



Douglas R. Gipson  
Senior Vice President  
Nuclear Generation

Fermi 2  
6400 North Dixie Highway  
Newport, Michigan 48166  
(313) 586-5249

10CFR50.73

November 15, 1996  
NRC-96-0096

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

- References: 1) Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43
- 2) NRC Integrated Inspection Report  
No. 50-341/95012 dated December 12, 1995

Subject: Licensee Event Report (LER) No. 96-016

Pursuant to 10 CFR 50.73, Detroit Edison is submitting the enclosed LER No. 96-016 which documents an Engineered Safety Feature (ESF) actuation which involved the isolation of drywell pneumatics, and transfer of 480V swing bus 72CF.

This LER contains the following commitments:

1. Procedure 42.309.05 and six other electrical procedures will be revised by April 3, 1997, to include verification that the temporary batteries are properly connected prior to putting them in service.
2. A discussion of this LER will be included in Electrical Maintenance Training, in the first quarter of 1997.

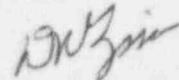
9611220128 961115  
PDR ADOCK 05000341  
S PDR

JE 22/11

November 15, 1996  
NRC-96-0096  
Page 2

If you have any questions, please contact Ronald Wittschen, Compliance Engineer at (313) 586-1267.

Sincerely,

A handwritten signature in dark ink, appearing to read "RW Wittschen", is written below the word "Sincerely,".

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) <b>Fermi 2</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 3 4 1 1</b>	PAGE (3) <b>OF 4</b>
-------------------------------------	---	-------------------------

TITLE (4) **Engineered Safety Features (ESF) Actuation Due to Loss of Power to DC Bus**

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)								
10	16	96	96	-	0	1	6	-	0	0	11	15	96			0	5	0	0	0		
														0	5	0	0	0				

OPERATING MODE (9) <b>5</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)	
POWER LEVEL (10) <b>0 0 0</b>	<div style="text-align: center;"> <u>10 CFR</u>    <u>50.73(a)(2)(iv)</u>  <u>OTHER -</u>          (Specify in Abstract below and in text, NRC Form 366A)       </div>	

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER
<b>Ronald C. Wittschen - Compliance Engineer</b>		AREA CODE <b>313</b> <b>586-1267</b>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH    DAY    YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	

**ABSTRACT (16)**

On October 16, 1996, while the plant was in Operational Condition 5 during a refueling outage, procedure 42.309.05 "Division I / II 130 / 260 Battery Capacity Test," was being performed on Division 1 battery 2A-2. During performance of the test 130V battery 2A-2 was isolated and battery loads are normally powered from the battery charger and a temporary battery. Division 1 DC power was inoperable during the testing. The temporary battery was connected to facilitate other testing while the Division 1 battery was inoperable and removed from service. At the conclusion of the test, while restoring the 130 VDC battery 2A-2 to the normal lineup, electrical power to the DC bus was lost when the battery charger was de-energized. This caused a loss of power to the outboard primary containment pneumatic supply valve which isolated Division 1 drywell pneumatics and caused closure of the Reactor Recirculation Pump "B" seal purge inboard primary containment isolation valve. The Recirculation Pump A seal purge isolation valve was tagged out of service at the time of the event. The 480V Swing Bus 72CF transferred to its Division 2 feed (Position 72F-5C).

The cause of this event was an inadequate procedure. Procedure 42.309.05 did not include sufficient detail for connecting and disconnecting the temporary battery and verifying that the temporary battery is properly connected. The in-line fuses for the temporary battery feed were not installed and the temporary battery could not provide power to the loads when the charger was de-energized. This event had minimal safety significance as the reactor was shutdown and the Division 1 battery system was removed from service. Power was restored when the cause of the event was determined. Corrective actions include revising the surveillance procedure and a review of the event in 1997 Cycle 1 Electrical Maintenance Requalification training.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
Fermi 2	0   5   0   0   0   3   4   1	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2   OF   4	
		96	- 0 1 6	- 0 0		

TEXT (17)

## Initial Plant Condition:

Operational Condition:	5 (Refueling)
Reactor Power:	0 Percent
Reactor Pressure:	0 psig
Reactor Temperature:	88 degrees Fahrenheit

## Description of the Event:

On October 16, 1996, the plant was shutdown and in Operating Condition 5, Refueling. Procedure 42.309.05, "Division I / II 130 / 260 Battery Capacity Test" was being performed. During performance of the test a temporary battery is connected to the DC system [EJ] and the affected battery is then isolated from its normal loads and is considered inoperable. DC loads during the test are powered from the battery charger and when the charger is off, loads are supplied by the temporary battery. At the conclusion of the test, while restoring the 130 VDC battery 2A-2 [EJ - BTRY] to the normal lineup, electrical power to the DC loads was lost when the battery charger was de-energized. Per the procedure, the charger is de-energized to allow battery voltages to equalize when battery 2A-2 is re-connected to the bus in parallel with the temporary battery. Battery 2A-2 loads are normally powered from the temporary battery during this interval. The temporary battery is not intended to replace the permanent battery, but is available for a short period of time to power small loads such as breaker controls and control logic.

When the charger was de-energized, an immediate loss of power to the 2A-2 loads was experienced. On loss of power, the Containment Pneumatics System outboard primary containment isolation valve [JM - ISV] closed automatically, isolating the drywell pneumatics supply, which caused closure of the Reactor Recirculation Pump "B" seal purge inboard primary containment isolation valve [JM - ISV]. The Division I feed from position 72C-3C opened and the Division 2 480V Bus 72F Breaker 72F-5C [ED - BKR] for the 72CF swing bus automatically closed, transferring swing bus 72CF from its normal to standby feed.

The event investigation revealed that the temporary battery safety disconnect switch was closed, but the in-line fuses in the safety switch were not installed. The temporary battery could not pick up the normal 2A-2 loads when the charger was de-energized and a DC power failure was experienced.

This is being reported under 10 CFR 50.73(a)(2)(iv) as an event that resulted in an unplanned automatic initiation of an engineered safety feature (ESF).

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)	
Fermi 2	0   5   0   0   0   3   4   1	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER	
		96	-	0 1 6	-	0 0	3

TEXT (17)

## Cause of the Event:

The cause of the event was an inadequate procedure. The instructions in surveillance procedure, 42.309.05 Rev 24 "Division I / II 130 / 260 Battery Capacity Test" as written, were not appropriate to the circumstances and placed too much reliance on the "skill of the craft." Specifically, Section 6.9 did not provide sufficient detail for verification that the temporary battery was connected and functional. The temporary battery fuses were not verified to be in the circuit, therefore, the temporary battery was not connected to the bus when the battery charger was turned off. Because of the potential to affect the operation of plant equipment, a procedural requirement to positively demonstrate that the battery is connected would have been appropriate.

Contributing factors include (1) the corrective actions from a previous violation focused on Preventative Maintenance (PM) procedures and did not include a review of Surveillance Procedures; (2) weak supervisory oversight and shift turnover; (3) Personnel error in not verifying that the temporary battery was connected; and (4) a lack of continuity within the test crew.

The 1995 violation contained in Inspection Report No. 50-341/95012 (Reference 2) addressed PM procedures which were seen as relying heavily on "skill of the craft." The violation involved test loads inadvertently connected to the permanent battery, which resulted in an inoperable battery. This LER is similar because poor communications and inadequate work instructions contributed to the event. The temporary battery fuses are removed as a safety precaution to positively de-energize the loose cables, and then they are to be re-installed prior to closing the safety switch. The fuse removal and replacement had been considered within the skill of the craft and was not included within the procedure. The corrective actions identified in response to violation 95012-02b included a review of electrical maintenance procedures to determine whether the level of detail included was appropriate, however, the review did not include Surveillance Procedures.

This surveillance had previously been performed by a dedicated crew. This outage the team was comprised of both new and experienced electricians that were rotated between tasks as needed to support this test and other emerging tasks. Weak supervision of the changing crew and a weak turnover of task details during shift changes contributed to the event.

## Analysis of the Event:

The consequence of this event is of minimal safety significance as containment is not needed in this Operational Condition. The battery capacity test is scheduled and always performed during plant shutdown. The ESF actuation was the result of inadvertent de-energizing of the Division 1 battery 2A-2 loads. The plant was shutdown at the time, the Division 1 battery was inoperable as a Division 1 outage was in progress, but the Division 2 battery was operable. Most Division 1 components were not functional but ESF components that were not tagged out of service functioned as expected. Isolation of the Reactor Recirculation Pump B seal purge had no



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)				PAGE (3)	
Fermi 2	0   5   0   0   0   3   4   1	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER	
		96	-	0   1   6	-	0   0	4   OF   4

TEXT (17)

impact as these pumps are not considered essential for plant shutdown. Prior to plant startup the temporary battery is removed and the configuration returned to normal, therefore, this event could not create a significant condition adverse to quality.

## Corrective Actions:

The test of the 2A-2 battery has been completed successfully. Supervisors and test crew were counseled, and Procedure 42.309.05 will be revised by April 3, 1997, to incorporate appropriate steps to verify that the temporary battery is connected and in service. Additionally, the LER will be included in Electrical Maintenance Training Cycle 1, scheduled for the first quarter 1997. Other electrical surveillance and test procedures which could potentially result in a similar event were reviewed. The following six additional procedures were identified and will be revised by April 3, 1997.

- 37.000.018 BOP 130/260 Battery Capacity Test
- 37.000.019 UPS Battery Capacity Test
- 37.000.024 Peaker Battery Capacity Test
- 42.309.03 Division 1 18 Month 130/260 VDC Battery Checks
- 42.309.06 Division 2 18 Month 130/260 VDC Battery Checks
- 47.310.01 24/48 VDC Instrumentation Battery Capacity Test

## Additional Information:

### A. Failed Components

None

### B. Previous LERs on Similar Problems

None