

TENNESSEE VALLEY AUTHORITY

6N 38A Lookout Place

December 20, 1989

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

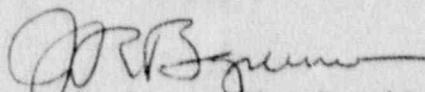
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSE DPR-77 - LICENSEE EVENT REPORT (LER)
50-327/89029

The enclosed LER provides details concerning a spurious main control room isolation that resulted due to a personnel error during a maintenance activity. This event is being reported in accordance with 10 CFR 50.73, paragraph a.2.iv.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



J. R. Bynum, Vice President
Nuclear Power Production

Enclosure

cc (Enclosure):

Regional Administration
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II
101 Marietta Street, Suite 2900
Atlanta, Georgia 30323

INPO Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

NRC Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) SEQUOYAH NUCLEAR PLANT, UNIT 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7	PAGE (3) 1 OF 0 5
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TITLE (4) **Main control room isolation during maintenance activities due to accidental bumping of control room isolation relays**

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 NAMES	DOCKET NUMBER(S)
11	21	89	89	029	00	12	20	89	Sequoyah, Unit 2	0 5 0 0 0 3 2 8

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
	POWER LEVEL (10) 100	<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"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.38(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.38(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
		<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)	
NAME Charles H. Wittemore, Compliance Licensing Engineer	TELEPHONE NUMBER AREA CODE: 6 1 5 8 4 3 - 7 2 1 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPS
X	VIFU		L2 23	N					

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

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

On November 21, 1989, with Units 1 and 2 in Mode 1 (100 percent power, 2,235 pounds per square inch gauge, and 578 degrees Fahrenheit), a spurious Train B control room isolation (CRI) (EIIIS VI) occurred. On November 21, 1989, at 1016 Eastern standard time (EST) a manual Train B CRI was attempted from the main control room in conjunction with Surveillance Instruction 143, "Control Building Emergency Air Cleanup System Filter Train Test." The CRI was attempted from both units using Handswitches 1-HS-31A-38A and 2-HS-31A-38A. The CRI failed to occur. Work Request (WR) B792993 was initiated to troubleshoot the problem. At 1450 EST on November 21, 1989, as the electricians were inspecting the relay cabinet to begin troubleshooting, an unplanned partial Train B CRI occurred. An immediate investigation revealed that this was a spurious actuation. Troubleshooting the CRI under the WR revealed a degraded fuse was in the circuit, and this prevented the planned CRI from being manually initiated. The spurious CRI was most likely a result of accidental bumping of the relays, and the degraded fuse prevented the contacts from sealing in, resulting in only a partial CRI. The immediate corrective action was to replace the fuses, remove the relays, and replace them with new relays. As a postmaintenance test, the new relays were completely functionally checked after installation by initiating a CRI and verifying proper component operation.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Sequoyah Nuclear Plant, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7	LER NUMBER (6)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Event

On November 20, 1989, at 2255 Eastern standard time (EST), Limiting Condition for Operation (LCO) 3.7.7 was entered to comply with technical specifications permitting the performance of a Surveillance Instruction (SI) 143, "Control Building Emergency Air Cleanup System Filter Train Test." On November 21, 1989, with Units 1 and 2 in Mode 1 (100 percent power, 2,235 pounds per square inch gauge, and 578 degrees Fahrenheit), a manual "B" train control room isolation (CRI) was attempted in conjunction with SI-143. ("A" train already had been successfully completed.) The CRI failed to occur. It was attempted from both units using Handswitches 1-HS-31A-38A and 2-HS-31A-38A. Work Request (WR) B792993 was initiated to troubleshoot the problem. After planning was completed for the WR, the electricians proceeded to begin troubleshooting. As the electricians were inspecting the associated relay cabinets, an unplanned partial Train B CRI occurred. The CRI was partial in that only the fans started and then stopped; the dampers started to assume their isolation position, then returned to their normal position, and an annunciation of a CRI was received in the main control room (MCR). An immediate investigation indicated that this was a spurious actuation because there was a lack of high temperature in the air intake, lack of smoke in the air intake, no radiation monitor spikes, and the handswitch to manually initiate a CRI had not been manipulated. After the CRI was declared to be spurious, the WR was replanned, and troubleshooting began to determine the cause of the spurious CRI as well as the failure to manually initiate a CRI as required by SI-143. The circuits and connections in the MCR and relay cabinets were inspected, tested, and found to be acceptable.

It was initially believed that dirty contacts contributed to the spurious CRI. The relay cabinets were inspected for dirty relays. Seventeen relays were identified as needing cleaning. WRs were initiated to clean these relays, and this action is complete. However, subsequent investigation from testing/exercising the relays revealed that dirty contacts did not contribute to this event.

Another possibility that was investigated and discarded was the unintentional shorting of power directly to the CRI relays from another panel. Review of work documentation and operation logs revealed no activity in these areas for November 21, 1989.

The reason for the failure to manually initiate a CRI, as required in SI-143, was attributed to a partially blown fuse that prevented the relays from actuating. The relays take a signal from one of the input devices (radiation monitor, safety injection signal, high temperature in the air intake, etc.) and activate the "seal-in" contact, which in turn makes up the circuit to provide MCR isolation. The fuse is in series with the CRI input signals, and it provides overcurrent protection. The fuse in its degraded condition did not allow sufficient voltage to pass for the relays to seal in. That is, the fuse prevented adequate voltage from getting to the relays to allow them to seal in. Therefore, as soon as the relay contacts made up, they dropped out, which supports the results seen from the partial CRI. It is indeterminate how and when the fuse degraded, only that successful testing on Train B CRI circuitry occurred as recently as September 14, 1989.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20585, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Sequoyah Nuclear Plant, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7 8 9	LER NUMBER (8)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Event (Continued)

The root cause of the spurious unplanned partial CRI could not be determined, but is assumed and was most likely a result of accidental bumping of the relays by the electricians, and the degraded fuse prevented the contacts from sealing in. However, this presumed personnel error is not recognized by the electricians, who stated that they did not touch or tamper with the circuits.

The fuse was replaced, the relays were cleaned and/or replaced with new relays, and the system was functionally tested. SI-143 for Train B was successfully completed. LCO 3.7.7 was exited, returning the control building ventilation system to normal operation at 0802 on November 22, 1989.

Cause of Event

The root cause of the unplanned spurious CRI could not be verified, but was attributed to personnel unintentionally bumping the relays while performing troubleshooting maintenance. The craft denies touching or tampering with the circuitry; however, Systems Engineering, in their investigations and testing of the components and circuitry, have eliminated other logical and possible electrical possibilities. The investigations did reveal that the manual CRI associated with the SI-143 failed to occur due to the degraded fuse. The degraded fuse also permitted only a partial CRI actuation in the unplanned event for which this report is being submitted. It is undetermined how and when the fuse degraded/failed, only that Train B CRI circuitry was functionally tested (SI-143) September 14, 1989.

Analysis of Event

This event is reportable as an engineered safety feature actuation in accordance with 10 CFR 50.73, paragraph a.2.iv.

The MCR habitability system (MCRHS) is designed to provide a safe location for personnel controlling plant operations during normal operation and during accidents. There are two 100-percent redundant equipment trains for the MCRHS--Train A and Train B. These trains are periodically tested using SI-143. One feature of the MCRHS is the main CRI upon one of several input signals. One signal is manual initiation from the MCR of Unit 1 or Unit 2.

The action statement of LCO 3.7.7 requires, with one train inoperable, to restore the inoperable system to operable status within seven days. During this event, the plant had already entered LCO 3.7.7 at 2350 on November 20, 1989, to support surveillance testing of the MCR emergency air cleaning unit Train B.

The time to return the Train B MCRHS to operable status did not exceed the action statement of seven days, i.e., Train B was returned operable at 0802 on November 22, 1989. In addition, the Train A CRI portion of the MCRHS had been verified operable by previous testing and completing SI-143 for Train A. As a result, a CRI would have been accomplished utilizing Train A, if required during this period.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

Corrective Action

Immediate corrective action was to troubleshoot the cause of the unplanned CRI and determine why it was spurious and partial. The possible causes of a spurious CRI were investigated by inspecting the components in the circuits for degraded condition and/or abnormal operation. The relays were inspected for dirty contacts and proper operation. Exercising the relays provided assurance that the contacts were not dirty enough to affect proper operation nor were they found to be defective in anyway. The fuse in series with the input signal's contacts was found to be degraded. This was discovered while continually actuating the manual CRI handswitch for 15-20 seconds. The reason for the degraded condition of the fuse and when it degraded was indeterminate. The fuse was replaced. The circuits and connections were checked and functionally checked. The MCRHS is periodically checked for operability by SI-143. The performance of this surveillance revealed a fuse in a degraded condition. The spurious CRI was presumed to be an unintentional bumping of the relays by the craft. Therefore, no further corrective action is necessary.

Additional Information

A review of potential reportable occurrence and LER databases at SQN has revealed 18 previous occurrences of CRIs since 1984. Of these 18 occurrences, six are attributed to personnel error. Only one involved personnel accidentally bumping equipment; however, in this event, personnel deny touching or tampering with the circuitry. Accordingly, corrective action taken for previous events could not be expected to have prevented this inadvertent/spurious event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

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Sequoyah Nuclear Plant, Unit 1

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YEAR SEQUENTIAL NUMBER REVISION NUMBER

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

