

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 1 7	PAGE (3) 1 OF 0 1 5
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TITLE AND SUMMARY
Inadvertent Grounding of a Unit 1 Radiation Monitor Input to the Solid State Protection System 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 8	0 6	8 8	8 8	0 3	0	0 0	0 8	2 5	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 1 0 1 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.36(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)						
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.36(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.406(a)(1)(viii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(ix)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)							
	<input type="checkbox"/> 20.406(a)(1)(x)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME D. Siska J. A. Naik, Plant Operations Review Staff		AREA CODE 6 1 5 8 4 1 0 1 6 1 8 6 2	

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

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 1,400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At approximately 0811 EDT on August 6, 1988, unit 1 was in mode 5 (cold shutdown) when a train "A" Containment Ventilation Isolation (CVI) signal was generated by the unit 1 Solid State Protection System (SSPS). Since the CVI closed the containment isolation valves to the containment upper and lower compartment radiation monitors (RMs), thereby stopping the airflow to each monitor, both RMs were inoperable and Limiting Condition for Operation 3.3.3.1 was entered. Following verification that the CVI was not caused by an actual high radiation condition, plant operators initiated the CVI recovery procedure. At approximately 0822 EDT, one RM had been restored to operable status and LCO 3.3.3.1 was exited. At approximately 0925 EDT, recovery from the CVI had been completed.

Following an investigation of the on-going work activities at the time the CVI was generated, it was concluded that the CVI was the result of an Instrument Maintenance (IM) technician inadvertently contacting the wrong RM terminal during functional testing of the unit 2 RMs. The root cause of this event has been attributed to the use of one terminal block for routing cables associated with RMs from both unit 1 and unit 2 without clearly identifying each cable and/or terminal. To prevent recurrence of this event, TVA will issue a design change to re-label the electrical cables in control room panel O-M-12 that are associated with RMs capable of generating CVIs. In the interim, TVA will review this event with IM personnel from who may be required to work on RMs before the relabeling has been completed.

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TEXT (if more space is required, use additional NRC Form 365A (2) (17))

DESCRIPTION OF EVENT

At approximately 0811 EDT on August 6, 1988, with unit 1 in mode 5 (cold shutdown), a train "A" Containment Ventilation Isolation (CVI) (EISS code JM) signal was generated by the unit 1 Solid State Protection System (SSPS) (EISS code JC). As designed, the CVI signal closed the train "A" radiation monitor (RM) containment isolation valves, stopped the containment purge (EISS code VA) supply/exhaust fans, and closed the containment purge suction/discharge dampers. Since closure of the train "A" RM containment isolation valves stopped airflow to containment upper and lower compartment radiation monitors 1-RM-90-106 and 1-RM-90-112, both RMs were inoperable and Limiting Condition for Operation (LCO) 3.3.3.1 was entered.

Following verification that the CVI was not caused by an actual high radiation condition inside containment (i.e., none of the inside containment RMs were indicating higher than normal radiation levels), the assistant shift operations supervisor (ASOS) and the lead unit 1 reactor operator (RO) initiated recovery from the event in accordance with Part B of System Operating Instruction (SOI)-30.2 "Containment Purge System Operation." The unit 1 RO reset the CVI signal with handswitch HS-30-65A, realigned the train "A" RM containment isolation valves, and dispatched an auxiliary unit operator (AUO) to locally verify airflow to radiation monitors 1-RM-90-106 and 1-90-RM-112. At approximately 0822 EDT, radiation monitor 1-RM-90-106 had been placed back in service and LCO 3.3.3.1 was exited. At approximately 0925 EDT, recovery from the CVI had been completed and containment purge operation was reestablished in accordance with SOI-30.2.

CAUSE OF EVENT

Following an investigation of the on-going work activities at the time the CVI was generated, it was concluded that the CVI was the result of an Instrument Maintenance (IM) technician inadvertently contacting the wrong terminal on the back of control room panel O-M-12 (Riser 1, cable LRM5) with a digital multimeter (DMM) probe during the performance of Surveillance Instruction (SI)-82.2, "Functional Tests for Radiation Monitoring System." This SI performs functional tests of the unit 2 containment purge air exhaust RMs and the unit 2 containment upper and lower compartment RMs. Step 5.1.12.1 of SI-82.2 verifies continuity across the high radiation contacts (terminals 2 and 7) of containment purge air exhaust monitor 2-RM-90-130. Under non-test conditions, closure of these contacts is indicative of a high radiation condition in the unit 2 containment purge exhaust ductwork and would result in a train "A" CVI on unit 2 (radiation monitor 2-RM-90-131 would generate a train "B" CVI under a similar high radiation condition). However, the output signals from unit 2 radiation monitor 2-RM-90-130 had been blocked from the main control room (using handswitch 2-HS-90-136A1) in accordance with Step 5.1.5 of SI-82.2, thereby precluding a train "A" CVI on unit 2.

During the performance of Step 5.1.12.1, the IM technician connected one lead of his DMM to terminal 2 of terminal block (TB) 1-1A (Riser 1, cable LRM 2) and was using the other probe of the DMM as a pointer to count down to terminal 7 of TB 1-1K (Riser 1, cable LRM5). As the IM technician was counting down the terminal points, he must have inadvertently touched terminal 5 of TB 1-1K with the DMM probe, thereby generating a train "A" CVI on unit 1.

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

Touching terminal 5 of TB 1-1K with the DMM probe created a current path for the associated unit 1 SSPS 48 volt power supply to flow through the DMM connected to terminal 2 of TB 1-1A to the station ground (see attached figure). Since each of the 48 volt SSPS power supplies is connected to the station ground, the 48 volt input signal to the SSPS logic (through radiation monitor 1-RM-90-130's output timing relay contacts) immediately went low, and a high radiation condition in the unit 1 containment purge system exhaust was simulated. As designed, the SSPS generated a train "A" CVI.

The root cause of this event has been attributed to the use of one terminal block for routing cables associated with RMs from both unit 1 and unit 2 without clearly identifying each cable and/or terminal. In this case terminals 5 and 7 on TB 1-1K were both identified on the back of Riser 1 as being termination points for cable LRMS. Terminal 5 was a termination point for unit 1 cable LRMS while terminal 7 was a termination point for unit 2 cable LRMS. Although the IM technician stated he was aware of which terminal he was supposed to connect his DMM to, the close proximity of two cables and two terminals (one from each unit) that were identified in exactly the same way is conducive to this type of error.

ANALYSIS OF EVENT

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 plant operators took appropriate actions (i.e., entering LCO 3.3.3.1 and performing SOI-30.2) to verify the plant was in a safe condition and recover from the train "A" CVI. All train "A" equipment required to operate following a CVI performed as designed. Since radiation monitor 1-RM-90-131 generates a train "B" CVI on a high radiation condition in the containment purge system exhaust, and no high radiation condition was present, a train "B" CVI did not occur. If this event had occurred in a different operational mode or as the result of an actual high radiation condition in the containment purge exhaust ductwork, the required equipment would have performed its designed safety function.

CORRECTIVE ACTION

As immediate corrective action, unit 1 operators verified that the CVI was not caused by an actual high radiation condition and initiated recovery from the event by performing Part B of SOI-30.2. During the performance of this SOI, airflow was reestablished to radiation monitor 1-Rm-90-106 and, at approximately 0822 EDT, LCO 3.3.3.1 was exited. At approximately 0925 EDT, SOI-30.2 was completed and the containment purge system was placed back in operation. To prevent recurrence of this event, TVA will issue a design change to relabel the electrical cables in control room panel O-M-12 that are associated with radiation monitors capable of generating ESF actuations. This design change will add the unit number as a prefix to the existing labels on the field-mounted RM cables. The design change will also identify any required procedure revisions resulting from this relabeling effort, and will make appropriate changes to design drawings. TVA expects that this relabeling effort will be completed by June 30, 1989.

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TEXT (if more space is required, use additional NRC Form 3054's) (17)

As an interim measure to reduce the potential for misidentifying unit 1 and unit 2 RM cables, TVA will review this event with Instrument Maintenance personnel who may be required to work on the unit 1 or unit 2 RMs before the relabeling has been completed. This review will stress the importance of properly identifying the correct cables before any work is initiated, as well as the need to exercise caution when using test equipment near the RM cabling. This review will be completed by September 30, 1988.

ADDITIONAL INFORMATION

There have been three previously reported occurrences where CVIs were caused by improper identification of the correct RM panel or terminal point during maintenance and/or testing activities. These events are documented in SQRO-50-327/85039, -87076 and -88006.

COMMITMENTS

1. TVA will issue a design change to relabel the electrical cables in control room panel O-M-12 that are associated with radiation monitor capable of generating an ESF actuation. This relabeling will be completed by June 30, 1989.
2. TVA will review this event with Instrument Maintenance personnel who may be required to work on RMs before the above relabeling has been completed. This review will be completed by September 30, 1988.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)

Sequoyah, Unit 1

DOCKET NUMBER (2)

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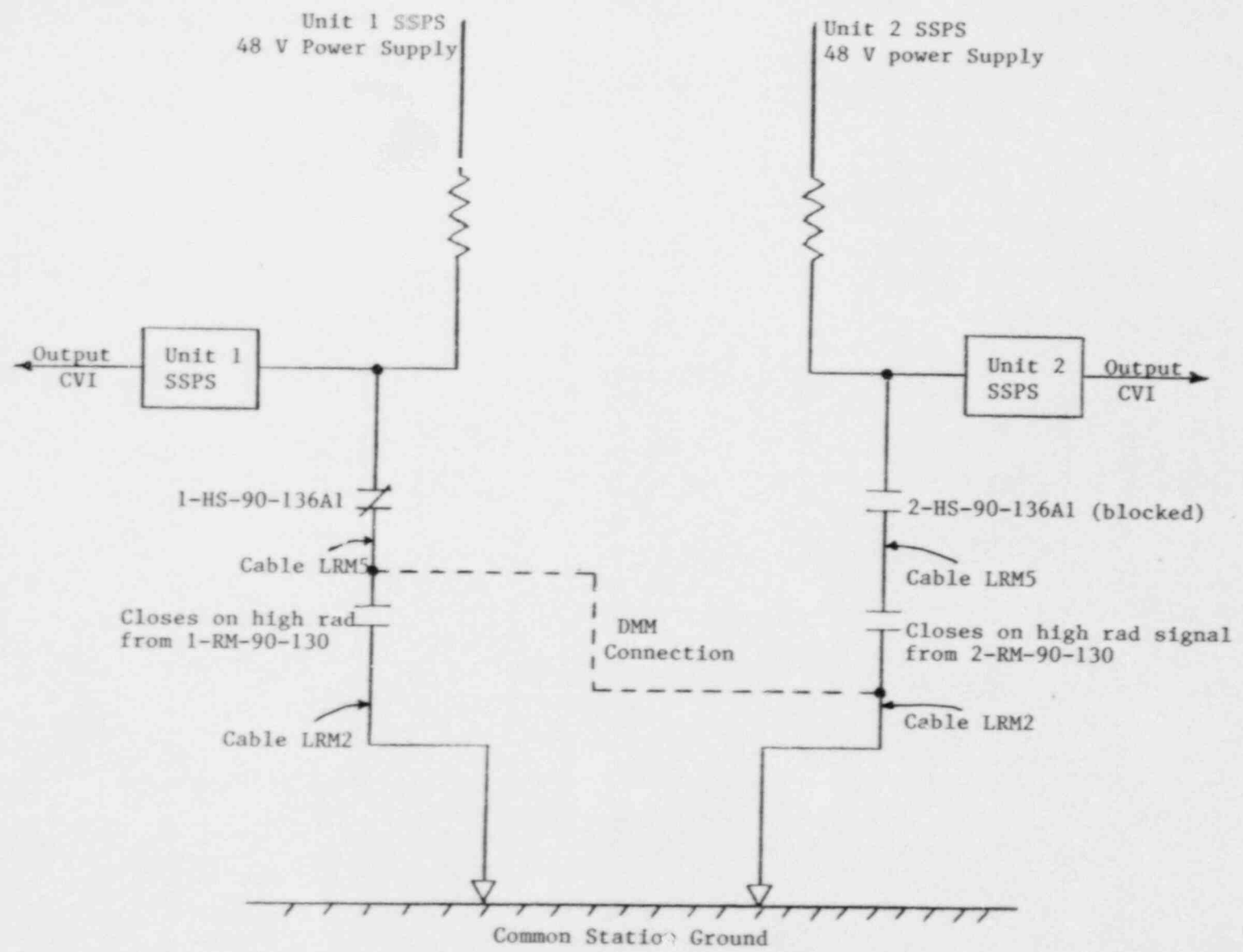
LER NUMBER (6)

88-030-01001505

YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
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TEXT (If more space is required, use additional NRC Form 894a (1/77))



SIMPLIFIED SCHEMATIC

TENNESSEE VALLEY AUTHORITY

Sequoyah Nuclear Plant
Post Office Box 2000
Soddy-Daisy, Tennessee 37379

August 25, 1988

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 1 - DOCKET NO.
50-328 - FACILITY OPERATING LICENSE DPR-79 - REPORTABLE OCCURRENCE REPORT
SQRO-50-327/88030

The enclosed licensee event report provides details concerning the inadvertent grounding of a unit 1 radiation monitor input to the solid state protection system that resulted in a containment ventilation isolation. This event is reported in accordance with 10 CFR 50.73, paragraph a.2.iv.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


S. J. Smith
Plant Manager

Enclosure
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