Keith J. Polson Site Vice President

DTE Energy Company 6400 N. Dixie Highway, Newport, MI 48166 Tel: 734.586.4849 Fax: 734.586.4172 Email: keith.polson@dteenergy.com



10 CFR 50.73

March 6, 2017 NRC-17-0018

U. S. Nuclear Regulatory Commission Attention: Document Control Desk Washington, D.C. 20555-0009

Reference: Fermi 2 NRC Docket No. 50-341 NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 2017-001

Pursuant to 10 CFR 50.73(a)(2)(v)(A) and (D), DTE Electric Company (DTE) is submitting LER No. 2017-001, Loss of Reactor Protection System Scram Function During the Main Steam Isolation Valve and Turbine Stop Valve Channel Functional Tests due to Use of a Test Box.

No new commitments are being made in this LER.

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

Sincerely,

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Keith J. Polson Site Vice President

Enclosure: Licensee Event Report No. 2017-001

cc: NRC Project Manager NRC Resident Office

Reactor Projects Chief, Branch 5, Region III

Regional Administrator, Region III

Michigan Public Service Commission

Regulated Energy Division (kindschl@michigan.gov)

Enclosure to NRC-17-0018

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

Licensee Event Report (LER) No. 2017-001

U.S. NUCLEAR REGULATORY COMMISSION						APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018 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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail									
(See I	(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 <u>http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)</u>								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. PAGE								
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4. TITLE Loss of Tests d	E f Reactor lue to Us	r Protections are of a Test	on System st Box	Scram Fi	nction D	uring Ma	in Stean	n Isolatic	on Val	ve and Tu	urbine Sto	p Val	ve Chann	el Fund	ctional
5. EVENT DATE 6. LER NUMBER 7. REPORT I						DATE 8. OTHER FACILITIES INVOL						LVED	VED		
MONTH	DAY	YEAR	YEAR	SEQUENTIA NUMBER	REV NO.	MONTH	DAY	YEAR	fac N/A	ILITY NAME		DOCKET NUMBER 05000			
01	06	2017	2017 -	001	- 00	03	06	2017	FAC N/A	ILITY NAME				05000	0
9. OP	ERATING	MODE	11. TH	IS REPOR	RT IS SUB	MITTED P	URSUA	NT TO TH	E REC	UIREMEN	TS OF 10 (CFR §	: (Checka	all that a	apply)
			20.22	201(b)		20.2	2203(a)(3	3)(i)		50.73(a))(2)(ii)(A)		50.7	3(a)(2)(\	viii)(A)
	1		20.2201(d)			20.2	20.2203(a)(3)		50.73(a)(2)(ii)(B)			50.7	3(a)(2)(\	(a)(2)(viii)(B)	
	1		20.2203(a)(1)			20.2203(a)(4)		4)	50.73(a)(2)(iii)		50.73(a)(2)(ix)(/			x)(A)	
			20.22	203(a)(2)(i)		50.3)(A)	50.73(a)(2)(iv)(A)			50.73(a)(2)(x)				
10. PO	WER LEV	'EL	20.22	203(a)(2)(ii)	50.3	36(c)(1)(i)(A) 50.73(a)(2)(v)(A)			73.71(a)(4)				
			20.2203(a)(2)(iii)			50.3	50.36(c)(2)		50.73(a)(2)(v)(B)			73.71(a)(5)			
			20.2	203(a)(2)(i	/)	50.4	46(a)(3)(i	i)) 50.73(a)(2)(v)(C) 73.77(a)(1)						
	100			20.2203(a)(2)(v)			50.73(a)(2)(i)(A		√ 50.73(a)(2)(v)(D)		73.77(a)(2		7(a)(2)(i)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(F)(B)	Γ	50.73(a))(2)(vii)		73.7	7(a)(2)(i	i)
						50.7)(C))(C) OTHER Specify in .			Abstract below or in NRC Form 366A				
					12. L		CONTAC	CT FOR T		ER	-				
LICENSEE Fermi 2	CONTACT / Scott A	. Maglio –	Manager, 1	Nuclear Lie	ensing							TELEF	PHONE NUME (734)	BER (Includ 586-50'	le Area Code) 76
			13. COMPL	ETE ONE	LINE FOR	EACH CC	MPONE	NT FAILU	RE DI	ESCRIBED	IN THIS R	EPOR	RT		
CAUS	SE	SYSTEM	COMPON	ENT FA	IANU- CTURER	REPORTAB TO EPIX		CAUSE		SYSTEM	COMPON	ENT	MANU- FACTURE	R	EPORTABLE TO EPIX
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14. SUP	14. SUPPLEMENTAL REPORT EXPECTED SUBMISSION DATE: 15. EXPECTED SUBMISSION							DAY	YEAR						
On Jan	uary $6, 2$	2017 an O	perations ?	Shift Engi	neer dete	rmined th	nat use o	of the Rea	actor]	Protection	System (RPS)	test box	describ	ed in
station procedures would result in the loss of two RPS reactor scram functions. Technical Specification (18) 3.3.1.1 requires that RPS instrumentation for Table 3.3.1.1-1 Function 5 for Main Steam Isolation Valves (MSIVs) and Table 3.3.1.1-1 Function 9 for Turbine															
Stop Valves (TSV) remain OPERABLE. Operations procedures were revised to incorporate the use of the test box in August of 2016.															
Betwee	en Septer ize the ir	mber 22 a npact of t	nd 23, 201 he procedu	6 the MS are revisio	IV and T ons is con	SV proce sidered a	dures w human	ere each performa	perforance e	rmed one rror by er	time using	g the t	test box.	The fa	uilure to nnel.
The procedures were corrected in January 2017 to remove the use of the RPS test box. Subsequently, on January 7 and 9, 2017.															
respectively, the procedures for the TSVs and the MSIVs were performed successfully.															
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NRC FORM 366A U.S. NUCLEAR REGULA	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018								
	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 FOIA, Privacy and Information Collections Branch (T-5 F53), 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								
(See NUREG-1022, R.3 for instruction and guidance for completing this form <u>http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/</u>) used to impose an information collection does not display a currently valid OMB control NRC may not conduct or sponsor, and a person is not required to respond to, the collection.								i number, the	
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NADDATIVE									
INITIAL PLANT CONDITIONS Mode – 1 Reactor Power – 100 percent	anonto (SS)		were increasely at the		his	overt that co	otrik	outod	
to this event.	ments (550	CS) that	were moperable at the	start or t	1115	event that co		Juleu	
DESCRIPTION OF THE EVENT									
On January 6, 2017 an Operations Shift Engineer (i.e. a Licensed Operator) determined that use of the Reactor Protection System (RPS) [JC] test box [IIS] in procedures 24.137.0.1 "Main Steam Line Isolation Channel Functional Test" and 24.110.05, "Turbine Control and Stop Valve Functional Test" would result in the loss of RPS reactor scram functions. Technical Specification (TS) 3.3.1.1 requires that RPS instrumentation for Table 3.3.1.1-1 Function 5 "Main Steam Isolation Valve – Closure" for Main Steam Isolation Valves (MSIVs) [ISV] and Table 3.3.1.1-1 Function 9 "Turbine Stop Valve – Closure" for Turbine Stop Valves (TSV) [ISV] remain OPERABLE. Both Operations procedures were revised to incorporate the use of a test box in August of 2016. Implementation of the test box was intended to reduce unnecessary RPS actuations by eliminating the half scram created during previous test procedure performances. Between September 22 and 23, 2016, the MSIV and TSV procedures were each performed one time using the test box. The performance of the MSIV and TSV procedures using the test box caused the loss of the RPS trip functions by bypassing more than the TS minimum allowed inputs per trip channel to maintain trip function operability. The unintended loss of RPS trip functions during these tests resulted in a NRC reportable condition under 10CFR50.73(a) (2)(v) (x) s "any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: 10CFR50.73(a)(2)(v)(A) shutdown the reactor and maintain it in a safe shutdown condition," and 10CFR50.73(a)(2)(v)(D) "Mitigate the consequences of an accident."									
successfully. SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS									
The test box was designed to reduce unnecessary RPS actuations. The test box consists of a 3-ohm resistor in parallel with a 5 VAC lamp terminated with banana jacks. The RPS test box is a low resistance path in parallel with the trip logic relay contacts.									
The RPS initiates a reactor scram when at least one MSIV in 3 of 4 Main Steam Lines (MSLs) close (Function 5) or when 3 of 4 TSVs close (Function 9). The automatic MSIV and TSV closure reactor scrams preserve the integrity of the fuel cladding and the Reactor Coolant System (RCS) in anticipation of the transients caused by closure of these valves.									

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NRC FORM 366A U.S. NUCLEAR REGULA	TORY COM	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018								
(See NUREG-1022, R.3 for instruction and guidance for http://www.nrc.gov/reading-rm/doc-collections/nureg	PORT (LE SHEET r completing th s/staff/sr1022	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 FOIA, Privacy and Information Collections Branch (T-5 F53), 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. DOCK			3. LER NUMBER					
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NARRATIVE										
The RPS has two independent trip systems (A and B) with two logic channels in each trip system: channels AI and A2, B1 and B2. The use of the RPS test box, as implemented in the procedures at the time of their use in September 2016, would bypass valve position inputs for one trip logic channel preventing the trip logic channel from being in a tripped condition (half-scram). For Function 5, the logic used ensures a full reactor scram occurs for the condition where at least one MSIV in three or more MSLs are less than 90% open. This occurs as the logic uses valves A and B for the A1 trip logic, C and D for the A2 trip logic, A and C for the B1 trip logic, and B and D for the B2 trip logic. For Function 9, the logic used ensures a full reactor scram occurs for the condition where three or more TSVs are less than 90% open. The use of the RPS test box, as implemented in September 2016, would still result in a half-scram for the trip system under test because each trip logic channel (A1, A2, B1, B2) individually produces a half-scram. Thus, the entire logic would have remained capable of initiating a full reactor scram. However, the TS 3.3.1.1 Bases requirement of 3 valve position signals per trip system was temporarily (for the duration of test) not met. Technical Specification 3.3.1.1 Condition C requires restoring RPS trip capability. For Function 5, this would require both trip systems to have each channel associated with the MSIVs in three main steam lines (not necessarily the same main steam lines for both trip systems) OPERABLE or in trip (or the associated trip system in trip). For Function 9, this would require both trip systems to have three channels representing three TSVs, each OPERABLE or in trip (or the associated										
The required action and completion time for TS 3.3.1.1 CONDITION C:										
C. REQUIRED ACTION – Restore RPS trip	capability, (ETION TIME – 1 hour							
Condition C was applicable to both the MSIV	and ISV R	PS logi	c functional testing.							
The longest time the test box was installed during the performance surveillances was 55 minutes for the MSIV surveillance and 57 minutes for the TSV surveillance. TS 3.3.1.1 Required Action C was not intentionally entered during the performance of the surveillance but was met each time.										
The surveillance procedural error was identified by the Operations Shift Engineer in January 2017 during the work control review for the next scheduled surveillance. Procedures 24.137.01 and 24.110.05 were subsequently revised to not use the test box for future surveillance tests.										
Each surveillance procedure was performed once in September 2016 before the error was recognized in January 2017. The procedures were revised and subsequently performed correctly during the next surveillance test in January 2017.										
CAUSE OF THE EVENT										
Procedures 24.137.01 and 24.110.05 were revised in August of 2016, to include use of the test box. Neither the procedure Technical Review nor the 10 CFR 50.59 evaluation recognized that use of the RPS test box in procedures 24.137.01 (MSIV) and 24.110.05 (TSV), resulted in bypassing the parallel contacts of multiple trip relays associated with the MSIVs or TSVs closure. In the test condition, the number of operable channels in both MSIV and TSV RPS trip systems was reduced such that the RPS trip capability was not maintained as described by the TS 3.3.1.1 Bases.										

NRC FORM 366A U.S. NUCLEAR REGULA	ATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018							
(06-2016) 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. Re lessons learned are incorporated into the licensing process and fed back to industry. comments regarding burden estimate to the FOIA, Privacy and Information Collections Branc									
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NARRATIVE									
While the requirement of having 3 valve posiduring preparation of the 10 CFR 50.59 evalutions development and the complexities intro the unique attributes of this logic and the imp the engineering and operations staff.	tion signals per trip Jation, the understa duced by the parall pact of the procedur	system to maintain the l anding of how this requir el logic strings was not i re revisions are consider	RPS trip capability wa ement translates to re dentified. The failure ed a human performa	as recognized elay contact to recognize ance error by					
The procedures 24.137.01 and 24.110.05 were revised to remove the use of the test box during future surveillance tests. Subsequently, on January 7 and 9, 2017, respectively, the procedures for the TSVs and the MSIVs were performed successfully without the use of the test box.									
A site wide Human Performance Event reset	was conducted to	communicate lessons les	arned from this event						
Additional coaching will be performed for Engineering and Operations personnel on lessons learned when conducting procedure changes such as: (1) supporting applicable Licensing Basis documents need to be reviewed, (2) supporting evaluations need to be adequately intrusive and to the required depth, (3) risk needs to be articulated, and (4) cross organizational expertise needs to be proactively sought before proceeding with the procedure change.									
In addition, project plans will be modified to c of a MSIV isolation logic test box.	communicate and in	nplement lessons learne	d for a planned future	e application					
PREVIOUS OCCURRENCES									
None.									