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

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

MAY 1 0 2005

10 CFR 50.73

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) 50-390/2005-001

This submittal provides LER 390/2005-001. This LER addresses an event that occurred on March 11, 2005, where both trains of the Auxiliary Building Gas Treatment System (ABGTS) were inoperable. This event is being reported under 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D).

There are no regulatory commitments associated with this letter. Should there be questions regarding this submittal, please contact Paul L. Pace at (423) 365-1824.

Sincerely,

W. R. Lagergren

Enclosure:
LER 390/2005-001

cc: See page 2

IE22

MAY 1 0 2005

cc (Enclosure):
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NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Two Trains of ABGTS Inoperable

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
										05000
03	11	2005	2005	- 001 -	0	05	10	2005	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

Defueled

10. POWER LEVEL

0%

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

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

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Jerry L. Bushnell, Licensing Engineer	(423) 365-8048

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

○ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ◉ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

In support of the Unit 1 Cycle 6 refueling outage, the Containment Hatch was opened and the Containment Purge System was placed in operation on March 3, 2005. Fuel movement in the Spent Fuel Pool was initiated on March 9, 2005, for the inspection of fuel assemblies. On March 11, 2005, the Operations staff was notified that having the plant in a configuration where the Containment Hatch was open while the Containment Purge System was in operation, made both trains of the Auxiliary Building Gas Treatment System (ABGTS) inoperable. Limiting Condition for Operation (LCO) 3.7.12, "ABGTS," requires that the system be operable during the movement of irradiated fuel assemblies in the fuel handling area. The basis for not operating the Containment Purge System if the Containment Hatch is open during the conditions when the ABGTS is required to be operable is contained in two System Descriptions. Based to these restrictions, Operations personnel entered Action D of LCO 3.7.12 at 08:30 on March 11, 2005, for both trains of ABGTS being inoperable. At the time Operations entered the action, fuel movement had been suspended. The inoperablity of both trains of the ABGTS is being reported under 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D) as an event or condition that could have prevented fulfillment of a safety function.

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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 (WBN) Unit 1 was in the Cycle 6 refueling outage with the reactor de-fueled.

II. DESCRIPTION OF EVENT

A. Event

In support of the Unit 1 Cycle 6 refueling outage, the Containment Hatch was opened and the Containment Purge System [Energy Industry Identification (EIIS) Code VA] was placed in operation on March 3, 2005. Fuel movement in the Spent Fuel Pool was initiated on March 9, 2005, for the inspection of fuel assemblies. On March 11, 2005, the Operations staff was notified that having the plant in a configuration where the Containment Hatch was open while the Containment Purge System was in operation, made both trains of the Auxiliary Building Gas Treatment System (ABGTS) (EIIS Code BH) inoperable. Limiting Condition for Operation (LCO) 3.7.12, "ABGTS," requires that the system be operable during the movement of irradiated fuel assemblies in the fuel handling area.

Operation of the ABGTS is initiated in the event of a fuel-handling accident in the spent fuel area by radiation monitors. The monitors initiate an Auxiliary Building Isolation (ABI) signal which stops the building ventilation systems and starts the ABGTS fans. For the Containment Purge System, the ABI stops the purge fans and closes the purge supply Auxiliary Building Secondary Containment Enclosure (ABSCE - EIIS Code VF) dampers but does not close any of the purge supply or exhaust valves. The exhaust valves remaining open along with the Containment Hatch (EIIS Code DR) being open, result in a configuration where the ABGTS can not produce enough negative pressure to prevent a radiological release through the Auxiliary Building pathways.

The basis for not operating the Containment Purge System if the Containment Hatch is open during the conditions when the ABGTS is required to be operable (i.e., during movement of irradiated fuel assembles in the fuel handling area) is contained in the following two System Descriptions:

1. Section 4.8, "Containment Purge Operation during Cold Shutdown or Refueling," of System Description N3-30AB-4001, "Auxiliary Building Heating, Ventilation, and Air Conditioning System."

2. Section 4.18 of System Description N3-30RB-4002, "Reactor Building Ventilation System."

Due to these restrictions, Operations personnel entered Action D of LCO 3.7.12 at 08:30 on March 11, 2005, for both trains of ABGTS being inoperable. At the time Operations entered the action, fuel movement had been suspended. The inoperablity of both trains of the ABGTS is being reported under 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D) as an event or condition that could have prevented fulfillment of a safety function.

Problem Evaluation Report (PER) 78414 was initiated to document this event in the TVA Corrective Action Program.

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

II. DESCRIPTION OF EVENT (continued)

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.

C. Dates and Approximate Times of Major Occurrences

Date & Time	Occurrences
March 3, 2005 – 12:24	The Containment Purge System is placed in service.
March 3, 2005 – 19:04	The Containment Hatch is opened.
March 9, 2005 – 00:52	Fuel Handling Supervisor was authorized to perform fuel handling activities in the Spent Fuel Pool by the Unit Supervisor for the inspection of fuel rods.
March 10, 2005 – 11:00	The inspection of the fuel rods was completed.
March 11, 2005 - 08:30	Based on input from System Engineering, Operations personnel entered LCO 3.7.12 for both trains of ABGTS being inoperable due to the Containment Hatch being open while the Containment Purge System was in operation. Fuel movement was not in process at this time.
March 14, 2005 - 21:10	Fuel movement resumed and the unit entered Mode 6

D. Other Systems or Secondary Functions Affected

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

E. Method of Discovery

A System Engineer was using trend data from the Integrated Computer System (ICS – EIIS Code ID) to review the air flow through the Containment Purge System. As part of the review, the System Engineer determined the Containment Hatch was open. The System Engineer then reviewed the Operation's log and determined fuel movement in the fuel handling area had been in process with this configuration. Once these conditions were realized, System Engineering informed Operations that, in accordance with the requirements of Section 4.18 of System Description N3-30RB-4002 and Section 4.8 of System Description N3-30AB-4001, the ABGTS was inoperable.

F. Operator Actions

Once it was identified that irradiated fuel had been moved while the Containment Hatch was open and the Containment Purge System was in service, the Operations staff acted appropriately and entered Action D of LCO 3.7.12 for both trains of ABGTS being inoperable. Fuel movement was not in process at this time.

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

II. DESCRIPTION OF EVENT (continued)

G. Safety System Responses

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

III. CAUSE OF EVENT

The cause of this event was determined to be an inadequate System Operation Instruction (SOI) and an inadequate Fuel Handling Instruction (FHI). The System Description requirements are captured in Section 3.0, "Precautions and Limitations," of SOI-30.02, "Containment Purge System." However, at the time of this event, the requirements were stated as being applicable to only Modes 5 and 6. The precautions did not apply to the condition of the unit (defueled) at the time of this event. The FHI used for the fuel movement involved in this event was FHI-2, "Spent Fuel Pit Bridge and Spent Fuel Pit Handling Tool." The FHI contained a precaution regarding the action to take if a fuel assembly was dropped or damaged by referring to Abnormal Operating Instruction (AOI) 29, "Dropped or Damaged Fuel or Refueling Cavity Seal Failure." However, the FHI contained no precautions that addressed the Containment Hatch and Containment Purge requirements of the System Descriptions. Based on this, the requirements of the System Descriptions were not completely translated into the affected site implementing procedures and this allowed plant systems and equipment to be configured in a manner that made both trains of ABGTS inoperable.

IV. ASSESSMENT OF SAFETY CONSEQUENCES

The ABGTS consists of two independent and redundant trains which filter airborne radioactive iodine and particulates from the area of the spent fuel pool following a fuel handling accident (FHA) and from the area of active Unit 1 Emergency Core Cooling Components and Unit 1 penetration rooms following a loss of coolant accident (LOCA). The ABGTS design basis is established by the consequences of the limiting FHA. The analysis of the FHA assumes that all fuel rods in an assembly are damaged. The design basis accident analysis of the FHA assumes that only one train of the ABGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the Auxiliary Building Secondary Containment Enclosure is determined for an FHA and for a LOCA. Since the plant was defueled, the LOCA mitigation function of the ABGTS was not required.

Operation of the ABGTS is initiated in the event of a fuel-handling accident by radiation monitors in the vicinity of the spent fuel pool. The monitors initiate an Auxiliary Building Isolation (ABI) signal which stops the building ventilation systems and starts the ABGTS fans. For the Containment Purge System, the ABI closes the intake valves but does not close the exhaust valves. The exhaust valves remaining open along with the Containment Hatch being open, result in a configuration where the ABGTS can not produce enough negative pressure to prevent a radiological release through the Auxiliary Building pathways.

The following evaluation considered the consequences of an FHA in the Auxiliary Building with no ABGTS safety function. For the subject event, plant shutdown occurred at 0001 hours on February 22, 2005. Consequently, the fuel had decayed approximately 360 hours when this event occurred. This evaluation is based on the alternative source terms (ASTs) specified in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors:"

IV. ASSESSMENT OF SAFETY CONSEQUENCES (continued)

Evaluation and Results:

The Main Control Room (MCR) doses are as follows (rem):

Spent Fuel Pit/Auxiliary Building FHA, 20.6 seconds MCR isolation

	Tritium Core ARCON96 X/Q
Gamma	1.246E-01
Beta	1.231E+00
Thyroid (ICRP-30)	21.34E+00
TEDE	4.254E+00

The offsite doses were determined to be (rem):

Spent Fuel Pit/Auxiliary Building FHA

	Tritium Core	
	2-hr EAB	30-day LPZ
Gamma	1.148E-01	2.666E-02
Beta	3.937E-01	9.145E-02
Thyroid (ICRP-30)	22.69E+00	5.27E+00
TEDE	1.999E+00	4.642E-01

Based on this evaluation, the MCR operator doses resulting from a FHA with 360 hours decay time and no ABGTS are less than the 10 CFR 50, Appendix A, GDC 19 limits of 5 rem gamma, 30 rem beta, 30 rem thyroid and the Regulatory Guide (RG)1.183 limit of 5 rem TEDE. The 2 hour Site Boundary (SB)/Exclusion Area Boundary (EAB) and 30 day Low Population Zone (LPZ) doses from a FHA are less than 25 percent of the 10 CFR 100 limits of 25 rem gamma, 300 rem beta, and 300 rem thyroid (= 6.25 rem gamma, 75 rem beta, 75 rem thyroid) and the RG 1.183 limit of 6.3 rem TEDE.

Based on the preceding discussion, there were no safety consequences associated with this event.

V. CORRECTIVE ACTIONS

A. *Immediate Corrective Actions*

1. The Operations staff entered Action D of LCO 3.7.12 for both trains of ABGTS being inoperable.

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. FHI-2, "Spent Fuel Pit Bridge and Spent Fuel Pit Handling Tool," was revised to incorporate the requirements of System Description N3-30RB-4002 and System Description N3-30AB-4001.

V. CORRECTIVE ACTIONS (continued)

2. SOI-30.02, "Containment Purge System," was revised to:

a. Clarify the System Description requirements apply whenever irradiated fuel is being moved.

b. Place references to the System Description requirements in each of the sub-sections for Section 5.0, "Startup."

VI. ADDITIONAL INFORMATION

A. Failed Components

There were no failed components involved in this LER.

B. Previous LERs on Similar Events

The following is a listing of the LERs which have been initiated for Watts Bar where both trains of the ABGTS were inoperable:

	LER Number	Cause of Event
1.	390/1997-04	Lack of a questioning attitude by Operations personnel for test data taken during a 10 hour surveillance test run.
2.	390/2003-05	Inattention and inadequate communication by a shift test director responsible for directing alignment activities associated with test prerequisites.

C. Additional Information:

None.

D. Safety System Functional Failure

This event is considered a safety system functional failure of ABGTS in accordance with Nuclear Energy Institute (NEI) 99-02, Revision 3, since the system was rendered incapable of automatically performing its safety function as designed.

E. Loss of Normal Heat Removal Consideration

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

VII. COMMITMENTS

None