

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7	PAGE (3) 1 OF 0 5
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Non-Compliance With Configuration Control Requirements Following A Postmodification Test Of A Radiation Monitor Resulted In A Containment Ventilation Isolation

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)
0 3	1 4	8 8	8 8	0 1	4 0 1	0 5	2 4	8 8			0 5 0 0 0
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OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0	20.402(b)		20.406(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)		73.71(b)			
	20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(e)			
	20.405(a)(1)(w)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 306A)			
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					
	20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)					
	20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(ix)					

LICENSEE CONTACT FOR THIS LER (12)									
NAME D. P. Siska B. E. Kilgore, Plant Operations Review Staff							TELEPHONE NUMBER AREA CODE 6 1 5 8 7 0 - 7 0 8 7		

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	

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)

This report is being revised to clarify the root cause and include additional corrective actions to be implemented to prevent recurrence of this event. On March 14, 1988, with unit 1 in mode 5 (cold shutdown), a train "A" containment ventilation isolation (CVI) occurred. At approximately 1110 EST, Instrument Maintenance (IM) personnel improperly actuated the local start switch for the sample flow pump on containment purge exhaust Radiation Monitor (RM) 1-RM-90-130. The switch actuation caused a spurious high radiation spike which was of sufficient magnitude and duration to trip the associated RM circuitry and initiate a unit 1 "A" train CVI. Operations personnel verified that the CVI was not caused by an actual high radiation condition and then reset the CVI. The immediate cause of this event was an electromagnetic interference (EMI)-induced high radiation spike. During subsequent investigation, it was determined that actuation of the pump switch induced EMI to the RM sample pump status (on/off) circuitry and resulted in the CVI. The root cause of this event was the failure of IM personnel to comply with applicable configuration control requirements. For immediate corrective action, the CVI was reset, and a memorandum was sent to all IM personnel stating that Operations personnel shall be contacted and the RM trip signal blocked before performing any work on RMs capable of actuating engineered safety feature (ESF) equipment. Signs will be placed on RMs which are capable of actuating ESF equipment which instructs all personnel to use the above blocking technique to prevent inadvertent ESF actuations. The IM personnel who performed the postmodification testing for Workplan 7343-02 were counseled to follow the requirements of configuration control and perform the requirements in the correct sequence. The RM sample pump motor switch will be replaced by Electrical Maintenance before unit 1 entry to mode 4.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7 8 8 - 0 1 4 - 0 1	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
					0 2	OF 0 5

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

This report is being revised to clarify the root cause and include additional corrective actions to be implemented to prevent recurrence of this event.

DESCRIPTION OF EVENT

On March 14, 1988, with unit 1 in mode 5 (0 percent power, 6 psig, 130 degrees F), a train "A" containment ventilation isolation (CVI) (EIIS Code JM) occurred. At approximately 1110 EST, Instrument Maintenance (IM) personnel actuated the local start switch for the sample flow pump on containment purge exhaust Radiation Monitor (RM) 1-RM-90-130 (EIIS Code IL). The switch was actuated to return the RM to the "run" position following the completion of a postmodification test. The switch actuation caused a spurious high radiation spike which was of sufficient magnitude and duration to trip the associated RM circuitry and initiate a unit 1 "A" train CVI. IM personnel contacted the unit 1 control room to inform Operations personnel that the high radiation trip was the result of the sample pump switch actuation. Operations personnel confirmed that an "A" train CVI had occurred and, following verification that no high radiation condition actually existed, reset the CVI in accordance with System Operating Instruction (SOI)-30.2.B, "Containment Ventilation System Isolation."

On March 6, 1988, IM personnel were performing Workplan (WP) 7343-02 to modify 1-RM-90-130. This modification included the addition of seal-in circuitry to reduce the potential for CVIs which could occur as the result of electromagnetic interference (EMI) generated from low sample flow switch chatter (i.e., repeated actuation which occurs during low flow conditions - reference LER SQRO-50-328/87010). The subject WP modified RMs which could actuate engineered safety feature (ESF) equipment.

To ensure a CVI did not occur during implementation of the modification, Operations blocked the output signals from the radiation analyzer module (RP-30) with the handswitch in the main control room (1-HS-90-136A) in accordance with the WP. While the handswitch was in the block position, the RM high radiation trip relay (K3) was removed. Removing the K3 relay ensured that a spurious high radiation trip signal would not initiate a CVI during the modification. Once the trip relay was removed, the handswitch was returned to its normal (unblocked) position, and the seal-in modification was performed.

On March 14, 1988, after completion of the modification, a functional test was performed to test the installed seal-in circuitry. The functional test required that the 480-volt power supply to the RM sample pump motor (from unit 1 Containment and Auxiliary Building ventilation (C&A vent) board 1A1-A) and the vital 120-volt power supply (from unit 1 vital 120 volt distribution board 1-I) to be returned to service. These power supplies were tagged out on Hold Order (HO) 1-88-398. The 480-volt supply had also been tagged out on HO 1-88-340 as a

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1): Sequoyah, Unit 1	DOCKET NUMBER (2): 0 5 0 0 0 3 2 7	LER NUMBER (6):			PAGE (3):	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 8	- 0 1 4	- 0 1 0 3	OF	0 5

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result of an overload condition discovered on the 1A1-A unit 1 C&A vent board (reference LER SQRO-50-327/87001). On March 7, 1988, following the completion of the seal-in modification, HO 1-88-398 was released on both the 120-volt and 480-volt power supplies; however, the 480 volt power supply was still tagged out on HO 1-88-340.

On March 14, 1988, at 0905 EST, HO 1-88-340 was released to allow IM personnel to perform the functional test on the RM. To ensure the unit 1 C&A vent board was not overloaded during the postmodification test, the 1A-A containment spray pump room cooler was tagged out. After the functional test was performed, Operations was notified that the test was complete, and 1-RM-90-130 was available to be returned to service. Operations then reinstated HO 1-88-340 on the 480-volt RM sample pump motor supply to ensure that the unit 1 C&A vent board 1A1-A did not exceed its load capacity.

After Operations was notified that the postmodification test was complete and the RM was available to be returned to service, a review of the completed work instructions and Instrument Maintenance Instruction (IMI)-134, "Configuration Control of Instrument Maintenance Activities," was performed by IM personnel. IMI-134 provides configuration control during IM activities affecting critical structures, systems, and components (CSSC). IMI-134 contains a work performance sheet which is used to document coordination with Operations, work performed, and equipment configuration. Following the instrument mechanics completion of the postmodification test, the local sample pump switch was left in the stop position, since the 480-volt power supply would be tagged out in accordance with HO 1-88-340 upon notification that the subject test was complete. To complete the IMI and return the switch to its normal operating configuration, the instrument mechanics, after discussion with their General Foreman, returned the local RM pump switch to the normal (run) position without notifying Operations to block the RM output signal.

Immediately following this pump switch actuation, the local high radiation trip indicator (RP-30 module light) came in. Operations was then informed of the high radiation trip annunciation by the instrument mechanics. Operations acknowledged that an "A" train CVI had occurred. The CVI was indicated by the "A" train valve position indicator lights in the main control room being in the closed position. After verifying that the CVI did not result from an actual high radiation condition, Operations personnel reset the CVI in accordance with SOI-30.2.B.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7 8 8 - 0 1 4 - 0 1 0 4	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	OF	5
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

CAUSE OF EVENT

The immediate cause of the CVI was an EMI-induced high radiation spike. A subsequent investigation of this event under Work Request (WR) B262490 revealed that with the 480-volt power supply to the RM sample pump motor switch removed, a spurious high radiation spike could be induced to the radiation analyzer (RP-30 module) when the 480-volt local sample pump motor switch was actuated. When the sample pump motor switch is actuated, a auxiliary set of contacts (isolated from the 480-volt supply) open or close to provide continuity for the circuitry necessary to actuate the RM sample pump status indication lights (run/stop). The pump status circuitry is powered from the 120-volt vital power supply that also supplies power to the radiation analyzer RP-30 module.

The investigation found that repeated actuation of the local sample pump switch intermittently produced EMI and that the contacts for the subject switch appeared to be worn. TVA has concluded that the worn contacts intermittently induced EMI to the 120-volt pump status circuitry. Thus, the actuation of the pump switch and subsequent switch contact closure induced an EMI spike of sufficient duration and magnitude to the RM radiation analyzer (RP-30 module) to trip the associated RM circuitry to initiate a unit 1 "A" train CVI.

The root cause of this event was the failure of IM personnel to comply with the configuration control requirements of IMI-134. Following the completion of the postmodification test (and before notification of Operations that the work was complete), IM personnel should have returned the switch to its normal position in accordance with IMI-134. As soon as the instrument mechanics discovered that the subject switch was not in its proper position, Operations personnel should have been notified. Following this notification, main control room (MCR) operators could have blocked the output signals from the radiation monitor (by use of the main control room handswitch) before the pump switch was returned to its normal position.

ANALYSIS OF EVENTS

A CVI is an engineered safety feature (ESF) actuation which is reportable for all modes of operation in accordance with 10 CFR 50.73, paragraph a.2.iv.

There were no safety consequences associated with this event. The MCR operators took appropriate actions to ensure that a high radiation condition did not exist and to reset the CVI (i.e., performance of SOI-30.2.B). At the time of the event, the containment purge system was tagged out with its isolation valves closed. The train "A" RM containment isolation valves were subsequently verified to be in the closed position. Thus, if this event had occurred in a different operational mode or as a result of an actual high radiation condition, the required containment isolation valves would have performed their designed safety function.

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FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 7	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	d 5	OF 0 5
		8 8	- 0 1 4	- 0 1		

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CORRECTIVE ACTION

As immediate corrective action, the MCR operators took appropriate actions to verify that a high radiation condition did not exist and, subsequently, reset the CVI in accordance with SOI-30.2.B. Further investigation into this event has determined that an adequate program for configuration control exists using IMI-134 configuration control worksheet. However, IM personnel did not properly implement these controls. To prevent recurrence of this event, the IM personnel who performed the postmodification testing for Workplan 7343-02 were counseled to follow the requirements of configuration control and perform the controls in the correct sequence. A memorandum was sent to all IM personnel stating that Operations personnel shall be contacted and the RM trip signal blocked before performing any work on RMs capable of actuating ESF equipment. Signs will be placed on RMs which are capable of actuating ESF equipment which instructs all personnel to use the above blocking technique to prevent inadvertent ESF actuations. The subject WPs which provide the seal-in modifications to unit 1 and unit 2 RMs were completed without further event. The RM sample pump motor switch will be replaced by Electrical Maintenance before unit 1 entry to mode 4.

ADDITIONAL INFORMATION

There have been no previous occurrences of CVIs resulting from noncompliance of configuration control.

COMMITMENTS

Signs will be placed on RMs by May 31, 1988, that instructs personnel to use a blocking technique to prevent inadvertent ESF actuations during performance of work.

The RM sample pump motor switch will be replaced by Electrical Maintenance before unit 1 entry to mode 4.

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TENNESSEE VALLEY AUTHORITY
Sequoyah Nuclear Plant
Post Office Box 2000
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May 24, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-327 - FACILITY OPERATING LICENSE DPR-77 - REPORTABLE OCCURRENCE REPORT
SQRO-50-327/88014 REVISION 1

The enclosed licensee event report is being revised to clarify the root cause and include an additional corrective action to be implemented to prevent recurrence of this event. This event was originally reported in accordance with 10 CFR 50.73, paragraph a.2.iv, on April 12, 1988.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


S. J. Smith
Plant Manager

Enclosure
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