

TENNESSEE VALLEY AUTHORITY

6N 38A Lookout Place
Chattanooga, Tennessee 37402-2801
November 10, 1990

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

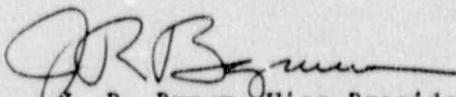
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSE DPR-77 - LICENSEE EVENT REPORT (LER)
50-327/90026

The enclosed LER provides details concerning an inadvertent auxiliary building isolation that occurred because a radiation monitor relay was not reset after the monitor was blocked during transfer of high radiation trash through the area. This event is reported in accordance with 10 CFR 50.73 (a)(2)(iv) as an engineered safety feature actuation.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


J. R. Bynum, Vice President
Nuclear Operations

Enclosure

cc (Enclosure):

Mr. J. N. Donohew, Project Manager
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INPO Records Center
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Sequoyah Nuclear Plant
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JRB:MAC:JWP:GC

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W. R. Cobean, Jr., LP 6N 38A-C
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0921h

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1045h

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah Nuclear Plant, Unit 1 DOCKET NUMBER (2) 0500032710 PAGE (3) 04

TITLE (4) An inadvertent auxiliary building isolation (ABI) occurred when an operator failed to reset the ABI signal seal-in relay before returning a radiation monitor to service

EVENT DAY (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)		
10	13	90	026	0	10	10	90	Sequoyah, Unit 2	05000328		

OPERATING MODE (9) 4 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER (Specify in
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	Abstract below and in
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	Text, NRC Form 366A)
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER		
	AREA CODE		
<u>C. H. Whittemore, Compliance Licensing</u>	<u>615</u>	<u>843</u>	<u>-7210</u>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO DATE (15)

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

On October 13, 1990, at 1837 Eastern daylight time (EDT) with Unit 1 in Mode 4 for a maintenance outage and Unit 2 in Mode 6 for a refueling outage, an inadvertent auxiliary building isolation (ABI) occurred. The ABI signal was initiated from the spent fuel pit area Radiation Monitor (RM) 0-RM-90-103, following the transfer of highly contaminated trash through the area. During the transfer, the RM 0-RM-90-103 reached its high radiation setpoint. The RMs had been removed from service (blocked) to prevent a spurious ABI. Once the RM high radiation setpoint is reached, the high radiation seal-in relay retains the ABI signal until the relay is reset. After the transfer of trash was completed, the operators proceeded to unblock the RMs but failed to reset the seal-in relay for 0-RM-90-103. The operators unblocked the RMs without resetting the relays and immediately received the inadvertent ABI. Operations' personnel immediately realized the cause of the ABI and proceeded to recover from the event in accordance with plant procedures. Corrective action was to take appropriate disciplinary action for the personnel involved. A modification to the annunciator circuitry to prevent RMs 0-RM-90-101, -102, and -103 high radiation alarms from being cleared without first resetting the seal-in relay, will be made by February 1, 1991.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				
Sequoyah Nuclear Plant Unit 1	0500032790	--	026	--	0	0	0	204

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

DESCRIPTION OF EVENT

On October 13, 1990, at 1837 Eastern daylight time (EDT) an inadvertent auxiliary building isolation (ABI) (EIIS Code VF) occurred. Unit 1 was in Mode 4 (0-percent power 205 degrees Fahrenheit [F] and 315 psig) and Unit 2 was in Mode 6 in mid-loop operations after completion of the fuel handling activities for the Cycle 4 refueling outage on October 11, 1990.

The auxiliary building spent fuel pit (SFP) radiation monitors (RMs) (EIIS Code IL) 0-RM-90-102 and -103 were removed from service (blocked) to prevent a spurious ABI while highly contaminated trash was being transferred through the area. During the transfer, one RM (0-RM-90-103) exceeded its high radiation alarm setpoint. The lead operator acknowledged the main control room (MCR) annunciator (EIIS Code ANN) alarm and cleared the RM module high radiation alarm light. This allowed the MCR annunciator window to also be reset.

Upon completion of the high radiation trash transfer, the balance of plant (BOP) operator proceeded to return the SFP RMs 0-RM-90-102 and -103 to normal. These RMs are unique in that a seal-in relay is installed in the circuitry to retain the high radiation alarm signals. These relays must be reset after a high radiation setpoint is reached or exceeded. A high radiation signal will still be present until these relays are reset. The seal-in relay actuation is indicated in the MCR by a small white light above Handswitches 0-HS-90-102 and -103 for 0-RM-90-102 and -103, respectively. The BOP operator was unaware the high radiation setpoint had previously been reached and that the MCR annunciator window had previously been reset by the lead reactor operator (LRO). The BOP operator returning the RMs to normal failed to observe an operator aid to reset the seal-in relay and also failed to observe that the lights above the handswitches were lit prior to unblocking the RMs. Therefore, when 0-RM-90-103 was unblocked, an ABI occurred. The operator immediately recognized the mistake and the cause of the ABI and proceeded to recover from the ABI using System Operating Instruction (SOI) 30.5-D, "Recovery from Auxiliary Building Isolation." The RMs were returned to service at 1841 EDT. At 1935 EDT, the NRC was notified as required under 10 CFR 50.72(b)(2)(i).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)			
		SEQUENTIAL		REVISION		YEAR	NUMBER	NUMBER	OF	PAGES	
		NUMBER	NUMBER	NUMBER	NUMBER						
Sequoyah Nuclear Plant Unit 1	0500032790	0	2	6	0	0	0	3	OF	0	4

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

CAUSE OF EVENT

There are three causes of this event:

- 1) A man-machine interface problem. Radiation monitors O-RM-90-102 and -103 are different from the other RMs in that a seal-in relay is installed in the circuitry to prevent a valid high radiation signal from being cleared. An operator can reset the RM module high radiation alarm and the MCR high radiation annunciator without resetting the seal-in relay. The white light on the high radiation seal-in relay reset switch which indicates the presence of a high radiation signal is not conspicuously located near the RM block and unblock handswitches. Without knowledge that these two indicators may have been previously cleared, another operator could possibly mistake the absence of alarms and annunciators as not having an ABI signal present and fail to remember that these RMs have an extra step to unblocking the RMs.
- 2) Inattention to detail of Operation personnel. The proper method for unblocking RMs O-RM-90-102 and 103 has been successfully performed many times without generating inadvertent ABIs. Both the lead operator and the BOP operator failed to observe the operator aide posted on the RM block hand switches and failed to recognize that the seal-in relay was actuated.
- 3) Inadequate corrective actions. In April 1990, a similar event occurred and was reported in LER-50-327/90006. The corrective action for the LER-50-327/90006 focused on the one operator and his actions. It was not until this event and the involvement of two operators that a man-machine interface problem was identified and recognized as a significant contributor to the issue. Since the April 1990 event, TVA has implemented the Human Performance Enhancement System (HPES) to review events that may have resulted from personnel actions.

ANALYSIS OF EVENT

An ABI is an engineered safety feature (ESF) actuation and is reportable pursuant to the criteria established in 10 CFR 50.73(a)(2)(iv).

An ABI can be automatically initiated by either: (1) high temperature in the auxiliary building air intake, (2) high radiation in the spent fuel pool area, (3) Phase A containment isolation signal, or (4) high radiation in the auxiliary building vent. During this event, a high radiation signal was received on the RM when the trash was transported through the spent fuel pool area, and, as a result, an ABI was generated. Subsequent to the ABI signal, all equipment functioned as designed as the general supply and exhaust fans shut off, the fuel handling area fans shut off, the appropriate dampers operated, and both trains of auxiliary building gas treatment system started. Because no high radiation levels actually existed and the system functioned as designed, this event did not adversely effect the health and safety of the public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				
Sequoyah Nuclear Plant Unit 1	051000327	90	026	00	0	0	0	4

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

CORRECTIVE ACTIONS

- 1) As immediate corrective actions, Operations personnel recovered from the ABI in accordance with SOI-30.5D, reset the ABI and returned the RMs to service.
- 2) Appropriate disciplinary action was taken for the personnel involved.
- 3) A modification will be made to the annunciator circuitry to prevent O-RM-90-102, 103, and 101 high radiation alarms from being cleared without first resetting the seal-in relay.
- 4) TVA will evaluate the modification for the man-machine interface problem and determine if further corrective actions or enhancements are warranted.
- 5) TVA has implemented the HPES to review events that may have resulted from personnel error.

ADDITIONAL INFORMATION

There have been 38 previously reported occurrences of inadvertent ESF actuations. Only one ESF actuation resulted from failure to reset the seal-in relay before unblocking the RM, and this was event occurred in April 1990 and reported in LER 50-327/90006.

Previous corrective actions for a similar event (LER 50-327/90006) included: (1) appropriate disciplinary action for Operations' personnel involved in the event, and (2) a training letter was issued to Operations' personnel addressing the specific operator's aid and addressing operator aids in general. These previous corrective actions were inadequate to prevent recurrence of a similar event.

Commitment

A modification to the annunciator circuitry, to prevent O-RM-90-101, 102, and 103 high radiation from being cleared without first resetting the seal-in relay, will be made by February 1, 1991.

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