Fermi 2
6400 North Dixie Hwy., Newport, MI 48166

Detroit Edison

10CFR50.73

May 17, 2000
NRC-00-0053

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. 00-008

Pursuant to 10 CFR 50.73(a)(2)(iv), Detroit Edison is submitting the enclosed Licensee Event Report (LER) No. 00-008. The LER documents an invalid automatic closure of the E1150F009, Residual Heat Removal (RHR) Division 1 and 2 Shutdown Cooling Inboard Containment Isolation Valve, resulting in a brief interruption of shutdown cooling.

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,

W. T. O'Connor

W. T. O'Connor
Vice President, Nuclear Generation

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

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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, the information collection.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)
ESF Actuation: Invalid Automatic Closure of E1150F009 Resulting in Shutdown Cooling Interruption

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 05000
04	22	00	00	--0 0 8--	00	05	22	00	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)	00		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			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)	X	50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Kimberly N. Harsley – Licensing Engineer	(734) 586-1255

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

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

At 1428 hours on April 22, 2000, the reactor was in Mode 5 with the vessel head removed, the reactor cavity filled with water, and the fuel pool gates removed. While attempting to deenergize solenoid valve T50F451 to remove it from service for maintenance, an operator (utility, non-licensed) removed the wrong fuse. Removal of this fuse deenergized part of the circuit involved in the Group 4 (Residual Heat Removal Shutdown Cooling and Head Spray) isolation signal. This initiated the automatic closure of E1150F009, Residual Heat Removal (RHR) Division 1 and 2 Shutdown Cooling Inboard Containment Isolation Valve, causing a trip of the operating RHR pump and a brief interruption of shutdown cooling. Once the cause of the isolation and pump trip was confirmed, the fuse was reinstalled and shutdown cooling was returned to operation. Shutdown cooling was interrupted for approximately 48 minutes due to this isolation, and a one degree Fahrenheit increase in reactor coolant temperature was observed. This event resulted from human performance errors caused by inattention to detail during the preparation, review, and implementation of the Safety Tagging Record (STR) associated with T50F451 maintenance activities. This event had minimal safety significance and did not impact the health and safety of the public. This event is being reported under 10CFR50.73(a)(2)(iv) as an Engineered Safety Feature Actuation.

Initial Plant Conditions:

Mode	5 (Refueling)
Reactor Power	0 Percent
Reactor Pressure	0 psig
Reactor Temperature	91 Degrees Fahrenheit

Description of the Event:

At 1428 hours on April 22, 2000, while attempting to deenergize the Primary Containment Radiation Monitoring System Outlet Isolation Solenoid Valve, T50F451, to remove it from service for maintenance, operators (utility, non-licensed) removed the wrong fuse. To deenergize T50F451, operators were required to remove fuse A71A-F901 [FU], located in panel H11-P622 at position AA-F18. Instead, fuse A71B-F62 [FU], located at AA-F12 in the same panel was removed. Removal of fuse A71B-F62 deenergized part of the circuit involved in the Group 4 (Residual Heat Removal Shutdown Cooling and Head Spray) isolation logic. This initiated automatic closure of E1150F009, Residual Heat Removal (RHR) Division 1 and 2 Shutdown Cooling Inboard Containment Isolation Valve [BO][ISV], causing a trip of the operating RHR pump and a brief interruption of shutdown cooling. This isolation resulted from an invalid partial (inboard) Group 4 (Residual Heat Removal Shutdown Cooling and Head Spray) isolation signal that occurred when the circuit was deenergized. The Head Spray valves were already closed at the time of this event, and the RHR Division 1 and 2 Shutdown Cooling Outboard Containment Isolation Valve, E1150F008, was unaffected by the inboard isolation signal.

The control room staff, responding to "Division 1 RHR Pump A/C Motor Tripped" alarm 1D23, entered the loss of shutdown cooling abnormal operating procedure 20.205.01. Once the cause of the isolation and pump trip was confirmed, the A71B-F62 fuse was reinstalled and shutdown cooling was returned to operation. Shutdown cooling was interrupted for approximately 48 minutes due to this isolation, and a one degree Fahrenheit increase in reactor coolant temperature was observed. At the time of this event, the reactor had been shutdown for approximately three weeks; the reactor was in Mode 5 with the vessel head removed, the reactor cavity filled with water and the fuel pool gates removed.

A four hour notification required by 10CFR50.72(b)(2)(ii) was made at 1705 hours on April 22, 2000, Event Number 36919. This event is being reported under 10CFR50.73(a)(2)(iv) as an Engineered Safety Feature Actuation.

Cause of the Event:

This event resulted from human performance errors caused by inattention to detail during preparation, review, and implementation of Safety Tagging Record (STR) 2000-003348, in preparation for maintenance on T50F451. Failure to apply human performance philosophies, such as "Qualification, Validation, and Verification" (QVV) and the "Three Question Technique" for event prevention, contributed to complacency of the individuals involved, leading to the operator removing the wrong fuse.

The sequence of events that led up to the operator removing the wrong fuse began in the preparation stage of STR 2000-003348. The designated fuse nomenclature listed on the STR was not consistent with the expected standard fuse nomenclature typically used on STRs. Therefore, even though the proper labeling and wiring prints were included in the STR package for review and verification, the fuse description was incorrect and confusing.

When the STR package was transferred to the Nuclear Supervising Operator (NSO) for signature, he questioned the fuse nomenclature, but he did not see the necessity to correct the nomenclature. The NSO rationalized the use of the aberrant nomenclature because the operator that had prepared the STR was the same operator who was assigned to hang the tag and pull the fuse. Therefore, it was determined that changes to the description of the confusing fuse nomenclature in the STR were unnecessary and the STR was approved by the NSO.

After the remaining necessary approvals were received, the STR was released for work. The operator, also the STR initiator, contacted the tagging center to request another operator to report to the relay room to perform verification as required per procedure MOP12, Tagging and Protective Barrier System. Prior to entering the relay room, the verifier requested to view the labeling and wiring prints. However, since the operator had left the prints at his desk, the proper review by the verifier was not conducted. Once the operators arrived at the H11P622 panel, with the misleading fuse nomenclature listed on the STR in hand, the wrong fuse was pulled which resulted in the automatic closure of E1150F009 and the brief interruption of shutdown cooling.

Analysis of the Event:

At the time of this event, the reactor had been shutdown for approximately three weeks; the reactor was in Mode 5 with the vessel head removed. The reactor cavity was filled with water greater than 20-feet, 6-inches above the top of the Reactor Pressure Vessel (RPV) flange, and the fuel pool gates were removed. Fuel Pool Cooling and Cleanup (FPCCU) System was in service, providing cooling for the spent fuel pool. Reactor refueling was in progress. In this condition, Technical Specification 3.9.7 requires one RHR shutdown cooling subsystem to be operable unless heat losses to ambient are greater than or equal to heat input to the reactor coolant. Continuous operation of RHR shutdown cooling is not required in this condition.

With the unit in Mode 5, the RHR System is not required to mitigate any events or accidents evaluated in the safety analyses. The RHR System is required for removing decay heat to maintain the temperature of the reactor coolant. Although the RHR System does not meet a specific criterion of the NRC Policy Statement, it was identified in 10 CFR 50.36(c)(2)(ii) as an important contributor to risk reduction. Therefore, the RHR System is retained as a Specification. Only one RHR shutdown cooling subsystem is required to be operable in Mode 5 with irradiated fuel in the RPV and the water level greater than 20-feet 6-inches above the RPV flange. Only one subsystem is required because the volume of water above the RPV flange provides backup decay heat removal capability. Additionally, each RHR shutdown cooling subsystem is considered operable if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required.

Actions were taken at 1440 hours on April 22, 2000 to stop core alterations in the RPV. For the plant conditions that existed at the time of the loss of shutdown cooling, the reactor coolant system heat-up rate, assuming no ambient heat losses or heat removal from FPCCU, was conservatively determined to be approximately six degrees Fahrenheit per hour. For the 48 minutes that shutdown cooling was out of service, a reactor coolant system temperature rise of approximately five degrees Fahrenheit would be expected. During that time an actual one degree Fahrenheit increase was observed in reactor coolant temperature. This is not a significant temperature rise. RHR shutdown cooling was returned to operation at 1516 hours and core alterations commenced at 1530 hours.

Additionally, FPCCU has been analyzed to be capable of serving as an alternate method of decay heat removal to enable RHR Shutdown Cooling to be taken out of service for maintenance during refueling. In this capacity, FPCCU maintains FPCCU suction temperature less than 140 degrees Fahrenheit, cooling both the old and freshly off-loaded assemblies in the fuel pool as well as those remaining in the RPV. RWCU may also be placed in operation with the regenerative heat exchanger bypassed to provide additional cooling and in-vessel mixing.

This event resulted in no damage or degradation of plant structures, systems, or components and had no significant potential for causing such damage or degradation. This event had minimal safety significance. The health and safety of the public was not impacted.

Corrective Actions:

Operations personnel will be briefed on this event and its causes. This event was documented in the Fermi 2 corrective action program (CARD 00-15146). Further corrective actions are being considered, and will be developed and implemented commensurate with established priorities and processes of the Fermi 2 corrective action program. Additionally, CARD 00-15147 was written to initiate an overall evaluation of human performance issues during STR activities.

Additional Information:

A. Failed Component Data

None

B. Previous Similar Events

LER 00-006-00 documents an invalid automatic closure of the E1150F008, Residual Heat Removal (RHR) Division 1 and 2 Shutdown Cooling Outboard Containment Isolation Valve, resulting in a brief interruption of shutdown cooling.