LICENSEE EVENT REPORT (LER)

FACILITY NAME (1): Fermi 2

DOCKET NUMBER (2): 0 5 0 0 0 3 4 1

PAGE (3): 1 OF 4

TITLE (4): Technical Specification Required Shutdown - Drywell to Suppression Chamber Vacuum Breaker Failed to Indicate Closed

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)
12	24	96	96	- 0 2 3 -	0	0	01	23	97		0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9): 2

POWER LEVEL (10): 0 0 8

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)

X 10 CFR 50.73(a)(2)(i)(A)

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	586-1427

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
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)	[X] NO				

ABSTRACT (16)

On December 24, 1996 at 0550, during performance of a required surveillance on Drywell to Suppression Chamber vacuum breakers, vacuum breaker T2300F400J failed to indicate closed after initial opening. Several attempts to achieve a closed indication on the valve were unsuccessful. A controlled shutdown was initiated in accordance with the Technical Specifications.

The cause of this event was that the maintenance procedure did not contain sufficient detail to address some of the design characteristics of the vacuum breaker magnet assembly. The vacuum breaker pallet, normally held in the closed position by a magnet, was not close enough to the magnet assembly to be attracted by the magnetic field and be held closed. After a number of actuations of the vacuum breaker, the magnet assembly had become misadjusted by a sufficient enough distance that the pallet was not pulled the approximate 1/8 inch to the fully closed position. Therefore, the proximity switch contacts did not close to energize the closed indication.

The magnet assembly was replaced, the vacuum breaker retested, and the closed indication verified. The remaining Drywell to Suppression Chamber vacuum breakers were inspected and no similar concerns were identified. The section on magnet installation in the vacuum breaker maintenance procedure will be revised prior to the next refueling outage or maintenance on a vacuum breaker to include assembly details that will prevent recurrence of this event.

Initial Plant Condition:

Operational Condition:	2 (Startup)
Reactor Power:	8 Percent
Reactor Pressure:	945 psig
Reactor Temperature:	545 degrees Fahrenheit

Description of the Event:

The plant was in Startup, Operational Condition 2, following the fifth refueling outage. On December 24, 1996, a Drywell to Suppression Chamber vacuum breaker valve [BF][VACB] operability surveillance was being performed. This surveillance is required to be performed after testing the safety relief valves (SRV) [AC][RV] to ensure operability of the vacuum breakers. The test is performed by mechanically opening each vacuum breaker pallet using an installed pneumatic actuator to obtain an open indication. The actuator cylinder piston is retracted and Control Room redundant indications of each vacuum breaker are observed to confirm full closure.

After initially opening vacuum breaker T2300F400J by depressing the open push-button and receiving the open indication, the open push-button was released allowing the vacuum breaker to reclose. The open indication went off, but the closed indication did not illuminate. Two additional vacuum breaker cycles were performed. The indications were identical each time. The open indication illuminated after the open push-button was depressed, and extinguished when the push-button was released, with the closed indication not illuminating.

The vacuum breaker was declared inoperable and Technical Specification (TS) 3.6.4.1, Action Statement "b" was entered at 0550 hours. The Action Statement states, "With one or more suppression chamber - drywell vacuum breakers open, close the open vacuum breaker within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours."

Potential failure modes were defined, an initial inspection plan prepared, and an orderly plant shutdown was initiated. Closed indication was subsequently received during the Suppression Chamber purge when there was a differential pressure between the Drywell and Suppression Chamber. The plant was placed in hot shutdown on December 24, 1996 at 1652 hours. The vacuum breaker was declared operable returned to service on December 26, 1996, at 0800 hours.

This event is reportable under 10 CFR 50.73(a)(2)(i)(A) which requires reporting the completion of any nuclear plant shutdown required by a plant's Technical Specifications. ENS notification of the TS required shutdown was made at 1302 hours, when the first control rod move was initiated to commence the shutdown, on December 24, 1996 as required by 10CFR50.72(b)(1)(i)(A).

Cause of the Event:

The cause of this event was that the maintenance procedure did not contain sufficient detail to address the particular design characteristics of the vacuum breaker magnet and, specifically, the effects of assembly adjustment on the elastomer spacing. A contributing factor was that the physical layout of the assembly does not allow for a visual verification of proper assembly installation without taking special actions. The magnet assembly "pulls" the vacuum breaker pallet closed and holds it in position. After a number of actuations the magnet assembly became misadjusted by a sufficient enough distance that the pallet was not pulled the approximate 1/8 inch to the fully closed position. Therefore, the proximity switch contacts did not close to energize the closed indication. This was due to the movement of the magnet assembly away from the magnet plate mounted on the pallet. Movement of the magnet assembly was permitted by a space that was formed between the pallet seat flange and magnet assembly spacers due to over-compression of the elastomer spacer and binding of metallic spacers on the threads of the magnet assembly mounting and adjusting cap screw. Investigation concluded that movement of the magnet assembly was probably caused by the pallet magnet plate striking the magnet assembly during previous cycling of this vacuum breaker.

Analysis of Event:

To test operability, the valve is stroked open by means of a permanently installed solenoid and pneumatically operated vacuum breaker test actuator. The actuator is used only for testing the valve. During normal operation, the actuator piston rod is fully retracted and does not impede the function of the vacuum breaker.

The purpose of the Drywell to Suppression Chamber vacuum breakers is to equalize the pressure between the Suppression Chamber and the Drywell and to prevent leakage from bypassing the Suppression Chamber downcomers and entering the Suppression Chamber air volume directly. Had a high energy line break (HELB) occurred in the Drywell, the vacuum breaker would have functioned as required to prevent leakage from bypassing the Suppression Chamber downcomers and entering the Suppression Chamber air space directly. As long as there is some differential pressure between the Drywell and the Suppression Chamber, the vacuum breaker would have fully closed as required for a HELB. The valve would also have opened as required to relieve a Drywell vacuum. Therefore, the health and safety of the public were not adversely affected by this condition.

Corrective Actions:

The magnet assembly for the T2300F400J vacuum breaker was replaced. The valve was retested and was demonstrated to operate correctly with correct position indications received. The remaining Drywell to Suppression Chamber vacuum breakers were inspected and tested to ensure that a similar deficiency did not exist. No other similar concerns were identified. Subsequent

testing of the magnet assembly that had been initially installed confirmed that there was no significant degradation of the magnetic strength and that the magnet assembly would have worked properly if it had been correctly adjusted.

The section on magnet installation in the vacuum breaker maintenance procedure will be revised prior to the next refueling outage or maintenance on a vacuum breaker to include assembly details that will prevent recurrence of this event.

Additional Information:

A. Failed Components

None

B. Previous LER's on Similar Problems

LER 92-003

On April 7, 1992, at 1105 hours, during performance of a routine surveillance on Drywell to Suppression Chamber vacuum breaker operability, a vacuum breaker did not close after being opened. A controlled shutdown of the plant was completed in accordance with the applicable Technical Specification Action Statement. The root cause of the failure of the vacuum breaker to close was that the actuator, used for surveillance testing only, bound up with the actuator cylinder in the open position. The binding resulted from an undersized piston in the vacuum breaker actuator cylinder. LER 92-003 is similar in that involves a failure of a vacuum breaker to close. However, this LER is different from the current LER in that it involves a component failure. The failure of a vacuum breaker to close in the current LER is due to a deficient installation procedure.