



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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November 13, 2017

Mr. Keith Polson
Senior Vice President and Chief Nuclear Officer
DTE Energy Company
Fermi 2 – 260 TAC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI POWER PLANT, UNIT 2—NRC INTEGRATED INSPECTION REPORT
05000341/2017003

Dear Mr. Polson:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2 (Fermi 2). On October 17, 2017, the NRC inspectors discussed the results of this inspection with Mr. M. Caragher and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

Based on the results of this inspection, the NRC has identified two issues, one that was evaluated under the risk significance determination process as having very low safety significance (Green) and one evaluated under the traditional enforcement process as a Severity Level IV violation. Both of these issues involved violations of NRC requirements. Because the licensee initiated condition reports to address these issues, these violations are being treated as Non-Cited Violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report.

If you contest the violations or significance of the Non-Cited Violations, 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 copies to: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and (3) the NRC Resident Inspector at the Fermi 2 Power Plant.

In addition, if you disagree with the cross-cutting aspect assignment to any finding 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 2 Power Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Billy Dickson, Chief
Branch 2
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000341/2017003

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Letter to Keith Polson from Billy Dickson dated November 13, 2017

SUBJECT: FERMI POWER PLANT, UNIT 2—NRC INTEGRATED INSPECTION REPORT
05000341/2017003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000341/2017003

Licensee: DTE Energy Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: July 1, 2017 through September 30, 2017

Inspectors: J. Nance, Acting Senior Resident Inspector
B. Kemker, Senior Resident Inspector
P. Smagacz, Resident Inspector

Approved by: B. Dickson, Chief
Branch 2
Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000341/2017003; 07/01/2017 – 09/30/2017; Fermi Power Plant, Unit 2; Operability Determinations and Functionality Assessments.

This report covers a 3-month period of inspection by the resident inspectors. One Green finding, with an associated Non-Cited Violation (NCV) of U.S. Nuclear Regulatory Commission (NRC) regulations, and one Security Level IV NCV of 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 April 25, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects 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 November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a Non-Cited Violation (NCV) of Technical Specification (TS) 3.8.7 "Distribution Systems – Operating," for the licensee's failure to either restore inoperable Division 1 and Division 2 AC electrical power distribution subsystems to operable status within 8 hours or be in Mode 3 in 12 hours. Specifically, electrical power distribution subsystems required by the above limiting condition for operation were inoperable due to their respective subdivisions of Residual Heat Removal (RHR) switchgear room ventilation systems being out of service and therefore unavailable to provide the technical specification support function of attendant cooling that was needed for the associated electrical systems to perform their specified safety functions. The licensee entered the issue into its corrective action program as CARD 17-26749.

The failure to comply with TS 3.8.7 by either restoring inoperable electrical power subsystems to operable status within 8 hours, or be in Mode 3 in 12 hours was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the Configuration Control attribute of the Mitigating Systems Cornerstone, and adversely affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time, or two separate safety systems out-of-service for greater than its technical specification allowed outage time. The inspectors determined that the violation had a cross-cutting aspect in the area of human performance, resources, because the licensee failed to ensure that the RHR Complex Heating and Ventilation procedure was adequate to support nuclear safety (H.1). (Section 1R15b.2)

Other Findings

Severity Level IV. The inspectors identified a Severity Level IV NCV of the NRC's reporting requirements Title 10 of the *Code of Federal Regulations* (CFR), Part 50.73(a)(1), "Licensee Event Report [LER] System." The licensee failed to submit a required LER or provide a telephone notification within 60 days after discovery on March 24, 2017, of a condition that resulted in the invalid actuation of containment isolation signals affecting containment isolation valves in more than one system. The licensee entered this issue into its corrective action program to evaluate the cause for its failure to satisfy the reporting requirements and to identify appropriate corrective actions. Subsequently, the licensee made a telephone notification on July 14, 2017 to the NRC Operations Center via the Emergency Notification System to report the event (Event Notice 52859).

Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined the performance deficiency was of minor significance based on "No" answers to the more-than-minor screening questions. In accordance with Section 6.9.d.9 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee failed to report as required by 10 CFR 50.73(a)(1). No cross-cutting aspect is associated with this traditional enforcement violation because the associated performance deficiency was determined to be of minor significance and therefore not a finding. (Section 1R15.b.1)

REPORT DETAILS

Summary of Plant Status

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

- On August 5, the licensee reduced power to about 80 percent to perform a control rod pattern adjustment and turbine stop and control valve testing. The unit was returned to full power the following day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report (UFSAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also walked down underground bunkers/manholes subject to flooding that contained multiple train or multiple function risk-significant cables. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written.

This inspection constituted one external flooding sample as defined in Inspection Procedure (IP) 71111.01.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions—Thunderstorms and High Temperatures

a. Inspection Scope

Since thunderstorms and high temperatures were forecasted for the week of September 18-22, the inspectors evaluated the licensee's overall preparations and protection for the expected weather conditions focusing on the emergency diesel generators (EDGs) and off-site power switchyards. The inspectors reviewed plant

specific design features and implementation of procedures for responding to or mitigating the effects of thunderstorms and high temperature conditions on the operation of plant systems. The inspectors observed housekeeping practices surrounding the switchyards and material condition and operating status of the EDGs in case of a loss of off-site power. The inspectors also discussed potential compensatory measures with plant operators.

In addition, the inspectors verified adverse weather protection problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected Condition Assessment Resolution Documents (CARDs) were reviewed to verify corrective actions were appropriate and implemented as scheduled.

This inspection constituted one readiness for impending adverse weather condition 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:

- Division 2 Residual Heat Removal (RHR) during planned maintenance on Division 1 RHR;
- Division 2 EDGs during planned maintenance on EDG 12; and
- Reactor Core Isolation Cooling during planned maintenance on High Pressure Coolant Injection (HPCI).

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones. The inspectors reviewed operating procedures, system diagrams, technical specification (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 problems associated with plant equipment alignment 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 partial system walkdown inspection samples as defined in IP 71111.04.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

From August 28 through September 16, the inspectors performed a complete system alignment inspection of the Control Center Heating, Ventilation, and Air Conditioning (CCHVAC) system to verify the functional capability of the system. This system was selected because it was considered risk significant from an initiating events perspective. 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 focusing on the availability, accessibility, and condition of firefighting equipment in the following risk-significant plant areas:

- Reactor Building First Floor – Mezzanine;
- Auxiliary Building Basement – “T” Room;
- Residual Heat Removal Complex – Division 2 EDGs and Switchgear/Ventilation Rooms;
- Turbine Building Basement – Standby Feedwater Area; and
- Auxiliary Building Fifth Floor – Division 2 CCHVAC.

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 (IPEEE) 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 problems associated with plant fire protection 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 71111.05Q.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

The inspectors observed licensed operators during simulator training on September 12, conducted partially in response to licensee-identified corrective actions intended to improve overall operating crew performance. The inspectors assessed the operators' performance of simulated tasks focusing on alarm response, command and control of crew activities, communication practices, and procedural adherence. The inspectors also observed the operations training staff's post-evaluation critique to assess the ability of the licensee's evaluators to 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.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observations During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On August 5 and 6, the inspectors observed licensed operators in the control room perform power maneuvers for a rod pattern adjustment, main steam valve testing, and turbine stop valve testing. Then, on August 18, the inspectors observed licensed

operators in the control room perform turbine low pressure stop and intercept valve testing. These activities 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.

In addition, the inspectors verified problems related to licensed operator performance 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 quarterly licensed operator heightened activity/risk inspection sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

The inspectors evaluated the licensee's handling of selected degraded performance issues involving the following risk-significant structures, systems, and components (SSCs):

- CARD 17-24655; E1150F068B Division 2 RHR Heat Exchanger Service Water Outlet Flow Control Valve Failed to Open;
- CARD 17-25769; Division 2 CCHVAC Make Up Air Rad Monitor Flow Switch Pegged High;
- CARD 17-27857; Combustion Turbine Generator (CTG) 11-3 Unit Trouble Alarm (11D58) due to High Stator Temperature; and
- CARD 17-21106; Review Reactor Pressure System (RPS) for Maintenance Rule (a)(1) Classification.

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSCs. Specifically, the inspectors independently verified the licensee's handling of SSC performance or condition problems in terms of:

- appropriate work practices;
- identifying and addressing common cause failures;
- scoping of SSCs in accordance with 10 CFR 50.65(b);
- characterizing SSC reliability issues;
- tracking SSC unavailability;
- trending key parameters (condition monitoring);
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification; and
- appropriateness of performance criteria for SSC functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSC functions classified (a)(1).

In addition, the inspectors verified problems associated with the effectiveness of plant maintenance for risk-significant SSCs 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 quarterly maintenance effectiveness inspection samples as defined in IP 71111.12.

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 and risk management actions were performed prior to removing equipment for work:

- Planned maintenance during the week of July 17–21 including the Division 1 RHR/RHR Service Water maintenance outage;
- Planned maintenance during the week of July 31–August 4 including the 65F under voltage and EDG 14 slow start tests and emergent maintenance on the East Gland Seal Exhauster;
- Planned maintenance during the week of August 7–11 including the EDG 12 safety system outage;
- Planned maintenance during the week of August 21–25 including the HPCI safety system outage;
- Emergent maintenance on Division 1 Standby Gas flow high out of specification;

- Planned maintenance during the week of September 18–22 including Division 2 CCHVAC; and
- Emergent maintenance on Division 1 service water pump room ventilation dampers and planned maintenance during the week of September 25–29 including the turbine building closed cooling water west heat exchanger replacement.

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 seven maintenance risk assessment and emergent work control 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 17–22500; Electrical Perturbation Occurred While Restoring Bus 64C to Offsite per 24.321.09;
- CARD 17–23600; Unable to Remote Start CTG 11–1 During Surveillance Testing;
- CARD 17–23029; Snubber T23–I2837–36–G56 Failed Functional Test; and
- CARD 17–00767; Diesel Fire Pump Failed to Start;
- CARD 17–26749; NRC Question Operability of EDG Switchgear with No Ventilation Available; and
- CARD 17–27936; RHR Division 1 Pump Room Dampers Indicating Closed.

The inspectors selected these potential operability/functionality issues based on the safety 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. 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 and/or nonconforming conditions were identified.

In addition, the inspectors verified problems associated with 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 corrective actions were appropriate and implemented as scheduled.

This inspection constituted six operability determination and functionality assessment inspection samples as defined in IP 71111.15.

b. Findings

(1) Failure to Satisfy 10 CFR 50.73 Reporting Requirements for Primary Containment Isolation Valve Actuations

Introduction: The inspectors identified a Severity Level IV Non-Cited Violation of the NRC's reporting requirements in 10 CFR 50.73(a)(1), "Licensee Event Report System." The licensee failed to submit a required LER or provide a telephone notification within 60 days after discovery on March 24, 2017, of a condition that resulted in the invalid actuation of containment isolation signals affecting containment isolation valves in more than one system.

Description: While performing testing during the refueling outage on March 24 with the unit in Mode 5 (refueling), an electrical perturbation occurred when synchronizing EDG 12 with offsite power. The electrical perturbation caused a loss of RPS channel A power and a loss of power to nuclear steam supply shutoff system (NSSSS) channels A and C. Several equipment/component actuations occurred including an RPS A half-scrum, Division 1 NSSSSs actuation; auto start of the Division 1 standby gas treatment subsystem; trip of the reactor building heating, ventilation, and air conditioning system; and isolation of drywell pneumatics. CARD 17-22500 was written to evaluate the event. The licensee determined the bus tie breaker was apparently closed with the EDG slightly out-of-phase with offsite power, which caused an electrical voltage and current transient. The licensee correctly concluded none of the equipment/component actuations met the reporting requirements in 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors;" however, it did not subsequently review the event with respect to the 10 CFR 50.73 reporting requirements.

The inspectors reviewed the licensee's initial evaluation of the event and raised questions with the licensee to better understand which primary containment isolation valves actuated as a result of the Division 1 NSSSS actuation and whether the reporting requirements in 10 CFR 50.73 were satisfied since it appeared containment isolation valves in more than one system received isolation signals. The inspectors reviewed the control room logs and noted that in addition to the drywell pneumatics valves, the drywell

floor and equipment drain valves also isolated. Although the containment isolation was not required due to the actual plant conditions, the invalid actuation of containment valves in more than one system would be reportable under 10 CFR 50.73(a)(2)(iv)(A).

In response to the inspectors' questions, the licensee initiated CARD 17-25005, "10 CFR 50.73 Reportability Review of CARD 17-22500 Not Documented Within 60 Days," and completed an evaluation of the event with respect to the 10 CFR 50.73 reporting requirements. The licensee determined this event should have been reported since Division 1 primary containment isolation valves actuated (closed) in three systems (drywell pneumatics, drywell floor and equipment drains, and torus water management). The licensee made a telephone notification on July 14, 2017 to the NRC Operations Center via the Emergency Notification System to report the event (Event Notice 52859).

Analysis: The inspectors determined the licensee's failure to report the invalid primary containment isolation valve actuations in accordance with the requirements in 10 CFR 50.73 was a licensee performance deficiency warranting a significance evaluation. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined the performance deficiency was not a finding of more than minor significance based on "No" answers to the more-than-minor screening questions. The inspectors also reviewed the examples of minor issues in IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009, and found no examples related to this issue.

Violations of 10 CFR 50.73 are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. This violation was also associated with a performance deficiency that has been evaluated as having minor safety significance by the significance determination process (SDP). The SDP, however, does not specifically consider regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and performance deficiency using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated performance deficiency. In accordance with Section 6.9.d.9 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee failed to make a report to the NRC as required by 10 CFR 50.73(a)(1).

No cross-cutting aspect is associated with this traditional enforcement violation because the associated performance deficiency was determined to be of minor safety significance and therefore not a finding.

Enforcement: Title 10 CFR 50.73(a)(1) requires, in part, that the licensee submit an LER for any event of the type described in this paragraph within 60 days after the discovery of the event. Title 10 CFR 50.73(a)(2)(iv)(A) requires, in part, that the licensee report any event or condition that resulted in manual or automatic actuation of any of the systems listed in Paragraph (a)(2)(iv)(B). Title 10 CFR 50.73(a)(2)(iv)(B)(2) lists general containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves.

Contrary to the above, the licensee failed to submit a required LER or provide a telephone notification within 60 days after discovery of a condition on March 24, 2017, that resulted in the invalid actuation of containment isolation signals affecting

containment isolation valves in more than one system as required by 10 CFR 50.73(a)(2)(iv)(A). The condition involved the invalid automatic actuation of the primary containment isolation logic for Groups 12, 13, and 18 primary containment isolation valves on March 24, 2017.

In accordance with Section 6.9.d.9 of the Enforcement Policy, this violation was classified as a Severity Level IV Violation. Because this violation was not repetitive or willful, and was entered into the licensee's corrective action program, it is being treated as a Non-Cited Violation consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000341/2017003-01, Failure to Satisfy 10 CFR 50.73 Reporting Requirements for Primary Containment Isolation Valve Actuations)**

The licensee entered this issue into its corrective action program (CARD 17-25005) to evaluate the cause for its failure to satisfy the reporting requirements and to identify appropriate corrective actions. Subsequently, the licensee made a notification call on July 14, 2017 to the NRC Operations Center via the Emergency Notification System to report the event (Event Notice 52859).

(2) Technical Specification Allowed Outage Time Exceeded for Electrical Power Distribution Systems Due to Auxiliary Equipment Out of Service

The inspectors identified a non-cited violation (NCV) of TS 3.8.7 "Distribution Systems – Operating," for the licensee's failure to restore inoperable Division 1 and Division 2 AC electrical power distribution subsystems to operable status within 8 hours, or be in Mode 3 in 12 hours. Specifically, on multiple occasions, electrical power distribution subsystems required by the above limiting condition for operation were inoperable due to their respective subdivisions of RHR switchgear room ventilation systems being out of service and therefore unavailable to provide the technical specification support function of attendant cooling that is needed for the associated electrical systems to perform their specified safety functions. The RHR switchgear room ventilation systems are required by the licensee's Updated Final Safety Analysis Report to be operable when the safety-related equipment in the associated room is required to be operable.

Description: The licensee's Updated Final Safety Analysis Report, in Section 3.11.4.4, "Residual Heat Removal Complex Safety-Related Ventilation Systems," states, in part, to maintain conditions below the limits specified in Table 3.11-4, each diesel generator room, switchgear room, and pump room is ventilated with two 50 percent-capacity supply air fans. They are not required unless the equipment served is required, and are designed to start when the associated diesel generator starts, or a preset high room temperature is reached. The switchgear in the RHR switchgear rooms are required to be operable in Modes 1, 2, and 3, as described in TS 3.8.7. On August 10, 2017, the inspectors questioned the licensee on the operability of RHR switchgear when the ventilation supply fans were out of service. The licensed operators stated that Precaution and Limitation 3.2 of station technical and operating procedure 23.420, "RHR Complex Heating and Ventilation," Revision 35, allowed RHR Pump Room and Switchgear Room equipment to remain operable without the applicable ventilation system being returned to normal operable status as long as temperatures do not exceed 104 degrees Fahrenheit (F) in the area, or for 24 hours if temperature exceeds 104 degrees F. The procedure referred to design calculation (DC)-4953, "RHR Complex Abnormal Operation-Damper Lineups," dated December 20, 2002, which was incorporated into procedure 23.420 on January 26, 2003.

The purpose of the design calculation states, in part, that it is to determine acceptable damper configurations based upon outside air temperature to maintain RHR complex design temperatures. The purpose further states, in part, that the results of the calculation should only be utilized in the event the motor operated dampers are unable to perform their design function and a spare operator is not readily available.

The licensee documented the issue in its corrective action program as CARD 17–26749 and took interim actions using Nuclear Generation Memo NPOP–17–0067 to outline department guidance to not use the guidance of DC–4953 until an engineering technical evaluation was completed. The subsequent technical evaluation concluded that the condition where both ventilation supply fans were out of service does not support operability of the AC distribution systems (i.e., 4160 kV and 480 V buses) in the RHR switchgear rooms. Additional licensee corrective actions planned include, but are not limited to, modification of procedure 23.420, “RHR Complex Heating and Ventilation,” to reflect the technical evaluation results.

Based on the licensee’s evaluation and a review of operating history since the procedure change in 2003, the inspectors concluded that on numerous occasions, between September 10, 2014, and August 9, 2017, the requirements of TS 3.8.7 were not met for the RHR switchgear room ventilation systems.

Analysis: The inspectors determined that the licensee’s failure to comply with TS 3.8.7 by either restoring inoperable electrical power subsystems to operable status within 8 hours, or be in Mode 3 in 12 hours was a performance deficiency. Specifically, the inspectors identified numerous occasions, between September 10, 2014, and August 9, 2017, where safety-related RHR switchgear ventilation systems were removed from service without restoring these systems within 8 hours or taking action to place the unit in Mode 3 within 12 hours.

The performance deficiency was determined to be more-than-minor because it was associated with the Configuration Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

In accordance with IMC 0609, Attachment 4, “Initial Characterization of Findings,” issued October 7, 2016, and Exhibit 2 of IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” issued June 19, 2012, the inspectors determined that this finding was of very low safety significance (Green) because it did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time, or two separate safety systems out-of-service for greater than its technical specification allowed outage time. That answer was based on reference material in the recent technical evaluation that showed that without the RHR switchgear room ventilation in operation for the probabilistic risk analysis mission time of 24–hours, the switchgear inside the room would still be able to perform its safety function. The inspectors determined that the violation had a cross-cutting aspect in the area of human performance, resources, because the licensee failed to ensure that the RHR Complex Heating and Ventilation procedure was adequate to support nuclear safety. H(1)

Enforcement: Technical Specification (TS) 3.8.7, “Distribution Systems – Operating,” requires, in part, that Division 1 and Division 2 AC and DC electrical power distribution

subsystems shall be operable in Modes 1, 2 and 3. Technical Specification 3.8.7 requires that if one or more required AC electrical power distribution subsystems is inoperable for more than 8 hours, action must be taken to place the unit in Mode 3 within 12 hours. Contrary to the above, on numerous occasions between September 10, 2014, and August 9, 2017, the licensee removed safety-related RHR switchgear ventilation systems from service without restoring these systems within 8 hours or taking action to place the unit in Mode 3 within 12 hours. Because the violation was of very low safety significance and was entered into the licensee's CAP, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement policy. **(NCV 05000341/2017003-02, Technical Specification Allowed Outage Time Exceeded for Electrical Power Distribution Systems Due to Auxiliary Equipment Out of Service)**

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 44741403; Perform 24 Month Post Maintenance Tasks on EDG 12 and R30P343C;
- HPCI Safety System Outage - Final Post Maintenance Test;
- WO 45095048; Inspect/Lube Blower and Motor, Replace Belts for CCHVAC Control Room North Division 1 Multizone Air Supply Unit; and
- WO 48734267; Troubleshoot/Repair of EDG 13 Output Breaker Tripping.

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 activities 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 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 functions and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- 24.204.01; Division 1 Low Pressure Coolant Injection and Suppression Pool Cooling/Spray Pump and Valve Operability Test;
- 24.307.16; Emergency Diesel Generator 13—Start and Load Test;
- 27.109.01; Turbine Steam Valves Test; and
- 44.030.155; Emergency Core Cooling System - HPCI Torus Level Functional 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 problems associated with surveillance testing activities 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 in-service test and three routine surveillance tests, for a total of four surveillance testing inspection samples as defined in IP 71111.22.

b. Findings

No findings were identified.

2. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index—Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported Mitigating Systems Performance Index (MSPI) Heat Removal System Performance

Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2016 through June 2017 to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI—Heat Removal System Performance Indicator verification inspection sample as defined in Inspection Procedure (IP) 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index—Residual Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI—Residual Heat Removal System (RHR) Systems Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, Licensee Event Reports (LERs), and maintenance and test data from July 2016 through June 2017 to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI—RHR Systems Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—Cooling Water Systems

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI Cooling Water Systems Performance Indicator. To determine the accuracy of the

performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2016 through June 2017 to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI Cooling Water Systems Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings were identified.

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 Annual In-depth Review Samples

a. Inspection Scope

The inspectors selected the following issues for in-depth review:

- CARD 13-24841; EDG Steady State Voltage and Frequency Technical Specification Ranges.

As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above CARD and other related CARDS:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;

- consideration of the extent of condition, generic implications, common cause, and previous occurrences;
- evaluation and disposition of operability/functionality/reportability issues;
- classification and prioritization of the resolution of the problem commensurate with safety significance;
- identification of the root and contributing causes of the problem; and
- identification of corrective actions, which were appropriately focused to correct the problem.

The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

This inspection constituted one annual in-depth review inspection samples as defined in IP 71152.

b. Findings

No findings were identified.

.3 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 component mispositionings, 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 January 2017 through June 2017, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the 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 review constituted one semi-annual trend review inspection sample as defined in IP 71152.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Retraction of Event Notification 52724: Unanalyzed Condition Combustion Turbine Generator 11-1

a. Inspection Scope

On May 2, 2017, the licensee submitted Event Notification 52724, "Unanalyzed Condition CTG 11-1," to the NRC for a condition discovered by the licensee that could not have ensured the applicable Appendix R success criteria under all of the postulated scenarios described in the Updated Final Safety Analysis Report (UFSAR) for Combustion Turbine Generator (CTG) 11-1. From December 21, 2016, until March 18, 2017, when Mode 4 was entered, CTG 11-1 was determined to be in a configuration where it could not be started from the dedicated shutdown panel although it could be started locally. One of the specific scenarios for Appendix R in the UFSAR credits CTG 11-1 to support a safe shutdown based on an assumed time required to start CTG 11-1 and then provide flow to the reactor pressure vessel using the Standby Feedwater System.

On May 19, the licensee retracted Event Notification 52724. A time validation study was performed verifying operator actions could have been completed within the time described in the UFSAR for initiating Standby Feedwater flow to the reactor pressure vessel to ensure Appendix R safe shutdown capability under the plant conditions during the relevant time period.

The inspectors reviewed the basis for the retraction including the time validation study. The inspectors concurred with the conclusion that operators would have sufficient time to manually start CTG 11-1 and initiate the Standby Feedwater System in compliance with the UFSAR and Appendix R requirements.

This inspection constituted one event follow-up inspection sample as defined in IP 71153.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 17, 2017, the inspectors presented the inspection results to Mr. M. Caragher and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

On November 9, 2017, the inspectors presented the results of the finding associated with the "Technical Specification Allowed Outage Time Exceeded for Electrical Power

Distribution Systems Due to Auxiliary Equipment Out of Service,” (Section 1R15b.2) to Mr. L. Bennett and other members of the licensee staff. The licensee acknowledged the issues presented and confirmed that none of the potential report input was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

L. Anderson, Manager, Radiological Emergency Response Preparedness (incoming)
N. Avrakotos, Manager, Radiological Emergency Response Preparedness (outgoing)
L. Bennett, Director, Nuclear Operations
R. Breymaier, Manager, Performance Engineering and Fuels
M. Brooks, Principal Technical Expert
M. Caragher, Executive Director, Nuclear Production
W. Colonnello, Director, Nuclear Project Management
K. Dittman, Acting Manager, Plant Support Engineering
D. Dowski, Engineer, Plant Systems Engineering
M. Donigian, Supervisor, Operations Training
J. Haas, Supervisor, Licensing
D. Hemmele, Superintendent, Nuclear Operations
E. Kokosky, Director, Organization Effectiveness
R. Laburn, Manager, Radiation Protection
K. Locke, General Supervisor - Electrical, Plant Systems Engineering
S. Maglio, Manager, Licensing
K. Mann, Supervisor, Regulatory Compliance
R. Matuszak, Manager, Plant Systems Engineering
D. Noetzel, Director, Nuclear Engineering
K. Polson, Senior Vice President and Chief Nuclear Officer
W. Raymer, Director, Nuclear Maintenance
B. Rumans, General Supervisor, Radiation Protection Technical Services
P. Southwell, General Supervisor, Radiation Protection ALARA

U.S. Nuclear Regulatory Commission

B. Dickson. Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---------------------|-----|---|
| 05000341/2017003-01 | NCV | Failure to Satisfy 10 CFR 50.73 Reporting Requirements for Primary Containment Isolation Valve Actuations (Section 1R15.b.1) |
| 05000341/2017003-02 | NCV | Technical Specification Allowed Outage Time Exceeded for Electrical Power Distribution Systems Due to Auxiliary Equipment Out of Service (1R15.b.2) |

Closed

| | | |
|---------------------|-----|---|
| 05000341/2017003-01 | NCV | Failure to Satisfy 10 CFR 50.73 Reporting Requirements for Primary Containment Isolation Valve Actuations (Section 1R15.b.1) |
| 05000341/2017003-02 | NCV | Technical Specification Allowed Outage Time Exceeded for Electrical Power Distribution Systems Due to Auxiliary Equipment Out of Service (1R15.b.2) |

LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply the NRC inspectors reviewed the documents in their entirety, but rather, selected sections of 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

- Fermi 2 Operations Conduct Manual MOP01-200; Severe Weather Guidelines; Revision 0
- Fermi 2 UFSAR; Section 2.4.2, Floods; Revision 20
- Fermi 2 UFSAR; Section 3.4, Water Level (Flood) Design; Revision 20
- Individual Plant Examination of External Events (IPEEE) For High Winds, Floods, and Transportation and Nearby Facility Accidents for Enrico Fermi Unit 2; Report Number 95-R102-59-01; Revision 0
- Memo from DTE NRC-13-0013; To NRC; Flooding Hazard Reevaluation Report; March 8, 2013
- NRC Information Notice 2015-01; Degraded Ability to Mitigate Flooding Events; January 9, 2015
- Procedure 20.000.01; Acts of Nature; Revision 51
- Procedure 20.300.SBO; Loss of Offsite and Onsite Power; Revision 25
- Procedure 29.400.02; Flex Flood; Revision 2
- WO 44131585; Local Leak Rate Testing Failure – Reactor Building Equipment Drain Sump Check Valve G1101F1411 Exceeded Leakage Limit
- WO 44132136; Perform 47.000.84 Sec-6.2 Local Leak Rate Testing for Equipment Drain Check Valves – Partial for G1101F1411

1R04 Equipment Alignment

- CARD 17-26349; Division 2 CCHVAC Has Three Parameters in Excess of Guidance in EPRI
- Drawing 51721-6005-02; Control Center Heating Ventilation and Air Conditioning (CCHVAC) Chiller Control Panel Division I and II Sheet 2; Revision A
- Drawing 51721-6005-03; Control Center Heating Ventilation and Air Conditioning (CCHVAC) Chiller Control Panel Division I and II Sheet 3; Revision 0
- Drawing 51721-6013-01; Control Center Heating Ventilation and Air Conditioner (CCHVAC) Division I and II Air Conditioner Chiller; Revision 0
- Drawing 61721-6005-01; Control Center Heating Ventilation and Air Conditioning (CCHVAC) Chiller Control Panel Divisions I and II Sheet 1; Revision 0
- Fermi 2 Chemistry Specifications; CCHVAC Chill Water System Tier 1 Intermittent; Revision 2
- Procedure 23.205; Residual Heat Removal System; Revision 133
- Procedure 23.206; Reactor Core Isolation Cooling System; Revision 99A
- Procedure 23.208; RHR Complex Service Water Systems; Revision 113
- Procedure 23.307; Emergency Diesel Generator System; Revision 122
- Procedure 23.413; Control Center HVAC; Revision 93
- Procedure 24.413.01; Division I and II Control Center Chilled Water Pump and Valve Operability Test; Revision 43
- Procedure 24.413.03; Control Room Emergency Filter Monthly Operability Test; Revision 38
- Procedure 24.413.04; Division 1 Control Room Emergency Filter Auto Transfer Test; Revision 38

- Procedure 24.413.05; Division 2 Control Room Emergency Filter Auto Transfer Test; Revision 39
- Sketch 6M721-5706; Residual Heat Removal Division II Functional Operating Sketch; Revision AJ
- Technical Service Request 36147; Scaffold Storage Areas in the Plant; Revision 0
- TE-T41-17-048; Division 1 and 2 CCHVAC Chiller Chill-Water Chemistry Exceeds EPRI Guidance; Revision 0

1R05 Fire Protection

- CARD 17-26390; Numerous CO2 Boundary Doors with Damaged Weather Stripping
- Fire Protection Pre-Plan FP-RB-1-7b; Reactor Building South Control Rod Drive (CRD) and Railroad Bay Area, Zone 7; Revision 4
- Procedure FP-AB-5-16e; Auxiliary Building Division II Control Center Heating, Ventilating, and Air Conditioning System Equipment Room, Zone 16, Elevation 677'6"; Revision 2
- Procedure FP-AB-5-16f; Auxiliary Building, Fifth Floor Ventilation Equipment Room, Zone 16, Elevation 677'0"; Revision 4
- Procedure FP-RB-B-5c; Reactor Building Basement Corridors, Zone 5, Elevation 562'0" and Elevation 564'0"; Revision 3
- Procedure FP-RHR-1-13-EDG; RHR Complex, EDG, 13 Room, Elevation 590'0"; Revision 6
- Procedure FP-RHR-1-13-OS; RHR Complex, EDG 13 Oil Storage Room, Elevation 590'0"; Revision 3
- Procedure FP-RHR-1-14-EDG; RHR Complex, EDG 14 Room, Elevation 590'0"; Revision 5
- Procedure FP-RHR-1-14-OS; RHR Complex, EDG 14 Oil Storage Room, Elevation 590'0"; Revision 4
- Procedure FP-RHR-2-54; RHR Complex, EDG 13 Switchgear and Switchgear Ventilation Room, zone 54, Elevation 617'0"; Revision 4
- Procedure FP-RHR-2-55; RHR Complex, EDG 14 Switchgear and Switchgear Ventilation Room Zone 55, Elevation 617'0"; Revision 4
- Procedure FP-TB; Turbine Building; Revision 9

1R11 Licensed Operator Regualification Program

- Procedure 22.000.03; Power Operation 20% to 100% to 25%; Revision 102
- Procedure 24.137.01; Main Steam Line Isolation Channel Functional Test; Revision 43
- Procedure SS-OP-904-7005; Main Steam Line Transmitter Failure, Recirculation Pump Trip, and Loss of Coolant Accident; Revision 3

1R12 Maintenance Effectiveness

- CARD 14-20706; D1100 (a)(1) Common Cause Get Well Plan
- CARD 15-30252; D11N428A, Division 1 CCHVAC Makeup Air Radiation Monitor Flow Switch, Has Been Degrading Since 2013
- CARD 16-22419; RB SPING Channel 9 High Range Noble Gas Detector Failure
- CARD 16-22445; Division 2 Standby Gas Treatment System Exhaust Accident Range Radiation Monitor Channel 4 Failed High
- CARD 16-27433; While Performing 44.080.402 D11K813 Division 2 CCHVAC Makeup Radiation Monitor Failed Downscale
- CARD 16-29709; Standby Gas Treatment System Division 2 AXM Channel 0804 Failed Low During Weekly Check
- CARD 17-21106; Review RPS for Maintenance Rule (a)(1) Classification
- CARD 17-21423; Off Gas Radiation Monitor B Fail

- CARD 17-23734; RPS-A EPA Breaker Found Tripped
- CARD 17-23898; RPS Initial Get Well Plan Not Timely
- CARD 17-24236; E1150F068B, Division 2 RHR Heat Exchanger Service Water Outlet Flow Control Valve, Limit Switch/Position Indication Failed
- CARD 17-24655; E1150F068B Division 2 RHR Heat Exchanger Service Water Outlet Flow Control Valve Failed to Open
- CARD 17-25427; Test Jacks Installed and not Documented
- CARD 17-25769; Division 2 CCHVAC Makeup Air Radiation Monitor Flow Switch Pegged High
- CARD 17-27857; CTG 11–3 Unit Trouble Alarm (11D58) due to High Stator Temperature
- CARD 18-20449; Off Gas Radiation Monitor Readings Increase >25% in 24 Hours (Action Level 1)
- Chemistry Excursion Engineering Evaluation Report; March 6, 2017
- Equipment Apparent Cause Evaluation CARD 17-24655; Failure of E1150F068B, Division 2 RHR Service Water Heat Exchanger Outlet Flow Control Valve to Open; Revision 1
- Fermi 2 (a)(1) Action Plan; Revision 0
- Fermi 2 D1100; (a)(1) Action Plan; Revision 10
- Fermi 2 System Health Status; Process Radiation Monitors; Fourth Quarter 2016
- Fermi 2 System Health Status; Auxiliary Electrical (CTG's) R1100; 2017 Quarter 1 & 2
- Fermi 2 System Health Status; Reactor Protection System; 2016
- MMR 03001; Maintenance Rule Scope Determination for SSCs; Revision 8
- NRC Information Notice 2013-13; Deficiencies with Effluent Radiation Monitoring System Instrumentation; April 15, 2015; Revision 1
- Nuclear Plant Operating Agreement for the Fermi 2 Nuclear Power Plant; Revision 9
- WO 42914155; Check +/- 24-VDC Per I-2183-05 If Voltage is not Present Check Associated Fuses

1R13 Maintenance Risk Assessment and Emergent Work Control

- CARD 17-23283; Abnormally High Flow through Division 1 SGTS
- CARD 17-27670; Division 1 SGTS Flow out of Spec High
- CARD 17-27936; RHR Division 1 Pump Room Dampers Indicating Closed
- CARD 17-27939; No Evidence of 100 Hour Burn-in for Material Master
- CARD 17-27955; Potential Decant Line Underground Leak
- CARD 17-27983; NRC Identified Transient Combustible in Column 12 RB-2
- Fermi 2 Archived Operator Log; September 15, 2017
- Fermi 2 Plan of the Day; Division 2 Week; August 22, 2017
- Fermi 2 Plan of the Day; Division 2 Week; August 23, 2017
- Fermi 2 Plan of the Day; Division 2 Week; August 24, 2017
- ODE-20; Protected Equipment; Revision 22
- Procedure 24.404.02; Division 1 SGTS Filter and Secondary Containment Isolation Damper Operability Test; Revision 44
- Risk Management Plan; 44.030.057 ECCS – Reactor Recirculation Riser DP, Division 2 Functional Test
- Risk Management Plan; 44.030.255—Reactor Vessel Water Level (Levels 1, 2, and 8) Division 1, Channel A Calibration; August 12, 2015
- Risk Management Plan; 44.030.257—Reactor Vessel Water Level (Levels 1, 2, and 8) Division 1, Channel C Calibration; August 13, 2015
- Risk Management Plan; 44.030.280 ECCS – Reactor Steam Dome Pressure – RHR Loop Select Permissive
- Risk Management Plan; 44826769 Inspect, Clean/Replace GSWBI Strainers and Expansion Joints; August 2, 2017

- Risk Management Plan; 48200356 Half Scram Received During Performance of Surveillance 44.020.432; July 18, 2017
- Risk Management Plan; 48309134 Mechanical Draft Cooling Tower B E1156C001B Brake System Leak Inspection and N2 Bottle Change Out; August 1, 2017
- Risk Management Plan; Foundation Enhancement of East Gland Seal Exhauster WO 48661512
- Risk Management Plan; Inspection for High Vibes on the East Gland Sealing Steam Exhauster, (N3013C023, WO 483325893); August 3, 2017
- Risk Management Plan; Perform 44.030.249 Reactor Vessel Water Level (Level 2) ATWS-Report Division 1 Functional Test; February 2, 2017
- Risk Management Plan; Perform 44.030.251 Reactor Vessel Water Level (Level 1, 2, & 8) Division 1 Channel A Functional Test; February 7, 2017
- Risk Management Plan; Perform 44.030.253 Reactor Vessel Water Level (Level 2 & 8) Division 1 Channel C Functional Test; February 7, 2017
- Risk Management Plan; Perform 44.030.292 Emergency Core Cooling System—Drywell Pressure, Ads Actuation, Trip System B, Channel Functional Test; August 2, 2016
- Risk Management Plan; Replace EDG Division 1 Load Sequencer Power Supplies; August 7, 2017
- Risk Management Plan; Risk Management Plan for the Performance of 24.321.07 (72CF Throwover Test); May 11, 2015
- Risk Management Plan; Safety Risk Plan for WO 48110370; July 19, 2017
- Risk Management Plan; WO 45092946 Replace West TBCCW Heat Exchanger
- WO 48682201; Division 1 SGTs Flow out of Spec High
- Work Week Strategy Document; AIM: 17-24482; EDG 12 SSO, 72 CF Automatic Throwover Surveillance, CFD “G” Work, Retube East TBCCW Heat Exchanger. CRD Operability Surveillances; August 7, 2017

1R15 Operability Determinations and Functionality Assessments

- CARD 17-00767; Diesel Fire Pump Failed to Start
- CARD 17-22500; Electrical Perturbation Occurred While Restoring Bus 64C to Offsite Per 24.321.09
- CARD 17-23029; Snubber T23-I2837-36-G56 Failed Functional Test
- CARD 17-23600; Unable to Remote Start CTG 11-1 During 24.324.01 Section 5.1
- CARD 17-25005; 10 CFR 50.73 Reportability Review of CARD 17-22500 not Documented Within 60 Days
- CARD 17-26749; NRC Question Operability of EDG Switchgear with no Ventilation Available
- CARD 17-26749-01; Complete MRFF Review
- CARD 17-27936; RHR Division 1 Pump Room Dampers Indicating Closed
- CARD 17-27980; X4103F157 Damper Actuating Collar not Affixed to Shaft
- CARD 17-28003; Division 1 RHR Pump Room Damper Position Anomaly
- CARD 17-28021; Enhancement to DBE X41-03
- Design Basis Document X41-03; Residual Heat Removal Complex Heating and Ventilating System; Revision B
- Design Calculation DC-4953 Volume 1; RHR Complex Abnormal Operation-Damper Lineups; Revision 1
- Event Notification 17-005-A; Retraction of Event Notification 52724
- Event Notification 52724; Past Configuration of CTG 11-1 Could not have Assured all of the Applicable Appendix R Success Criteria Under all of the Postulated Scenarios Described in the UFSAR

- Event Notification 52859; Unplanned, Invalid Actuation of Containment Isolation Valves in More than One System Which Occurred During the Most Recent Refueling Outage at Fermi 2
- Fermi 2 Archived Operator Log; September 27, 2017 – September 28, 2017
- Fermi 2 Control Room Log; August 11, 2017
- Fermi 2 Control Room Log; August 8, 2017
- Fermi 2 Control Room Log; August 9, 2017
- Fermi 2 Control Room Log; July 28, 2017
- Fermi 2 Control Room Log; March 24, 2017
- Fermi 2 Control Room Log; September 11, 2017
- Fermi 2 Control Room Log; September 12, 2017
- Fermi 2 Control Room Log; September 28, 2017
- Fermi 2 Operator Log; October 1, 2014 to October 3, 2014
- Fermi 2 Operator Log; October 7, 2014 to October 14, 2017
- Fermi 2 Safety Tagging Record; Diesel Generators, Auxiliaries, and Load, – EDG 12
- Fermi 2 UFSAR; 7.5-12; Safety Parameter Display System; Revision 20
- Fermi 2 UFSAR; Revision 20
- Fermi Control Room Log; September 27, 2017
- LCO 2017-0510; Division 1 RHR Pump Room Dampers X4103F157 and X4103F162 are Blocked per 23.420
- Procedure 20.000.18; Control of the Plant from the Dedicated Shutdown Panel; Revision 52
- Procedure 23.324; Supervisory Control—120 kv Switchyard and Ctg11 Generators; Revision 86
- Procedure 23.420; RHR Complex Heating and Ventilation; Revision 28
- Procedure 27.000.09; Time Critical Actions Validation and Verification; Revision 1
- PSA Mechanical Snubber Test Data Sheet; SST Job ID 44153977; April 3, 2017
- Technical Evaluation TE-T23-17-030; Snubber T23-I2837-36-G56 Functional Failure Evaluation; Revision 0
- Time Verification Validation Record; Operator Starting CTG Unit 1 When Start from Main Control Room Fails During 20.000.18

1R19 Post-Maintenance Testing

- CARD 17-23295; Indications of a Ground on 2PB Battery on the Neutral Line
- CARD 17-27858; 2PB Ground Detector Lights Indicate Fault
- CARD 17-27904; EDG 13 Output Breaker Failed to Close During Manual Start and Load Test
- Fermi 2 Control Room Log; September 22, 2017
- Fermi 2 Control Room Log; September 23, 2017
- Fermi 2 Control Room Log; September 24, 2017
- Fermi 2 Control Room Log; September 25, 2017
- Fermi 2 Shift Manager Daily Alignment Meeting; September 25, 2017
- Fermi 2 Control Room Log; August 24, 2017
- Foreign Material Control Log; WOs 44270257 and 45161331; August 7, 2017
- Procedure 24.107.03; SBFW Pump and Valve Operability and Lineup Verification Test; Revision 42
- Procedure 24.202.01; HPCI Pump and Valve Operability Test at 1025 PSI; Revision 112
- Procedure 24.202.08; HPCI Time Response and Pump Operability Test at 1025 PSI; Revision 14
- Procedure 24.307.46; Emergency Diesel Generator 12—Fast Start Followed by Load Reject; Revision 15
- WO 25970681; Inspect, Clean, and Test Air Start Check Valves Per 34.307.001
- WO 26001099; Perform NON-ASME as Found and as Left Relief

- WO 26832950; Inspect, Clean, and Test Air Start Check Valves Per 34.307.001
- WO 37545242; Visually Inspect ITE/GOULD Series 'J' Relays for Thermal Degradation
- WO 37640413; Calibrate EDG-12 DGSW Pump 'C' Minimum Flow Loop
- WO 38363575; Oil Leak EDG-12 Near Control Side Turbo
- WO 38567644; Replace Tubing on Low Lube Oil Pressure Sensing Lines with SS Tubing
- WO 38567673; Replace Tubing on Fuel Oil Supply Lines With SS Tubing
- WO 42280739; Replace EDG Division 1 Sequencer Power Supplies
- WO 42472627; Division 1 EECW Temperature Control Valve Plugging – Division 1 EESW System Flow During Biocide Below Maintenance Trigger Limit
- WO 42556139; Replace Filter Element in EDG-12 Air Cooler Pressure Regulator
- WO 42562496; Calibrate EDG-12 Lube Oil System Instrumentation
- WO 42569772; Calibrate EDG-12 Air Cooler Temperature Control Loop
- WO 43131015; Sample Valve for R30R564C has a Slow Leak
- WO 43470807; Replace Door Seal Gasket Material at EDG-12 Control Panel R3000S006
- WO 43491515; Replace EDG-12 Voltage Regulator MOC
- WO 43514775; Broken Stud on Vertical Drive Inspection Cover
- WO 43514848; Regulator R30F404C Shows Small Signs of Leakage
- WO 43526800; Wear Marks Observed on EDG-12 #3 and #7 OCS Camshaft Lobes
- WO 43527244; CBM – EDG-12 #2 and #10 Piston/Liners Have Indications of Wear
- WO 43530642; EDG-12 Jacket Coolant Leak Approximately 10 DPM from Heat Exchanger
- WO 44197496; EDG-12 Engine Room Return Air Damper Linkage Broken
- WO 44270217; Recalibrate EDG-12 Local and Control Room Indicators
- WO 44720727; Replace K1 & K2 Contactors in R30P343C for EDG-12
- WO 44720742; Visually Inspect R1600S047 Position M3 Square D Motor Starter for Signs of Degradation
- WO 44727252; Calibrate EDG-12 Coolant Standby Heater Low Temperature Switch
- WO 44734013; Test Relays for 12EB Position EB3 — EDG-12 Output Breaker
- WO 44741403; Perform 24-month PM Tasks on EDG-12 and R30P343C
- WO 44850244; Replace X41K001C
- WO 44950906; Perform 24.107.03 Section 5.3 SBFW Pump "B" Flow Test
- WO 45095048; Inspect/ Lube Blower & Motor, Replace Belts
- WO 45138835; Replace X41K002C
- WO 45161331; EDG Heat Exchanger PM and CM Maintenance
- WO 45363137; EDG-12 Standby Lube Oil Temperature Control Replace R30NA07C
- WO 45363187; EDG Standby Lube Oil Temperature Control Replace R30NA14C
- WO 45409135; Temperature Switch Body Flats are Worn Beyond Use (Removal and Installation of Switch) Replace Switch
- WO 45835590; Inspect, Lube Motor & Fan, Check Belts, Clean Motor Housing & Vents
- WO 45868869; Electrically Test Time Delay Relays for EDG-12
- WO 46251722; Cooling Fan Abnormal Vibration
- WO 46359961; Valve Handwheel Stripped on R3000F170C EDG12/SAS Under Start Air Supply Bleed Valve
- WO 46884102; Replace Annunciator Reset Pushbutton Switch PB3 at EDG-12 Control Panel R3000S006
- WO 47023936; PDMA Testing (Motor Tagged) of R3001C006 (EDG-12 Service Water Pump)
- WO 47315753; PDMA Testing (Motor Tagged) of X4103C003
- WO 47465520; Locate/Repair Ground Condition on 2PB Battery Neutral Line
- WO 48393308; Troubleshoot/Repair Resistive Imbalance of X4103C004
- WO 48415126; Broken Thermometer
- WO 48734267; Troubleshoot/Repair Cause of EDG 13 Output Breaker Tripping
- WO 48736149; Locate/Repair Ground Condition on 2PB Battery Positive Line

- WO F260140100; EDG-12 Main Fuel Oil Tank Cleaning
- WO V122150100; Refurbish 4160V Breaker 12EB-EB3
- Work Request 44270257; Install Two Temporary Air-Cooling Units in the RHR Complex Per Technical Evaluation TE-X41-17-057, While Performing Work on EDG-12

1R22 Surveillance Testing

- CARD 17-24623; 4D102 Alarmed Unexpectedly During #1 LPIV Closure
- Fermi Operations Conduct Manual MOP19; Reactivity Management; Revision 24
- Fermi Operator Log; August 18, 2017
- Procedure 24.204.01; Division Low Pressure Coolant Injection and Suppression Pool Cooling/Spray Pump and Valve Operability Test; Revision 80
- Procedure 24.307.16; Emergency Diesel Generator 13—Start and Load Test; Revision 56
- WO 44757956; Perform 24.307.16 Section 5.1 EDG 13 Start and Load Test—Slow Start
- WO 44765347; Perform 24.204.01 Division 1 Low Pressure Coolant Injection and TORUS Cooling/Spray Pump and Valve Operability Test
- WO 44950908; Perform 27.109.01 Section 5.7 through 5.12 LPSV/LPIV Test
- WO HS08160100; ECCS—High Pressure Coolant Injection Torus Level Functional
- WO 45205426; Perform 24.208.03 Division 2 EECW M/U Pump and Valve Operability

40A1 – Performance Indicator Verification

- Fermi 2 Performance Indicators; MSPI Heat Removal System; July 12, 2017

40A2 – Problem Identification and Resolution

- CARD 13-24841; EDG Steady State Voltage and Frequency Tech Spec Ranges
- CARD 13-25920; Untimely Update of Surveillance “Acceptance Criteria”
- CARD 17-23685; Emerging Trend – Mispositionings in Operations
- CARD 17-23736; Adverse Trend: Foreign Material Exclusion (FME)
- CARD 17-24544; FRO18 Personal Contamination Events (PCEs) Trend
- CARD 17-24873; Adverse Trend in Emergency Classifications
- CARD 17-24989; Request for Common Cause Analysis and Necessary Actions to Prevent Possible Cross-Cutting Theme
- CARD 17-25284; Emerging Trend – Chiller Reliability
- CARD 17-25639; Management Review Committee (MRC) Cognitive Trend – SRVs
- DTE Memo NAPI-17-0005 To Clifford Harris, Performance Improvement Manager, From Corey Tomkinson, Corrective Action Program – Trending; First Quarter 2017 Station Trend Report; May 19, 2017
- DTE Memo NAPI-17-0008 To Clifford Harris, Performance Improvement Manager, From Corey Tomkinson, Corrective Action Program – Trending; Second Quarter 2017 Station Trend Report; August 18, 2017
- Fermi 2 LCO Index; Updated as of 8/16/2017
- Fermi 2 Operator Log; 7/11/13
- Fermi 2 Active LCO Log
- Letter from NRC to All Holders of Operating Licenses for Nuclear Power Reactors; Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety; December 29, 1998
- Procedure 24.307.15; Emergency Diesel Generator 12 – Start and Load Test; Revision 58

LIST OF ACRONYMS USED

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| AC | Alternating Current |
| ADAMS | Agencywide Document Access and Management System |
| CARD | Condition Assessment Resolution Document |
| CCHVAC | Control Center Heating, Ventilation, and Air Conditioning |
| CFR | <i>Code of Federal Regulations</i> |
| CTG | Combustion Turbine Generator |
| DC | Design Calculation |
| F | Fahrenheit |
| EDG | Emergency Diesel Generator |
| HPCI | High Pressure Coolant Injection |
| IMC | Inspection Manual Chapter |
| IP | Inspection Procedure |
| IPEEE | Individual Plant Examination of External Events |
| LER | Licensee Event Report |
| MSPI | Mitigating Systems Performance Index |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NRC | U.S. Nuclear Regulatory Commission |
| NSSSS | Nuclear Steam Supply Shutoff System |
| RHR | Residual Heat Removal |
| RPS | Reactor Pressure System |
| SDP | Significance Determination Process |
| SSC | Structure, System, and/or Component |
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| WO | Work Order |