NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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TITLE (4)
Torus Cooling Outboard Test Valve Would Not Close Resulting In Inoperable Low Pressure Coolant Injection System Due to Faulty Breaker Auxiliary Contact Switch

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	
12	01	97	97	013	01	06	19	98	FACILITY NAME: N/A	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)							
POWER LEVEL (10)	099		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
			20.2203(a)(2)(i)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.405(a)(1)(ii)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)	X	50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
P. Garrett, Plant Engineering	(815) 942-2920 Ext. 2713

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	BO	CNTR	G080	Y						

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

ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)

On December 1, 1997, at approximately 1215, during performance of Dresden Operating Surveillance (DOS) 1500-10, LPCI System Pump Operability Test With Torus Available and In-Service Test Program, the Torus Cooling Outboard Test valve, 3-1501-38B, could not be closed via its control switches. With the 3-1501-38B valve, and the Torus Cooling Inboard Test valve 3-1501-20B open, a flow path existed which could have diverted flow from the Reactor Vessel if initiation of the LPCI system, in response to a Design Basis accident, was required. The flow path is required to be isolated within 36 seconds. The 36-second isolation requirement is controlled administratively, by throttling open the 3-1501-38B valve no more than 36 seconds; thus, the valve will automatically close within 36 seconds upon a LPCI system initiation. Since the 3-1501-38B valve was inoperable, the 36 second isolation requirement could not be met. The LPCI system test line was then isolated using the 3-1501-20B valve. However, the 3-1501-20B valve stroke time exceeds the system design basis requirement to isolate the flow path (36 seconds) by 5 seconds. The root cause of the failure was the auxiliary contacts sticking open in the close circuit. Faulty auxiliary contacts on the valve breaker resulted in the valve not being able to close. Corrective actions included replacement of the faulty auxiliary contact switches. The safety significance of this event was minimal. No previous occurrences were identified.

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TEXT *(If more space is required, use additional copies of NRC Form 366A) (17)*

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 Mwt rated core thermal power

Energy Industry Identification System (EIIS) Codes are identified in the text as [XX] and are obtained from IEEE Standard 805-1984, IEEE Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities.

Low Pressure Coolant Injection System (LPCI) [BO]

EVENT IDENTIFICATION:

Torus Cooling Outboard Test Valve Would Not Close Resulting In Inoperable Low Pressure Coolant Injection System Due to Faulty Breaker Auxiliary Contact Switches

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 12/01/97 Event Time: 1215

Reactor Mode: 1 Mode Name: Run Power Level: 99%

Reactor Coolant System Pressure: 1000 psig

No other systems or components were inoperable or out of service at the start of this event which contributed to this event.

B. DESCRIPTION OF EVENT:

This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D) which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of a system required to mitigate the consequences of an accident.

On December 1, 1997, at approximately 1215, during performance of Dresden Operating Surveillance (DOS) 1500-10, LPCI System Pump Operability Test With Torus Available and In-Service Test Program, the Torus Cooling Outboard Test valve, 3-1501-38B, could not be closed. With the 3-1501-38B valve and the Torus Cooling Inboard Test valve 3-1501-20B open, a flow path existed which could have diverted flow from the Reactor Vessel if initiation of the LPCI system, in response to a Design Basis accident, was required.

The 3-1501-20B and 3-1501-38B valves are motor operated, in series and automatically isolate on initiation of the LPCI system. The flow path is required to be isolated within 36 seconds. The 36-second isolation requirement is controlled administratively, by throttling open the 3-1501-38B valve no more than 36 seconds; thus, the valve will automatically close within 36 seconds upon a LPCI system initiation. Since the 3-1501-38B valve was inoperable, the 36 second isolation requirement could not be met. The LPCI system test line was then isolated using the 3-1501-20B valve. The 3-1501-20B valve stroke time exceeds the system design basis requirement to isolate the flow path (36 seconds) by 5 seconds; thus, if it were to receive an LPCI system initiation signal, the valve would not automatically close within the specified time.

DOS 1500-10 provides for surveillance testing to verify that the LPCI system can achieve its required flow. The valve configuration required to perform this test opens the 3-1501-20B valve, and then throttles open the 3-1501-38B valve for no longer than 36 seconds. Following the throttling of the 3-1501-38B valve to achieve required flow, the valve would not close when given a close signal from the control switches. The valve breaker was then reset and turned off, then turned back on and reset again. No valve movement was observed following reset of the breaker. Performance of DOS 1500-10 was terminated and the 3-1501-20B valve was closed at 1225, closing the flow path to the Torus. If an actual LPCI initiation had occurred, the 3-1501-20B and 3-1501-38B valves automatically receive a closed signal. In this case, the 3-1501-38B valve would not have closed, but the 3-1501-

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20B valve would have. However, the closure time for the 3-1501-20B valve is 41 seconds, 5 seconds beyond the 36 seconds required by the system design basis.

During troubleshooting of the 3-1501-38B valve failure, it was identified that the valve's breaker auxiliary contact switches were faulty. With agitation of the subject breaker auxiliary contacts plunger, the 3-1501-38B valve then completed its closed stroke. This indicated that the auxiliary contact was stuck in the open position, preventing 3-1501-38B valve closure. The auxiliary contact switches were replaced and the valve was stroked with a return to service on December 1, 1997. The failed auxiliary contacts were shipped to the ComEd central testing facility for examination. The examination could not identify a specific failure mode for the contact preventing the 3-1501-38B valve from closing, the failure was attributed to a sticky contact, which released when agitated.

C. CAUSE OF EVENT:

The root cause of the failure was the auxiliary contacts sticking open in the close circuit, the specific reason for the sticking could not be determined, NRC cause code X. Faulty auxiliary contacts on the valve breaker resulted in the valve not being able to close. No other similar incidents were identified; thus, this incident is considered an isolated case.

D. SAFETY ANALYSIS

In the LPCI system's standby line-up, the isolation valves, 3-1501-38B and 3-1501-20B, are normally closed. When the valves are opened for performance of the quarterly surveillance test, an automatic interlock closes the valves upon an LPCI system initiation, and is to isolate this flow path within 36 seconds. This is necessary to ensure that LPCI flow is not diverted from vessel injection. With these valves in the closed position, the 3-1501-38B valve condition would have no affect on the ability of the LPCI system to perform its safety injection function.

In addition to the injection function, the LPCI system is to provide suppression pool cooling. The system utilizes the line associated with the 3-1501-38B valve to return the cooled water to the suppression pool. This function of the system is secondary compared to the injection function, which keeps the fuel covered in the event of a LOCA. After the LOCA has occurred and the vessel level has been restored, LPCI flow to the vessel is throttled back to the quantity required to keep the fuel covered. Following throttling back the flow, suppression pool cooling would be valved in. If the loop in question would have been put into service, the system would have been able to perform its function. The 3-1501-38B valve would have been able to open and allow cooled suppression pool water to return to the suppression pool, based on the valve opening for the quarterly surveillance test. During the course of adjusting the flow through this line, the inability to close the 3-1501-38B would have been discovered. This would have minimal impact on the ability of the system to provide suppression pool cooling. The valve still would have established a flow path. If the flow path was determined not to be needed, the downstream series valve 3-1501-20B could be utilized to shut down flow through the line.

At the time the condition with the 3-1501-38B was discovered, the system was in a flow test line-up, being tested. If there was an LPCI initiation signal present, the design of the system contains various interlocks that would close the 3-1501-38B and 3-1501-20B valves. If the 3-1501-38B valve would not close, either manually from the control room or on a LPCI initiation signal, the LPCI system would not respond as evaluated in the UFSAR. It would not be able to perform its design function for the period of time it took the 3-1501-20B valve to close in excess of 36 seconds, approximately 5 seconds. Full LPCI injection flow would be directed to the vessel after the 3-1501-20B valve had gone full closed. This event however, is bounded by the analysis contained in Section 6.2.1.3.2.2 of the UFSAR. This analysis postulates a failure of the LPCI loop select logic resulting in all LPCI flow injecting to the drywell. The resulting long term containment response for this event shows that containment integrity is still maintained. Based on the above and the fact that all other Emergency Core Cooling Systems required by Technical Specification 3.5.A.2.b were operable through out this event, the safety significance is minimal.

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E. CORRECTIVE ACTIONS:

The faulty auxiliary contacts were replaced and the valve was cycled. (Complete)

F. PREVIOUS OCCURRENCES:

No previous occurrences were identified in the past three years.

An industry operating experience search was performed and identified no similar failures of auxiliary contacts of this model during the past 3 years. Review of OPEX data for other GE models indicated six (6) events industry wide involving contact or contact spring problems over the three year period prior to this event. This NPRDS data does not indicate an adverse trend. (Complete)

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Mfg Part Number
General Electric	Auxiliary Contact	CR105X

The subject auxiliary switches were installed in April 1997.