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February 23, 2018
NRC-18-0013

10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Fermi 2 Power Plant
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 2018-001

Pursuant to 10 CFR 50.73(a)(2)(v)(C), DTE Electric Company (DTE) is submitting LER No. 2018-001, Secondary Containment Pressure Exceeded Technical Specification Due to Reactor Building HVAC System Manipulation

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact Mr. Scott A. Maglio, Manager – Nuclear Licensing, at (734) 586-5076.

Sincerely,

Keith J. Polson
Senior Vice President and CNO

Enclosure: LER No. 2018-001, Secondary Containment Pressure Exceeded Technical Specification Due to Reactor Building HVAC System Manipulation

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III

USNRC
NRC-18-0013
Page 2

Regional Administrator, Region III
Michigan Public Service Commission
Regulated Energy Division (kindschl@michigan.gov)

**Enclosure to
NRC-18-0013**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**Licensee Event Report (LER) No. 2018-001, Secondary Containment Pressure Exceeded
Technical Specification Due to Reactor Building HVAC System Manipulation**



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Fermi 2

2. DOCKET NUMBER

05000 341

3. PAGE

1 OF 4

4. TITLE

Secondary Containment Pressure Exceeded Technical Specification Due to Reactor Building HVAC System Manipulation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
01	11	2018	2018	001	00	02	23	2018	FACILITY NAME	DOCKET NUMBER	
										05000	
										05000	
9. OPERATING MODE		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
1		<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
		<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
		<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
		<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. POWER LEVEL		<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
		<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
		<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
		<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
		<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
					<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Fermi 2 / Scott A. Maglio – Manager, Nuclear Licensing

TELEPHONE NUMBER (Include Area Code)

(734) 586-5076

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	VA	PCV	R411	No					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 11, 2018, at 1041 EST, a planned train swap of the Reactor Building Heating Ventilation and Air Conditioning (RBHVAC) system resulted in the Technical Specification (TS) for secondary containment (SC) pressure boundary not being met for less than one minute. The maximum secondary containment pressure recorded during that time was approximately 0.116 inches of vacuum water gauge. Secondary containment pressure was restored to within TS limits by starting Division 1 of the Standby Gas Treatment System (SGTS). There were no safety consequences or radiological releases associated with this event.

The cause of this momentary loss of SC was determined to be the effect of the RBHVAC West Exhaust Fan Modulating Damper failing to fully open. For corrective actions, Fermi 2 has repaired the damper.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
Fermi 2		05000-	YEAR 2018	SEQUENTIAL NUMBER 001	REV NO. 00

NARRATIVE**INITIAL PLANT CONDITIONS:**

Mode – 1
Reactor Power – 100 percent

There were no structures, systems, or components (SSCs) that were inoperable at the start of this event that contributed to this event.

DESCRIPTION OF THE EVENT:

On January 11, 2018, while in Mode 1 at 100 percent power, a planned train swap of the Reactor Building Heating Ventilation and Air Conditioning (RBHVAC) [[VA]] system in support of troubleshooting vibrations on the East Supply Fan was initiated. Following shutdown of the Center Supply and East Exhaust Fans [[FAN]], secondary containment (SC) [[NH]] pressure began to rise. At 1041 EST, the Technical Specification (TS) for SC pressure boundary was exceeded. Division 1 of the Standby Gas Treatment System (SGTS) [[BH]] was started and restored SC vacuum to within the TS operability limit of greater than or equal to 0.125 inches of vacuum water gauge per TS Surveillance Requirement (SR) 3.6.4.1.1. The duration of the TS not being met was less than one minute and the maximum SC pressure observed within the Control Room during the event was 0.117 inches of vacuum water gauge. SC was declared OPERABLE at 1045 EST.

There are two recorder divisions to monitor SC pressure. Review of the pressure recorder [[PR]], following January 11, identified the highest pressure was 0.116 inches of vacuum water gauge. During the transient, the Division 1 recorder indicated that the TS operability limit had been exceeded for less than one minute. The Division 2 recorder indicated that the TS operability limit was maintained throughout the transient, with the lowest observed vacuum of 0.164 inches of vacuum water gauge. Recorder data deltas were reviewed with no notable trend.

An 8-hour event notification (EN 53165) was made to the NRC based on meeting the reporting criteria of Title 10 Code of Federal Regulations (10 CFR) 50.72(b)(3)(v)(C) as an event or condition that could have prevented the fulfillment of a safety function needed to control the release of radioactive material. This Licensee Event Report (LER) is being made under the corresponding requirement in 10 CFR 50.73(a)(2)(v)(C).

SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS:

There were no safety consequences or radiological releases associated with this event. At no time during this event was there a potential for endangering the public health and safety.

The specified safety function of the SC is to contain, dilute, and hold up fission products that may leak from primary containment following a Design Basis Accident (DBA). In conjunction with operation of the SGTS and closure of certain valves [[V]] whose lines penetrate the SC, the SC is designed to reduce the activity level of the fission products prior to release to the environment and to isolate and contain fission products that are released during certain operations that take place inside primary containment, when primary containment is not required to be OPERABLE, or that take place outside primary containment. It is possible for the pressure in the control volume to rise relative to the environmental pressure (e.g., due to pump [[P]] and motor [[MO]] heat load additions). To prevent ground level exfiltration while allowing the SC to be designed as a conventional structure, the SC requires support systems to maintain the control volume pressure at less than the external pressure. For the SC to be considered OPERABLE, it must have adequate leak tightness to ensure that the required vacuum can be established and maintained.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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1. FACILITY NAME		2. DOCKET NUMBER		3. LER NUMBER		
Fermi 2		05000-	341	YEAR	SEQUENTIAL NUMBER	REV NO.
				2018	001	00

NARRATIVE

During this event, a higher indicated SC pressure was recorded for less than one minute. In Chapter 15 of the Updated Final Safety Analysis Report (UFSAR), RBHVAC is assumed lost at the onset of a Loss of Coolant Accident (LOCA) concurrent with a Loss of Offsite Power. As a result, calculations show that the SC would be pressurized until the SGTS restores vacuum. The structural integrity (i.e., leak tightness) of the SC was re-confirmed on January 11 when SC vacuum was restored to greater than 0.125 inches of vacuum water gauge by starting Division 1 SGTS.

If the DBA LOCA for SC concurrent with a Loss of Offsite Power had occurred during the time when the SC pressure TS limit was exceeded, the SC was sufficiently leak tight such that the SGTS would still have established and maintained vacuum greater than the TS required value.

The radiological consequences of the DBA LOCA for SC contained in Chapter 15 of the Fermi 2 UFSAR result in doses that are below 10 CFR 50.67. The SC is assumed to be at a pressure of 0.0 inches of vacuum water gauge at the onset of the LOCA. For this particular event, had the DBA LOCA for SC actually occurred there would be no increase in magnitude of radiological dose because the recorded pressure of 0.116 inches of vacuum water gauge was bounded by the assumed SC pressure of 0.0 inches of vacuum water gauge.

CAUSE OF THE EVENT:

The direct cause of the event was due to a degraded bolt and pivot linkage on the West Exhaust Fan Modulating Damper. The bolt had eroded, causing a loose-fitting connection, which prevented the damper from fully opening and exhausting the excess air from the building. This resulted in increased pressure within the Reactor Building.

CORRECTIVE ACTIONS:

Immediate corrective actions included starting SGTS and restoring the RBHVAC system configuration that was in service prior to the troubleshooting.

The degraded bolt and pivot linkages in the West Exhaust Fan Modulating Damper [[CDMP]] were identified and replaced.

PREVIOUS OCCURRENCES:

Six events involving loss of SC due to the issues with the RBHVAC system have been reported in the following LERs:

LER 2013-001 involved a loss of SC function due to an RBHVAC system equipment malfunction. The cause of that event was related to improper damper sequencing.

LER 2013-003 involved a loss of SC function due to an RBHVAC system equipment malfunction. The cause of that event was related to a RBHVAC system trip caused by the lack of steam flow through a heating coil due to inadequate draining of the downstream steam trap.

LER 2015-001 involved the loss of SC function due to an RBHVAC system trip caused by a valid actuation of a freeze protection device.

LER 2015-004 involved the loss of SC function due to reverse rotation of the RBHVAC center exhaust fan during post-maintenance testing caused by reversed electrical leads.



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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Fermi 2	05000-341	YEAR 2018	SEQUENTIAL NUMBER 001	REV NO. 00

NARRATIVE

LER 2015-005-01 involved the loss of SC function due to set point drift of the RBHVAC supply damper time delay relay resulting in the dampers moving out of sequence.

LER 2016-005 involved the loss of SC function due to the combined effect of high winds during the RBHVAC startup sequence.