



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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LISLE, ILLINOIS 60532-4352

May 14, 2020

Mr. Peter Dietrich  
Chief Nuclear Officer  
DTE Energy Company  
Fermi 2 – 260 TAC  
6400 North Dixie Highway  
Newport, MI 48166

SUBJECT: FERMPOWER PLANT, UNIT 2 – INTEGRATED INSPECTION REPORT  
05000341/2020001

Dear Mr. Dietrich:

On March 31, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Fermi Power Plant, Unit 2. On April 15, 2020, 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.

Two findings of very low safety significance (Green) are documented in this report. None of these findings involved a violation of NRC requirements.

If you disagree with 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 Inspector at Fermi Power Plant, Unit 2.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

***/RA/***

Richard A. Skokowski, Chief  
Branch 4  
Division of Reactor Projects

Docket No. 05000341  
License No. NPF-43

Enclosure:  
As stated

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Letter to Peter Dietrich from Richard Skokowski dated May 14, 2020.

SUBJECT: FERMIL POWER PLANT, UNIT 2 – INTEGRATED INSPECTION REPORT  
05000341/2020001

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000341

License Number: NPF-43

Report Number: 05000341/2020001

Enterprise Identifier: I-2020-001-0047

Licensee: DTE Electric Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Inspection Dates: January 01, 2020 to March 31, 2020

Inspectors: T. Briley, Senior Resident Inspector  
C. Norton, Senior Resident Inspector  
T. Taylor, Resident Inspector

Approved By: Richard A. Skokowski, Chief  
Branch 4  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at 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.

### List of Findings and Violations

Failure to Perform Adequate Maintenance on Electric Fire Pump			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000341/2020001-01 Open/Closed	None (NPP)	71111.12
A self-revealed finding of very low safety significance (Green) was identified when the licensee failed to follow procedure MMA02, "Maintenance Program." Specifically, the electric fire pump bearings were run to failure due to not having an adequate preventative maintenance program in place which rendered the electric fire pump non-functional.			

Inoperable Secondary Containment due to Failure of Reactor Building Heating, Ventilation, and Air Conditioning Damper			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green FIN 05000341/2020001-02 Open/Closed	None (NPP)	71152
A self-revealed finding of very low safety significance (Green) was identified when the licensee failed to follow procedure MLS04, "Operating Experience Program." Specifically, the center modulating exhaust damper of the Reactor Building Heating, Ventilation, and Air Conditioning (RBHVAC) system failed due to a design issue with the positioner and subsequently rendered secondary containment inoperable for a short period of time. The damper failed because available operating experience and vendor guidance had not been incorporated into site processes in order to prevent the equipment failure.			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000341/2019-006-00	LER 2019-006-00 for Fermi Power Plant, Secondary Containment Pressure Exceeded Technical Specification Due to Reactor Building HVAC Damper Malfunction	71153	Closed

## **PLANT STATUS**

Unit 2 began the inspection period at rated thermal power. The following exceptions were noted: On January 10, 2020, the unit was down powered to approximately 58 percent rated thermal power for planned power suppression testing. The unit returned to rated thermal power on January 12, 2020. On January 13, 2020, the unit was down powered to approximately 75 percent rated thermal power for a planned control rod pattern adjustment. The unit returned to rated thermal power on January 13, 2020. On January 22, 2020, the unit was down powered to approximately 91 percent rated thermal power to repair High Pressure Control Valve Number 3 following abnormal valve oscillations. The unit returned to rated thermal power on January 23, 2020. On February 15, 2020, the unit was down powered to approximately 63 percent rated thermal power for a planned control rod pattern adjustment and repair to the North Heater Drains Pump Line Discharge Flow Control Valve. The unit returned to rated thermal power on February 17, 2020. On February 21, 2020, the unit was down powered to approximately 67 percent for a planned rod pattern adjustment. The unit returned to rated thermal power on February 22, 2020. On March 21, 2020, the unit shutdown for a planned refueling outage and remained shutdown at the end of the inspection period.

## **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/readingrm/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." From January 1 – March 19, 2020, 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week and during that time conducted plant status activities as described in IMC 2515, Appendix D; and observed risk significant activities when warranted. In addition, resident and regional baseline inspections were evaluated to determine if all or portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In the cases where it was determined the objectives and requirements could not be performed remotely, management elected to postpone and reschedule the inspection to a later date.

## **REACTOR SAFETY**

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) Division 1 Residual Heat Removal Service Water (RHRSW) during Division 2 RHR/RHRSW planned maintenance during the week ending January 25, 2020
- (2) Emergency Diesel Generator (EDG) 13 following a planned safety system outage during the week ending February 8, 2020
- (3) Division 1 Non-Interruptible Air System (NIAS) during Division 2 NIAS corrective maintenance during the week ending February 15, 2020
- (4) Division 2 split-flow shutdown cooling lineup during the week ending April 4, 2020

### 71111.05 - Fire Protection

#### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Reactor Building Sub Basement and Basement, Southwest Corner Room during the week ending February 29, 2020

### 71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

#### Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during a planned down power for routine turbine valve testing and control rod pattern adjustment on January 13, 2020

#### Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated a licensed operator just-in-time training evolution for placing shutdown cooling in service during the week ending March 14, 2020

## 71111.12 - Maintenance Effectiveness

### Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) Electric Fire Pump during the week ending March 7, 2020

## 71111.13 - Maintenance Risk Assessments and Emergent Work Control

### Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Emergent work on the feedwater heating system following feedwater heater level perturbations during a planned down power on January 10, 2020
- (2) Emergent work on High Pressure Control Valve 3 following abnormal oscillations during the week ending January 25, 2020
- (3) Emergent work on North Heater Drain Pump Line Discharge Flow Control Valve (N2200-F415A) following lost indication and runback logic during the week ending February 8, 2020
- (4) Planned maintenance on Reactor Pressure System (RPS) A motor generator set during the week ending April 4, 2020

## 71111.15 - Operability Determinations and Functionality Assessments

### Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Operability and functionality of Division 2 North Control Complex Heating Ventilation Air Conditioning (CCHVAC) Emergency Air Inlet Radiation Monitor following identification of a lifted wire, as documented in condition assessment resolution document (CARD 19-29694)
- (2) Operability and functionality of the Division 1 Low Pressure Coolant Injection (LPCI) system following Automatic Depressurization (ADS) system Emergency Core Cooling System (ECCS) Pump Channel A Permissive alarm locked in following planned Division 1 LPCI surveillance testing, as documented in CARD 20-20623
- (3) Operability and functionality of lo-lo-set logic (safety relief valves) following inspectors' indication questions on ECCS testability panel
- (4) Operability and functionality of the Ultimate Heat Sink, Division 2 Emergency Diesel Generators (EDG) 13 and 14, and High-Pressure Coolant Injection system following application of Technical Specification Limiting Condition for Operation 3.0.9 Barriers to the Mechanical Draft Cooling Tower Fan Brake system, as documented in CARDS 18-29751 and 18-26818



- (5) Operability and functionality of EDG 12 following identification of a broken air start distributor line, as documented in CARD 20-20552

#### 71111.19 - Post-Maintenance Testing

##### Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post maintenance test activities to verify system operability and functionality:

- (1) Diesel Fire Pump following right angle drive replacement during the week ending January 25, 2020
- (2) EDG 14 Lube Oil Sump Float Valve following replacement during the week ending February 1, 2020
- (3) Division 2 Reactor Water Level 3 Scram Trip Unit following replacement of failed Master Trip Unit (MTU) during the week ending February 1, 2020
- (4) EDG 13 following planned electronic governor replacement during the week ending February 8, 2020
- (5) Division 1 Residual Heat Removal Service Water (RHRSW) Pump A following planned pump replacement during the week ending January 18, 2020
- (6) Division 2 Control Air Compressor following failure to load and corrective air dryer lubrication during the week ending February 15, 2020

#### 71111.20 - Refueling and Other Outage Activities

##### Refueling/Other Outage Sample (IP Section 03.01) (1 Partial)

- (1) (Partial)  
The inspectors evaluated refueling outage 20 activities from March 21, 2020 to March 31, 2020. The inspectors completed inspection procedure sections 03.01.a and 03.01.b.2. Due to the actions in response to the COVID-19 National Health Crisis, inspectors could not complete 71111.20 for refueling outage 20. Specifically, inspectors did not observe portions of the cooldown process

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

##### Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) Scram Discharge Volume Trip System A testing during the week ending February 29, 2020
- (2) Local Power Range Monitor calibration during the week ending March 14, 2020

## **OTHER ACTIVITIES – BASELINE**

### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

#### IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (1 Sample)

- (1) Unit 2 from January 1 - December 31, 2019

#### IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

- (1) Unit 2 from January 1 - December 31, 2019

#### IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (1 Sample)

- (1) Unit 2 from January 1 - December 31, 2019

#### MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (1 Sample)

- (1) Unit 2 from January 1 - December 31, 2019

### 71152 - Problem Identification and Resolution

#### Annual Follow-up of Selected Issues (IP Section 02.03) (1 Sample)

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

- (1) RBHVAC damper failures during the week ending March 7, 2020

### 71153 - Followup of Events and Notices of Enforcement Discretion

#### Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 2019-006: Secondary Containment Pressure Exceeded Technical Specification Due to Reactor Building HVAC Damper Malfunction (ADAMS Accession ML20045E360). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71152

## INSPECTION RESULTS

Failure to Perform Adequate Maintenance on Electric Fire Pump			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000341/2020001-01 Open/Closed	None (NPP)	71111.12
<p>A self-revealed finding of very low safety significance (Green) was identified when the licensee failed to follow procedure MMA02, "Maintenance Program." Specifically, the electric fire pump bearings were run to failure due to not having an adequate preventative maintenance program in place which rendered the electric fire pump non-functional.</p> <p><u>Description:</u></p> <p>On November 14, 2019, the electric fire pump was manually started to maintain fire water system header pressure as part of a planned maintenance activity on the normally in-service jockey fire pump. Approximately 30 hours later, while the electric fire pump was still in operation, operators noted the electric fire pump and associated nearby piping were violently vibrating and that fire water system header pressure was starting to lower. Operators subsequently shut down the electric fire pump and the licensee started to investigate the condition. The licensee discovered excessive degradation of the pump bearings that resulted in the impeller coming into contact with the pump casing. Numerous pump bearings were damaged, the suction strainer and impeller were damaged, and motor bearings were also damaged by the excessive vibrations.</p> <p>The licensee performed an equipment cause evaluation and discovered the maintenance strategy for the fire pumps was inadequate. Unlike other deep-well pumps on site, which the licensee evaluated for extent of condition and extent of cause, there was neither an adequate performance monitoring strategy nor a time-based replacement strategy in place for the fire pumps on site (both the electric and diesel-driven pumps). In 2000 and 2003, the electric fire pump and diesel fire pump, respectfully, were refurbished due to performance degradation. Both had been in service between 15 and 20 years at the time. Despite this internal operating experience regarding pump lifetime, no actions were taken to develop a proper maintenance strategy to avoid functionality impacts due to degradation over time.</p> <p>Corrective Actions: The licensee repaired the electric fire pump and motor and developed a time-based replacement strategy for both the electric and diesel fire pumps.</p> <p>Corrective Action References: CARD 19-28797</p> <p><u>Performance Assessment:</u></p> <p>Performance Deficiency: The licensee failed to follow procedure MMA02, "Maintenance Program," Revision 10, sections 3.1 and 3.2. Section 3.1 states that the licensee shall develop a maintenance program to maintain structures, systems, and components (SSCs) at the quality required for them to perform their intended functions. Section 3.2 states that planned maintenance activities shall be established to ensure SSCs important to safety or reliability are maintained at a quality required for them to perform their intended functions and extend their life. Further, that the preventative maintenance program should include periodic inspection and testing to identify abnormal conditions that could lead to failures.</p>			

The inspectors reviewed the issue and determined no violation of regulatory requirements occurred. The fire pumps were not part of the Maintenance Rule program, were not safety related, and therefore not subject to the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" and the maintenance aspects of the pumps were not covered in the fire protection program.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the electric fire pump was declared non-functional when the pump bearings ran to failure due to not having an adequate preventative maintenance program in place as required by licensee procedure MMA02, "Maintenance Program."

Significance: The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post - Fire Safe Shutdown SDP." Specifically, the inspectors assigned a fire finding category of Fire Water Supply since it dealt with fire pumps. Next, a finding of high degradation was conservatively chosen as a specific example was not available in Attachment 2. Continuing on, the inspectors answered 'yes' to section 1.4.3 regarding the availability of sufficient fire water flow and pressure that was able to be provided by the diesel fire pump. Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. The inspectors did not find an example of recent performance that specifically dealt with the maintenance strategy for the fire pumps.

Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

Very Low Safety Significance Issue Resolution Process: Application of Technical Specification Limiting Condition for Operation 3.0.9, Barriers, to the Mechanical Draft Cooling Tower Fan Brake System	71111.15
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This issue is a current licensing basis question and inspection effort is being discontinued in accordance with the Very Low Safety Significance Issue Resolution (VLSSIR) process. No further evaluation is required.

Description: The Fermi ultimate heat sink (UHS) consists of two interconnected (hard-piped) cooling water reservoirs. Each reservoir is cooled by a safety-related mechanical draft cooling tower (MDCT) that is comprised of two cells. Each cell includes a motor-operated fan. Each MDCT is designed to help cool its respective division of plant loads (residual heat removal heat exchanger, emergency equipment cooling water (EECW) heat exchanger, and two emergency diesel generators (EDGs)). Each MDCT fan includes a mechanical fan brake, which is designed to prevent the cooling tower fans from over-speeding (and energetically disassembling) during a design basis tornado on site. The MDCT fan brakes for each division (two fans and two fan brakes) receive power from a single safety-related electrical power supply.

In the past, electrical power supply failures in the Division 2 MDCT fan brake system have rendered the fan brakes, therefore, the associated fans incapable of performing their function

during a tornado. Division 2 of the MDCT system supports the High-Pressure Coolant Injection (HPCI) system in that the EECW division cooled by Division 2 of the MDCT system supports the HPCI room cooler. When those failures have occurred, the licensee has declared the HPCI system inoperable and entered the associated Technical Specification Limiting Condition for Operation (TS LCO) required action with a 14-day completion time. Since HPCI is a single train system, this potential loss of safety function required a 10 CFR 50.72 (immediate notification requirements for operating nuclear power reactors) and 10 CFR 50.73 (licensee event report (LER) system) report. Additionally, with an UHS reservoir inoperable, both Division 2 EDGs were declared inoperable and the required actions with a 72-hour completion time were also entered. The details surrounding previous MDCT fan brake system failures are documented in Integrated Inspection Reports 2016004 (ADAMS Accession ML17030A328) Section 4OA2.5; 2016007 (ADAMS Accession ML16319A150) Sections 1R21.3 and 1R21.6; 2017004 (ADAMS Accession ML18036A012) Section 4OA3; and 2019001 (ADAMS Accession ML19130A097) Sections 71152 and 71153.

However, the licensee subsequently determined that TS LCO 3.0.9, "Barriers," which establishes conditions under which systems described in the TSs remain operable when required barriers are not capable of providing their related support function(s), can be applied to the MDCT fan brake system.

In the event of the failure of the MDCT fan brake system, this would extend the 72-hour and 14-day completion times to a 30-day provision to not declare the MDCT fan brake system and associated structures, systems, and components inoperable. Also, the submission of 10 CFR 50.72 and 10 CFR 50.73 reports to the NRC resulting from HPCI inoperability would no longer be required.

The issue of concern is whether or not the MDCT fan brake system can be considered a "barrier" since it provides no physical interference as we would normally consider a barrier to provide. In addition, the inspectors questioned whether or not it is acceptable for the licensee to take credit for the provisions of TS LCO 3.0.9 in lieu of declaring a division of the UHS inoperable when the fan brake system is not capable of performing its intended function.

The issue is of very low potential safety significance and it is not clear if a performance deficiency exists. In particular, the question of whether the MDCT fan brake system could be considered a "barrier" is not straight forward since the Fermi TS Bases for TS LCO 3.0.9 and TSTF-427, "Allowance for Non Technical Specification Barrier Degradation on Supported Systems," defines barriers to include "installed structures or components or other devices not explicitly described in Technical Specifications," in addition to traditional physical devices such as "doors, walls, floor plugs, curbs, [and] hatches."

The inspectors were not able to conclude whether the issue of concern was part of the plant's current licensing basis. As a result, the effort to determine whether the MDCT fan brake system would constitute a "barrier" was judged to likely require a significant amount of resources to develop a conclusion that far outweighed the issue's potential safety significance.

Licensing Basis: Updated Final Safety Analysis Report (UFSAR) Section 9.2.5.2.2 Cooling Towers states "the [MDCT] fans are provided with a brake system to prevent overspeed from the design-basis tornado.

Technical Specification Limiting Condition for Operation (LCO) 3.0.1 states "LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, LCO 3.0.7, LCO 3.0.8, and LCO 3.0.9."

Technical Specification LCO 3.0.9 states "when one or more required barriers are unable to perform their related support function(s), any supported system LCO(s) are not required to be declared not met solely for this reason for up to 30 days provided that at least one division or subsystem of the supported system is OPERABLE and supported by barriers capable of providing their related support function(s), and risk is assessed and managed. This specification may be concurrently applied to more than one division or subsystem of a multiple division or subsystem supported system provided at least one division or subsystem of the supported system is OPERABLE and the barriers supporting each of these divisions or subsystems provide their related support function(s) for different categories of initiating events. For purposes of this specification, the High-Pressure Coolant Injection (HPCI) system, the Reactor Core Isolation Cooling (RCIC) system, and the Automatic Depressurization System (ADS) are considered independent subsystems of a single system. If the required OPERABLE division or subsystem becomes inoperable while this specification is in use, it must be restored to OPERABLE status within 24 hours or the provisions of this specification cannot be applied to that divisions or subsystems supported by the barriers that cannot perform their related support function(s). At the end of the specified period, the required barriers must be able to perform their related support functions(s) or the supported system LCO(s) shall be declared not met."

Technical Specification bases for LCO 3.0.9 defines barriers as "doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in the Technical Specifications." The fan brake system meets this definition of barrier since it consists of installed components that are not explicitly described in TS but support the performance of safety functions of the UHS and EDGs which are described in TS. The fan brakes act as a barrier to protect the UHS and the UHS is not a ventilation system (therefore the ventilation system exclusion does not apply). The tornado is the only initiating event that is applicable to the fan brake system.

The NRC Safety Evaluation for License Amendment 176 (ADAMS Accession ML071490013) stated that, "for purposes of this TS, the term "barrier" refers to one or more devices which protect one train of a safety system from a given initiating event."

Regulatory Issue Summary 01-009, "Control of Hazard Barriers," defined hazard barriers as "plant features or structures that are credited with protecting plant equipment from external and internal hazards such as ..., tornado missiles, ... and the effects of design basis events such as a loss-of-coolant accident (LOCA) or a high energy line break (HELB)."

Technical Specification Task Force Traveler TSTF-427, "Allowance for Non-Technical Specification Barrier Degradation on Supported System Operability," provides a definition of a barrier as "doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in Technical Specifications, which are designed to provide for the performance of the safety function for the Technical Specification system after the occurrence of one or more initiating events." Tornadoes or high wind is listed as one of the initiating events.

The licensee concluded that the MDCT fan brakes were not prohibited by the current design and licensing basis and therefore could be considered a 'barrier,' and hence would not

immediately render the UHS and associated systems inoperable upon a failure of the MDCT fan brake system.

Significance: If the issue of concern were assumed to be an inspection finding, the inspectors determined the issue would have insufficient safety significance in accordance with Inspection Manual Chapter 0609, "Significance Determination Process" as the issue would not have proceeded to a detailed risk evaluation, or a Phase 2 evaluation when relevant, or Appendix M "Significance Determination Process for Qualitative Acceptance Criteria."

For the purpose of the VLSSIR process, the inspectors screened the issue of concern through IMC 0609, Appendix A and determined the issue of concern would likely be Green had a performance deficiency been identified.

Corrective Action Reference: CARDS 18-26818 and 18-29751

Inoperable Secondary Containment due to Failure of Reactor Building Heating, Ventilation, and Air Conditioning Damper			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green FIN 05000341/2020001-02 Open/Closed	None (NPP)	71152
<p>A self-revealed finding of very low safety significance (Green) was identified when the licensee failed to follow procedure MLS04, "Operating Experience Program." Specifically, the center modulating exhaust damper of the Reactor Building Heating, Ventilation, and Air Conditioning (RBHVAC) system failed due to a design issue with the positioner and subsequently rendered secondary containment inoperable for a short period of time. The damper failed because available operating experience and vendor guidance had not been incorporated into site processes in order to prevent the equipment failure.</p>			
<p><u>Description:</u></p> <p>On December 18, 2019, with the east and center RBHVAC trains in operation (non-safety-related system and therefore not subject to the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"), the center exhaust modulating damper failed to modulate in response to system demand. As a result, a secondary containment pressure alarm was received in the main control room and pressure was noted to be below the minimum value required by Technical Specification 3.6.4.1, Secondary Containment (0.125 inch of water vacuum gauge). In accordance with alarm response procedures, control room operators started the safety-related Division 1 Standby Gas Treatment system, which subsequently restored secondary containment pressure to above the minimum value required by Technical Specifications and secondary containment was declared operable. Secondary containment was inoperable for approximately four minutes, therefore, the required action to restore secondary containment to operable with a four-hour completion time was met. Secondary containment pressure did not go positive with respect to the outside environment throughout the event. Event Notification (EN) 54452 and Licensee Event Report (LER) 2019-006 Secondary Containment Pressure Exceeded Technical Specification due to Reactor Building HVAC Damper Malfunction (ADAMS Accession ML20045E360) were submitted to the NRC for an event that</p>			

could have prevented the fulfillment of a safety function to control the release of radioactive material. Although the TS containment pressure setpoint was exceeded, the containment pressure was restored within the TS completion time, therefore no violation of TS occurred.

The licensee received two relevant industry operating experience (OE) reports associated with the design of the positioners used for the RBHVAC modulating dampers back in 2004. Both OE reports dealt with positioner failures attributed to a retaining clip that helps maintain the cam follower arm in contact with the cam inside the positioner. Over time, the clip was forced off, causing the parts to misalign, which led to failure of the positioner. This was the same failure mechanism experienced with the RBHVAC damper at Fermi on December 18, 2019. The OE reports recommended periodic inspections of the clip and also referred to a bolt that could be used versus the clip to provide a more robust design. The vendor also put out a bulletin recommending the use of a bolt. The licensee had evaluated both of the OE reports when they were issued. In one case (OE 18899), the licensee determined that it was not applicable to Fermi. In the other case (OE 19201), the licensee concluded that "more attention is being placed by the AOV team on the Bailey AV1 positioner." Contrary to the site's evaluation and the vendor recommendations, no further action was taken associated with the clips until the failure on December 18, 2019.

Corrective Actions: The licensee replaced the failed RBHVAC modulating damper positioner and performed an extent-of-condition review to address other potentially susceptible positioners in the plant.

Corrective Action References: CARD 19-29705

Performance Assessment:

Performance Deficiency: The licensee failed to follow site procedure MLS04, "Operating Experience Program," Revision 11. Specifically, Section 4.4.3 required a CARD to be written for potentially applicable industry OE. In this case, the licensee did not generate a CARD for OE 18899, OE 19201, and the vendor bulletin related to the design of the positioners used for the RBHAVC modulating damper. As a result, a design deficiency was not evaluated and corrected which led to a failure of the center RBHVAC modulating exhaust damper on December 18, 2019.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the SSC and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, failure to properly address industry OE resulted in failure of the center RBHVAC modulating exhaust damper positioner which rendered secondary containment inoperable.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The finding screened to Green, or very low safety significance, based on answering 'yes' to exhibit 3, question D.1, since the finding only affected secondary containment.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. The inappropriate OE reviews in question took place in the 2004 time-frame.



Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

**EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On April 15, 2020, the inspectors presented the integrated inspection results to Mr. P. Dietrich, Chief Nuclear Officer, and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Drawings	6M721-2015	Station and Control Air	CQ
		6M721-5734	Emergency Diesel Generator System	BK
	Miscellaneous	DBD R30-00	Emergency Diesel Generator	1
		E1100-000067	E1150F028B - Perform Maxi and MPM Stroke Test (72E-5A Pos 2Dr)	01/21/2020
		E1100-000092	Inspect/Test 480VAC MCC 72E-5A Pos 2C-R Perform MOV Thermal O/L Test - E1150F027B at MCC 72E-5A POS-2C-R	01/21/2020
	Procedures	E1100-000712	Maxi Inspection and MPM Stroke E1150F068B	01/22/2020
		23.129	Station and Control Air System	120
		23.208	RHR Service Water	128A
		MOP09	Operations Conduct Manual	5A
71111.05	Calculations	DC-5702	Fire Loading Calculation	02/13/2019
	Miscellaneous	55454079 - Transient Combustible Permit	SW Quad	02/17/2020
		Procedures	MOP11	Fire Protection
71111.11Q	Procedures	22.000.03	Power Operation 25% to 100% to 25%	105
		22.000.04	Plant Shutdown from 25% Power	87
		23.205	Residual Heat Removal System	146
		MOP01	Conduct of Operations	39
71111.12	Corrective Action Documents	19-28797	During Electric Fire Pump Run, Pump Displayed Excessive Vibrations	11/15/2019
	Procedures	MMA02	Maintenance Program	10
		MMR APP E	Maintenance Rule SSC Specific Functions	26
		MMR APP F	Maintenance Rule Performance Criteria	25
71111.13	Corrective Action Documents	20-20315	5 North Feedwater Heater Level Oscillating During Down Power	01/11/2020
		20-20319	The 6N Feedwater Heater Extraction Steam Valve Will Not Stroke from Main Control Room	01/11/2020
		20-20320	North Separator Seal Tank Level is Not Controlling Level Normally	01/11/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		20-20603	Main Turbine Generator High Pressure Control Valve (HPCV) Oscillation	01/18/2020	
		20-21307	Loss of Indication N22F415A	02/04/2020	
	Drawings	5I721-2322-18	Heater Drains Start-Up LCV North N22F415A and South N22F415B	K	
		6M721-5716	Feedwater Heater Drains, Vents and Emergency Drains Functional Operating Sketch	BA	
		6M721-5716-1	Feedwater Heater Drains, Vents and Emergency Drains Functional Operating Sketch	AH	
		I-2151-01	Schematic Diagram RX PROT SYS Motor-Generator Set A	03/30/2020	
		I-2154-01	Internal and External Wiring Diagram RPS PWR DIST CAB A & B C71P001A & C71P001B	10/09/2017	
	Procedures	20.107.02	Loss of Feedwater Heating	26	
		22.000.03	Power Operation 25% to 100% to 25%	105	
		22.000.03	Plant Operation 25% to 100% to 25%	105	
		23.109	Turbine Operating Procedure	95	
		23.610	Reactor Protection System (RPS)	25	
		MWC13	Outage Nuclear Safety	20	
	71111.15	Corrective Action Documents	18-26818	Request Licensing Evaluation of Potential Tech Spec Change	09/11/2018
			18-29751	Investigate Application of TS LCO 3.0.9 to Mechanical Draft Cooling Tower (MCDT) Fan Brakes	12/04/2018
19-28723			EDG-12 East Starting Air Receiver Pressure Drip During EDG Start Exceeded 30 PSIG	11/13/2019	
19-29694			Lifted Lead Discovered in Panel H21P296F	12/18/2019	
20-20460			Received 1D48 ADS ECCS Pump 'A' Permissive	01/15/2020	
20-20552			EDG 12 Starting Air Line Broken at Air Start Distributor	01/17/2020	
20-20623			ADS Channel 'A' Permissive Locked In	01/19/2020	
Drawings		6I721-2674-04	Wiring Diagram Part II PCMS Control Cabinet H11P915 Division 2	AF	
		6M721-2847	System Diagram Control Center Air Conditioning Air Side Reactor Building	Z	
		I-2095-04	Schematic Diagram Automatic Depressurization System Sol Valves B2104F013F, G, & H	04/20/2012	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		I-2095-06	Schematic Diagram Automatic Depressurization System Control Logic A	12/19/1997
	Miscellaneous	T41-02	Control Center Heating, Ventilating, and Air-Conditioning (CCHVAC) System	F
		Vendor Manual VMCI-144.1.1	General Atomic	A
	Procedures	23.601	Instrument Trip Sheets	42
		24.307.15	Emergency Diesel Generator 12 - Start and Load Test	61
71111.19	Corrective Action Documents	19-25906	Repair of RHRSW Pump A	08/06/2019
		20-20867	Received 10D21 DIV II EDG 14 Lube Oil Tank D Level High/Low in MCR	01/24/2020
		20-20979	Evaluate Whether the Credited Discharge Pressure Achieved During 28.504.03 has Enough Margin	01/28/2020
		20-21062	Master Trip Unit (MTU) B21N680D	01/30/2020
		20-21063	Standby Jacket Coolant Circulating Pump did Not Shut Off When Expected, at Greater Than 810rpm	01/30/2020
		20-21121	Excessive Voltage Swings on EDG 13	01/30/2020
		20-21175	EDG 13 - Exciter Cabinet R1 - R2 Potentiometers Resistance Checks	02/02/2020
		20-21480	Division 2 Control Air Compressor Will Not Load	02/11/2020
		20-21602	Division 2 Control Air Compressor Failed PMT (WO 56659384)	02/13/2020
		Drawings	6M721-5733-1	Fire Protection Functional Operating Sketch
	Miscellaneous	SIEE 90169	Replacement of Diesel Fire Pump P8000C001	0
		SPF 2090	Perform 24.307.47 EDG 13 Fast Start Followed by Load Reject	02/02/2020
		Vendor Manual VMB11-16.4	Right Angle Gear Drives	A
	Procedures	24.205.05	Division 1 RHRSW Pump and Valve Operability Test	58
	Work Orders	50724919	Perform 28.504.03 Fire Suppression Water System Sim Auto Act Test (Diesel Pump)	01/28/2020

71111.19	Work Orders	51610027	Perform 24 Month PM Tasks per 34.307.017 on EDG 13 and R30P343B	01/27/2020
		52424430	Refurbish 2301A and (DRU) Unit in EDG 13 Control Panel	01/27/2020
		54796258	Replace RHRSW Pump A	01/16/2020
		55148399	Install Right Angle Drive and Pump for Diesel Fire Pump	01/10/2020
		56445774	Correct Operation of Float Valve, R3000F109D	
		56523612	Replace MTU B21N680D- Erratic Setpoint Potentiometer	
		56659384	Division 2 Control Air Compressor Will Not Load	02/18/2020
71111.20	Corrective Action Documents	20-22851	Request for Ultrasonic Flow Measurement of FPSST Drain Path	03/17/2020
		20-23111	Lake Erie Water Levels Approaching Starting Point of Design Basis Event	03/23/2020
		20-23463	Impact of Shutdown of RPS A Not Recognized	03/29/2020
	Drawings	M-2083	Residual Heat Removal (RHR) Division 2	01/24/2019
		M-2084	Residual Heat Removal (RHR) Division 1	11/15/2017
	Procedures	22.000.04	Plant Shutdown from 25% Power	87
		22.000.05	Pressure/Temperature Monitoring During Heatup and Cooldown	51
		23.205	Residual Heat Removal System	146
		MOP05-200	RPV Water Inventory Control	1
		MOP13	Conduct of Refueling and Core Alterations	19
		MWC13	Outage Nuclear Safety	20
	Work Orders	52179637	Detension and Disassemble the Reactor Vessel	
	71111.22	Corrective Action Documents	20-21202	TIP E Scan Value is Low
20-21388			TIP E Flux Readings Degrading Rapidly	02/07/2020
Procedures		44.010.045	RPS - Scram Discharge Volume High Water Level Trip System A, Channel A1/A Float Switch Calibration/Functional Test	35
		56.000.04	TIP Machine and Gain Adjustment	29
		MMA08	Scaffolding	19
Work Orders		51947736	Perform 44.010.045 RPS SDV High Water Level Trip System A	02/26/2020

71151	Miscellaneous	Licensing Performance Indicator	Safety System Functional Failure (SSFF) CDE Date Entry, Verification, and Approval	02/05/2019
		Operating Data Report	Third Quarter 2019	02/11/2020
		TE-T92-19-037	Past Operability for Open Secondary Containment Airlock Doors	0
		Trend Report	Fermi 2 PI Trend Report for 2019	02/11/2020
71152	Corrective Action Documents	19-27379	T4100-F014 Exhaust Damper Failed to Close When Exhaust Fan was Shutdown	09/29/2019
		19-29033	T4100F025 RB Center Supply Fan Shutoff Damper Failure/Delayed Closure	11/25/2019
		19-29081	RBHVAC Not Maintaining RB Pressure	11/25/2019
		19-29705	RBHVAC Exhaust Fan Modulating Damper Failure	12/18/2019
		19-29708	RBHVAC Center Supply Fan Shutoff Damper Failed to Close	12/18/2019
	Drawings	M-2707	Flow Diagram Reactor and Auxiliary Building Ventilation System	09/27/2013
		M-2707-01	Flow Diagram Reactor and Auxiliary Building Ventilation System	09/27/2013
	Procedures	MLS04	Operating Experience	11
71153	Corrective Action Documents	19-29705	RBHVAC Exhaust Fan Modulating Damper Failure	12/18/2019