



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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May 10, 2018

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
05000341/2018001

Dear Mr. Polson:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2. On April 12, 2018, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that one violation is associated with this issue. Because you have initiated condition reports to address this issue, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report.

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 copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspectors 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC resident inspectors at the Fermi 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 5
Division of Reactor Projects

Docket Nos. 50-341
License Nos. NPF-43

Enclosure:
IR 05000341/2018001

cc: Distribution via ListServ®

Letter to Keith Polson from Billy Dickson dated May 10, 2018

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05000341/2018001

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Numbers: 50-341

License Numbers: NPF-43

Report Numbers: 05000341/2018001

Enterprise Identifier: I-2018-001-0036

Licensee: DTE Energy Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: January 1 through March 31, 2018

Inspectors: T. Briley, Senior Resident Inspector
P. Smagacz, Resident Inspector
J. Jandovitz, Project Engineer
V. Myers, Senior Health Physicist
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T. Ospino, Reactor Engineer
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Approved by: B. Dickson, Chief
Branch 5
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee’s performance by conducting an integrated quarterly inspection at the Fermi Power Plant, Unit 2 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Failure to Incorporate Vendor Recommendations into Maintenance Instructions on the Division 1 Control Complex Heating Ventilation and Air Conditioning Supply Fan Motor			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000341/2018001-01 Closed	[H.7] – Human Performance, Documentation	71111.19
A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to include instructions for maintenance on the Division 1 Control Complex heating ventilation and air conditioning (CCHVAC) supply fan motor requiring a matching belt set per the recommendation in the vendor manual. Specifically, by installing an unmatched belt set, vibrations degraded past the shutdown limit, rendering Division 1 CCHVAC inoperable.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000341/2017-004-00	Inadequate Procedural guidance for Residual Heat Removal Complex Ventilation System Leads to Condition Prohibited by Technical Specifications and Loss of Safety Function	71153	Closed

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PLANT STATUS

Unit 2 began the inspection period at approximately 65 percent rated thermal power as a result of a planned power suppression testing to identify the location of a fuel bundle with a small fuel element defect. The unit was returned to 100 percent rated thermal power on January 1, 2018.

The unit remained at or near 100 percent rated thermal power for the remainder of the inspection period with the following exceptions: On January 2, 2018, the licensee reduced rated thermal power to approximately 85 percent for a planned rod pattern adjustment. The unit was returned to 100 percent rated thermal power the same day. On February 16, 2018, the licensee reduced rated thermal power to approximately 80 percent for a planned rod pattern adjustment, turbine stop and control valve testing; and main steam line isolation valve testing. The unit was returned to 100 percent rated thermal power on February 18, 2018. On February 19, 2018, the licensee reduced power to approximately 80 percent for a rod pattern adjustment. The unit was returned to 100 percent rated thermal power the same day.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.04—Equipment Alignment

Partial Walkdown (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Division 2 residual heat removal (RHR) during Division 1 RHR planned maintenance during the week ending January 20, 2018;
- (2) Division 1 emergency diesel generators (EDGs) during EDG 13 planned maintenance during the week ending January 27, 2018; and
- (3) Division 1 non-interruptible air supply during Division 2 non-interruptible air supply planned maintenance during the week ending February 24, 2018.

Complete Walkdown (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the core spray system during the week ending March 3, 2018.

71111.05AQ—Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Reactor building sub-basement and basement — Division 1 RHR pump room;
- (2) Auxiliary building second floor — control room relay room;
- (3) Auxiliary building third floor — Division 2 switchgear;
- (4) Turbine building first floor — station air compressor area; and
- (5) Reactor building fourth floor — reactor recirculation motor-generator sets.

71111.06—Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the reactor building southwest sub-basement and basement during the week ending March 29, 2018.

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated an operations crew evaluated scenario in the plant training simulator on March 13, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated a downpower for rod pattern adjustments following power suppression testing on January 2, 2018.

71111.12—Maintenance Effectiveness

Routine Maintenance Effectiveness (1 Sample)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) RHR complex heating ventilation and air conditioning system during the week ending February 3, 2018.

71111.13—Maintenance Risk Assessments and Emergent Work Control (6 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Planned maintenance during the week ending January 20, 2018 including primary containment isolation valve testing;
- (2) Planned maintenance during the week ending January 27, 2018 including the EDG 13 system outage;

- (3) Emergent work on the west control rod drive pump and Division 1 CCHVAC during the week ending February 10, 2018;
- (4) Emergent work on the reactor recirculation pump motor-generator set 'A' brush gear assembly during the week ending March 10, 2018;
- (5) Emergent work on the Division 2 emergency equipment cooling water (EECW) to reactor building closed cooling water (RBCCW) return isolation valve (P4400F601B) during the week ending March 17, 2018; and
- (6) Planned maintenance during the week ending March 24, 2018 including EDG 14 switchgear room ventilation.

71111.15—Operability Determinations and Functionality Assessments (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Application of Technical Specification 3.7.5, main condenser off gas, and associated surveillance requirement implementation following identification of a small fuel element defect during the week ending January 6, 2018;
- (2) Operability of drywell floor drain sump pumps to floor drain collector tank outboard isolation valve (primary containment isolation valve G1100F003) after failed stroke time test during the week ending January 6, 2018;
- (3) Operability of the Division 2 ultimate heat sink after the introduction of foreign material during the week ending February 17, 2018; and
- (4) Operability of EDG 14 north and south supply fans during planned damper maintenance during the week ending March 24, 2018.

71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following temporary modifications:

- (1) Division 2 EECW to RBCCW return isolation valve (P4400F601B) clamping device during the week ending March 17, 2018.

71111.19—Post Maintenance Testing (4 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) Emergency diesel generator 13 operability testing following a planned safety system outage during the week ending January 27, 2018;
- (2) Division 1 CCHVAC supply fan operability testing following emergent maintenance during the week ending February 10, 2018;
- (3) Reactor building fifth floor crane load testing following crane modifications during the week ending March 14, 2018; and
- (4) Division 2 EECW to RBCCW return isolation valve (P4400F601B) operability testing following motor actuator repairs during the week ending March 17, 2018.

71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (2 Samples)

- (1) 24.307.15; EDG 12 start and load testing during the week ending March 17, 2018; and
- (2) 42.321.15; dedicated shutdown panel transfer switch control center isolation testing during the week ending March 17, 2018.

In-service (2 Samples)

- (1) 24.206.01; reactor core isolation cooling system pump and valve operability test during the week ending February 10, 2018; and
- (2) 24.202.01; high pressure coolant injection pump and valve operability test at 1025 psi during the week ending February 24, 2018.

71114.06—Drill Evaluation

Drill/Training Evolution (1 Sample)

The inspectors evaluated a graded tabletop training evolution on January 18, 2018.

RADIATION SAFETY

71124.05—Radiation Monitoring Instrumentation

Walk Downs and Observations (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

Calibration and Testing Program (1 Sample)

The inspectors evaluated the licensee's calibration and testing program.

OTHER ACTIVITIES – BASELINE

71151—Performance Indicator Verification (4 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) IE01: Unplanned Scrams per 7000 Critical Hours - 1 Sample (01/01/2017 – 12/31/2017);
- (2) IE03: Unplanned Power Changes per 7000 Critical Hours - 1 Sample (01/01/2017 – 12/31/2017);
- (3) IE04: Unplanned Scrams with Complications - 1 Sample (01/01/2017 – 12/31/2017);
and
- (4) MS05: Safety System Functional Failures - 1 Sample (01/01/2017 – 12/31/2017).

71152—Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee’s corrective action program for trends that might be indicative of a more significant safety issue:

- (1) Fire protection transient combustible program implementation.

Annual Follow-Up of Selected Issues (1 Sample)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issues:

- (1) Cyber security — security maintenance issue (CARD 17–28226)

71153—Follow-Up of Events and Notices of Enforcement Discretion

Licensee Event Reports (1 Sample)

The inspectors evaluated the following licensee event reports (LERs) which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) LER 05000341/2017–004 - Inadequate Procedural Guidance for Residual Heat Removal Complex Ventilation Systems Leads to Condition Prohibited by Technical Specifications and Loss of Safety Function. A finding and associated non-cited violation was previously documented in NRC Integrated Inspection Report 05000341/2017003 dated November 13, 2017 (ADAMS Accession No. ML17318A053) as NCV 05000341/2017003–02, Technical Specification Allowed Outage Time Exceeded for Electrical Power Distribution Systems Due to Auxiliary Equipment Out of Service. This LER is closed.

INSPECTION RESULTS

71111.19—Post Maintenance Testing

Failure to Incorporate Vendor Recommendations into Maintenance Instructions on the Division 1 Control Complex Heating Ventilation and Air Conditioning Supply Fan Motor			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000341/2018001–01 Closed	[H.7] – Human Performance, Documentation	71111.19
A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for the licensee’s failure to include instructions for maintenance on the Division 1 CCHVAC supply fan motor requiring a matching belt set per the recommendation in the vendor manual. Specifically, by installing an unmatched belt set, vibrations degraded past the shutdown limit, rendering Division 1 CCHVAC inoperable.			

Description:

On August 9, 2017, the licensee identified an increasing vibration trend on the Division 1 CCHVAC supply fan during review of monthly vibration data. The observed vibration trend was documented in the corrective action program (CARD 17-26708) and remained just below the administrative limit of 0.450 inches per second. Routine preventative maintenance was performed in September 2017. However, the supply fan continued to exhibit higher than expected vibrations at or above the administrative limit. The supply fan motor was scheduled to be replaced in March 2018 based on the projected vibration trend and margin to the 0.628 inches per second fan shutdown limit.

On February 7, 2018, engineering concluded that there was not 100 percent confidence the Division 1 CCHVAC supply fan could meet its specified mission time of 30 days with vibrations trending slightly below the shutdown limit. Operations subsequently declared Division 1 CCHVAC inoperable and the supply fan motor was replaced along with all three belts that connect the motor sheave to the fan sheave per WO 48742046. The Division 1 CCHVAC supply fan was returned to service on February 9, 2018, following post maintenance testing and reduced vibrations. A follow-up monitoring plan was implemented to take vibration data on an increased frequency to monitor component performance.

On February 10, 2018, the Division 1 CCHVAC supply fan was again declared inoperable due to vibrations exceeding the procedural shutdown limit. A causal investigation determined the increasing vibration was due to the fan belts not being machine matched resulting in uneven stress and tension on the motor sheave. The Browning vendor manual design and installation instructions specify that when replacing belts to be sure to replace the entire set with a new set of matched belts. Since an unmatched belt set was used, a difference in length of up to 0.5 inches was noted. In addition, the licensee's material master for procurement only listed two machine matched sets of belts instead of three. Since the Division 1 CCHVAC supply fan required three set of belts, two matched belts and one unmatched belt were installed.

Two redundant divisions of the CCHVAC system are designed to provide long-term main control room envelope habitability and to limit the introduction of radioactive material for station operators to operate safety-related equipment during normal and design basis accident conditions.

Corrective Action(s): The licensee entered this issue into their corrective action program. The belts were replaced and procedures updated to ensure matching belt sets were utilized. Following belt replacement, vibrations returned to the normal range.

Corrective Action Reference(s): CARD 18-21153

Performance Assessment:

Performance Deficiency: The licensee failed to include instructions for maintenance on the Division 1 CCHVAC motor requiring a matching belt set per the vendor manual. By installing an unmatched belt set, vibrations degraded past the shutdown limit, rendering Division 1 CCHVAC inoperable.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the SSC and barrier performance attribute of the Barrier Integrity cornerstone objective of maintaining radiological barrier functionality of control room.

Specifically, the failure to have instructions commensurate with the safety significance degraded the ability of the CCHVAC system to protect the control room in the event of a radiological release.

Significance: The inspectors assessed the significance of the finding using the IMC 0609, Appendix A, and answered “Yes” to Question B.1 of Exhibit 3 since the inoperability of the CCHVAC system only represented a degradation of the radiological barrier function provided for the control room. Therefore, this performance deficiency screened as Green.

Cross-cutting Aspect: This finding had an associated cross-cutting aspect in the area of human performance, documentation—the organization creates and maintains complete, accurate and up-to-date documentation. Specifically, the material master specified for procuring matched belts were listed in sets of two instead of three. (H.7)

Enforcement:

Violation: Title 10 CFR Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, on February 9, 2018, the licensee failed to have instruction appropriate to the circumstances for activities affecting quality. Specifically, work order 48742046 failed to include instructions for maintenance on the safety related Division 1 CCHVAC supply fan motor that required a matching belt set per the recommendation in the vendor manual. By installing an unmatched belt set, vibrations degraded past the shutdown limit, rendering the Division 1 CCHVAC inoperable.

Disposition: This violation is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

71152—Problem Identification and Resolution

Observation—Fire Protection Transient Combustible Program Implementation	71152—Semiannual Trend Review
<p>The inspectors identified an adverse trend in fire protection transient combustible program implementation following various field walk downs and a review of the corrective action program over a nominal six-month period of September 2017 through March 2018.</p>	
<p>Transient combustible permits are generally governed by operations conduct manual implementation procedure MOP11–100, Fire Protection Implementation, Revision 2, which defines combustible material as any flammable or combustible material that are not identified or accounted for as a combustible load/fire load in the approved combustible/fire loading design calculation. Transient combustible material is defined as any combustible material that is taken into plant areas to be used in support of work activities, or that is taken into plant areas to be used on a temporary basis, and will be left unattended. After review and evaluation by a fire protection engineer, unattended combustible materials may be approved and stored in the plant for up to a nominal 30 day period with a valid transient combustible material permit.</p>	

The inspectors identified multiple transient combustible material permits that were expired while staged combustible material remained in the plant unattended or were stored inappropriately over the course of the inspection period. The NRC identified examples included, but were not limited to:

- On September 27, 2017, material and test equipment for a planned emergency equipment cooling water system surveillance test contained combustible material on the second floor of the reactor building and was left inside a transient combustible material exclusion zone (CARD 17–27983);
- On January 8, 2018, combustible materials for a radio upgrade project were unattended in the cable spreading room on the second floor of the auxiliary building with an expired transient combustible permit posted on the wall (CARD 18–20207); and
- On January 10, 2018, four temporary power carts installed on the second and fourth floors of the reactor building in support of a reactor water cleanup pump outage were unattended with expired transient combustible permits (CARD 18–20179).

Additional examples identified by the licensee and documented in the corrective action program, included, but were not limited to:

- On November 7, 2017, combustible material associated with a lighting upgrade project in the radwaste building was unattended with an expired transient combustible material permit (CARD 17–28994);
- On January 10, 2018, toolboxes with combustibles stored underneath a stairwell on the third floor of the reactor building were found with no transient combustible permit (CARD 18–20180);
- On January 18, 2018, multiple Saf-T guider poles with wooden handles were unattended with no transient combustible permit on the first floor of the turbine building (CARD 18–20408);
- On January 23, 2018, several hydraulic jacks were left behind following a reactor water cleanup outage on the third floor of the reactor building and were found with an expired transient combustible permit (CARD 18–20609);
- On January 23, 2018, a mechanical tool cart on second floor of the turbine building was found with an expired permit for a location on the radwaste building first floor. (CARD 18–20610);
- On February 13, 2018, septa tubes were left unattended on a cart on the second floor of the turbine building with no transient combustible permit (CARD 18–21205); and
- On February 23, 2018, a wood table was found on the second floor of the turbine building without a transient combustible permit (CARD 18–21559).

The licensee generated CARD 18–20646 on January 24, 2018 to document the adverse trend in fire protection transient combustible program implementation. The licensee determined the cause was generally attributed to workers not closing transient combustible permits as required by station procedures. The inspectors determined the various examples were of minor significance since they were generally administrative in nature and the accumulation of transient combustible material did not exceed allowable fire loading limits. Licensee corrective actions to address the trend included, but were not limited to, re-issuing updated permits or removing transient combustibles materials from the plant, establishing a multi-discipline team to walk down the plant and identify any further deficiencies, and performing a programmatic review on the generation, tracking, and removal of transient combustible permits needed for planned work activities.

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure. No proprietary information was documented in this report.

- On February 8, 2018, the inspectors presented the radiation protection inspection results to Mr. B. Rumans, and other members of the licensee staff.
- On April 12, 2018, the inspectors presented the quarterly resident inspector inspection results to Mr. K. Polson, and other members of the licensee staff.

THIRD PARTY REVIEWS

Review of the Plant Evaluation Report from the Institute of Nuclear Power Operations

As discussed in Inspection Manual Chapter 0611, Power Reactor Inspection Reports, Section 13.01, the inspectors completed a review of the report issued in August 2017 by the Institute of Nuclear Power operations for the most recent periodic plant evaluation performed at the Fermi Power Plant.

DOCUMENTS REVIEWED

71111.04—Equipment Alignment

- Drawing 6M721–2015; Diagram Station and Control Air; Revision CM
- Procedure 23.129; Station and Control Air System; Revision 111
- Procedure 23.203; Core Spray System; Revision 61
- Procedure 23.205; Residual Heat Removal System; Revision 135
- Procedure 23.307; Emergency Diesel Generator System; Revision 122A
- Sketch 6M721–5707; Core Spray System Functional Operating Sketch; Revision AG
- WO 44151892; Perform 24.203.04 Sec-5.4 Division 2 CSS Local Valve Position Indication Verification
- WO 45724462; Perform 24.204.02 Division 1 and 2 RHR Valve Line-up and System Filled Verification

71111.05AQ—Fire Protection Annual/Quarterly

- Drawing 6A721–2015; Turbine House First Floor Plan Elevation 583’6”; Revision AK
- Drawing 6A721–2407; Fire Protection Evaluation Reactor and Auxiliary Building Third Floor Plan; Revision T
- Drawing 6A721–2408; Fire Protection Evaluation Reactor and Auxiliary Buildings Fourth Floor Plan Elevation 659’6”; Revision U
- Drawing 6A721–2413; Fire Protection Evaluation Turbine Building – First Floor Plan, Elevation 583’6”; Revision K
- Drawing 6M721–2854; Air condition—Relay Room Reactor Building Control Center Unit 2; Revision B9
- Procedure 28.508.01; Monthly Portable Fire Extinguisher Inspection; Revision 23A
- Procedure FP–AB–2-8; Relay Room, Zone 8, Elevation 613’6”; Revision 6
- Procedure FP–AB–3–14c; Auxiliary Building, Division II Switchgear Room, Zone 14, Elevation 643’6”; Revision 3

- Procedure FP–RB–4–17b; Reactor Building Recirculation System Motor Generator Area, Zone 17, Elevation 659'6"; Revision 4
- Procedure FP–TB; Turbine Building; Revision 9

71111.06—Flood Protection Measures

- CARD 16–23700; 2D78 Reactor Building Floor / Equipment Dm Sumps Level Hi – Hi/Lo – Lo due to DO76 Lo – Lo
- CARD 16–26737; 2D78 Reactor Building Floor / Equipment Dm Sumps Level Hi – Hi/ Lo – Lo due to DO76
- Diagram 61721–2251–06; Schematic Diagram R/W System Reactor Building Floor Drain Sump 76 Pumps G1101C003 A & B

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

- March 13, 2018 Evaluated Simulator Scenario
- Procedure 22.000.03; Power Operation 25% to 100% to 25%; Revision 103A

71111.12—Maintenance Effectiveness

- CARD 17–26749; NRC Question Operability of EDG Switchgear with no Ventilation Available
- 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 17–28441; Damper X4103-F162 not Operating Properly
- Procedure 23.420; RHR Complex Heating and Ventilation; Revision 38
- System Health Fermi 2; RHR HVAC X4103; Quarter Three and Four 2017
- TE–X41–17–074; Review of RHR Division 1 Pump Room HVAC Past Operability; Revision 1

71111.13—Maintenance Risk Assessments and Emergent Work Control

- CARD 18–20572; Excessive Build Up of Grime and Sludge on Outside of the Tube Bundle
- CARD 18–20577; Jacket Coolant Pump Backlash Out of Spec
- CARD 18–20615; NRC Concern, Protected Equipment Postings for Core Spray Systems
- CARD 18–20682; Unable to Perform JCS Samples due to Excessive Leakage (WO 46558720)
- CARD 18–20981; West CRD Pump Mechanical Seal Leakage (Outboard End)
- CARD 18–21719; Occasional Sparks on #4 Inboard Brush Generator End of 'S'
- CARD 18–21798; Lost Closed Indication for P4400F601B
- CARD 18–21810; Overtorque Evaluation for P4400F601B
- CARD 18–21898; Lost Closed Indication for P4400F601B
- CARD 18–21933; Abnormal Noise from Actuator during Performance of WO 50060638
- CARD 18–21935; Partial Complete of P4400F601B WO 50060638
- CARD 18–21965; Installed Motor Pinion and Worm Shaft Gear Ratio does not Match CECO
- CARD 18–22064; Tripper Fingers Set Screw Broke
- CARD 18–22065; EECW-2 Head Tank Isolation Valve MOV Handwheel Fell Off
- CARD 18–22069; Handwheel Fell Off P4400F601B Division 2 EECW M/U Tank Outlet Isolation Valve
- CARD 18–22070; P4400F601B Valve had Hardened Grease (Grade 5) in it
- CARD 22098; Evaluation of Potential Differenced in Clutch Return Springs during Actuator Refurbishment

- Fermi 2 Operator Log from 3/20/2018 to 3/21/2018
- Fermi 2 Work Control Conduct Manual MWC15; Elevated Risk Management; Revision 17
- Procedure 24.207.13; Division 2 EECW Makeup Pump Logic Testing; Revision 6
- Procedure 35.CON.027; Raychem Installation and Removal; Revision 3
- Procedure 35.LIM.005; Limitorque SMB-00 Operator — Maintenance; Revision 38
- Procedure 47.306.05; Viper 20 Diagnostic System Operating Procedure; Revision 5
- Risk Management Plan; 45147802 RBHVAC MG Set North Vent Fan T4100C012/48758100 and G903161100 (WAO) Replace RWCU Precoat Tank Relief Valves
- Risk Management Plan; 49823976 West CRD Pump Mechanical Seal Leakage (Outboard End)
- Risk Management Plan; Marotta Regulator P50F426 Calibration Check
- Risk Management Plan; Perform Stoning on the Reactor Recirculation Motor Generator Sets B3103S001B and A
- Risk Management Plan; PM T271 Calibrate RB to Torus Vacuum Breaker Differential Pressure Indicating Switch
- Risk Management Plan; Risk Management Plan for the Performance of 24.321.07 (72CF Throwover Test)
- Risk Management Plan; WO 49596838—Change Power feed of HEPA Filters at H21P551 Panel
- WO 44566482; Refurb MOV P4400F601B and Replace Stem Nut
- WO 45940714; Perform Heat Exchanger Inspection
- WO 46551232; EDG–13 Heat Exchanger Eddy Current Test (WAO)
- WO 49823976; West CRD Pump Mechanical Seal Leakage (Outboard End)
- WO 50060638; Loss of Closed Indication of P4400f601B
- WO 50107663; Refurbish Actuator (P4400F601B)

71111.15—Operability Determinations and Functionality Assessments

- 50.59 17–0253; Update Design Calculation DC-4953 Volume I to Incorporate Zero Fan Case; Revision 0
- ARP 17D52; Division II RHR Switchgear Rooms Supply Fans No Air Flow; Revision 10
- ARP 8D4; Division 1 RHR Switchgear Rooms Supply Fans No Air Flow; Revision 10
- CARD 17–30475; Noted Step Change Increase in Off Gas Rad Monitor Channel 'A'
- CARD 17–30481; Ops Shift 2 CLO Panel Monitoring
- CARD 17–30547; Enhancement – IPCS Rate of Change for Off Gas Rad Levels
- CARD 18–20079; G1100F003 Stroke Time Outside of IST and Owner Specified Time Limits
- CARD 18–20120; NRC Identified Crew Failed to Use Provision of SR 3.0.3 as Appropriate
- CARD 18–21195; Foreign Material Lost in RHR Division 2 Reservoir
- EFA–E11–18-001; RHR Reservoir Debris Impact to Interfacing Systems; Revision 0
- Fermi 2 Updated Final Safety Analysis Report; 3.11.4.4 Residual Heat Removal Complex Safety–Related Ventilation Systems; Revision 21
- LCO 2018-002; X 4103 Replace EDG–14 Switchgear Room Damper X4103F140 Actuator
- Operating Narrative Log; 3/20/2018 and 3/21/2018
- Procedure 24.702.01; Miscellaneous Systems Valve Operability Test; Revision 38
- Technical Service Request–37944; Update Design Calculation DC–4953 Volume I Incorporate Zero Fan Case for Switchgear Room Ventilation; Revision 0
- WO 45819537; Perform 24.702.01 Section 5.1 Miscellaneous Systems Valve Operability Test
- WO 49555274; Perform 24.702.01 Section 5.1 Miscellaneous Systems Valve Operability Test

71111.18—Plant Modifications

- CARD 00–14755; Elevated Turbine Building Temps, Contingency Action Recommendation
- CARD 15–30270; Degraded Grease Condition Found in Valve during Mini MOV Inspection
- Design Change Package 18–0005; Online Installation of temporary Stem ‘Gag’ Device to Secure P4400F601B (RBCCW Division 2 Return Isolation MOV) in the Closed Position; Revision 0
- Design Change Package 80006; Permanent Repair of N1100F610, Main Steam Line B Isolation Valve and Downgrade of D+ Piping and Components; Revision A
- Drawing 61721–2441–04; Schematic Diagram EECW System EECW Return to RBCCW & RBCCW to EECW Stop Valves; Revision Q
- Drawing 61721–2441–06; Schematic Diagram EECW MU TK ‘B’ Outlet & EECW to Drywell Equipment Stop Valves; Revision L
- Drawing 61721–2441–13; Schematic Diagram EECW & EESW ‘B’ System Auto-Manual Control; Revision M
- Drawing 6M721–5729–2; Emergency Equipment Cooling Water (Division 2); Revision BB
- Fermi 2 Operators Log; 10/19/2017
- Fermi 2 Updated Final Safety Analysis Report; 12.1.2.2 Description of Plant Shielding; Revision 21
- Fermi 2 Updated Final Safety Analysis Report; Table 21.1-4 Specific Shield Design Criteria for Turbine Building; Revision 16
- MGA02; Procedures, Manuals, and Orders, Revision 42
- Procedure 23.412; Turbine Building Heating, Ventilation, and Air Condition System; Revisions 35, 64, and 65
- Temporary Modification 17-0016; Leak Repair for N1100F610
- WO 47532061; Install Temporary Modification 17-0016: Furmanite N1100F610

71111.19—Post Maintenance Testing

- CARD 18–20578; EDG–13 “OTH” Relay Failure during PM R315—WO 46551073
- CARD 18–20677; EDG–13 LO Day Tank Fill WO
- CARD 18–20724; Leaking Fuel Injector
- CARD 18–21798; Lost Closed Indication for P4400F601B
- CARD 18–21810; Overtorque Evaluation for P4400F601B
- CARD 18–21933; Abnormal Noise from Actuator during Performance of WO 50060638
- CARD 18–21935; Partial Complete of P4400F601B WO 50060638
- CARD 18–21965; Installed Motor Pinion and Worm Shaft Gear Ratio does not Match CECO
- CARD 18–22064; Tripper Fingers Set Screw Broke
- CARD 18–22065; EECW-2 Head Tank Isolation Valve MOV Handwheel Fell Off
- CARD 18–22069; Handwheel Fell Off P4400F601B Division 2 EECW M/U Tank Outlet Isolation Valve
- CARD 18–22070; P4400F601B Valve had Hardened Grease (Grade 5) in it
- CARD 22098; Evaluation of Potential Differenced in Clutch Return Springs during Actuator Refurbishment
- Pictures; RB5 Crane Load Test
- Procedure 24.207.13; Division 2 EECW Makeup Pump Logic Testing; Revision 6
- Procedure 24.307.47; Emergency Diesel Generator 13—Fast Start Followed by Load Reject; Revision 14
- Procedure 35.306.002; Insulation Resistance Checks (and “Surge Testing”) for AC & DC Motors < 600 Volts; Revision 29
- Procedure 35.CON.027; Raychem Installation and Removal; Revision 3

- Procedure 35.LIM.005; Limitorque SMB-00 Operator — Maintenance; Revision 38
- Procedure 42.000.02; Thermal Overload Relay Calibration; Revision 37A
- Procedure 47.306.05; Viper 20 Diagnostic System Operating Procedure; Revision 5
- WO 33721852; Replace EDG-13 Engine DRVN ACP Mechanical Seal Per ERE 44217 Rev A
- WO 43299752; Jacket Coolant Leak Coming from Standby Jacket Coolant Temperature Switch
- WO 44566482; Refurb MOV P4400F601B and Replace Stem Nut
- WO 47057934; EDP-37681, Load Test / Commission RB5 Crane
- WO 50060638; Loss of Closed Indication of P4400F601B
- WO 50107663; Refurbish Actuator (P4400F601B)

71111.22—Surveillance Testing

- CARD 17-30495; HPCI Turbine Leak
- CARD 18-22132; NRC Concern, Small Oil Leak on Oil Pipe Coupling
- CARD 18-22134; NRC Safety Concern, Platform Safety Chain Could Be Hot to Touch
- CARD 18-22135; NRC Concern, Small Oil Leak on Turbo
- Drawing 61721-2201-12; Shutdown Cooling Inboard Isolation Valve E1150F009; Revision T
- Drawing 61721-2441-09; EECW System-EECW Drywell Supply ISO and EECW Drywell Return ISO Valves P4400F606A and P4400F607A; Revision P
- MWC15; Elevated Risk Management; Revision 17
- Procedure 23.202; High Pressure Coolant Injection System; Revision 111
- Procedure 24.202.01; HPCI Pump and Valve Operability Test at 1025 PSI; Revision 112
- Procedure 24.206.01; RCIC System Pump and Valve Operability Test; Revision 82
- Procedure 24.307.15; Emergency Diesel Generator 12 – Start and Load Test; Revision 59
- Procedure 42.321.15; Dedicated Shutdown Panel H21-P625 and H21-P632 Transfer Switch Control Center Isolation Test; Revision 4
- WO 46001661; Perform 24.206.01 RCIC System Pump Operability and Valve Test at 1000 PSIG

71114.06—Drill Evaluation

- January 18, 2018 Tabletop Training Evolution Scenario
- CARD 18-20418; RERP Table top 1/18/18 — Unexpected Results during Tabletop Scenario

71124.05—Radiation Monitoring Instrumentation

- 65.000.156; Radiological Instrumentation Source Checking; Revision 3
- 66.000.223; Calibration of the Eberline PCM-1B Personnel Contamination Monitor; Revision 4
- 66.000.245; Calibration of The NE SAM11 Small Articles Monitor; Revision 1
- 66.000.258; Calibration of The Canberra Argos Series Monitor; Revision 1
- 66.000.425; Calibration of The Eberline RMS-3 Area Radiation Monitor; Revision 1
- Amp-100 Calibration Form, 7/18/2017
- Argos Series Calibration Form; 12/14/2017
- ASP2 Calibration Certificate; 7/12/2017
- Certificate of Calibration Electroplated Beta Source; 264/88; 3/4/1988
- Certificate of Calibration Standard Radionuclide Source; 15868-50; 9/1/1984
- Gamma Calibrator Dose Rate Verification; 8/25/2017
- Gamma Spectroscopy System Calibration; 6/1/2017
- GEM 5 Calibration Form; 5/8/2017

- H809 Air Sampler Calibration Form; 1/17/2018
- PCM-1B Calibration Form; 9/19/2017
- Report of Calibration Electroplated Beta Source; S2800; 9/23/1981
- RMS-3 Calibration Form, 9/19/2017
- Sam 11 Calibration Form; 9/11/2017
- Telepole Calibration Form, 10/4/2017
- WO 44749156; Perform Contamination Monitoring Equip Challenge Test

71151—Performance Indicator Verification

- CARD 18-20565; Adverse Trend in NRC PI for Unplanned Power Changes
- LER 2017-001; Loss of Reactor Protection System Scram Function During Main Steam Isolation Valve and Turbine Stop Valve Channel Functional Tests Due to Use of a Test Box
- LER 2017-002; High Water Level Indications at Low Reactor Pressures Causes Some Functions of High Pressure Coolant Injection System and Reactor Core Isolation Cooling System to be Inoperable
- LER 2017-003; Division 2 Residual Heat Removal Service Water System (RHRSW) Inoperable Due to an Inoperable RHRSW Flow Control Valve
- LER 2017-004; Inadequate Procedural Guidance for Residual Heat Removal Complex Ventilation Systems Leads to Condition Prohibited by Technical Specifications and Loss of Safety Function
- LER 2017-005; Non-Functional Mechanical Draft Cooling Tower Fan Brakes Leads to HPCI Being Declared Inoperable and Loss of Safety Function
- NEI 99-02; Unplanned Power Changes Per 7,000 Critical Hours; Revision 7

71152—Problem Identification and Resolution

- CARD 17-27983; NRC Identified—Transient Combustible in Column 12 RB-2
- CARD 17-28226; Security Maintenance Issue
- CARD 17-28994; Material Staged Without Transient Combustible Permit
- CARD 17-28999; Flammable Material Left on Wheeled Podiums
- CARD 17-29001; Flammable Material Found in Staging Area
- CARD 17-29005; Cart Staged with Flammable Material on it
- CARD 17-29705; Fire Watch Extinguishers Not in Signed Out Locations
- CARD 17-29802; Non-liquid Combustible in Flammable Locker
- CARD 18-20180; Combustibles Stored in Open Stairwell
- CARD 18-20210; MOP11-100 Violation in EDG-12 Switch Gear Room
- CARD 18-20342; Focused Observation Tagging Committee; MOP12 Evaluation Needed
- CARD 18-20408; Combustible Material Located on TB1
- CARD 18-20609; Transient Combustible Permit Expired
- CARD 18-20610; Transient Combustible Permit Posted on Cart in Wrong Area
- CARD 18-20646; Adverse Trend Related Tracking and Closing Transient Combustible Permit
- CARD 18-20652; NRC Concern— EDG-12 SSO Staged Equipment Blocking Fire Extinguisher
- CARD 18-20848; Transient Combustibles Left Out Multiple Times
- CARD 18-21030; Transients not Removed from Floor
- CARD 18-21205; Septa Tubes Left Unattended on Cart and No Transient Combustible Permit
- CARD 18-21558; Flammable Locker With Combustibles Inside
- CARD 18-21559; Combustible Material Found on TB2

- CARD 18–21638; There are 12 Containers of EPICOR Resin Approximately 50 Gallons Each Located in the Radwaste Basement, it's Believed to be the Design Calculation but Could Not be Validated
- CARD 18–21709; Exclusion Zone is Not Painted on Floor and Most Individuals do Not Know there is a Zone Here
- CARD 18–21894; Operations Not Notified of Pre-Arranged Fire Impairment
- CARD18–20291; NQA—Fire Hazard Level 1 Combustibles Not Included in MOP11–100 Enclosure F Quick Reference Flammable / Combustible Liquids

71153—Follow-Up of Events and Notices of Enforcement Discretion

- CARD 17-26749; NRC Question Operability of EDG Switchgear with no Ventilation Available