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Mike Skaggs
Site Vice President, Watts Bar Nuclear Plant

APR 10 2006

10 CFR 50.73

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

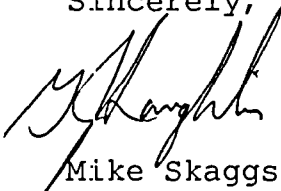
In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - LICENSEE EVENT REPORT
390/2006-002 - POTENTIAL LOSS OF COOLING TO THE CHEMICAL AND
VOLUME CONTROL SEAL WATER HEAT EXCHANGER DURING AN APPENDIX R
FIRE

The enclosed Licensee Event Report (LER) provides details concerning WBN's evaluation of another utility's LER. This evaluation address a potential loss of cooling water to the Chemical and Volume Control System (CVCS) Seal Water Heat Exchanger during an Appendix R fire. The report contains information regarding this event which is provided in accordance with 10 CFR 50.73 (a)(2)(ii)(B).

Should there be questions regarding this submittal, please contact Paul L. Pace at (423) 365-1824.

Sincerely,



Mike Skaggs

Enclosure
cc: See Page 2

JE22

U.S. Nuclear Regulatory Commission
Page 2

APR 10 2006

Enclosure

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 collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Watts Bar Nuclear Plant, Unit 1	2. DOCKET NUMBER 05000 390	3. PAGE 1 OF 4
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4. TITLE
Potential Loss of Cooling to the Chemical and Volume Control Seal Water Heat Exchanger During an Appendix R Fire

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	09	2006	2006	002	000	04	10	2006	FACILITY NAME	DOCKET NUMBER
										05000
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)										
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)							
10. POWER LEVEL 100%	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)							
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)							
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)							
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)							
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER								
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A								

12. LICENSEE CONTACT FOR THIS LER

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input type="radio"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input checked="" type="radio"/> NO			

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

On January 27, 2006, engineering personnel identified a scenario involving a potential loss of cooling water to the Chemical and Volume Control System (CVCS) Seal Water Heat Exchanger during an Appendix R fire event. The scenario involves a loss of Component Cooling System (CCS) flow to the Seal Water Heat Exchanger due to fire damage. The loss of CCS flow results in a potential high suction temperature on the running CVCS Centrifugal Charging Pump (CCP) causing a loss of adequate suction head. During an Appendix R fire event, CCP suction is aligned to the Refueling Water Storage Tank (RWST), normal charging and letdown are isolated and the only makeup flow to Reactor Coolant System (RCS) is via the Reactor Coolant Pump (RCP) seal injection flow path. If the Seal Water Heat Exchanger cooling is lost, the CCP recirculation flow and RCP seal return flow are not being cooled. The outlet of the heat exchanger combines with cool water from the RWST. The net result is that the CCP suction temperature could reach saturation temperature leading to pump cavitation. The temperature increase could be high enough to potentially damage both the CCP and the RCP seals, which would result in increased seal leakage and a potential loss of RCS inventory.

The cause of this event is a latent error in the WBN Fire Safe Shutdown Analysis. The original analysis did not evaluate the ramifications of not protecting cooling water flow to the CVCS Seal Water Heat Exchanger. Corrective actions include: 1) posting of roving fire watches in the areas affected, 2) procedure revisions to provide operator actions and 3) to issue a design change to reroute and/or protect the identified vulnerable cables.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Watts Bar Nuclear Plant, Unit 1	05000 390	2006	-- 002	-- 00	2 OF 4

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

I. Plant Conditions:

Watts Bar, Unit 1 was in Mode 1 at 100 percent power.

II. Description of Event:

A. Event:

On January 27, 2006, engineering personnel reviewed operating experience from another station involving a potential loss of cooling water (Energy Industry Identification System (EII) Code CC) to the Chemical and Volume Control System (CVCS) Seal Water Heat Exchanger (EII Code CB/Hx) during an Appendix R fire event. The scenario involves a loss of Component Cooling System (CCS) flow to the CVCS Seal Water Heat Exchanger due to fire damage results in a potential high suction temperature on the running CVCS Centrifugal Charging Pump (CCP) (EII Code CB/P) causing a loss of adequate suction head (NPSH). During an Appendix R fire event, CCP suction is aligned in the Refueling Water Storage Tank (RWST) (EII Code BP/TK), normal charging and letdown (EII Code CB) are isolated and the only makeup flow to Reactor Coolant System (RCS) is via the Reactor Coolant Pump (RCP)(EII Code AB/P) seal injection flow path. If the Seal Water Heat Exchanger cooling is lost, the CCP recirculation flow (~60 gpm) and RCP seal return flow (~12 gpm) are not cooled. The outlet of the heat exchanger combines with cool water from the RWST. The net result is that the CCP suction temperature could reach saturation temperature leading to pump cavitation. The temperature increase could be high enough to potentially damage both the CCP and the RCP seals, which would result in increased seal leakage and a potential loss of RCS (EII Code AB) inventory. This item is being provided in accordance with 10 CFR 50.73 (a)(2)(ii)(B).

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

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

C. Dates and Approximate Times of Major Occurrences

Date & Time Occurrences

January 27, 2006 - Engineering reviewed operating experience regarding a potential Appendix R fire scenario as described above.

February 3, 2006 - 1530 EST - Precautionary fire watches established in areas potentially affected.

February 3, 2006 - 1900 EST – Abnormal Operating Instruction AOI-30.2, "Fire Safe Shutdown" was revised to provide interim operator actions to mitigate the consequences of the event.

February 9, 2006 - 1600 EST - Fire Protection Report, Operating Requirement (OR) 14.8.1.b, "Fire-Rated Assemblies," entered when engineering determination was finalized providing exactly which areas were affected. The precautionary fire watches previously put in place were adjusted.

D. Other Systems or Secondary Functions Affected

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

E. Method of Discovery

This condition was discovered during a review of operating experience of another utility's Licensee Event Report.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Watts Bar Nuclear Plant, Unit 1	05000 390	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
		2006	-- 002	-- 00	

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

F. Operator Actions

No operator actions were required.

G. Safety System Responses

Not applicable - No safety system responses were required.

III. CAUSE OF EVENT

A. Immediate Cause:

The immediate cause of the condition was failure to protect cooling water flow to the seal water heat exchanger from the effects of an Appendix R fire.

B. Root Cause

The cause of the event is a latent error in WBN Fire Safe Shutdown Analysis. The subject matter experts involved in preparation and review of the analysis did not evaluate the ramifications of not protecting cooling water flow to the CVCS Seal Water Heat Exchanger.

C. Contributing Factor:

There were not contributing factors for this condition.

IV. ANALYSIS OF THE EVENT

The following five areas are affected by this condition:

1. Auxiliary Building Room 713.0-A1 between column lines A1-A3 and S-U
2. Auxiliary Building Room 737.0-A1, between column lines A1-A6 and Q-U
3. Auxiliary Building Room 737.0-A3, Heat and Vent Equipment Room
4. Auxiliary Building Room 757.0-A2, 6.9kv and 480V Shutdown Board Room A
5. Auxiliary Building Room 772.0-A1, 480V Board Room 1A

The condition identified is applicable to fire areas which affect the availability of cooling for the Seal Water Heat Exchanger. Since the design of the heat exchanger is such that it can only be cooled by the A-Train header of CCS, the safety significance is applicable for the affected fire areas in which the CCS A-Train header cannot be credited for hot standby functions.

The fire areas identified include full area automatic suppression and detection systems. Therefore, for the fire areas identified, the installed fire protection features would identify and control the fire, and the onsite fire department would, in all probability, prevent a fire from developing to the extent that there would be a loss of CCS to the seal water heat exchanger. Additional defense in depth against the affect of a fire is provided by posting fire watches in the affected areas.

Based on it being unlikely that a plant fire would result in a loss of CCS to the seal water heat exchanger, the condition has low safety significance.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Watts Bar Nuclear Plant, Unit 1	05000 390	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
		2006	-- 002	-- 00	

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

V. ASSESSMENT OF SAFETY CONSEQUENCES

Based on the above "Analysis of The Event," this event did not adversely affect the health and safety of plant personnel or the general public.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Upon learning of another station's operating experience, WBN placed roving fire watches in the suspected areas until engineering completed their assessment of the issue, and WBN put in place interim operator actions to mitigate the consequences of the event. Upon engineering confirmation that this condition existed at WBN, the roving fire watches were adjusted and limited to the areas described above.

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.)

The condition identified by this LER is considered to be a non-conforming condition, due to the fact that the current Fire Safe Shutdown analysis did not recognize the need to protect the seal water heat exchanger, or to evaluate the ramifications of not protecting the heat exchanger. TVA has evaluated various options to address this condition. The resolution involves maintaining cooling water supply to the CVCS Seal Water Heat Exchanger by implementing a design change to reroute and/or provide protection for the identified vulnerable cables.

VII. ADDITIONAL INFORMATION

A. Failed Components

There were no failed components involved in this LER.

B. Previous LERs on Similar Events

A review of previous WBN LERs revealed no other similar events within three years of this event that involved a failure to recognize the need to protect a component or to evaluate the ramifications of not protecting this component from a fire.

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.

VII. COMMITMENTS

None