

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), 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.

FACILITY NAME (1)

RIVER BEND STATION

DOCKET NUMBER (2)

05000458

PAGE (3)

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TITLE (4) TRAIN B OF THE RHR SYSTEM RENDERED INOPERABLE WHILE THE HPCS SYSTEM WAS OUT OF SERVICE (TECHNICAL SPECIFICATION 3.0.3 ENTRY) DUE TO PERSONNEL FAILURES TO RECOGNIZE THE RESULTING ECCS SYSTEM CONFIGURATION

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
11	04	93	93	-- 025 --	00	12	06	93	FACILITY NAME	DOCKET NUMBER
										05000
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)	
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)			
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

DAVID N. LORFING, SUPERVISOR - NUCLEAR LICENSING

TELEPHONE NUMBER (Include Area Code)

(504) 381-4157

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

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

On November 4, 1993 at approximately 2232, with the plant in Operational Condition 1 (Power Operation), loop B of the low pressure coolant injection (LPCI) system (residual heat removal (RHR) system - train B), was inadvertently rendered inoperable while the high pressure core spray system was out of service to support unrelated testing. This condition, HPCS and LPCI - B inoperable, is not specifically addressed by Technical Specification (TS) 3.5.1, "ECCS - Operating," and thus, requires entry into TS 3.0.3. Therefore, this report is submitted pursuant to 10CFR 50.73(a)(2)(i)(B), as operation prohibited by the Technical Specifications.

The root cause of this event is that Operations personnel did not recognize the resulting ECCS system configuration when RHR B was rendered inoperable to perform a retest. In response to this event, GSU formed a team to review the event and initiated an operations accountability review. These reviews revealed that existing procedures are adequate. Counseling was provided for all of the individuals involved and Night Orders have been initiated to implement required reading for all Operations personnel, consisting of the condition report response documenting this event. Disciplinary actions are under evaluation. The ECCS configuration required by the River Bend Station design basis was maintained throughout this event.

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REPORTED CONDITION

On November 4, 1993 at approximately 2232, with the plant in Operational Condition 1 (Power Operation), loop B of the low pressure coolant injection (LPCI) system (*BO*) (residual heat removal (RHR) system - train B), was inadvertently rendered inoperable while the high pressure core spray system (*BG*) was out of service to support unrelated testing. This condition, HPCS and LPCI - B inoperable, is not specifically addressed by Technical Specification (TS) 3.5.1, "ECCS - Operating," and thus, requires entry into TS 3.0.3. Therefore, this report is submitted pursuant to 10CFR 50.73(a)(2)(i)(B), as operation prohibited by the Technical Specifications.

INVESTIGATION

Prior to the event, corrective maintenance had been performed on loop B RHR valve (*20*) 1E12*MOVFP006B. A tracking limiting condition for operation (TRLCO) had been written to track maintenance and retest requirements. A valve stroke was performed as a part of the corrective maintenance procedure and was completed at 1415. A portion of the surveillance test procedure (STP) for loop B RHR valve operability was also specified for retest of the valve, but was believed to be redundant to the previous valve stroke test and therefore, was not performed at that time. At 1510, the HPCS system was declared inoperable in support of unrelated motor-operated valve signature testing. The Operations crew believed that the operability requirements for 1E12*MOVFP006B had been satisfied at 1415, following corrective maintenance on the valve and the subsequent stroke test. Prior to shift turnover at 1800, based on review of plant priority items, it was revealed that the STP was specified for retest of the valve. Following a discussion with Electrical Maintenance personnel at 2200, a copy of the STP was obtained by the Shift Technical Advisor (STA) and approved for work by the Control Operating Foreman (COF). The STP was given to the Unit Operator (UO) to be performed. The first step in the applicable section of the STP is to close valve (*20*) 1E12*MOVFP004B, which isolates the suction to the RHR B pump (*P*), thereby rendering the LPCI function of RHR B loop inoperable. This action was taken by the Unit Operator. Immediately after the UO placed the switch for this valve in the closed position, he and the entire operations crew realized that both HPCS and RHR B were inoperable, a condition requiring entry into TS 3.0.3. After the valve had fully closed, the UO immediately reopened it. The length of time that the valve was closed was approximately 2 minutes.

GSU's investigation revealed that the COF inappropriately approved the STP for work, since the HPCS system was inoperable at the time. In addition, a caution in the procedure reminds the operator that closing the RHR B pump suction valve will render the loop inoperable and thus, the operator must ensure that at least the minimum number of ECCS systems are operable. This caution was misinterpreted by the UO.

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ROOT CAUSE

The root cause of this event, determined using event and causal factor analysis, as well as barrier analysis, was found to be human error. The results of the root cause analysis revealed the following root causes:

- 1) The Control Operating Foreman failed to realize that the STP would render RHR B inoperable and therefore inappropriately approved the STP for work.
- 2) The Unit Operator failed to correctly interpret and act upon the caution in the procedure. He incorrectly believed that the caution applied only to low pressure ECCS systems and not HPCS.

Contributing factors to this event are as follows:

- 1) The Shift Technical Advisor failed to maintain proper oversight of the job by getting directly involved with its performance. This was contrary to the responsibilities of the STA as stated in ADM-0044, Shift Technical Advisor Program.
- 2) The methodology for signing-in work in the plant has recently changed. The use of a work management center outside of the main control room was implemented approximately one month previous to this event. However, the work management center is only used between 0600 and 1800, Monday through Friday. At all other times, work is signed-in at the Main Control Room. This change in normal operation could have contributed to the occurrence of this event.
- 3) Work responsibilities of the Shift Supervisor and the Control Operating Foreman have changed recently. As a result of several identified deficiencies, the Control Operating Foreman was relocated to within the at-the-controls area, and work is now approved by the Shift Supervisor. In this case, the SS did not approve the procedure and was not made aware of the performance of the STP until after the RHR loop was rendered inoperable.
- 4) During the shift briefing, the fact that the HPCS system was inoperable was discussed; however, the implications of having this system inoperable were not brought out (i.e., with HPCS inoperable, no work should be performed on any other ECCS system or the RCIC system).

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- 5) Surveillance test procedure (STP)-204-6304 was listed as an outstanding item on the tracking limiting condition for operation (TRLCO) for E12*MOVFO06B. This TRLCO was listed as a high priority item for the plant workers to accomplish. The perceived need to complete this task may have projected undue schedule pressure onto the individuals involved.

A review of previous LERs revealed other instances in which Technical Specifications were violated due to failures to recognize the applicability of TS requirements. These LERs were 85-025, 88-013, 88-028, 89-031, 90-021, 90-022, 92-027, and 92-028. Note that these events involved a number of different Technical Specifications and varying circumstances.

CORRECTIVE ACTION

Immediate corrective actions taken included returning the B loop of the RHR system to operable status within minutes by opening valve 1E12*MOVFO04B. Additionally, the Operations Supervisor and the Assistant Plant Manager-Operations were notified of this event within one hour of its occurrence and a condition report was initiated.

A team which included the individuals involved and an additional Nuclear Control Operator was formed to determine the root causes of the event, any additional contributing factors and develop corrective actions to prevent recurrence. The Operations Department held a meeting with the parties involved, in accordance with OSP-0018, Operations Accountability Review, to support the development of the root cause and corrective actions to prevent recurrence. The results of these reviews revealed the following:

The River Bend administrative procedures governing conduct of operations and the STA program, were reviewed and found to adequately address the responsibilities of each crew member.

The caution in the STP for loop B RHR valve operability was determined to be adequate to prevent recurrence. The investigation revealed that if the unit operator had asked the COF if the minimum number of ECCS systems were operable, rather than if it was necessary to enter a short-term LCO, a more thorough review of plant configuration would have resulted.

Additional training was considered as a possible corrective action for this event. Operations training, initial license and requalification training, all stress the fact that the ECCS systems are HPCS, LPCS, RHR-LPCI and ADS. Every licensed operator and STA, who is SRO Certified, knows this

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to be the case. Based on the investigation of this event, GSU has concluded that the existing training is both adequate and sufficient to prevent recurrence of this event.

All individuals involved have been counseled on the significance of this event and the possible consequences of an event of this type. Included in this counseling was emphasis on the need to increase sensitivity to inoperable equipment, and the implications of having equipment such as ECCS systems inoperable. In addition, this counseling included a review of the responsibilities of each crew member. Disciplinary actions are under evaluation. Night Orders have been initiated to implement required reading for all Operations personnel, consisting of the condition report response documenting this event.

Although the root cause of this event was personnel error, GSU has recognized that improvements in the work control process are required, as documented in the Near-Term Performance Improvement Plan. In addition to this effort, GSU will conduct another evaluation which will broaden the scope to include other areas of potential improvement.

SAFETY ASSESSMENT

The ECCS is designed to provide protection against postulated loss-of-coolant accidents (LOCA) caused by ruptures in primary system piping. The functional requirements are such that the system performance under all LOCA conditions postulated in the design satisfies the requirements of 10CFR50.46, "Acceptance Criteria for Emergency Core Cooling System for Light Water Cooled Nuclear Power Reactors." In the event of a pipe break in the ECCS, no single active component failure in the ECCS prevents automatic initiation and successful operation of less than the following combination of ECCS equipment:

- 1) 2 LPCI loops and the ADS; or
- 2) 1 LPCI loop, the LPCS, and the ADS; or
- 3) 1 LPCI loop, the HPCS, and the ADS; or
- 4) The LPCS, the HPCS and ADS.

These are the minimum ECCS combinations which result after assuming any failure and assuming that the ECCS line break disables the affected system. Therefore, for the short duration (approximately 2 minutes) that valve 1E12*MOV004B was closed, the plant was never in a condition that was outside of its design basis.

Note: Energy Industry Identification System codes are indicated in the text as (*XX*).