



Wayne D. Romberg
Assistant Vice President
and Manager, Technical

Fermi 2
6400 North Dixie Hwy
Newport, Michigan 48166
(313) 586-1844



10CFR50.73

April 2, 1997

NRC-97-0021

U. S. Nuclear Regulatory Commission
Attn: 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. 97-003

Pursuant to 10CFR50.73, Detroit Edison is submitting the enclosed LER No. 97-003 documenting a condition outside the design basis for the Emergency Equipment Cooling Water System (EECWS) containment isolation function.

The following commitment is made in this LER:

The EECWS primary containment penetrations will be modified to provide diverse power such that a single failure will not result in the loss of the containment isolation function. This modification will be implemented prior to Startup from the current maintenance outage.

If you have any questions, please contact Andrew V. Antrassian, Compliance Engineer, at (313) 586-1856.

Sincerely,

Wayne D. Romberg *Ier*

cc: A. B. Beach
G. A. Harris
M. J. Jordan
A. J. Kugler
Region III
M. V. Yudas, Jr.
Wayne County Emergency Management Division

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Fermi 2										DOCKET NUMBER (2) 0 5 0 0 0 3 4 1 1					PAGE (3) 1 OF 4				
TITLE (4) Emergency Equipment Cooling Water System Containment Isolation Function Outside Design Basis																			
EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)								
MON	DAY	YR	YR	SEQUENTIAL NUMBER			REVISION NUMBER		MON	DAY	YR	FACILITY NAMES			DOCKET NUMBER (S)				
03	03	97	97	-	0	0	3	-	0	0	04	02	97				0 5 0 0 0		
			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)																
OPERATING MODE (9) 4																			
POWER LEVEL (10) 0 0 0			<input checked="" type="checkbox"/> 10 CFR <u>50.73(a)(2)(ii)(B)</u> <input type="checkbox"/> OTHER - _____ (Specify in Abstract below and in text, NRC Form 366A)																
LICENSEE CONTACT FOR THIS LER (12)																			
Andrew V. Antrassian - Compliance Engineer														TELEPHONE NUMBER AREA CODE 313 NUMBER 586-1856					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs										
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR					
[] YES (If yes, complete EXPECTED SUBMISSION DATE)										[X] NO									

On March 3, 1997, it was determined that the Emergency Equipment Cooling Water System (EECWS) containment isolation function was outside the design basis. The EECWS consists of two independent, redundant, full capacity cooling water divisions. The EECWS is normally in standby and portions of the system piping distribute cooling water supplied by the Reactor Building Closed Cooling Water System (RBCCWS). The RBCCWS is isolated from the EECWS upon initiation of the EECWS. Division I (II) EECWS containment and RBCCWS isolation valves are powered by Division I (II) electrical busses. The Updated Final Safety Analysis Report (UFSAR) identifies the EECWS containment penetrations as General Design Criteria (GDC) 56. The UFSAR Containment Isolation System (CIS) design basis identifies that no single failure will result in loss of the containment function. The UFSAR CIS design requirements, in part, require that a closed system used as an isolation barrier inside and outside containment be Seismic Category I and at least Quality Group B. The EECWS piping outside containment is Quality Group C and Seismic Category I. The RBCCWS piping is designated Quality Group D and Seismic Category II/I. Consequently, this piping can not be considered a redundant mechanical barrier. A single failure of an electrical division could result in the EECWS containment and RBCCWS isolation valves of the same division failing in the open position which could result in the loss of the containment isolation function. The EECWS containment penetrations will be modified to provide diverse power such that a single failure will not result in the loss of the containment isolation function.

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		97	- 0 0 3	- 0 0			
TEXT (17)							

Initial Plant Condition:

Operational Condition: 4 (Cold Shutdown)
 Reactor Power: 0 Percent
 Reactor Pressure: 0 psig
 Reactor Temperature: 122 degrees Fahrenheit

Description of the Event:

On March 3, 1997, with the plant in a maintenance outage, it was determined that the Emergency Equipment Cooling Water System (EECWS) [BI] containment isolation function was outside the plant design basis. At 1527 hours, a four-hour non-emergency notification was made regarding this condition in accordance with 10CFR50.72(b)(2)(i).

The EECWS is an Engineered Safety Features (ESF) system consisting of two independent, redundant, full capacity cooling water divisions. During normal operation, the EECWS is in the standby mode and system piping is used to distribute cooling water provided through system supply and return cross connect lines by the Reactor Building Closed Cooling Water System (RBCCWS) [CC]. The EECWS is activated and system piping is isolated from the RBCCWS upon manual initiation, loss of offsite power, high drywell pressure, or low RBCCWS supply/return header differential pressure. Division I (II) EECWS containment and RBCCWS isolation valves are powered by Division I (II) electrical busses.

The Fermi 2 Updated Final Safety Analysis Report (UFSAR) identifies the EECWS primary containment penetrations as General Design Criteria (GDC) 56 penetrations (i.e., the associated piping connects directly to the containment atmosphere). While the EECWS piping inside containment is not physically open to the containment atmosphere, this piping does not meet the UFSAR definition of a closed containment barrier. The UFSAR Containment Isolation System (CIS) [JM] design bases identify that the electrical and mechanical designs ensure that no single failure will result in loss of the containment function. Further, CIS valves for a single division of a redundant ESF system may be powered from a single electrical division so that a single failure of an electrical division can not disable both divisions of an ESF system. In these cases, a redundant mechanical barrier (i.e., a closed system beyond the isolation valves) exists so that the containment isolation function is not lost as a result of a single failure. The UFSAR CIS design requirements, in part, require that closed systems used as an isolation barrier inside and outside containment be designated Seismic Category I and at least Quality Group B.

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Description of the Event (Continued):

The EECWS piping outside containment is designated Quality Group C and Seismic Category I. The RBCCWS piping is designated Quality Group D and Seismic Category II/I. Consequently, even though this piping is physically closed, it does not meet the definition of a closed system and can not be considered a redundant mechanical barrier. A single failure of an electrical division could result in the EECWS containment and RBCCWS isolation valves of the same division failing in the open position which could result in the loss of the containment isolation function. This constitutes a condition outside the design basis of the plant and is being reported in accordance with 10CFR50.73(a)(2)(ii)(B).

Cause of the Event:

The Fermi 2 Final Safety Analysis Report (FSAR) originally identified the EECWS primary containment penetrations as subject to GDC 57 (i.e., not directly connected to the containment atmosphere). In FSAR Amendment 29, dated April 1980, the EECWS penetrations were changed from GDC 57 to GDC 56. Based on a review of Fermi 2 correspondence from that time frame, the rationale for the change appears to be that because certain EECWS components and piping inside containment were designated Quality Group D, the EECWS could not be considered a closed system inside containment. The cause of this condition is a design basis deficiency in that the plant design was not adequately upgraded when the EECWS containment penetrations were changed from GDC 57 to GDC 56.

Analysis of the Event:

This condition is considered of minor safety significance. The CIS is designed to provide protection against the release of radioactive materials to the environment by providing a minimum of one protective barrier between the reactor and the environs under all postulated conditions. This condition would result in failure of the containment isolation function only in the unlikely event of a Design Basis Accident (DBA) coincident with a single failure and a failure of the EECWS/RBCCWS pressure boundary.

In addition, Seismic Category II/I, Quality Group D, RBCCWS piping is designed to maintain structural integrity following a safe shutdown earthquake. Major differences between Quality Group B and Quality Group C EECWS components are in Non-Destructive Examination requirements at the time of installation. From the standpoint of quality of material, manufacture, and installation, the differences are negligible. Therefore, EECWS and RBCCWS piping would be reasonably expected to maintain structural integrity during and following a DBA.

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Corrective Actions:

A review of UFSAR Table 6.2-2, Summary Of Primary Containment Penetrations And Associated Isolation Valves, was conducted which verified that no other primary containment penetrations have design basis deficiencies similar to that described in this report.

The EECWS primary containment penetrations will be modified to provide diverse power such that a single failure will not result in the loss of the containment isolation function. This modification will be implemented prior to Startup from the current maintenance outage.

Additional Information:

A. Failed Components

None

B. Previous LERs on Similar Problems

No previous LERs have identified primary containment penetration design basis deficiencies.