



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

John A. Scalice
Site Vice President, Watts Bar Nuclear Plant

SEP 08 1997

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) 50-390/97013

The enclosed report provides details regarding the failure to properly implement a surveillance requirement. 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,


J. A. Scalice

Enclosure
cc: See page 2

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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 20603.

FACILITY NAME (1) Watts Bar Nuclear Plant - Unit 1		DOCKET NUMBER (2) 05000390	PAGE (3) 1 OF 8
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TITLE (4)
Missed surveillance during performance of maintenance activities

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
08	8	97	97	013	00	09	8	97		05000
										05000

OPERATING MODE (9) 1 POWER LEVEL (10) 84	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	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	
20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)		or in NRC Form 366A		

LICENSEE CONTACT FOR THIS LER (12)

NAME Jerry Bushnell, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (423)-365-8048
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

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

Calculations EPM-AMP-081789 and EPM-CES-082989 established revised values for the outside ambient air temperatures for which an emergency diesel generator (EDG) is functional when the ventilation fans are out-of-service. These revisions resulted in a reduction in the temperatures from the values previously used in the System Operating Instructions (SOIs) for the EDGs. Based on the revisions, Engineering performed a review to establish if there had been any instances since initial fuel load where the fans were taken out-of-service during a period where the outside ambient temperature was higher than the values currently established in the calculations. From this review, the three prior instances were identified. For these situations, the affected EDG should have been considered inoperable and Action B of LCO 3.8.1 invoked to verify the availability of the offsite power supplies. The cause of this event was the usage of temperatures listed in a design memorandum for which there was no corresponding design output document. Operations personnel responded to this event by revising the affected SOIs to reflect the revised temperatures. A test plan is being developed which will remove various combinations of the EDG fans from service during an upcoming 24 hour endurance run of the EDGs. This will allow for collection of temperature values which better represent actual operating conditions to be defined. Design and procedural changes will be initiated as required. In order to ensure that other cases do not exist where documents such as a memorandum were used for design values, a sample of Operation's procedures will be reviewed.

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		YEAR	SEQUENTIAL NUMBER	REVISION	
		97	013	00	

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

I. PLANT CONDITIONS:

On August 4, 1997, the plant was in Mode 1, Reactor Coolant System (RCS) (EIS AB) average temperature was 583° F, RCS pressure was 2230 psig, reactor power was 84 percent. The plant was in a coastdown condition prior to the first refueling outage.

II. DESCRIPTION OF EVENT

A. Event

Revision 6 of calculations EPM-AMP-081789 and EPM-CES-082989 established revised values for the range of ambient air temperatures under which an emergency diesel generator (EDG) may be considered functional when a generator and electrical panel fan is out-of-service or when one diesel room exhaust fan is out-of-service. The values defined in these calculations define a range of temperatures based on the temperature of the Essential Raw Cooling Water (ERCW) system and resulted in a reduction in the temperatures from the values previously used in the System Operating Instructions (SOIs) for the EDGs. Based on this change in values, a review was performed by engineering personnel to establish if there had been any instances since initial fuel load where the fans were taken out-of-service during a period where the outside ambient temperature was higher than the values currently established in calculations EPM-AMP-081789 and EPM-CES-082989. From this review, the following three situations were identified:

Component Identifier	Function	*Period Fan was Out-of-Service	Date - Ambient Air Temperature	Current Maximum Allowed Temperature
1-FAN-30-491	EDG 1A-A Room Generator/Panel Vent Fan	0217 on May 21, 1996 to 1006 on May 22, 1996 1130 on May 22, 1996 to 2148 on May 22, 1996	May 21, 1996 - 86° F** May 22, 1996 - 80° F	77° F
2-MTR-30-450	EDG 2B-B Room Exhaust Fan 1B Motor	0359 on Sept. 3, 1996 to 1010 on Sept. 3, 1996 1320 on Sept. 3, 1996 to 1455 on Sept. 3, 1996	Sept. 3, 1996 - 80° F	76° F***
1-MTR-30-447	EDG 1A-A Room Exhaust Fan 1A Motor	0638 on July 18, 1997 to 0553 on July 19, 1997	July 18, 1997 - 91° F	80° F

*--Approximate times based on data listed on hold orders.
 **--86° was higher than 80° value initially allowed in the SOIs.
 ***--ERCW temperature approximately 81° F.

For the above situations, the affected EDG associated with the fans that were out-of-service should have been considered inoperable. When this occurred, Action B of Limiting Condition for Operation (LCO) 3.8.1, "AC Sources - Operating," should have been invoked. This action requires the performance of Surveillance Requirement (SR) 3.8.1.1 which verifies the availability of the offsite power supplies. Subsequent reviews of Surveillance Instructions (SIs) performed during the periods the fans were not functional, found the offsite supplies to be fully operable. However,

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II. DESCRIPTION OF EVENT (continued)

for the time periods listed above, implementation of SR 3.8.1.1 did not occur as required which is reportable under 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant's Technical Specifications.

Problem Evaluation Report (PER) WBPER970748 was initiated to document this event in the TVA Corrective Action Program and initiate immediate corrective actions to revise affected SOIs. Subsequent to these actions, WBPER970857 was initiated to review the methods defined in the plant procedures for obtaining outside air temperatures and initiate any needed clarifications to the procedures.

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

Time (EDT)	Occurrences on May 21, 1996
0217	The EDG 1A-A room generator/panel vent fan, 1-FAN-30-491, is removed from service for cleaning and lubricating. This maintenance work was performed under work order (WO) 96-05986-00.
Time (EDT)	Occurrences on May 22, 1996
1006	1-FAN-30-491 is returned to service.
1130	The maintenance activities being performed under WO 96-05986-00 continues and 1-FAN-30-491 is removed from service.
2148	1-FAN-30-491 is returned to service.
Time (EDT)	Occurrences on September 3, 1996
0359	The EDG 2B-B room exhaust fan 1B motor, 2-MTR-30-450, is removed from service for inspection and lubricating. This maintenance work was performed under WO 96-10003-00.
1010	2-MTR-30-450 is returned to service.
1320	The maintenance activities being performed under WO 96-10003-00 continues and 2-MTR-30-450 is removed from service.
1455	2-MTR-30-450 is returned to service.
Time (EDT)	Occurrences on July 18, 1997
0638	The EDG 1A-A room exhaust fan 1A motor, 1-MTR-30-447, is removed from service for the calibration of a relay in the motor start circuit. This maintenance work was performed under WO 97-05862-00.
Time (EDT)	Occurrences on July 19, 1997
0553	1-FAN-30-447 is returned to service.

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II. DESCRIPTION OF EVENT (continued)

D. Other Systems or Secondary Functions Affected

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

E. Method of Discovery

A request for a Technical Operability Evaluation (TOE) was submitted to Site Engineering to clarify the limiting values of outside ambient air temperature with various EDG heating ventilation and air conditioning (HVAC) fans out-of-service. During actions taken to address the TOE, Engineering personnel found that the values initially documented in the SOIs were taken from a memorandum generated by TVA's Engineering department on August 9, 1984. Engineering personnel also identified that the values documented in this memorandum currently do not exist in any approved design output documents or valid essential calculations.

During a recent scheduled performance of Technical Instruction (TI) 79.822 "1B-B Diesel Generator Jacket Water Cooler Performance Test," data was obtained with all the required fans running. This test data was obtained to substantiate the limiting values of outside ambient air temperature when different EDG fans are removed from service. Engineering's evaluation of the data produced limiting ambient temperatures that were less than the values initially used in the SOIs. WBPER970748 was written to document this deficiency and to establish the required corrective measures.

F. Operator Actions

Upon identification by site Engineering of the need for the revision of the outside ambient air values contained in the SOIs for the EDGs, Operations personnel issued the following documents:

1. Change Notice (CN) 1 to Revision 29 of SOI-82.01, "Diesel Generator 1A-A."
2. CN 1 to Revision 28 of SOI-82.02, "Diesel Generator 1B-B."
3. CN 1 to Revision 28 of SOI-82.03, "Diesel Generator 2A-A."
4. CN 1 to Revision 27 of SOI-82.04, "Diesel Generator 2B-B."

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 apparent cause of this event was the use of a memorandum as a basis for the design values for the temperature ranges initially defined in the SOIs. Problems similar to this, the use of inappropriate design documentation as a basis for procedural requirements, were previously documented as WBPER950045. As part of the action taken for resolution of this issue, a review of the documents

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III. CAUSE OF EVENT (continued)

referenced in site procedures was performed. From this review approximately 1300 procedures with potentially inappropriate references were identified. A sampling process was followed for the 1300 procedures to identify situations where the use of inappropriate data may have had an impact on plant hardware. The intent of this process was to establish a high confidence level that plant procedures were supported by adequate design documentation. The situation documented in this event where a memorandum was used as a basis for design values appears to be an exception to the findings of the corrective action implemented for WBPER950045.

IV. ANALYSIS OF EVENT - ASSESSMENT OF SAFETY CONSEQUENCES

The EDG rooms are located directly below their associated air intake and exhaust rooms. Airflow in each room is induced by exhaust fans which draw outside air into the intake room, through the EDG room and into the exhaust room and then exhausts it to the outdoors. When the EDGs are operating (i.e., emergency condition or testing) cool air flows from the intake opening into the EDG room and travels the length of the room, absorbing heat from the diesel engines and associated equipment. When room temperatures are between 60°F and 80°F and the EDG is operating, one fan operates while the other is on standby, available to operate should the first one fail. When room temperature reaches 80°F, both room exhaust fans operate simultaneously to provide maximum airflow to maintain the average room temperature below 120°F. When the EDG room temperature drops to 60°F, the EDG room exhaust fans shutdown.

The diesel engines produce a significant amount of the room heat load. In addition, the generator circulates air around its rotor and discharges the heated air into an area near the engine's electrical control panel. This local concentration of heat requires the use of a third fan, the generator and electrical panel vent fan. This fan provides cool air to the generator air intake and to the interior of the electrical control panel. The fan provides sufficient airflow to ensure that the generator intake air temperature and the interior temperature of the electrical control panel are below the maximum design temperatures. The generator and electrical panel vent fan is interlocked with the EDG room exhaust fans so that it will start if either of the exhaust fans start.

In order to assess the impact the failure to implement SR 3.8.1.1 had on plant safety, four factors were considered. First, the allowed outage time for an EDG to be inoperable is 72 hours in accordance with Action B of LCO 3.8.1. The time periods the fans were inoperable for maintenance never exceeded a 72 hour period. Secondly, the weekly scheduling of maintenance and testing activities allows work to only occur on one train at a time. A review of the daily scheduling packages for the periods the fans were inoperable verified that the maintenance was performed on the A and B train EDGs during the week work was scheduled for their respective trains. Next an assessment of whether there was equipment in the opposite train out-of-service during the periods the fans were out-of-service was performed. This review was conducted by Operations personnel and used the logs for equipment clearances and hold orders, and the logs maintained by operating crews to establish that there was no opposite train equipment inoperable during the same time periods. The last point is that SR 3.8.1.1 is implemented on a weekly basis by Surveillance Instruction (SI) O-SI-O-3, "Weekly Log."

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

A review of the performances of O-SI-0-3 for the time periods in which the fans were inoperable did not identify any problems in meeting the acceptance criteria for SR 3.8.1.1. Considering these factors, there was no impact on plant safety due to this event.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Upon identification of the problem with the temperature ranges used in the SOIs being higher than the values currently supported by calculations, Engineering personnel initiated corrective action document WBP970748. Engineering coordinated the nature of the problem with Operations and Systems Engineering personnel. Operations personnel responded to this deficiency by issuing the following SOIs:

1. CN 1 to Revision 29 of SOI-82.01, "Diesel Generator 1A-A."
2. CN 1 to Revision 28 of SOI-82.02, "Diesel Generator 1B-B."
3. CN 1 to Revision 28 of SOI-82.03, "Diesel Generator 2A-A."
4. CN 1 to Revision 27 of SOI-82.04, "Diesel Generator 2B-B."

B. Corrective Actions to Prevent Recurrence

The first refueling outage for Watts Bar Unit 1 is scheduled to begin on September 6, 1997. During this outage, surveillance requirement (SR) 3.8.1.14 will be implemented which performs a 24 hour endurance test of the EDGs. A test plan is being developed in accordance with Site Standard Practice (SSP) 8.04, "Special Test Instructions," which will remove various combinations of EDG fans from service during the 24 hour test. This will allow for the collection of temperature values which better represent actual operating conditions to be defined. Once the temperature values are defined, design and procedural changes will be initiated as required. Additional revisions to plant procedures may be initiated based on the corrective action for WBP970857 regarding the methodology for collection of outside air temperatures. Also as part of the corrective action for WBP970857, a review of the processes followed when releasing equipment for maintenance will be performed. This review will establish if procedural changes are needed to strengthen the processes to ensure factors such as the outside air temperature are considered.

In order to ensure that other cases do not exist where documents such as a memorandum were used for design values, a sample of Operation's procedures will be reviewed. In addition, a meeting will be held with appropriate personnel to stress the importance of using approved design output when developing or revising plant procedures.

Implementation of the above corrective actions will occur by December 12, 1997.

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VI. ADDITIONAL INFORMATION

A. Failed Components

1. Safety Train Inoperability

The cause of LER 390/97013 was not due to a component failure that rendered a train or a safety system inoperable.

2. Component/System Failure Information

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

There were no component failures involved.

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

There were no component failures involved.

c. Root Cause of Failure:

There were no component failures involved.

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

There were no component failures involved.

e. Manufacturer and Model Number of Each Failed Component:

There were no component failures involved.

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B. Previous Similar Events

The following is a listing of the LERs which have been initiated for Watts Bar due to surveillance requirements (SRs) not being implemented or not being implemented properly:

	LER Number	Cause of Event
1.	95001	Applicability of a SR not interpreted correctly.
2.	95002	Failure to recognize that the acceptance criteria for SR 3.8.10.1 was not being met.
3.	96001	All components within the scope of the surveillance were not properly identified in the Surveillance Instruction (SI).
4.	96003	Applicability of a SR not interpreted correctly.
5.	96008	SI inadequate, requirements of the SR not met.
6.	96018	Misinterpretation of SI.
7.	96019	Failure to control system status which allowed the improper performance of an SR.
8.	96022	Misinterpretation of an SR during a procedure revision.
9.	97001	Misinterpretation of an SR.
10.	97003	Failure to follow procedures.
11.	97012	Technical Specification requirements were not properly translated into the controlling surveillance instruction.

Based on the above comparison of the causes of the events, there were no previous situations where the usage of inappropriate design documentation resulted in a failure to fulfill a surveillance requirement.

VII. COMMITMENTS

The actions committed to be implemented in response to this event are tabulated in Section V, Corrective Actions.