LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Fermi 2	0 5 0 0 0 3 4 1	1 OF 5

TITLE (4) Condition Prohibited By Technical Specifications Due To Failure of Reactor Building HVAC

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	25	97	97	- 0 0 7 -	0 0	04	24	97		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	4
POWER LEVEL (10)	0 0 0

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

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

OTHER -

(Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

Norm Peterson - Compliance Supervisor	TELEPHONE NUMBER AREA CODE	313 457-4258

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	
X	V A	P S V	A 6 1 0								

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

ABSTRACT (16)

On March 25, 1997, at 2247 hours, with the plant shutdown in Operational Condition 4 (Cold Shutdown) and Secondary Containment Integrity required to be met because of inoperable low pressure Emergency Core Cooling System (ECCS) subsystems, one of the two operating Reactor/Auxiliary Building Ventilation System (RBHVAC) exhaust fan discharge dampers closed, resulting in high reactor building pressure of +0.5 inch water gauge. This caused a loss of Secondary Containment Integrity. The cause of this event is age and service related mechanical failure of the solenoid valve that controls opening air to the discharge damper for the west RBHVAC exhaust fan, allowing the discharge damper to close. A related problem is the potential malfunction of the exhaust fan no-flow trip function. A no-flow trip of the west supply and exhaust fans may have prevented the loss of Secondary Containment Integrity following the closure of the exhaust fan discharge damper. The west supply and exhaust fans were subsequently manually tripped. Secondary Containment Integrity was restored within approximately two minutes of the event by starting the standby pair of RBHVAC fans. The failed solenoid valve was replaced and sent offsite for failure analysis. Corrective actions include completing the evaluation of the exhaust fan no-flow trip function, and determining the effectiveness of the quarterly walkdown of non-safety related solenoid valves used in this application.

Initial Plant Condition:

Operational Condition: 4 (Cold Shutdown)
Reactor Power: 0 Percent
Reactor Pressure: 2 psig
Reactor Temperature: 122 degrees Fahrenheit

Description of the Event:

A. Background

The Reactor/Auxiliary Building Ventilation System (RBHVAC) [VA] consists of three parallel, fifty-percent capacity supply fans, and three parallel, fifty-percent capacity exhaust fans, each with associated discharge dampers. The reactor building is normally maintained at a slight negative pressure (relative to outside) to prevent leakage of air from the reactor building by operating two of the three supply and exhaust fan pairs. The supply and exhaust fans are manually controlled from the control room. The supply and exhaust discharge dampers automatically open following a 20 second delay after the associated fan is started. These spring loaded dampers are held open by air, which is controlled by non-safety related, single acting solenoid valves. The exhaust fan in each pair is started first to establish the direction of air flow from general access to potentially contaminated areas.

B. Event Description

Following identification on March 19, 1997 of the need to amend certain Technical Specification (TS) response time testing requirements, it was determined that the required TS response time testing for the low pressure Emergency Core Cooling Systems in Operational Conditions 4 and 5 was not current (See LER 97-006 dated April 21, 1997). Therefore, although one Residual Heat Removal (RHR) [BO] subsystem and both Core Spray [BM] subsystems were fully functional as ECCS subsystems, they did not meet the TS Definition of Operability and were considered inoperable. Technical Specification 3.5.2.b requires that Secondary Containment Integrity be maintained when less than two low pressure ECCS subsystems are operable. The TS Definition of Secondary Containment Integrity and the Secondary Containment Integrity requirements of TS 4.6.5.1.a require the vacuum within secondary containment [NH] to be greater than or equal to 0.125 inch of vacuum water gauge (i.e., -0.125 inch).

On March 25, 1997, at 2247 hours, alarms 8D46 and 17D46 (Division 1 and Division 2 Reactor Building Pressure High/Low) were received. Reactor building pressure had increased to +0.5 inch water gauge as indicated on recorders T41R800A and B. The control room operators determined that the west RBHVAC exhaust fan discharge damper T41F014 had closed, decreasing the exhaust flow from the building, and immediately secured the west RBHVAC supply and exhaust fans. With only the center RBHVAC supply and exhaust fans continuing to operate, reactor building pressure decreased from +0.5 to +0.1 inch water gauge. The east RBHVAC fans were started approximately two minutes

later at 2249 hours in accordance with plant procedures, and the reactor building pressure returned to 0.4 inch vacuum water gauge (i.e., -0.4 inch). This momentary loss of Secondary Containment Integrity with less than two low pressure ECCS subsystems operable resulted in the failure to meet TS 3.5.2.b. This event is reportable in accordance with 10 CFR 50.73 (a)(2)(i)(B).

Cause of the Event:

A work request was initiated on March 5, 1997 following the quarterly walkdown of non-safety related solenoid valves [VA][PSV], to check ASCO solenoid valve T41F056 (Model No. HB8320G1) which had been identified as making a "buzzing" sound during the walkdown. This solenoid valve, which controls air to the west RBHVAC exhaust fan discharge damper T41F014 [VA][DMP], failed prior to the performance of the work request, allowing damper T41F014 to close, which resulted in the momentary loss of Secondary Containment Integrity. Investigation immediately following the event revealed that solenoid valve T41F056 was blowing by excessively. The solenoid valve was sent to the Detroit Edison Warren Service Center for confirmatory evaluation. It was determined that the exhaust port elastomer seating material had completely disintegrated, leaving the valve with degraded sealing capacity and allowing air to leak by at the exhaust port. (In contrast to the quarterly walkdown of non-safety related solenoid valves, safety related solenoid valves have been evaluated for specific preventive maintenance events based upon their specific use and application.)

An additional concern related to this event is the potential failure of the west exhaust fan no-flow trip [PDS] function to sense the closed damper and to automatically trip the west supply and exhaust fans. A quick, automatic trip of these fans may have enabled the center supply and exhaust fans to maintain the necessary vacuum in secondary containment. It is not clear why the exhaust fan did not trip when its associated discharge damper closed. A work request has been written to investigate the fan trip logic and components and to determine whether any changes are necessary.

Analysis of the Event:

Secondary containment, in conjunction with the Standby Gas Treatment System, is designed to minimize any ground level release of radioactive material which may result from an accident. There are two principal accidents for which Secondary Containment Integrity is assumed, a loss of coolant accident (LOCA) and a fuel handling accident. In Operational Conditions 4 and 5, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations in these conditions. Therefore, from an analytical standpoint, maintaining Secondary Containment Integrity during Operational Conditions 4 and 5 is only necessary for situations for which significant releases of radioactive material can be postulated, such as during operations with a potential for draining the reactor vessel (OPDRVs), during core alterations, or during movement of irradiated fuel assemblies in the secondary containment. None of these operations were being conducted during the approximate two minute period that Secondary Containment Integrity was not maintained.

Had an event requiring Secondary Containment Integrity occurred during this period, the standby RBHVAC fans were immediately available, as was the isolation capability afforded by the high radiation trip of this system and the isolation capability provided by the secondary containment isolation function. The Standby Gas Treatment System, which is designed to maintain the reactor building at a negative pressure relative to the outside atmosphere during transient and accident conditions was also available. Additionally, although the low pressure ECCS subsystems were considered inoperable because of the response time testing concerns, three of the four subsystems were functional and would have been available if needed. Therefore, this event did not pose an actual threat to the public health or safety.

Corrective Actions:

A. Immediate Corrective Actions

1. The east RBHVAC exhaust and supply fans were started in order to reestablish Secondary Containment Integrity. This was completed at 2249 hours on March 25, 1997, approximately two minutes following the initiation of the event.

2. The failed solenoid valve was replaced with a new solenoid valve of the same design and tested satisfactorily.

B. Corrective Actions to Prevent Recurrence

1. The effectiveness of the quarterly walkdown of non-safety related solenoid valves is being evaluated to determine whether it is sufficient for this application, considering the failure mechanism discovered during post failure examination of the solenoid valve.

2. An evaluation of the exhaust fan no-flow trip function is being made to determine why it did not actuate when damper T41F014 closed.

Additional Information:

A. Failed Components

ASCO Solenoid Valve T41F056 (Model No. HB 8320G1).

B. Previous LERs on Similar Problems

No previous LERs have been written involving loss of Secondary Containment Integrity caused by the closing of an operating RBHVAC fan discharge damper.