Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

William R. Lagergren, Jr.
Site Vice President, Watts Bar Nuclear Plant

OCT 2 7 2003

10 CFR 50.73

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

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket No. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - FACILITY OPERATING LICENSE NPF-90 - LICENSEE EVENT REPORT (LER) 50-390/2003-004

This submittal provides Licensee Event Report 390/2003-004. This LER addresses an event that occurred on August 28, 2003, which resulted in an a failure to meet Surveillance Request (SR) 3.5.2.3. This event is being reported under 10 CFR 50.73(a)(2)(i)(B).

The commitment documented in this letter is in Section VII of the Enclosure. If you have any questions about this change, please contact P. L. Pace at (423) 365-1824.

Sincerely,

for W. R. Lagergren

Enclosure
cc: See page 2

IE22

OCT 2 7 2003

cc (Enclosure):

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NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

Emergency Core Cooling System Surveillance Requirement 3.5.2.3 - Verify Piping is Full of Water

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
08	28	03	2003	– 004	– 00	10	27	03	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	1
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)	✔	50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Rebecca N. Mays, Licensing Engineer	(423) 365-3855

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
✔ YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		12	19	03

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

During preparation for the Unit 1 Cycle 5 refueling outage, work orders were being prepared to perform ultrasonic testing (UT) on the emergency core cooling system (ECCS) safety injection (SI) system "piggy back" supply piping to the SI pump (SIP) 1B-B. During the history review of that system for the work order preparation, it was discovered that on January 14-15, 2003, the SIP was drained to support maintenance activities. It appeared that the draining and subsequent refilling of the SIP 1B-B may have been inadequate because the associated work orders did not contain instructions for draining and refilling, and because there was no evidence of special precautions to assure the supply piping to the SIP 1B-B was filled with water when restoring the equipment to service. The method of filling in the procedure was involved valve alignments outside the clearance boundary and therefore, did not adequately address the piggy back line. A work order was initiated to perform UT which subsequently verified the presence of approximately 5.5 cubic feet of gas in the piping line. The gas in the line is contrary to Technical Specification Surveillance Requirement 3.5.2.3 to verify piping is full of water. A work order was initiated to vent the piping. Following the venting of the piping, a UT verified that the pipe was full of water.

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

I. PLANT CONDITIONS:

Watts Bar Nuclear Plant Unit 1 was in Mode 1 operating at approximately 100 percent reactor power when this event occurred.

II. DESCRIPTION OF EVENT

A. Event

During preparation for the Unit 1 Cycle 5 refueling outage, work orders were being prepared to perform ultrasonic testing (UT) on the emergency core cooling system (ECCS) safety injection (EIIS BQ) "piggy back" supply piping to the safety injection pump (EIIS P) 1B-B. The "piggyback" piping connects the ECCS residual heat removal (RHR) system (EIIS BP) pump discharge piping to the suction of safety injection pump 1B-B. It is also possible for this line to supply the suction of safety injection pump 1A-A and both centrifugal charging pumps (CCP) (EIIS CB). A history review of that system was being performed during the work order preparation. It was discovered during that review, that on January 14-15, 2003, the safety injection pump was drained to support maintenance activities. It appeared that the draining and subsequent refilling of the safety injection pump 1B-B may have been inadequate because the associated work orders did not contain instructions for draining and refilling, and because there was no evidence of special precautions to assure the "piggyback" supply piping to the safety injection pump 1B-B was filled with water when restoring the equipment to service. The operator log entry on January 15, 2003, indicated that fill and vent of the safety injection pump 1B-B was performed in accordance with the System Operating Instruction (SOI)-63.01, "Safety Injection System." However, the method in the procedure was for filling and venting the entire system piping rather than the small portion that was actually drained. The procedure involved valve alignments outside the clearance boundary and therefore, did not adequately address the "piggy back" line. On August 28, 2003, due to the suspicion that gas may be in the piping from the inadequate filling and venting, a UT of the suction line to the pump was performed and verified that gas was in the line. This is contrary to Technical Specification 3.5.2, Emergency Core Cooling System, (ECCS) – Operating, Surveillance Requirement (SR) 3.5.2.3 which is to verify the ECCS piping is full of water.

Problem Evaluation Report (PER) 03-014922-000 was initiated to document this event in the TVA Corrective Action Program.

B. Inoperable Structures, Components, or Systems that Contributed to the Event

There were no structures, components or systems inoperable at the start of the event that contributed to the event.

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

II. DESCRIPTION OF EVENT (continued)

C. Dates and Approximate Times of Major Occurrences

Time	Occurrences
January 14, 2003 2300 EDT	Entered Limiting Condition for Operation (LCO) 3.5.2 for safety injection pump 1B-B to remove pump from service for maintenance
January 15, 2003 1930 ED	Held pretest briefing for filling and venting of safety injection pump 1B-B using SOI-63.01.
January 15, 2003 2235 EDT	Exited LCO 3.5.2 for safety injection pump 1B-B due to all post modification testing being complete
August 28, 2003 1025 EDT	Entered LCO 3.5.2 Action A and LCO 3.6.6, Containment Spray System, Action B to allow UT inspection of the ECCS "piggyback" suction piping for the safety injection pump 1B-B due to suspicion that gas may be in the line.
August 28, 2003 1245 EDT	UT confirmed pockets of gas in the horizontal run of piping at Elevation 692 in the pipe chase were approximately 7/8 full.
August 28, 2003 1810 EDT	Plant Operations Review Committee approved a vent plan as this line was in the Auxiliary Building and was not in the procedure to verify the ECCS piping was full of water.
August 28, 2003 1850 EDT	Completed venting and achieved a solid stream of water for one minute. UT confirmed pipe was full of water.

D. Other Systems or Secondary Functions Affected

No other systems or secondary functions were affected by this event.

E. Method of Discovery

As discussed above, during preparation of Unit 1 Cycle 5 refueling outage, work orders were being prepared to perform UT on the ECCS safety injection system "piggy back" supply piping to the safety injection pump 1B-B. A history review of that system for the work order preparation discovered that on January 14-15, 2003, the safety injection pump was drained to support maintenance activities. It appeared that the draining and subsequent refilling of the safety injection pump 1B-B may have been inadequate because the associated work orders did not contain instructions for draining and refilling, and because there was no evidence of special precautions to assure the "piggyback" supply piping to the safety injection pump 1B-B was filled with water when restoring the equipment to service.

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II. DESCRIPTION OF EVENT (continued)

F. Operator Actions

Upon discovery of the potential for gas to be in the piggyback supply piping to the safety injection pump 1B-B, LCO, Action A of Technical Specification 3.5.2 and LCO, Action B of Technical Specification 3.6.6 were entered. The piggyback line was isolated by a tagout to ensure that the potential gas pocket could not be transported into any other section of ECCS piping if an ECCS pump started unexpectedly. Following venting and UT verification that the piping was full of water, the Technical Specifications LCO actions were exited.

G. Safety System Responses

There were no automatic or manual safety system responses and none were necessary.

III. CAUSE OF EVENT

A. Immediate Cause

The immediate cause appeared to be inadequate procedural guidance for filling and venting of the safety injection pump 1B-B suction line within the tagged out area of the work orders during the maintenance activities on January 14-15, 2003. In addition, that portion of the ECCS piping was not included in the procedure to implement Technical Specification SR 3.5.2.3 to verify the ECCS piping is full of water.

B. Root Cause

The root cause is still under development and will be provided in the supplement to this LER along with any human performance deficiencies.

IV. ANALYSIS OF EVENT

On August 28, 2003, a gas bubble with a volume of 5.5 cubic feet was discovered below the Unit 1 flow control valve, 1-FCV-63-11. This valve is in a line in the ECCS piping on the discharge side of the RHR pump 1B-B. The normal position for 1-FCV-63-11 is closed and the valve is in a vertical configuration. The line connects the RHR pump discharge to the suction of the safety injection pump 1B-B and the centrifugal charging pumps (CCPs). Valve 1-FCV-63-11 is opened after the injection phase of an event when the ECCS pump suctions are transferred from the refueling water storage tank to the containment sump at the start of long term recirculation.

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IV. ANALYSIS OF EVENT (continued)

TVA's Nuclear Steam Supply System (NSSS) vendor for TVA's pressurized water reactors (PWR) has previously evaluated gas pockets for a TVA nuclear plant in similar locations to the pocket found at Watts Bar Nuclear Plant. The safety injection pumps and CCPs line sizes, pump flows, and general layout is essentially the same for both of TVA's PWR plants. Therefore, the NSSS vendor's evaluation is equally applicable to both plants. The amount of gas evaluated by the NSSS vendor was 6.0 cubic feet.

That evaluation considered piping length to the pumps, number of elbows and degree of the elbows, pump design and manufacturer, and the flow rates. That evaluation concluded that the gas in the piping would be moved through the piping and be mixed by the elbows. When compressed by RHR pumps, the initial 6.0 cubic feet of gas would be compressed to approximately 1.75 cubic feet, which would represent less than 5 percent void fraction as required to avoid damage to the CCPs. The evaluation concluded that catastrophic pump failure would be unlikely for a total gas accumulation of less than 6.0 cubic feet.

The piping containing the gas at Watts Bar is routed to both safety injection pumps and both CCPs. The previous evaluation addressed the CCPs. However, the evaluation included a statement that the gas in the lines could travel to the safety injection pumps but CCPs would be evaluated since the piping to the safety injection pumps is longer with more elbows than that for the CCPs. Consequently, it is assumed the acceptance criteria established for gas located in the piping applies to both the CCPs and the safety injection pumps.

Watts Bar compared the piping length to the pumps, number of elbows and degree of the elbows, pump design and manufacturer, and the flow rate to that in the previous NSSS vendor evaluation. Since the lines to the Watts Bar safety injection pumps have higher flows and a greater number of elbows, than that evaluated for TVA's other PWR plant, and since the overall volume fraction of gas was less than 5 percent, it is concluded that the previous evaluation bounds the condition for Watts Bar Nuclear Plant.

V. ASSESSMENT OF SAFETY CONSEQUENCES

Based on the discussion in Section IV above, the condition described in this event does not result in a loss of functional capability for the safety function provided by the ECCS. Therefore there was no safety significance to this event.

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

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Initiated work order to perform UT on the pipe and check for the presence of gas. Technical Specification LCO 3.5.2, Action A and LCO 3.6.6, Action B were entered to check for gas. The UT verified that gas was present in the piggyback supply piping to the Safety Injection pump 1B-B. A work order was initiated to vent the piping. The piping was subsequently vented and a follow up UT verified the piping was full of water. The Technical Specification LCOs was exited.

B. Corrective Actions to Prevent Recurrence - (TVA does not consider these items to constitute regulatory commitments. TVA's corrective action program tracks completion of these actions.)

1. Valve 1-FCV-63-11-B was modified during the Unit 1, Cycle 5, Refueling Outage to add a vent to provide verification the ECCS line is full of water.

The remainder of the correction actions is still under development and will be provided in the supplement to this LER.

VII. ADDITIONAL INFORMATION

A. Failed Components

There were no failed components involved in this LER.

B. Previous LERs on Similar Events

On June 26, 1996, SR 3.5.2.3 was implemented in Surveillance Instruction (SI) 1-SI-63-10-A, to ensure the piping from the ECCS pumps to the reactor coolant system was full of water. However, 1-SI-63-10-A allowed for the venting requirements to be waived for the vent paths inside containment if it can be verified through administrative means that no periodic filling of the cold leg accumulator (CLA) had occurred in conjunction with leakage through a cold leg injection line check valve. At 1545 hours (EST), licensed personnel initiated actions to perform 1-SI-63-10-A. During this activity it was noted that refilling of a CLA had occurred during the month of May and that action had been taken to back-seat a check valve to resolve the need to refill the CLA. A review of the package for 1-SI-63-10-A dated May 28, 1996, identified that the refilling of the CLA had not been factored into this performance of the SI and the venting requirements had been waived. The cause for this event was determined to be that no formal process exists to document system status issues such as the leakage through the check valve. This event was documented as LER 390/1996-019.

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

VII. ADDITIONAL INFORMATION (continued)

C. Additional Information:

None.

D. Safety System Functional Failure:

This event did not involve a safety system functional failure as defined in NEI-99-02, Revision 0.

E. Loss of Normal Heat Removal Consideration

This event is not considered a scram with loss of normal heat removal.

VIII. COMMITMENTS

TVA will provide a supplement to LER 390/2003-004 upon development of the root cause and corrective actions by December 19, 2003.