handed to the candidate. There was no indication that the wrong material was being handed to the candidates and no indication of exam compromise.

Remedial Training Assessment: The inspectors reviewed the licensee's self-assessment of the remedial training that had been provided due to a failure of a portion of the last requalification exam. The remedial training met the requirements of a SAT based training program.

This inspection was a Partial Biennial Licensed Operator Requalification Program inspection as defined in IP 71111.11 and does not count as a complete sample.

b. Findings

No findings were identified.

.3 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors observed licensed operators during evaluated simulator training on November 25, 2014. The inspectors assessed the operators' response to the simulated events focusing on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of Emergency Plan requirements. The inspectors also observed the post-training critique to assess the ability of the licensee's evaluators and the operating crew to self-identify performance deficiencies. The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constituted one quarterly licensed operator requalification program simulator inspection sample as defined in IP 71111.11 and satisfied the inspection program expectation for the resident inspectors to observe annual operator requalification simulator testing during the training cycle in which it was not observed by the NRC during the biennial portion of this IP.

b. Findings

No findings were identified.

.4 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On October 13, 2014, the inspectors observed licensed operators in the Control Room reduce reactor power to approximately 64 percent to remove the north reactor feedwater pump from service to repair a steam leak on a discharge drain line. This activity required heightened awareness, additional detailed planning, and involved increased operational risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;

- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance, and task completion requirements.

This inspection constituted one quarterly licensed operator heightened activity/risk inspection sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for maintenance and emergent work activities affecting risk significant and/or safety-related equipment listed below to verify the appropriate risk assessments were performed prior to removing equipment for work:

- Emergent maintenance during the week of September 29 through October 3, 2014, on the Radwaste Monicon System;
- Planned maintenance during the week of October 13 through 17, 2014, including work on the North Reactor Feed Pump (NRFP) discharge drain line and EDG 11;
- Emergent maintenance during the week of November 17 through 21, 2014, on EDG 12; and
- Planned maintenance during the week of December 1 through 5, 2014, including work on Division 2 RHR/RHRSW, Division 2 Emergency Equipment Cooling Water (EECW), and #3 General Service Water Pump.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each of the above activities, the inspectors reviewed the scope of maintenance work in the plant's daily schedule, reviewed Control Room logs, verified plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities, discussed the results of the assessment with the licensee's Probabilistic Risk Analyst and/or Shift Technical Advisor, and verified plant conditions were consistent with the risk assessment assumptions. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid, redundant safety-related plant equipment necessary to minimize risk was available for use, and applicable requirements were met.

In addition, the inspectors verified maintenance risk related problems were entered into the licensee's corrective action program with the appropriate characterization and

significance. Selected CARDS were reviewed to verify corrective actions were appropriate and implemented as scheduled.

This inspection constituted four maintenance risk assessment inspection samples as defined in IP 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- CARD 14-27704, Standing Water Found in Electrical Manhole 16947A;
- CARD 14-28221, Incorrect Grease Used in Lower Motor Bearing on RHRSW Pump C;
- CARD 14-28653, Support Frame Bolt Missing on HCU 06-27;
- CARD 14-00617, Valve Bushing Stripped; and
- CARD 14-29426, P4400F625A Division 1 Makeup Pump Discharge Check Valve Failure to Seat.

The inspectors selected these potential operability/functionality issues based on the risk significance of the associated components and systems. The inspectors verified the conditions did not render the associated equipment inoperable/non-functional or result in an unrecognized increase in plant risk. When applicable, the inspectors verified the licensee appropriately applied TS limitations, appropriately returned the affected equipment to an operable or functional status, and reviewed the licensee's evaluation of the issue with respect to the regulatory reporting requirements. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluation. When applicable, the inspectors also verified the licensee appropriately assessed the functionality of SSCs that perform specified functions described in the UFSAR, Technical Requirements Manual, Emergency Plan, Fire Protection Plan, regulatory commitments, or other elements of the current licensing basis when degraded or nonconforming conditions were identified.

In addition, the inspectors verified problems related to the operability or functionality of safety-related and risk significant plant equipment were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted five operability determination inspection samples as defined in IP 71111.15.

b. Findings

Failure to Perform an Operability Determination for Partially Submerged EDG Cables

Introduction: The inspectors identified a finding of very low safety significance with an associated NCV 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 CARD 14-27704, "Standing Water Found in Electrical Manhole 16947A," that identified water in a manhole partially submerging safety-related Division 1 EDG cables.

Description: On May 25, 2014, CARD 14-00145 was initiated because the sump pump for Manhole 16947A was found non-functional with the high water level alarm lit. This manhole was one of six new manholes that houses safety-related cables for the EDGs. The review by the shift manager identified this manhole contained safety-related cables and required compensatory pumping measures to be issued in accordance with Procedure 23.325, "Cable Vault Sump System." However, no operability determination was performed for the safety-related EDG cables. The CARD operability review section indicated the issue was not license based (i.e. no operability determination required) since the system the CARD was initiated for was the sump system and did not include the EDG system.

On September 30, 2014, WO 37165401 was started to inspect Manhole 16947A and upgrade the sump pump system that had failed. When the lid was lifted, water was found half way up the west side of the vault partially submerging the Division 1 EDG cables that pass through the vault. No water was found over the cables on the east side of the vault as the cables change to a higher elevation when passing through the manhole. CARD 14-27704 was initiated to document the high water level and partially submerged cables. Similar to CARD 14-00145, the inspectors noted no operability determination was provided for the safety-related EDG cables, and the issue was indicated in the CARD operability review section as not license based. CARD 14-27704 was also accepted on October 2 by the Ownership/Screening Committee, a group that included an Operations Department representative and reviewed all CARDS for completeness and accuracy of information.

The inspectors questioned the shift manager on October 3 as to why no operability determination was performed since the CARD documented partially submerged safety-related electrical cables for the EDGs that could potentially affect their safety function. The shift manager agreed that an operability determination should have been performed and requested the CARD be sent back to Operations. An operability determination was documented on October 8 and determined the EDG electrical cables remained operable due to the short length of time the cables were estimated to have been submerged (since May 25 when the sump pump was identified as non-functional) and due to the design of the modern insulation material for the cables. The inspectors concurred with the licensee's assessment.

Quality Assurance Conduct Manual, MQA-11, "Condition Assessment Resolution Document," Revision 38, stated, in part, "if the identified issue represents a nonconforming or actual plant condition that reduces the functional capability of the plant equipment (i.e., degraded condition) and the equipment or activity is Licensed Based,

mark "Yes" in the Licensed Based box" and determine if the issue is then "operable, operable but degraded, operable but nonconforming, or Inoperable." MQA-11 further specified for any determination other than inoperable, justification needs to be provided. ODE-11, "CARD Operability/Reportability Determination Expectations," Revision 15, also stated, in part, "if an SSC is determined to be operable, then a definite statement to that effect shall be documented." However, the inspectors identified an operability determination was not performed for CARD 14-27704 that documented water intrusion into Manhole 16947A, partially submerging safety-related EDG cables.

Analysis: The inspectors determined the licensee's failure to perform an operability determination in accordance with MQA-11, "Condition Assessment Resolution Document," Revision 38, and ODE-11, "CARD Operability/Reportability Determination Expectations," Revision 15, was a performance deficiency warranting a significance evaluation. The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," dated August 11, 2009, and found no similar examples. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined the performance deficiency was a finding of more than minor safety significance because, if left uncorrected, the performance deficiency has 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 failed cables and one or more inoperable onsite emergency power sources without the licensee's knowledge.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 3, "SDP Appendix Router," the inspectors determined this finding affected the Mitigation Systems Cornerstone, specifically the Mitigating SSCs and Functionality contributor, and would require review using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," June 19, 2012. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," and determined this finding was a licensee performance deficiency of very low safety significance (Green) because it: (1) was not a deficiency affecting the design or qualification of a mitigating 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 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 (P.2) 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.

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," required, in part, that activities affecting quality be prescribed and accomplished by procedures appropriate to the circumstance and in accordance with those instructions and procedures. Quality Assurance Conduct Manual, MQA-11, "Condition Assessment Resolution Document," Revision 38, stated, in part, that "if the

identified issue represents a nonconforming or actual plant condition that reduces the functional capability of the plant equipment (i.e., degraded condition) and the equipment or activity is Licensed Based, mark "Yes" in the Licensed Based box" and determine if the issue is then "operable, operable but degraded, operable but nonconforming or inoperable." MQA-11 further stated for any determination other than inoperable, justification needs to be provided. ODE-11, "CARD Operability/Reportability Determination Expectations," Revision 15, also stated, in part, that "if an SSC is determined to be operable, then a definite statement to that effect shall be documented."

Contrary to the above, the licensee did not perform an operability determination when safety-related (i.e., licensed based) EDG cables were found partially submerged, on September 30, 2014, which potentially could have rendered one or more EDGs inoperable. Because this violation was not repetitive or willful, and was entered into the licensee's corrective action program, it is being treated as a NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05000341/2014005-02, Failure to Perform an Operability Determination for Partially Submerged EDG Cables**). The licensee entered this violation into its corrective action program as CARD 14-28232 to evaluate changes to its procedures and personal accountability training.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance testing activities to verify procedures and test activities were adequate to ensure system operability and functional capability:

- WO 28400291, Installation of the Split Front Cover on EDG 11;
- WO 42022083, Perform 24.202.01 High Pressure Coolant Injection (HPCI) Pump and Valve Operability Test at 1025 PSI [Pounds-per-Square Inch]; and
- WO 36223058, Calibrate RCIC Turbine Speed Control Loop.

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post-maintenance testing. The inspectors verified the post-maintenance testing was performed in accordance with approved procedures; the procedures contained clear acceptance criteria that demonstrated operational readiness, and the acceptance criteria were met; appropriate test instrumentation was used; the equipment was returned to its operational status following testing; and the test documentation was properly evaluated.

In addition, the inspectors verified problems associated with post-maintenance testing were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify corrective actions were appropriate and implemented as scheduled.

This inspection constituted three post-maintenance testing inspection samples as defined in IP 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed surveillance testing results for the following activities to determine whether risk significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Procedure 24.204.01, Division 1 LPCI [Low Pressure Coolant Injection] and Torus Cooling/Spray Pump and Valve Operability Test

The inspectors observed selected portions of the test activities to verify the testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify equipment performance was consistent with safety analysis and design basis assumptions, test equipment was used within the required range and accuracy, applicable prerequisites described in the test procedures were satisfied, test frequencies met TS requirements to demonstrate operability and reliability, and appropriate testing acceptance criteria were satisfied. When applicable, the inspectors also verified test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable.

In addition, the inspectors verified surveillance testing issues were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected CARDS were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted one in-service test inspection sample as defined in IP 71111.22.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The regional inspectors performed an in-office review of the latest revisions to the Emergency Plan, Emergency Plan Annex, and Emergency Plan Implementing Procedures.

The licensee transmitted the Emergency Plan and Emergency Action Level revisions to the NRC pursuant to the requirements of 10 CFR Part 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection.

This Emergency Action Level and Emergency Plan Change inspection constituted one sample as defined in IP 71114.04.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on November 4, 2014, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The drill was planned to be evaluated and was included in the performance indicator data regarding drill and exercise performance. The inspectors observed emergency response operations in the Technical Support Center and the Emergency Operations Facility to determine whether the event classifications, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee's drill critique to compare any inspector-observed weaknesses with those identified by the licensee's staff in order to evaluate the critique and to verify whether the licensee's staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents.

This inspection constituted one emergency preparedness drill inspection sample as defined in IP 71114.06.

b. Findings

No findings were identified.

.2 Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on November 18, 2014, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one inspection sample as defined in IP 71114.06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

The inspection activities supplement those documented in NRC Inspection Report 05000341/2014002 and constitute one complete inspection sample as defined in IP 71124.01.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of Radiation Protection Program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the corrective action program and dose evaluations were conducted as appropriate.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.3 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the

performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicated the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee has established a *de facto* "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors reviewed radiation work permits for work within airborne radioactivity areas, as applicable, with the potential for individual worker internal exposures.

For these radiation work permits, the inspectors evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor cavities). The

inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (i.e., nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high radiation areas and very high radiation areas to verify conformance with the occupational performance indicator.

b. Findings

No findings were identified.

.5 Risk Significant High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk, high radiation areas and very high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduced the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that had the potential to become very high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations required communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very high radiation areas and areas with the potential to become very high radiation areas to ensure that an individual was not able to gain unauthorized access to the very high radiation areas.

b. Findings

(Open) URI 05000341/2014005-03: Spent Fuel Pool Securement of Irradiated Local Power Range Monitors

Introduction: During inspection activities associated with the storage and securement of irradiated materials within the spent fuel pool, the inspectors identified a URI associated with the securement of irradiated Local Power Range Monitors (LPRMs) within the spent fuel pool.

Description: The inspectors observed a series of locked metal sleeves attached to a handrail surrounding the spent fuel pool. These locked metal sleeves extend into the spent fuel pool. From each of these sleeves were suspended two or three irradiated LPRMs. These metal sleeves had the potential to rotate at the point of securement to the handrail. This rotation would increase the possibility of an individual obtaining access to the irradiated LPRMs. The inspectors discussed this concern, along with the potential radiation exposure rates on the irradiated LPRMs, with the licensee. Specifically, the NRC provides guidance on this subject in Regulatory Guide 8.38, "Controls of Access to High and Very High Radiation Areas in Nuclear Power Plants," Revision 1. Section 4.2, "Spent Fuel Pools, Reactor Vessels, and Refueling Cavities," provides the following in part, "Therefore, these pool areas do not have to be controlled as high or very high radiation areas solely because of the materials in them, provided that the following criteria are fulfilled: Control measures are implemented to ensure that activated materials are not raised above or brought near the surface of the pool water."

The licensee could not immediately provide the specifics about the design of the locked metal sleeves and the associated LPRM radiation exposure rates to answer inspector questions. The licensee installed an additional metal bar to prevent rotation of the metal sleeves after this issue was identified by the inspectors. The inspectors could not evaluate whether the controls as originally implemented were adequate to prevent activated materials from being raised above or brought near the surface of the pool water. Consequently, this issue remains under review by the NRC to determine if it represents a performance deficiency and is categorized as a URI
(URI 05000341/2014005-03, Spent Fuel Pool Securement of Irradiated LPRMs).

.6 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the radiation work permit controls/limits in place, and whether their performance reflected the level of radiological hazards present.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.7 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether

technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.8 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's corrective action program. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to its plant.

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable Planning and Controls (71124.02)

The inspection activities supplement those documented in NRC Inspection Report 05000341/2014002 and constitute one complete inspection sample as defined in IP 71124.02.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three-year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures and source term measurements.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors reviewed ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features, considered alternate mitigation features, and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote technologies (e.g., teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and radiation work permit documents.

The inspectors compared the results achieved (dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity and failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's corrective action program.

b. Findings

No findings were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors reviewed the assumptions and basis (including dose rate and man-hour estimates) for the current annual collective exposure estimate for reasonable accuracy for select ALARA work packages. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.

The inspectors evaluated whether the licensee established measures to track, trend, and, if necessary, to reduce occupational doses for ongoing work activities. The

inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

Failure to Maintain Radiation Exposure ALARA During RF-16

Introduction: A finding of very low safety significance (Green) was self-revealed for the licensee having unplanned and unintended occupational collective radiation dose because of deficiencies in the licensee's work planning and work control program. Specifically, the licensee failed to properly incorporate ALARA strategies and insights while planning and executing refueling activities on the 5th floor of the reactor building (RB-5) during refueling outage 16 (RF-16).

Description: RWP 145002 was written to perform refuel activities on RB-5, including core alterations, bridge repair, LPRM replacement, fuel sipping, and radiation protection support. The initial dose estimate for this work was 3.710 person-rem, but the work resulted in 15.329 person-rem of actual dose. While the work was in progress, the licensee performed a Job Progress ALARA Review at approximately 80 percent of the original work dose estimate. It became apparent that the percentage of work completed was not tracking with original dose estimates, with the main reasons for the increased dose for the work activity including equipment reliability, work quality, and human performance errors. The licensee did not perform additional work in progress reviews for this RWP during the outage. Upon completion of the outage, the licensee identified that the work was completed in 20,462 man-hours, while the original estimate was 9,070 man-hours. The inspectors reviewed the licensee work in progress evaluation as well as post-outage review documentation. The licensee's RF-16 ALARA Post-Outage Report listed a number of reasons for the dose overage. These include conflicts and delays with refueling equipment, equipment issues, procedural challenges, equipment malfunctions, and increased radiation levels due to a crud burst during shutdown and refueling equipment design and placement issues.

The inspectors reviewed and concurred with the licensee's assessments. The inspectors assessed the actual dose outcome of the work activity and compared it to the planned, intended dose for that work activity. This mismatch between the planned, intended dose and the actual dose that resulted from completing the work activity was an indication of a possible program weakness. Many of these issues could have been avoided or minimized with adequate planning and response to emergent conflicts and delays with refueling equipment, equipment issues, procedural challenges, and equipment malfunctions. Additionally, the inspectors interviewed licensee personnel which revealed that the licensee made organizational changes before the refueling outage that moved skilled and knowledgeable individuals to supervisor positions which diminished this knowledge from the field.

Analysis. The failure to appropriately plan and coordinate outage activities, together with the failure to properly incorporate ALARA strategies or insights while planning and executing work on RB-5 during refueling outage RF-16, was a performance deficiency that was within the licensee's ability to control and should have been prevented. The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone that adversely affected the cornerstone objective of ensuring the adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Additionally, the finding is very similar to IMC 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 inspectors determined that this finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. This was a finding in the ALARA Planning and Work controls but not greater than the 240 person-rem/unit for a boiling water reactor. The licensee's current collective 3-year rolling average was 65.077 person-rem (2011-2013).

The inspectors determined that this finding affected the cross-cutting area of human performance and the field presence aspect (H.2), 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.

Enforcement: No violation of regulatory requirements occurred. This issue is considered a finding (**FIN 05000341/2014005-04, Failure to Maintain Radiation Exposure ALARA During RF-16**). The licensee has entered this issue into its corrective action program as CARD 14-23433.

.4 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

.5 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers

demonstrated the ALARA philosophy in practice (e.g., workers were familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers are not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

.6 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors evaluated whether problems associated with ALARA planning and controls were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's corrective action program at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action program as a result of the inspectors' observations; however, they are not discussed in this report.

This inspection was not considered to be an inspection sample as defined in IP 71152.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action program item

screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of July 2014 through December 2014, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This inspection constituted one semi-annual trend review inspection sample as defined in IP 71152.

b. Assessment and Observations

In August 2014, an emerging trend was identified with plant fire doors in CARD 14-26777 as a result of a noted increase in the number of doors with issues and several fire doors with active fire impairments requiring compensatory measures. Issues with plant doors ranged from degraded security card readers and physical door hardware to doors not being fully secured by plant personnel after passage. A site-wide communication was sent out on October 16 to reinforce the expectations for fire door use and ensuring they were latched correctly. Doors that are not properly maintained and secured in a fully closed and latched position have the potential to impact plant safety equipment.

During the course of the inspection period, the inspectors performed walk downs of various plant doors, which were generally found to be in good working condition. The inspectors did identify two additional examples of fire doors that were degraded that were not previously entered into the licensee's corrective action program:

- Fire Door RHR-D62 – EDG 14 room double door – On October 20, both fire door latches on the passive side door were unlatched (not engaged) resulting in a brief Technical Requirements Manual Limiting Condition for Operation (TRLCO) 3.12.4 entry for the associated room carbon dioxide system being declared inoperable. A subsequent walkdown by operations personnel found the bottom latch engaged and the TRLCO was exited shortly thereafter. CARD 14-28226 was written to document the issue.
- Fire Door R2-14 – Auxiliary Building Personnel Change Area double door
 - On September 17, both latches of the passive side door were unlatched resulting in a brief TRLCO 3.12.8 entry for the fire-rated assembly (doors, barriers, etc.) being declared inoperable. A subsequent walkdown by operations personnel found both latches engaged and the TRLCO was exited shortly thereafter. CARD 14-27369 was written to document the issue and closed to trending.
 - On September 30, the top latch of the passive side door was unlatched. The intent is for both latches to be secured; however, since the bottom latch remained engaged the door remained functional. The same issue was observed again on

October 28. CARDS 14-27707 and 14-00690 were written to document the issue.

In November 2014, it was determined through the system monitoring program an adverse trend had existed involving plant fire doors as documented in CARD 14-28736. The trend was based on the increasing number of door issues that continued to be documented in the corrective action program. Corrective actions taken and/or proposed to address the adverse trend to date included, but were not limited to, performing a causal analysis and extent of condition review along with a review of the preventative maintenance strategy for plant doors.

c. Findings

No findings were identified.

4OA6 Management Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. V. Kaminskas and other members of the licensee's staff at the conclusion of the inspection on January 7, 2015. The licensee acknowledged the findings presented. Proprietary information was examined during this inspection, but is not specifically discussed in this report.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The inspection results from the Annual and Biennial Licensed Operator Requalification Program area assessment with Mr. B. Crone on November 6, 2014.
- The inspection results from the annual review of Emergency Action Level and Emergency Plan with Mr. N. Avrakotos, via telephone on December 3, 2014.
- The inspection results for the areas of Radiological Hazard Assessment and Exposure Controls; and Occupational ALARA Planning and Controls with Mr. V. Kaminskas on November 21, 2014.

The licensee acknowledged the issues presented. The inspectors confirmed none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee and Contractor Employees

J. Auler, Principal Engineer, Nuclear Engineering
N. Avrakotos, Manager, Radiological Emergency Response Preparedness
T. Barrow, Radiological Emergency Response Preparedness
S. Berry, Manager, Outage & Work Management
J. Chase, Supervisor, Fire Protection
D. Coseo, Supervisor, Regulatory Compliance
B. Crone, Operations Training Supervisor
R. Duke, Operations Requalification Training Lead
J. Ford, Director, Organization Effectiveness
G. Garber, Radiological Emergency Response Preparedness Specialist
S. Hassoun, Acting Manager, Licensing
D. Hemmele, Superintendent, Operations
J. Henscheid, Radiological Emergency Response Preparedness Specialist
V. Kaminskis, Vice President, Nuclear Generation
R. LaBurn, Manager, Radiation Protection
J. May, Supervisor, Chemistry
M. Philippon, Director, Nuclear Production
J. Pendergast, Principal Engineer, Regulatory Compliance
L. Petersen, Acting Director, Nuclear Engineering
G. Piccard, Manager, Systems Engineering
C. Robinson, Manager, Licensing
P. Southwell, Radiation Protection General Supervisor
K. Scott, Director, Nuclear Work Management
G. Strobel, Manager, Operations
J. Thorson, Manager, Performance Engineering & Fuels

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000341/2014005-01	FIN	Potential Missile Hazards from Unrestrained Equipment Near the 345-Kilovolt and 120-Kilovolt Switchyards (Section 1R01.1)
05000341/2014005-02	NCV	Failure to Perform an Operability Determination for Partially Submerged EDG Cables (Section 1R15)
05000341/2014005-03	URI	Spent Fuel Pool Securement of Irradiated Local Power Range Monitors (Section 2RS1.5)
05000341/2014005-04	FIN	Failure to Maintain Radiation Exposure ALARA During RF-16 (Section 2RS2.3)

Closed

05000341/2014004-01	URI	Potential Missile Hazards from Unrestrained Equipment near the 345-Kilovolt and 120-Kilovolt Switchyards (Section 1R01.1)
05000341/2014005-01	FIN	Potential Missile Hazards from Unrestrained Equipment near the 345-Kilovolt and 120-Kilovolt Switchyards (Section 1R01.1)
05000341/2014005-02	NCV	Failure to Perform an Operability Determination for Partially Submerged EDG Cables (Section 1R15)
05000341/2014005-04	FIN	Failure to Maintain Radiation Exposure ALARA During RF-16 (Section 2RS2.3)

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 – Adverse Weather Protection

- CARD 14-27157; NRC Identified Safety Concern About Storage of Independent Spent Fuel Storage Installation-Related Material Near 345-Kilovolt
- CARD 14-27160; NRC Identified Safety Concern About Storage of Material Near 120-Kilovolt
- CARD 14-28361; Combustion Turbine Generator 11 Unit 1 Low Diesel Compartment Temperature Alarm
- CARD 14-28804; Wrong Motors Procured for De-Ice Pumps
- CARD 14-28863; North Cooling Tower Deice System Not Functioning in Auto Mode
- Procedure 20.000.01; Acts of Nature; Revision 48
- Procedure 27.000.04; Freeze Protection Lineup Verification; Revision 48
- Procedure 27.000.05; Operator Rounds; Revision 30
- Procedure 27.000.07; Cold Weather Operations; Revision 5
- Procedure MOP-21; Housekeeping; Revision 6
- Procedure ODE-3; Communications; Revision 53

1R04 – Equipment Alignment

- CARD 14-00536; SLC Storage Tank Outlet Valve, Covered Borate Crust
- CARD 14-23314; Procedure Enhancement for 24.139.02
- CARD 14-24794; Division 2 CCHVAC Chiller Oil Level Low in Band
- CARD 14-25270; T4100F069A Division 2 CCHVAC Heating Coil Shutoff Damper Indication
- CARD 14-25473; T4100F068A Damper Indicating Dual Following CCHVAC Division Shift
- CARD 14-25682; CCHVAC Recirculation Air Filter Controller Setpoint is Incorrect
- CARD 14-26268; MMR14 Structures Monitoring Walkdown – RHR DIV 1 South Pump Room Findings
- CARD 14-26361; 3D11 SLC Ignition Continuity Loss Due to 'B' Squib Valve Continuity Light Out
- CARD 14-26433; Trend Noted with 3D11, SLC Ignition Continuity Loss
- CARD 14-27526; Division 1 CCHVAC Chiller Tripped Due to Low Evaporator Temperature
- CARD 14-27649; Bridging Strategy for HPCI & RCIC Control System
- CARD 14-28348; T4100B009 Division 1 CCHVAC Chiller Will Not Unload in Auto or Manual Control
- CARD 14-28359; Division 1 CCHVAC Chiller Did Not Start When Placed Inservice Per the Standard Operating Procedure
- CARD 14-28385; Stem Nut Worn on E1150F006A
- CARD 14-28872; Packing Leak on P8000F007
- CARD 14-28874; Gate Valve Leaks By
- CARD 14-28886; Increased Leakby Indication – E5150F095
- CARD 14-28911; Potential Problem Condition
- Drawing 5I721-2613-59; Automatic Temp. Control Sys. L/D Static Pressure Cont. Control Room Panel H21P296A; Revision O
- Drawing 6M721-2082; Standby Liquid Control System; Revision AB

- Drawing 6M721-2084; Diagram Residual Heat Removal (R.H.R.) Division 1; Revision BK
- Drawing 6M721-2751; Diagram – Air Flow for Control Center Air Conditioning System; Revision S
- Drawing 6M721-2847; System Diagram Control Center Air Conditioning Air Side Reactor Building; Revision Z
- Drawing 6M721-2849; Air Conditioning – 4th Floor Upper Level Control Center Reactor Building; Revision V
- Drawing 6M721-5704; Standby Liquid Control System Functional Operating Sketch; Revision I
- Drawing 6M721-5706-2; Residual Heat Removal (R.H.R.) Division 1 Functional Operating Sketch; Revision X
- Drawing 6M721-5709-1; Reactor Core Isolation Cooling (RCIC) System Sketch, Functional Operating Sketch; Revision AM
- Drawing 6M721-5729-1; Emergency Equipment Cooling Water (Division I) Functional Operating Sketch; Revision BE
- Drawing 6M721-5729-2; Emergency Equipment Cooling Water (Division II) Functional Operating Sketch; Revision AX
- Drawing 6M721-5733-1; Fire Protection Functional Operating Sketch; Revision BH
- Drawing 6M721-5733-2; Fire Protection Functional Operating Sketch; Revision N
- Drawing 6M721-5736-1; Heating – Reactor, Auxiliary, Radwaste and Service Buildings Functional Operating Sketch; Revision Y
- Drawing 6M721-5736-2; Control Center A/C Water System Functional Operating Sketch; Revision R
- Drawing 6M721-5736-3; Control Center A/C Air System Functional Operating Sketch; Revision J
- Procedure 23.139; Standby Liquid Control System; Revision 48
- Procedure 23.205; Residual Heat Removal System; Revision 125
- Procedure 23.206; Reactor Core Isolation Cooling System; Revision 97
- Procedure 23.413; Control Center HVAC; Revision 91
- Procedure 23.501.01; Fire Water Suppression System; Revision 53
- Procedure 24.206.01; RCIC System Pump and Valve Operability Test; Revision 76
- Procedure 24.206.03; RCIC Discharge Piping Venting and Valve Verification Test; Revision 39
- Procedure 28.501.01; Fire Suppression Water System – Valve Lineup Verification – BOP; Revision 18
- Procedure 28.501.02; Fire Suppression Water System and Spray/Sprinkler Systems Valve Lineup Verification; Revision 15
- Procedure 28.504.01; Electric Fire Pump Weekly Operability Test; Revision 16
- Procedure 28.504.09; Electric Fire Pump Monthly Operability Test; Revision 8
- System Health Reports; CCHVAC; 4th Quarter 2013 – 3rd Quarter 2014

1R05 – Fire Protection

- CARD 14-28226; NRC Identified Issue: Door RHR-D62 Passive Door Latches Unlatched
- CARD 14-21036; Sulfate Crystals Formed on Several Batteries
- CARD 14-21296; Battery Plate Material in Division 1 Battery Bank of 2A-1 Only
- CARD 14-23430; Debris on Battery Plates Found During Division 1 Battery Inspection
- CARD 14-26317; 9D18 24/48 Volt 2A Battery Trouble Due to Battery Charger 2IA-1 Trip
- CARD 14-28252; 10D67 Division 2 48/24V Battery 2IB Trouble for High Voltage
- CARD 14-28603; Condensation Catch Interferes with RCIC Quad Sprinkler - NRC Concern
- Drawing 6A721-2401; Fire Protection Evaluation Reactor Building Subbasement – Plan – El. 540'-0"; Revision L

- Drawing 6A721-2405; Fire Protection Evaluation – Reactor and Auxiliary Buildings – Second Floor – Plan – Elevation 613' 6"; Revision Y
- Procedure FP-CWPH-1-32; Circulating Water Pumphouse Zone 32 El. 583'6"; Revision 5
- Procedure FP-RB-SB-5a; Reactor Building Sub-Basement Northeast Corner Room, Zone 5, EL. 540'-0"; Revision 5
- Procedure FP-RB-B-5b; Reactor Building Basement Northeast Corner Room, Zone 5, El. 562'-0"; Revision 3
- Procedure FP-RHR-1-11-EDG; RHR Complex, EDG 11 Room, El. 590'0"; Revision 4
- Procedure FP-RHR-1-11-OS; RHR Complex, EDG 11 Oil Storage Room, El. 590'0"; Revision 4
- Procedure FP-RHR-1-12-EDG; RHR Complex, EDG 12 Room, El. 590'0"; Revision 6
- Procedure FP-RHR-1-12-OS; RHR Complex, EDG 12 Oil Storage Room, El. 590'0"; Revision 3
- Procedure FP-AB-3-14a; Auxiliary Building, East Battery Room, Zone 14, El. 643'6"; Revision 3
- Procedure FP-AB-3-14b; Auxiliary Building, West Battery Room, Zone 14, El. 643'6"; Revision 3
- Procedure FP-AB-3-14F; Auxiliary Building, DC Motor Control Center Room, Zone 14, El. 643'-6"; Revision 5
- FP-RB-2-10a; Reactor Building Emergency Equipment Cooling Water, North, Zone 10, Elevation 613' 6"; Revision 3
- Procedure 20.000.22; Plant Fires; Revision 44
- Procedure 20.000.18; Control of the Plant from the Dedicated Shutdown Panel; Revision 51
- Nuclear Training Work Instruction 5.08; Fire Brigade Training and Drills; Revision 5
- RWWI-002; Fermi 2 Radwaste Work Instruction, Plant Leaks and Catch Containments; Revision 8
- W1-RPO-010, Attachment 2, 2013 Cycle 16 RP Shift Log; Revision 2; June 1, 2013
- 2013 Cycle 16 RW Shift Log; June 1, 2013

1R11 – Licensed Operator Requalification Program

- CARD 14-28954; CLO Near Miss: Remedial Exam Did Not Meet the Requirements of WI 5.15
- CARD 14-28684; Potential for Examination Compromise During Records Verification
- PBN JPM P000-043.AOT; Perform Manual Hand Pump Operation of the Containment Sump B Isolation Valves; Revision 8
- PBN LOC 000 001E; NRC Annual Operating Exam; Revision 4
- PBN LOC 000 002E; NRC Annual Operating Exam; Revision 4
- TR-AA-230-1004-F04; Training Remediation; Revision 1
- PBN JPM P004.027.COT; Manually Makeup to the VCT; Revision 7
- PBN JPM P000.005a.COT; Align Containment Spray Pump for Containment Sump Recirculation with Suction Supplied by the RHR Pump; Revision 1
- 2014 Annual NRC Operational Exam Debrief Report, Crew B, Teams 1 and 2; September 25, 2014
- Crew Simulator Evaluation Form; Crew B, Team 1
- Crew Simulator Evaluation Form; Crew B, Team 2
- Action Request Report 01991727; Evaluate Training Need for ENS Forms; September 25, 2014
- Action Request Reports 01993687 and 01993654; Tracking CR – Licensed Operator Completion of Annual Exam
- Fermi 2, Nuclear Training Work Instruction, Section 1.0, Administration, Instruction 1.16; Revision 33

- Fermi 2, Nuclear Training Work Instruction, Section 5.0 Implementation of Training, Instruction 5.12; Revision 16
- Fermi 2, Nuclear Training Work Instruction, Section 5.0 Implementation of Training, Instruction 5.14; Revision 5
- SS-OP-904-1321; Earthquake/Loss of RBCCW/ATWS; September 2014
- SS-OP-904-1400; APRM Failure, CR Drift, Loss of 72R, ATWS; October 2014
- SS-OP-904-1404; Control Power 72 CF/Jet Pump Failure/LOCA/RPV Flooding; September 2014
- Procedure 23.129; Station And Control Air System; Revision 103
- Procedure 23.308.01; Uninterruptible Power Supply System; Revision 39
- Procedure 24.000.02; Shiftly, Daily, and Weekly Required Surveillances; Revision 142

1R13 – Maintenance Risk Assessments and Emergent Work Control

- CARD 14-28023; NRFP Turning Gear Did Not Start and Engage on Shutdown of the NRFP per 23.107
- CARD 14-28794; NQA – Probabilistic Safety Assessment (PSA) Risk Management Program Non-Compliance
- CARD 14-28861; X4103F152 Failed to Stroke While Performing IC13 Work Order 36657916
- CARD 14-28937; Received 3D19, Annunciator System Trouble Due to VAS MUX A Failure
- CARD 14-28974; Failure of VAS CPU A
- CARD 14-29146; RHR Pump B Seal Cooler Inspection Results From December 2014 SSO
- CARD 12-29119; Expired Grease Used to Lubricate Handwheel Threads on E11F400D, D2 RHRSW Pump D Min Flow Valve
- Drawing 6I721-2080-16; Visual Annunciator & Sequence Recorder Alarm Schematic; Revision O
- Drawing 6I721-4100-01; Annunciator/SOER System Diagram; Revision C
- Drawing 6I721-4100-02; Annunciator/SOER System Interconnect Diagram; Revision B
- Procedure ARP 3D19; Annunciator System Trouble; Revision 19
- Procedure 23.621; Main Control Room Annunciator and Sequence Recorder; Revision 82
- Procedure MMR12; Equipment Out of Service Risk Management; Revision 16
- Procedure ODE-20; Protected Equipment; Revision 14
- Operational Decision Making Issue 14-003; NRFP Drain Line Leak; Revision 0

1R15 – Operability Evaluations

- CARD 14-00617; Valve Bushing Stripped
- CARD 14-25196; Wrong Grease Added to Bearing on P4600C001A,B,C
- CARD 14-25296; Wrong Grease Applied to Crane Sub Components
- CARD 14-27341; Shell Oil Product Line Changes
- CARD 14-27704; Standing Water Found in Electrical Manhole 16947A
- CARD 14-27848; Review PM Practices for Lubricating Greased Motor Bearings
- CARD 14-27924; NRC Question: UFSAR Section 8.3.1.1.8.1, Page 8.3-9 has a Typo
- CARD 14-28221; Incorrect Grease Used in Lower Motor Bearing on RHRSW Pump 'C'
- CARD 14-28232; NRC Issue – Failure to Perform, Immediate Operability Review
- CARD 14-28239; Warehouse Employee Issued Wrong Material on Reservation
- CARD 14-28653; Support Frame Bolt Missing on HCU 06-27 NRC Identified Issue
- CARD 14-29426; P4400F625A Division 1 Makeup Pump Discharge Check Valve Failure to Seat
- Drawing 5I721-6025-02; General Electric Hydraulic Control Unit Parts List; Revision A

- Drawing 6I721-2113-43; Control Rod Drive Hydraulic Piping, South Side, Outside Containment, General Notes and Details; Revision D
- Drawing 6I721-2113-8; Control Rod Drive Hydraulic Piping Plan & Sections 180-270 Quadrant Outside Drywell; Revision F
- Drawing 6I721-6025-01; General Electric Hydraulic Control Unit Assembly Control Rod Drive Hydraulic System; Revision A
- Drawing 6I721N-2201-34; RHR Service Water Pump C E1151C001C
- Drawing 6M721-2081; Control Rod Drive Hydraulic System Reactor Building Part 1 of 2; Revision AX
- Drawing 6M721N-2053; RHR Service Water System Division 2 RHR Complex; Revision AH
- Equivalent Replacement Evaluation 43203; Lubrication Change for Shell Dolium BRB & Stamina RL 2 to Chevron SRI; Revision 0
- Equivalent Replacement Evaluation 44812; Evaluation of Lubrication Change from Shell Alvania 2 and Alvania EP 2 to Shell Gadus S2 V220 2; Revision 0
- Ownership/Screening Committee (OSC) Summary Reports
- Procedure 24.208.02; Division 1 Emergency Equipment Service Water and EECW Makeup Pump and Valve Operability Test; Revision 68
- Procedure 35.000.217; Maintenance Lubrication; Revision 47
- Procedure MQA-11; Condition Assessment Resolution Document; Revision 38
- Procedure ODE-11; CARD Operability/Reportability Determination Expectations; Revision 15
- WO 35975660; Lubricate Lower Motor Bearing on RHRSW Pump A
- WO 35975665; Lubricate Lower Motor Bearing on RHRSW Pump C
- WO 41937789; Incorrect Grease Used in Lower Motor Bearing on RHRSW Pump C
- WO 42048259; Support Frame Bolt Missing on HCU 06-27 NRC Identified Issue

1R19 – Post-Maintenance Testing

- CARD 14-28404; E4150F042, HPCI Torus Suction Inboard Isolation Valve Manual Open Seal-in Not Functioning
- CARD 14-28411; T-handle for E4100F212 Broke
- CARD 14-28443; Request Trending for Main Contactor Aux Contact Operation
- CARD 14-28444; Request for Revision 46.202.001 HPCI Turbine Governor Control System Calibration Procedure
- CARD 14-28450; Potential Issue with Spring Alignment Found Prior to Installation on Valve
- CARD 14-28455; Procedure 46.202.001 Needs Enhancements
- CARD 14-28456; AFCC 4 for PM E663 (HPCI Speed Loop) During WO 35555849
- CARD 14-28479; HPCI Aux Oil Pump Did Not Restart When Tripping HPCI Turbine
- CARD 14-28483; Received 2D68, HPCI Turbine Oil Cooler Disch Temp High Alarm Multiple Times
- CARD 14-28573; Insufficient Electronic Dosimeter (ED) Setpoints Due to Higher Than Expected Radiation Levels
- CARD 14-28795; NQA – Work Order/Procedure Documentation for HPCI Relief Valve Testing Not Completed by a Qualified Worker
- CARD 14-29073; Procedure Enhancement 24.202.01
- Drawing 6M721-2035; High Pressure Coolant Injection System (HPCI) Reactor Bldg; Revision BL
- Drawing 6M721-2043; High Press Coolant Injection Sys Barometric Cndr (HPCI) Reac Bldg; Revision AI
- Drawing 6M721-5708-1; High Pressure Coolant Injection System Functional Operating Sketch; Revision AO
- Procedure 24.202.01; HPCI Pump and Valve Operability Test at 1025 PSI; Revision 103

- Procedure 23.202; High Pressure Coolant Injection System; Revision 108
- Procedure 23.206; Reactor Core Isolation Cooling System; Revision 97
- Procedure 24.307.14; Emergency Diesel Generator 11 – Start and Load Test; Revision 55
- Procedure 34.307.001; Emergency Diesel Generators – Inspection and Preventive Maintenance; Revision 75
- Procedure 46.206.001; RCIC Turbine Governor Control System Calibration; Revision 41
- WO 36223058; Calibrate RCIC Turbine Speed Control Loop
- WO 38400291; Installation of the Split Front Cover on EDG 11
- WO 38575880; Perform 24.307.14 Sec-5.2 EDG 11 Start and Load Test – Fast Start
- WO 42022083; Perform 24.202.01 HPCI Pump and Valve Operability Test at 1025 PSI

1R22 – Surveillance Testing

- Drawing 6M721-5706-2; Residual Heat Removal Division 1 Functional Operating Sketch; Revision X
- IST-PPL; IST Program – Pump Performance Limits Basis; Revision 4
- IST-STB; IST Program – Valve Stroke Time Basis Book; Revision 38
- Procedure 24.204.01; Div. 1 LPCI and Suppression Pool Cooling/Spray Pump and Valve Operability Test; Revision 74
- WO 36589662; Perform 24.204.01 Div. 1 LPCI & Torus Cooling/Spray Pump and Valve Operability Test

1EP4 – Emergency Action Level and Emergency Plan Changes

- Radiological Emergency Response Preparedness Plan; Revisions 42 and 43

1EP6 – Drill Evaluation

- CARD 14-28880; RERP Drill 11/4/14: Status Board Review and Comprehension
- CARD 14-28878; RERP Drill 11/4/14: EOF Activation Comment for Trending
- CARD 14-28605; RERP Drill Identified Gap With Maintenance FLS Training Program
- CARD 14-28609; SWGR 480V Unit Substation Transformer Bus
- CARD 14-28631; RERP Drill 11/4/14: WebEOC Use
- CARD 14-28633; RERP Drill 11/4/14: Observations on Rad Release Identification and PARs
- CARD 14-28636; RERP Drill 11/4/14: Observation(s) of Turnover Between ERO Teams
- CARD 14-28637; RERP Drill 11/4/14: Drill Control Observations
- Procedure EP-101; Fermi 2 RERP Plan Implementing Procedure; Revision 39
- Drill Evaluation Scenario 39e

2RS1 – Radiological Hazard Assessment and Exposure Controls

- Quick Hit Self-Assessment Report: Alpha Monitoring Effectiveness; October 30, 2013
- Quick Hit Self-Assessment of Radiological Hazardous Assessment and Exposure Controls; August 20, 2014
- Quality Assurance Audit of the Radiological Protection Program; October 6, 2014
- Alpha Contamination Level Evaluation Data; 2009 through October 2014
- List of RF-16 Electronic Dosimetry Dose and Dose Rate Alarms
- Adjustment of Electronic Dosimeter Doses to More Accurately Compare to Individual DLR Results; July 14, 2014
- Verification of VHRA/LHRA/ HRA Doors; November 12, 2014
- MRP02; Administrative Controls; Revision 19

- MRP06; Accessing High Radiation, Locked High Radiation, and Very High Radiation Areas at Fermi 2; Revision 14
- MRP31; Control of Keys for High Radiation, Locked High Radiation and Very High Radiation Areas at Fermi 2; Revision 2
- MWC15; Elevated Risk Management; Revision 13
- 63.000.100; Radiation Work Permits; Revision 41
- 63.000.200; ALARA Reviews; Revision 36
- 65.000.737; Set-Up, Operation, Shutdown and Disassembly of a Breathing Air System; Revision 12
- 67.000.100; Posting and De-Posting of Radiological Hazards; Revision 24
- 67.000.101; Performing Surveys and Monitoring Work; Revision 42
- WI-RPO-001; Work Instruction for Job Coverage When Transferring RWCU, FPCCU and Condensate Resin; Revision 11
- WI-RPO-045; Work Instruction – Shutdown Cool (RHR) Survey Information; Revision 0
- SAM11 Calibration Form; Serial Number 306; September 18, 2014
- SAM11 Calibration Form; Serial Number 281; September 19, 2014
- RWP14-5003; Perform Refuel Activities on RB-5, IVVI
- CARD 14-25800; NQA Audit Deficiency – Inconsistent Alpha Contamination Survey Practices; August 26; 2013
- CARD 14-21352; Worker Received Electronic Dose Alarm; February 19, 2014
- CARD 14-21373; 5 Workers Asked to Leave the Drywell After Being Unable to Locate Their Work Location; February 19, 2014
- CARD 14-21639; RF-16 ED Dose Rate Alarms – RP Monitoring to Detect Presence of Emerging Trend; February 24, 2014
- CARD 14-21679; RWP Violation into High Radiation Without Correct Dosimetry; February 25, 2014
- CARD 14-21795; Delta Suit Process Improvements; February 28, 2014
- CARD 14-22516; Individual Enters a Locked High Radiation Area on the Wrong RWP; March 18, 2014
- CARD 14-23141; Dose Alarm Received While Performing S/U Walkdowns; April 5, 2014
- CARD 14-23222; Emerging Trend of Dose Alarms in 2014; April 9, 2014
- CARD 14-26114; UHLD-164 Liner Grapple Malfunction; July 29, 2014
- CARD 14-26964; Increased Dose Rated Identified on FPCCU Lines Resulting in a LHRA Condition; September 3, 2014
- CARD 14-27341; Scaffold Platform Built Near RB1 Steam Tunnel Blowout Panel Gate; September 16, 2014
- CARD 14-27404; NQA Audit Recommendation – Evaluate the Use of Template for Reporting Investigations of Dose/Dose Rate Alarms and Personnel Contamination Events; September 18, 2014

2RS2 – Occupational ALARA Planning and Controls

- Condition Assessment Resolution Document; Corrective Action 13-25842; NQA Audit Recommendation: Revise Guidance for the Station ALARA Committee; April 10, 2013
- Condition Assessment Resolution Document; Corrective Action 13-27701; Revise MRP05 to Align With 63.000.200; January 3, 2014
- Condition Assessment Resolution Document; Corrective Action 14-21359; RF-16 Lessons Learned – DW Cooler Motor Interferences; June 4, 2014
- Condition Assessment Resolution Document; Corrective Action 14-22747; RF-16 Lessons Learned – Challenges with RHRSW Pipe Cutout Result in Increased Dose; June 12, 2014

- Condition Assessment Resolution Document; Corrective Action 14-23433; RF-16 Dose Goal Exceeded; September 25, 2014
- Procedure 63.000.200; ALARA Reviews; Review 34
- Radiation Protection Conduct Manual; MRP05; ALARA/RWPS; Revision 9
- Radiation Work Permit (RWP) and Associated ALARA Files; RWP 143003; Radiation Protection Job Coverage, Surveys and Inspections in the Drywell and RB-1 Steam Tunnel
- Radiation Work Permit (RWP) and Associated ALARA Files; RWP 143024; Drywell Cooler Motor Replacement and All Associated Work
- Radiation Work Permit (RWP) and Associated ALARA Files; RWP 144008; RHR Service Water System Component Repair, Replace, and PMs in the RRA
- Radiation Work Permit (RWP) and Associated ALARA Files; RWP 145002; Perform Refuel Activities on RB-5, Includes Core Alterations, Bridge Repair, LPRM Replacement, Fuel Sipping, and RP Activities
- RF-16 ALARA Post Outage Report; Date Not Provided

40A2 – Identification and Resolution of Problems

- CARD 14-00690; Upper Door Latch on Fire Door R2-14
- CARD 14-00691; Broken Floor Latch of Fire Door RA2-6
- CARD 14-24362; 2014 FPSA – Lack of Engineering Evaluation of Fire Door Assemblies
- CARD 14-26777; Emerging Trend, Fire Door Failures
- CARD 14-27368; RBD 21 Thumb Latch Pin Has Fallen Out
- CARD 14-27369; NRC Concern – TRM Required Fire Door Left Unlatched
- CARD 14-27707; NRC Concern – Latch Not Made Up for AB2 Change Room Stationary Door
- CARD 14-28002; HRD 03 – Bolt Not Fully Retracting
- CARD 14-28005; R2-14 Door Latch Not Meeting Fire Code
- CARD 14-28045; Door Not Closing
- CARD 14-28060; Door Sweep Is Broken
- CARD 14-28226; NRC Identified Issue: Door RHR-D62 Passive Door Latches Unlatched
- CARD 14-28431; HPCI Room Water Tight Door Hand Wheel Loose
- CARD 14-28736; Adverse Trend Identified With Doors
- CARD 14-28788; Latching Mechanism on CO2 System Boundary Door Is Bent
- CARD 14-28833; Broken Push Bar
- CARD 14-28851; Malfunctioning Door Latch
- CARD 14-28859; Fire Door at South End of Turbine Building Oil Storage Room Has a Broken Door Closer
- Procedure 28.507.02; Fire Door Surveillance Test; Revision 18

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
CARD	Condition Assessment Resolution Document
CCHVAC	Control Center Heating, Ventilating and Air Conditioning
CFR	Code of Federal Regulations
CS	Core Spray
DC	Direct Current
EDG	Emergency Diesel Generator
HCU	Hydraulic Control Unit
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IST	Inservice Testing
JPM	Job Performance Measure
LORT	Licensed Operator Requalification Training
LPCI	Low Pressure Coolant Injection
LPRM	Local Power Range Monitor
NCV	Non-Cited Violation
NQA	Nuclear Quality Assurance
NRC	U.S. Nuclear Regulatory Commission
NRFP	North Reactor Feed Pump
ODE	Operations Department Expectation
PARS	Publicly Available Records System
PSI	Pounds per Square Inch
RB-5	5 th Floor of the Reactor Building
RCA	Radiologically Controlled Area
RCIC	Reactor Core Isolation Cooling
RF-16	16 th Refueling Outage
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RWP	Radiation Work Permit
SAT	Systems Approach to Training
SDP	Significance Determination Process
SLC	Standby Liquid Control
SSCs	Structure, System, and Component
TRLCO	Technical Requirement Limiting Condition for Operation
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

P. Fessler

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Sincerely,

/RA/

Michael A. Kunowski, Chief
Branch 5
Division of Reactor Projects

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