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**Detroit Edison**



10CFR50.73

November 24, 1999  
NRC-99-0108

U S Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington D C 20555

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

Subject: Licensee Event Report (LER) No. 99-006

Pursuant to the Fermi 2 Operating License, NPF-43, Section 2.F, Detroit Edison is submitting the enclosed LER No. 99-006. The LER documents the discovery that the plant fire protection program dedicated shutdown procedure omitted a required action for fires in certain zones.

No new commitments are being made in this LER.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,



cc: J. Dyer  
A. J. Kugler  
A. Vogel  
M. V. Yudasz, Jr.  
NRC Residents Office  
Region III  
Wayne County Emergency Management Division



POB ADDON 05006341

**LICENSEE EVENT REPORT (LER)**

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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,

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

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**TITLE (4)**  
Plant Fire Protection Program Dedicated Shutdown Procedure Omitted a Required Action for Certain Fire Zones

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
10	27	99	99	--0 0 6--	00	11	24	99		05000	
									FACILITY NAME	DOCKET NUMBER	
										05000	
<b>OPERATING MODE (9)</b>		<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>									
1		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)		50.73(a)(2)(viii)	
<b>POWER LEVEL (10)</b>		20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		50.73(a)(2)(x)	
97		20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		73.71	
		20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)		<input checked="" type="checkbox"/> OTHER	
		20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)		<small>Specify in Abstract below or in NRC Form 366A</small>	
		20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)			

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> Peter W. Smith, Supervisor - Compliance	<b>TELEPHONE NUMBER (Include Area Code)</b> (734) 586-4271
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**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>				<b>EXPECTED</b>	<b>MONTH</b>	<b>DAY</b>	<b>YEAR</b>
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO						

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

At approximately 1700 hours, on October 27, 1999, it was determined that a deficiency existed in the dedicated shutdown procedure used for plant shutdown in the event of fires in certain areas of the plant. The dedicated shutdown procedure did not include a required action for fires in all fire zones for which the action would be required. The dedicated shutdown procedure directs isolation of the control air supply [LF] for the High Pressure Coolant Injection System (HPCI) [BJ] test return line control valve [BJ][FCV], E41F011, only for some fires in some of the fire zones where the action is required. Isolation of the control air supply is required to prevent fire induced spurious opening of the HPCI test return line control valve which, in combination with fire induced spurious opening of two other valves, could result in Standby Feedwater (SBFW) [SJ] flow being bypassed to the condensate storage tank (CST) [SD][TK], reducing flow to the reactor vessel. The SBFW system was declared inoperable invoking Technical Specification (TS) 3/4.7.11, Appendix R Alternative Shutdown Auxiliary Systems. The dedicated shutdown procedure was revised to correct the omission. The TS action was exited at approximately 1500 hours on October 28, 1999, terminating the event. This event is reportable in accordance with Operating License Section 2.F as a condition not fully satisfying License Condition 2.C(9). A 24 hour initial telephone notification was made to the NRC Operations Center at 1157 hours on October 28, 1999, Event Number 3632. This Licensee Event Report constitutes the 30 day written followup report required by Operating License Section 2.F.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**Initial Plant Conditions:**

Operational Condition      1 (Power Operation)  
 Reactor Power                97 Percent  
 Reactor Pressure            1024 psig  
 Reactor Temperature        540 degrees Fahrenheit

**Description of the Occurrence:**

At approximately 1700 hours, on October 27, 1999, it was determined that a deficiency existed in the dedicated shutdown procedure used for plant shutdown in the event of fires in certain areas of the plant. The dedicated shutdown procedure did not include a required action for fires in all fire zones for which the action would be required. Specifically, the dedicated shutdown procedure directs isolation of the control air supply [LF] for the High Pressure Coolant Injection System (HPCI) [BJ] test return line control valve [BJ][FCV], E41F011, only for fires occurring in fire detection zones 4, 6, 8, 9A, or 12. The procedure omitted this action for fires occurring in fire detection zones 11, 12A, 14, or 16. Isolation of the control air supply is required to prevent fire induced spurious opening of the HPCI test return line control valve for fires occurring in all of these detection zones. Spurious opening of the HPCI test return line control valve and two other valves [BJ][V] (E4150F006 and E4150F008), which also are assumed to spuriously open during fires, could result in Standby Feedwater (SBFW) [SJ] flow being bypassed to the condensate storage tank (CST) [SD][TK] instead of the reactor vessel. The SBFW system is credited during certain fire scenarios with injecting water into the reactor vessel to maintain reactor water level and adequate core cooling.

At approximately 1700 hours, on October 27, 1999, the SBFW system was declared inoperable based on the discovery of this omission in the dedicated shutdown procedure. With the SBFW system inoperable, the Technical Specifications (TS) TS 3/4.7.11, Appendix R Alternative Shutdown Auxiliary Systems, Action a.2, permitted plant operation to continue provided that SBFW system operability was restored within seven days; otherwise the plant was to be in hot shutdown within the next 12 hours, and in cold shutdown within the following 24 hours. The dedicated shutdown procedure was revised on October 28, 1999 to correct the omission, thereby restoring SBFW operability. Technical Specification 3/4.7.11, Appendix R Alternative Shutdown Auxiliary Systems, Action a.2, was exited at approximately 1500 hours on October 28, 1999, terminating the event.

The Fermi 2 Operating License, NPF-43, License Condition 2.C(9) requires Detroit Edison to implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report (UFSAR). The identified deficiency in the dedicated shutdown procedure is considered to be a condition not fully satisfying License Condition 2.C(9), which is reportable in accordance with Section 2.F of the Operating License. The required 24 hour initial telephone notification was made to the NRC Operations Center at 1157 hours on October 28, 1999, Event Number 3632. This Licensee Event Report constitutes the 30 day written followup report required by Operating License Section 2.F.

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**Cause of the Occurrence:**

Prior to November 1994, the HPCI test return line control valve, E41F011, was a motor operated valve. The valve was normally electrically deactivated in the closed position by removing fuses. Removing fuses prevented spurious opening of the valve in the event of a fire, eliminating the possibility of a SBFW bypass flow path. In November 1994, a design change was implemented which replaced the motor operated HPCI test return line control valve with an air operated control valve. This design change was made to facilitate performance of TS required HPCI pump surveillance tests. It was recognized during development and implementation of the design change that a different method of preventing spurious actuation during fires was required for the new valve. A new action was added to the dedicated safe shutdown procedure to isolate the air supply to the new valve to prevent spurious opening for fires in certain fire zones. However, this action was not incorporated into the procedure for fires in all fire zones for which this action would be required.

This omission in the dedicated shutdown procedure resulted from not having adequate involvement of a fire protection engineer in the development and review of the procedure change. The fire zones for which the new action is required were informally communicated between engineering and operations support personnel who prepared the procedure change. Fire protection engineer review of the procedure change was not obtained during final review and approval of the procedure. Fire protection engineer review may have prevented the new action from being omitted for some fire zones. Fire detection zone designations, which are used in the procedure, are different than the fire zone designations used in the UFSAR Fire Protection Program. Because different designations are used, it was not readily apparent to the procedure writer which fire detection zones required the new action.

**Analysis of the Occurrence:**

This event did not adversely affect the health and safety of the public. The event involves the omission of an action to isolate the air supply for the HPCI test return line control valve to prevent it from spuriously opening in the event of fires in four fire detection zones. Spurious opening of this valve in the event of a fire alone could not create a bypass flow path for SBFW. The fire would also have to induce two other independent control or electrical faults to spuriously open two other valves to create a SBFW bypass flow path. The post fire safe shutdown evaluation conservatively assumes that a fire damages all unprotected equipment in a fire zone. The evaluation does not credit early detection, and suppression of fires by the automatic fire suppression equipment or the fire brigade, to minimize the fire damage. These actions reduce the potential for an actual fire to grow to the point where the three independent spurious actuations necessary to create a SBFW bypass flow path could occur. In addition, if a fire had occurred, creating the postulated SBFW bypass flow path, appropriate reactor water level and condensate storage tank level indications were available to the operators. The operators would have had sufficient time to recognize and take actions to close and disable one of three valves in the bypass flow path. Therefore, the health and safety of the public was not adversely affected by this event.

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**Corrective Actions:**

The dedicated shutdown procedure was revised on October 28, 1999 to correct the omission. In addition, since 1994, the fire protection engineer has been added as a recommended technical reviewer to changes to the dedicated shutdown procedure.

This event was documented in the Fermi 2 corrective action program. Further corrective actions are being considered including: strengthening requirements for fire protection engineer review of dedicated shutdown procedure change; revising the UFSAR to clarify fire protection zone designations; and improving the availability of basis information for dedicated shutdown procedure. These and any further actions relating to this event will be developed and implemented commensurate with established priorities and processes of the Fermi 2 corrective action program.

**Additional Information:**

A. Previous Similar Events

LER 98-03

On March 18, 1998, it was determined that fire induced multiple hot shorts could cause spurious valve operations which could result in condensate storage tank (CST) inventory to drain to condenser hotwell. This could have resulted in a loss of CST inventory necessary for safe shutdown following a fire. Procedures were revised to deenergize appropriate valves to prevent this drain path. The cause of this event was inadequate cross-discipline review of assumptions made in the fire protection program safe shutdown evaluation.

LER 97-005

On March 7, 1997, during an engineering review of Emergency Equipment Cooling Water (EECW) it was discovered that the Reactor Building Closed Cooling Water (RBCCW) to EECW return and supply isolation valve interlocks are not bypassed when the valve was in local control at the dedicated shutdown panel. These valves could not be operated from the dedicated shutdown panel; therefore there was no assurance that the EECW makeup tank isolation valve could be operated properly from the dedicated shutdown panel if the RBCCW and EECW supply and return valves could not be verified to be closed. The cause of this event was an inadequate design review and inadequate post modification testing.

LER 96-019

On November 15, 1996 a Deviation Event Report (DER) was initiated to investigate the adequacy of the water supply for the Standby Feedwater (SBFW) system to meet Appendix R requirements. The water supply for SBFW is from a nine foot standpipe in the Condensate Storage Tank (CST). Technical Specification (TS) 3.7.11 required an operable SBFW system consisting of two operable SBFW pumps and an operable flow path from the CST to the reactor vessel. The cause of this event was an inadequate design review of the Appendix R Dedicated Shutdown

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an operable SBFW system consisting of two operable SBFW pumps and an operable flow path from the CST to the reactor vessel. The cause of this event was an inadequate design review of the Appendix R Dedicated Shutdown Method during design development in 1984. Appropriate Operating procedures were revised to maintain the required volume of water in the CST at greater than 22 feet.

**LER 96-008**

Following a plant housekeeping tour, a concern was raised about the fire wrap in the Auxiliary Building Basement, elevations 551 feet and 562 feet. This prompted a review of the 10CFR50, Appendix R assumptions used for this area. This review which was completed on May 13, 1996 revealed an incorrect assumption used in the Appendix R Fire Hazards Analysis. Further investigation identified a portion of Division 2 cable trays which were not fire-wrapped in their entirety and were located near equipment which can be considered intervening combustibles, i.e., combustible material within 20 feet of redundant shutdown divisions. An engineering design modification was installed to bring this area into compliance with 10CFR50, Appendix R.