

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

Richard T. Purcell
Site Vice President, Watts Bar Nuclear Plant

May 7, 1999

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

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - FACILITY OPERATING
LICENSE NPF-90 - LICENSEE EVENT REPORT (LER) 50-390/1999-002,
REVISION 1

The purpose of this submittal is to provide Revision 1 of the
subject LER. LER 50-390/1999-002 was originally submitted on
March 26, 1999. The enclosed report provides some
clarification regarding the condition identified involving the
ice condenser lower inlet doors. Submittal of this report is
in accordance with 10 CFR 50.73(a)(2)(i)(B).

If you should have any questions, please contact P. L. Pace at
(423) 365-1824.

Sincerely,



R. T. Purcell

Enclosure
cc: See page 2

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PDR ADOCK 05000390
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U.S. Nuclear Regulatory Commission

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cc (Enclosure):

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LICENSEE EVENT REPORT (LER)

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

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 20803. In an information collection does not display a currently valid OMB control number, the NRC may no conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1) Watts Bar Nuclear Plant - Unit 1		DOCKET NUMBER (2) 05000390	PAGE (3) 1 OF 5
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TITLE (4)
Ice Condenser Bay 1 Lower Inlet Door Ice Buildup

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
02	27	99	1999	002	01	03	29	99		05000
										05000

OPERATING MODE (9) 3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 0	20.2201(b)		20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	50.73(a)(2)(viii)				
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)				
	20.2203(a)(2)(i)		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)		50.73(a)(2)(v)	Specify in Abstract below				
			50.36(c)(2)		50.73(a)(2)(vii)	or in NRC Form 366A				

LICENSEE CONTACT FOR THIS LER (12)

NAME Rickey A. Stockton, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (423)-365-1818
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	BC	DR	L050	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO <input checked="" type="checkbox"/>	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On February 27, 1999, while Unit 1 was in mode 3 progressing to cold shutdown for refueling, and during an inspection of the lower ice condenser, it was discovered that ice buildup had occurred such that both lower inlet doors in bay 1 were found to exceed their maximum allowable opening force as specified in the Technical Specification Surveillance Requirement 3.6.12.4. This condition has existed such that it has exceeded the shutdown time requirement of Technical Specification 3.6.12. Therefore, this condition is being reported in accordance with 10 CFR 50.73 (a)(2)(i)(B). Inspection of the other bay doors revealed that no other doors would have been impeded from opening. Engineering judgment is that the bay 1 doors would have performed their function.

The cause of this event was determined to be damage resulting from a steam generator manway cover moisture leak (secondary side) inside containment being condensed and frozen behind the bay 1 lower inlet doors. This condition was such that the resultant damage from the ice buildup would have prevented satisfactory completion of Surveillance Requirement 3.6.12.4. Corrective actions included: 1) removing the ice buildup and replacing the bay 1 doors and 2) repairing of the steam generator manway cover steam leak.

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		YEAR	SEQUENTIAL NUMBER	REVISION	
		1999 - 002 - 01			

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

I. PLANT CONDITIONS:

Watts Bar Nuclear Plant Unit 1 was in Mode 3 and cooling down to begin refueling outage when this condition was discovered.

II. DESCRIPTION OF EVENT

A. Event

On February 27, 1999, while Unit 1 was in mode 3 progressing to cold shutdown for refueling, and during an inspection of the lower ice condenser [Energy Industry Identification System (EII) Code BC], it was discovered that damage and binding due to ice buildup had occurred such that both lower inlet doors (EII Code DR) in bay 1 were found to exceed their maximum allowable opening force as specified in the Technical Specification Surveillance Requirement 3.6.12.4. This condition has existed such that it has exceeded the required action time allowance of Technical Specification 3.6.12. Therefore, this condition is being reported in accordance with 10 CFR 50.73 (a)(2)(i)(B). Inspection of the other bay doors revealed that no other doors would have been impeded from opening. Engineering judgment is that the bay 1 doors would have performed their function.

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

There was a steam leak originating from a steam generator (EII Code SG) manway cover which provided moisture to the containment environment which condensed behind the lower ice condenser bay 1 inlet doors where it froze. This condition led to the ice buildup which impeded the lower inlet doors opening such that the doors would have prevented the satisfactory completion of the technical specification surveillance.

C. Dates and Approximate Times of Major Occurrences

Time (EST)	Occurrences on February 27, 1999
0455	Operations personnel entered Limiting Condition for Operation 3.6.12.A due to Bay 1 lower inlet doors being blocked.

D. Other Systems or Secondary Functions Affected

There were no other systems affected by the condition.

E. Method of Discovery

The condition was discovered during an inspection of the lower ice condenser.

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II. DESCRIPTION OF EVENT (continued)

F. Operator Actions

Upon being notified that lower inlet doors in bay 1 were blocked due to ice buildup, Operations personnel entered LCO 3.6.12, condition A at 0455 on February 27, 1999.

G. Automatic and manual safety system responses

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

III. CAUSE OF EVENT

The cause of this event was determined to be damage resulting from a steam generator manway cover moisture leak (secondary side) inside containment being condensed and frozen behind the bay 1 lower inlet doors. This moisture entered the ice condenser around the bay 1 lower inlet doors and froze on the top surface of the ice condenser floor and the continued migration of moisture to this location caused a block of ice to form from the floor up to the bottom surface of the lower inlet door panel. This ice formation caused the door to be pushed upward due to the force of the expanding water. The expansion of ice deformed the bottom surface of the door panel and caused the doors to bind. This condition was such that the resultant damage from the ice buildup would have prevented satisfactory completion of Surveillance Requirement 3.6.12.4.

An inspection of the bay 1 door seal identified a small cut on the lower door seal that may have contributed to the moisture intrusion.

IV. ANALYSIS OF EVENT - ASSESSMENT OF SAFETY CONSEQUENCES

Surveillance Requirement 3.6.12.4 requires verification that the torque required to open the lower inlet doors is less than or equal to 675 inch lbs. This verification provides assurance that no doors become stuck in the closed position during a design basis event such as a loss of coolant accident (LOCA).

As previously documented in an April 15, 1996 letter, regarding WBN's Ice Bed and Flow Channel Inspection Surveillance Frequencies amendment request, the initial ice loading for the WBN unit ice condenser was 2,877,685 or 473,885 pounds more than the currently approved TS value of 2,403,800 pounds provided for an 18-month surveillance interval, and 752,685 pounds greater (about 31 percent) than the safety analysis value of 2,125,000 pounds. During the last refueling outage, the as-found and the as-left ice bed weights were 2,757,294 and 2,826,003 pounds of ice, respectively. From this evidence, it can be seen that the ice bed weights have remained stable throughout both operating cycles.

If an accident occurred during this condition, it is likely that the bay 1 lower inlet doors would have opened since a typical small break LOCA produces a lower compartment pressure of about 3 psig (based on analyses performed for the Watts Bar PSA model, Rev. 0) and when this pressure is applied to the surface area of one of the lower doors, this produces a force of about 11,000 lbr. This available force is far in excess of the pushing force applied to the door during the inspection which caused it to open.

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IV. ANALYSIS OF EVENT - ASSESSMENT OF SAFETY CONSEQUENCES (continued)

Even if the bay 1 did not open with the initial pressure increase due to the LOCA, the steam from the break would melt any ice around the door which may have impeded its opening and thus allow the bay 1 to open and permit the ice in bay 1 to melt and drain to the containment sump. Even more conservatively, assuming that the bay 1 doors would not open during accident conditions and assuming no cross-flow between bays, only 81 ice baskets representing approximately 120,000 pounds of ice would have been unavailable during the event. This is considerably less than the excess margin of ice above the Technical Specification for the more challenging large break LOCA. Therefore, there is reasonable assurance that the ice buildup condition for the bay 1 inlet doors would have had no impact on the health and safety of the public.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Ice was removed from behind the Bay 1 lower inlet doors and the doors were replaced.

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

1. The number 4 steam generator manway leak was investigated and was repaired via the corrective action program.
2. TVA inspected the ice door seals and replaced the seals, as necessary, to ensure proper function.

VI. ADDITIONAL INFORMATION

A. Failed Components

1. Safety Train Inoperability

The bay 1 lower inlet doors were inoperable due to the ice buildup condition.

2. Component/System Failure Information

a. Method of Discovery of Each Component or System Failure:

The condition was found during an inspection of the lower ice condenser on February 27, 1999.

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

VI. ADDITIONAL INFORMATION (continued)

b. Failure Mode, Mechanism, and Effect of Each Failed Component:

As described previously, moisture from a number 4 steam generator manway (secondary side) leak into the lower containment environment condensed behind the lower inlet doors resulting in the ice buildup which caused damage to bay 1 lower inlet doors.

c. Root Cause of Failure:

The root cause was damage caused by ice buildup behind the lower inlet doors. A small cut found in the lower door seal may have contributed to the moisture intrusion.

d. For Failed Components With Multiple Functions, List of Systems or Secondary Functions Affected:

Ice Condenser System

e. Manufacturer and Model Number of Each Failed Component:

Westinghouse Electric Company Part Number 1102E24G01 and 02 (manufactured for Westinghouse by Lamco Industries, Inc. El Cajon, CA)

B. Previous Similar Events

A review of the previous WBN LERs reveals that LER 390/96-018 issued May 30, 1998, involved a personnel error in performing Surveillance Requirement 3.6.12.4. That LER is unrelated to this condition since its cause was personnel error and this LER involves a hardware issue.

VII. COMMITMENTS

None