

Detroit
Edison

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10CFR50.73

October 28, 1996
NRC-96-0094

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. 96-011

Pursuant to 10 CFR 50.73, Detroit Edison is submitting the enclosed LER No. 96-011 regarding an unanticipated Engineered Safety Feature (ESF) actuation of a Torus to Drywell Vacuum Breaker.

The following commitments are being made in this LER:

1. A caution statement stating that Torus to Drywell vacuum breakers may actuate will be added to procedures which have been identified as planned evolutions that may potentially cause Torus pressure to be greater than the Drywell pressure. This action will be completed by February 28, 1997.
2. The lessons learned from this LER will be included in the next operator requalification training cycle, 96-07. This action will be completed by December 20, 1996.

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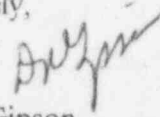
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If you have any questions, please contact Mari Jaworsky at (313) 586-1427.

Sincerely,



D. R. Gipson

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

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) Engineered Safety Feature (ESF) Actuation of Torus to Drywell Vacuum Breaker																			
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 (5)				
9	28	96	96	-	0	1	1	-	0	0	10	28	96				0 5 0 0 0		
OPERATING MODE (9) 3			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)																
POWER LEVEL (10) 0 0 0			x 10 CFR <u>10CFR50.73(a)(2)(iv)</u> OTHER - _____ (Specify in Abstract below and in text, NRC Form 366A)																

LICENSEE CONTACT FOR THIS LER (12) Mari Jaworsky - Compliance Engineer										TELEPHONE NUMBER	
										AREA CODE 313	NUMBER 586-1427
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)	
[] YES (If yes, complete EXPECTED SUBMISSION DATE)										[X] NO	

ABSTRACT (16)

On September 28, 1996 at 0342, the Division 1 Residual Heat Removal (RHR) Shutdown Cooling (SDC) piping warm-up evolution was started. The shutdown cooling mode of RHR was being initiated as part of the plant shut down in preparation for a refueling outage. Concurrently, a Drywell purge was also in progress. Therefore, the Drywell pressure was constant and near atmospheric during this evolution. At 0445, the Torus to Drywell Vacuum Breaker opened due to increasing Torus water level from the piping warm-up evolution which, in turn, increased Torus pressure. At 0455 the RHR Division 1 piping warm-up was completed and at 0456 the vacuum breaker reseated.

The primary cause of the event was the lack of awareness on the part of the operators regarding the potential for opening of the Torus to Drywell vacuum breaker under the above conditions. A contributing factor was that the RHR system procedure did not contain sufficient guidance to alert the operators of the potential for vacuum breaker cycling during this evolution. The RHR system procedure has been revised to incorporate a caution statement regarding the potential for the torus to Drywell vacuum breaker actuation during this evolution.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Fermi 2	0 5 0 0 0 3 4 1	96	-	0 1 1	-	0 0		2		4

TEXT (17)

Initial Plant Condition:

Operational Condition: 3 (Hot Shutdown)
 Reactor Power: 0 Percent
 Reactor Pressure: 58 psig
 Reactor Temperature: 295 degrees Fahrenheit

Description of the Event:

In preparation for a refueling outage, a Torus purge was initiated at 0234 on September 27, 1996 and completed at 0604. At 0631 Drywell purge was commenced and continued to be in progress throughout this event.

On September 28, 1996 at 0220, the Torus Water Management System (TWMS) was started in order to lower torus water level from +0.2 inches in preparation for a Division 1 Residual Heat Removal (RHR) Shutdown Cooling (SDC) piping warm-up evolution. The TWMS was shutdown at 0249 when torus water level reached -1.6 inches. At 0342 the Division 1 RHR SDC piping warm-up evolution was started. The shutdown cooling mode of RHR was being initiated as part of the outage preparations. At 0445, the Torus to Drywell Vacuum Breaker opened due to increasing Torus water level from the piping warm up evolution which, in turn, increased Torus pressure. At 0455 the RHR Division 1 piping warm-up was completed and at 0456 the vacuum breaker reseated.

This ESF initiation occurred during this planned evolution. However, since the actuation was not anticipated and the procedure did not specify the potential for this actuation, this event is reportable under 10CFR50.73(a)(2)(iv).

Cause of the Event:

This actuation occurred during a planned sequence during reactor shutdown. The warm-up of SDC piping involves adding water into the suppression pool. This naturally increases the water level in the suppression pool which, in turn, increases pressure. Also, since a Drywell purge was concurrently in progress keeping the Drywell pressure constant at about atmospheric pressure, there was a greater chance that the low differential pressure setpoint of the vacuum breaker would be reached.

The primary cause of the event was the lack of awareness on the part of the operators regarding the potential for opening of the Torus to Drywell Vacuum Breaker under the above conditions. A contributing factor was that the RHR system procedure did not contain sufficient guidance to alert the operators of the potential for vacuum breaker cycling during this evolution.

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Analysis of the Event:

An engineering analysis determined that the Torus to Drywell differential pressure had reached the setpoint based on the plant conditions at the time. Therefore the vacuum breaker lifted appropriately and the plant responded as designed.

The maximum differential pressure achieved before vacuum breaker actuation was approximately 0.15 psid which is within the normal setpoint range for the vacuum breakers. This is much lower than the Technical Specification limit of 0.5 psid. The containment differential pressure reached during this evolution was much lower than the maximum of 2 psid assumed for the UFSAR analysis of the most severe negative pressure in containment. Therefore, containment integrity had not been compromised and the suppression pool functions were maintained. Also, the vacuum breaker was open for only about 11 minutes which is considerably less than the Technical Specification limit of two hours.

Therefore, the health and safety of the public were not adversely affected by this event.

Corrective Actions:

The RHR System Operating Procedure has been revised to incorporate a caution statement regarding the potential for the Torus to Drywell Vacuum Breaker actuation.

A caution statement stating that Torus to Drywell Vacuum Breakers may actuate will be added to procedures which have been identified as planned evolutions that may potentially cause Torus pressure to be greater than the Drywell pressure. This action will be completed by February 28, 1997.

The lessons learned from this LER will be included in the next operator training cycle, 96-07. This action will be completed by December 20, 1996.

Additional Information:

A. Failed Components

None

B. Previous LERs on Similar Problems

LER 96-002

On February 7, 1996, at 2145 hours, during a surveillance test on the Division 1 Thermal Recombiner System (TRS), operators observed a pressure divergence between the suppression chamber (torus) and Drywell. Torus pressure was increasing slowly and Drywell pressure was decreasing slowly, with torus pressure exceeding Drywell pressure by approximately 3.5 inches of water. A Torus to Drywell Vacuum Breaker was observed to cycle as expected for this condition. This operation of the vacuum

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TEXT (17)

breaker was considered an unplanned ESF actuation. An abnormal valve line-up was identified with TRS inlet aligned to both the Torus and Drywell with TRS discharge aligned to the torus. Drywell suction valves were immediately closed and the pressure divergence stopped. This LER is not completely similar in that the cause of this event was personnel error.

LER 93-009

On July 26, 1993 at approximately 1015, Control Room operators noticed increasing temperatures for heat loads cooled by General Service Water (GSW). Because Drywell pressure was increasing due to increasing temperature, Drywell venting was initiated. Emergency Equipment Cooling Water/Emergency Equipment Service Water (EECW/EESW) was manually started to supplement Reactor Building Closed Cooling Water (RBCCW), primarily for Drywell cooling. The cooling provided by the EECW system reversed the Drywell pressure increase. At 1032 as Drywell pressure continued to decrease, Drywell venting was terminated and a Torus to Drywell Vacuum Breaker opened briefly as expected. This LER is similar in that it involved an anticipated opening of the vacuum breaker, however, the circumstances under which this occurred were different.

LER 91-022

On December 11, 1991, Operations personnel were proceeding with the planned plant shutdown for replacement of the 2A main unit transformer. At 1212 hours, Drywell pressure started decreasing from 15.2 psia to 14.4 psia. The Torus to Drywell and Reactor Building to Torus Vacuum Breakers began lifting at 1226 hours, as designed, to control the negative pressure. Investigation established that the cause of this event was a reverse flow through the safety relief valves (SRVs) and the SRV Vacuum Breakers. This LER is also not completely similar in that this ESF actuation of the Torus to Drywell vacuum breaker was not part of a planned evolution.