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Richard T. Purcell  
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APR 08 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) 50-390/1999-003

The enclosed report provides details regarding the condition identified involving a breach of a fire barrier. Submittal of this report is in accordance with 10 CFR 50.73(a)(2)(ii).

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

Sincerely,



R. T. Purcell

Enclosure  
cc: See page 2

*IEB*

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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 20603. 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.

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TITLE (4)  
**Fire Barrier Breach Involving Removal of Fire Wrap**

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
03	09	99	1999	003	00	04	08	99		05000
										05000

<b>OPERATING MODE (9)</b> 6  <b>POWER LEVEL (10)</b> 0	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>									
	<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)		
	<input checked="" type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input checked="" type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(x)		
	<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	73.71		
	<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	OTHER		
	<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	Specify in Abstract below		

<b>LICENSEE CONTACT FOR THIS LER (12)</b>										
<b>NAME</b> Rickey A. Stockton, Licensing Engineer						<b>TELEPHONE NUMBER (Include Area Code)</b> (423)-365-1818				

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>SUPPLEMENTAL REPORT EXPECTED (14)</b> <input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).						<input checked="" type="checkbox"/> NO X			<b>EXPECTED SUBMISSION DATE (15)</b>		MONTH	DAY	YEAR
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**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On March 9, 1999, during a fire barrier inspection while Unit 1 was in mode 6, it was discovered that a fire barrier (an electrical raceway radiant energy shield) had been breached that protects cable 1NM1333D involving one channel (1-NE-92-132-E) of the source range monitors. This fire barrier at electrical penetration 1-PENT-293-43-D is required to protect this source range cable during an Appendix R fire event. Upon discovery, fire protection impairment permit C99-0249 was issued and compensatory measures were established. It was determined through the investigation that the condition had existed during plant operation. Since the fire wrap is required for an Appendix R event and may have been in a condition where it would not have performed its function, this condition was considered outside the design basis and, therefore, TVA is reporting this condition under 10 CFR 50.73(a)(2)(ii).

The cause of this event could not be exactly determined. However, it was determined to have been most likely breached during the performance of a local leak rate test during the first refueling outage and never replaced. Corrective actions included: 1) fire protection impairment permit was issued, and compensatory measures established, 2) the subject breach has been repaired, 3) caution signs have been placed on each electrical penetrations wrapped with a radiant energy shield (RES), 4) an awareness memorandum is being issued to each organization that has a potential for interfacing with the RESs, and 4) this event is being included in the 1999 continuing training for engineering support and mechanical maintenance personnel.

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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 6 when this condition was discovered.

**II. DESCRIPTION OF EVENT**

**A. Event**

On March 9, 1999, during the performance of procedure 1-FOR-304-1, "Visual Inspection of Fire-Rated Assemblies Located in the Unit 1 Reactor Building," while Unit 1 was in mode 6, it was discovered that a fire barrier (an electrical raceway radiant energy shield) had been breached that protects cable 1NM1333D which is one channel (1-NE-92-132-E) of the source range monitors (Energy Industry Identification System (EIIIS) Code MON) at electrical penetration (EIIIS Code PEN) 1-PENT-293-43-D. This fire barrier is required to protect the cable during an Appendix R fire event. Upon discovery, fire protection impairment permit C99-0249 was issued and compensatory measures (e.g., firewatch) were established. It was determined through the investigation that this condition has existed during unit operation. However, the investigation could not conclusively determine how long the condition has existed. Since the fire wrap is required for an Appendix R event and may have been in a condition where it would not have performed its function, this condition was considered outside the design basis and, therefore reportable under 10 CFR 50.73(a)(2)(ii).

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

There were no inoperable structures, components, or systems that contributed to the event other than the fire wrap.

**C. Dates and Approximate Times of Major Occurrences**

Date/Time (EST)	Occurrence
2/17/99 - Time Unknown	Initiated work request C405231 to repair test valve (EIIIS Code TV) at electrical penetration 1-PENT-290-43-D below the identified fire wrap. Subsequent discussion with work crew indicated fire wrap was pulled back at that time.
3/9/99 - 0237	Conducting FOR and identified fire wrap condition. Initiated fire protection impairment permit C99-0249 and established compensatory measures
3/9/99 - 0636	Documented the fire wrap breach in Problem Evaluation Report 99-003392-00.

**D. Other Systems or Secondary Functions Affected**

The fire wrap protects cable which feeds one channel of the source range detection monitors.

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II. DESCRIPTION OF EVENT (continued)

E. Method of Discovery

The condition was discovered during the performance of Fire Operating Requirement procedure, 1-FOR-304 performed on March 9, 1999.

F. Operator Actions

Upon discovery of the fire wrap breach, fire protection impairment permit C99-0249 was issued, and compensatory measures were established.

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 could not be completely determined. However, it was determined that the breach most likely occurred during the performance of 1-SI-O-702, "Type B Local Leak Rate Test", on August 15, 1997, during the first refueling outage. This surveillance instruction performs local leak rate tests for containment penetrations and in order to view the penetration test valve, the fire barrier would have been disturbed. It appears that this fire barrier was not replaced when this test was completed. The performance of 1-FOR-304-1 during the first refueling outage did not inspect penetration 1-PENT-293-43-D since only a percentage of the items in this FOR are done after the initial baseline inspection prior to fuel load. This apparent cause is further substantiated by the fact that the personnel assigned to perform the local leak rate for the current refueling outage found the fire barrier breached.

IV. ANALYSIS OF EVENT - ASSESSMENT OF SAFETY CONSEQUENCES

The fire wrap that was breached protects cable (EIS Code CBL) 1NM1333D involving one channel (1-NE-92-132-E) of the source range monitors. The source range detectors (EIS Code DET) are located external to the reactor vessel and determine reactor power by measuring neutrons leaking from the core. The source range trip is the only reactor trip system (EIS Code JC) automatic protection function required in modes 3, 4, and 5 and in mode 2 below the P-6 interlock. Therefore, the functional capability at the specified trip setpoint is assumed to be available. The Technical Specifications require two channels of Source Range Neutron Flux to be operable. Two operable channels are sufficient to ensure no single random failure will disable this trip function. The Source Range Neutron Flux function provides protection for control rod withdrawal from subcritical, boron dilution and control rod ejection events. The function also provides neutron flux indication in the control room during very low reactor power and during shutdown periods.

There are three channels of source range monitors (1-NI-92-131-D, 1-NI-92-132-E, and 1-NI-92-138P) available for reactor trip. One of these channels is fire wrapped (cable 1NM1333D) to meet Appendix R requirements. Channel 1-NI-92-138P is a portable unit that is used when the other two are not

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available, but it also requires cable 1NM1333D (the fire wrapped cable) to be available to function. Channel, 1-NI-92-132-E, is not assumed available because cable 1NM1330E is routed in the same fire area as 1NM1333D. A fire hazard evaluation of cables in the Unit 1 annulus required for 10CFR50, Appendix R was performed under WBN calculation EPM-FXM-060295. This calculation identifies the combustible load in the annulus area which consists of cable insulation, with small quantities of pipe insulation, and incidental plastic instrument covers. The combustible content of the area is made up almost entirely of cable insulation with the remaining combustibles distributed throughout the area. Due to their distribution and small heat content, the combustibles other than cable insulation do not represent significant individual fuel sources. Cable insulation in open cable tray presents the most credible postulated fire which can be expected during power operation. However, with the exception of the potential for limited amount of unprotected non-IEEE-383 cable, the cables are either IEEE-383 qualified or have been coated with a fire retardant cable coating (Vimasco) to make them equivalent to the qualified cable with respect to fire resistance. Cables at WBN are not considered ignition sources due to proper over current protection. Any fire involving the cables in the annulus must be initiated by a transient exposure fire. Sheet metal cable tray covers are provided on cable trays located adjacent to personnel access areas, trays with instrumentation cables and those trays which separate safety and non-safety cables located in close proximity. These tray covers limit potential exposure from transient fires. The annulus is also a combustible controlled zone which administratively restricts combustibles from being brought into the area and is not normally entered during power operation. Therefore, the probability of an exposure fire is minimal. With the small possibility of a fire in the annulus very low, the likelihood of the RES having to perform its function and then failing to the point where cable damage occurs is also considered very low. Therefore, the safety significance of this condition is low.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Fire protection impairment permit C99-0249 was issued, and compensatory measures were established. An inspection of the other three penetrations with the same type fire wrap (radiant energy shield) revealed no other breaching issues, however, the penetration trap doors were not secured properly. The subject breach has been repaired via work order 99-002329-00.

B. Corrective Actions to Prevent Recurrence (TVA does not consider this information to constitute a regulatory commitment. TVA's Corrective action program will track completion.)

Signs have been placed on each electrical penetration wrapped with a radiant energy shield (RES) identifying them as a RES and that a fire protection impairment permit is required to remove or breach this shield.

An awareness memorandum is being issued to each organization that has a potential for interfacing with the RESs. In addition, this event is being included in the 1999 continuing training for engineering support and mechanical maintenance personnel.

Procedure 1-SI-0-702 is being revised to address those electrical penetrations that are wrapped with RES, to add steps to have the RES removed and re-installed for testing purposes, and to identify the need to initiate a fire protection impairment permit when breaching occurs.

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B. Corrective Actions to Prevent Recurrence (continued)

Work request WRC432840 was initiated to address the trap doors.

VI. ADDITIONAL INFORMATION

A. Failed Components

1. Safety Train Inoperability

The fire barrier at penetration 1-PENT-293-43-D for cable 1NM1333D was considered inoperable.

2. Component/System Failure Information

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

There were no component or system failures due to this event.

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

There were no component or system failures due to this event.

c. Root Cause of Failure:

There were no component or system failures due to this event.

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

There were no component or system failures due to this event.

e. Manufacturer and Model Number of Each Failed Component:

There were no component or system failures due to this event.

B. Previous Similar Events

A review of the previous WBN LERs revealed that there have been no other WBN events involving the breaching of fire barrier wraps (radiant energy shields).

VII. COMMITMENTS

None