

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-330), 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) Nine Mile Point Unit 1	DOCKET NUMBER (2) 0500220	PAGE (3) 1 OF 4
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TITLE (4)
Vent and Purge System Isolation During Troubleshooting Due to Insufficient Precautions Applied

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	25	97	97	014	01	02	06	98	N/A	05000	
									N/A	05000	

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

POWER LEVEL (10) 000	<input type="checkbox"/> 20.402(b) <input type="checkbox"/> 20.405(a)(1)(i) <input type="checkbox"/> 20.405(a)(1)(ii) <input type="checkbox"/> 20.405(a)(1)(iii) <input type="checkbox"/> 20.405(a)(1)(iv) <input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.405(c) <input type="checkbox"/> 50.36(e)(1) <input type="checkbox"/> 50.36(e)(2) <input type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(b) <input type="checkbox"/> 73.71(c) <input type="checkbox"/> OTHER <i>(Specify in Abstract below and in Text, NRC Form 366A)</i>
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LICENSEE CONTACT FOR THIS LER (12)

NAME P. A. Mazzaferro - Manager Technical Support NMP1	TELEPHONE NUMBER (315) 349-1019
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	IL	JX	N305	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On November 25, 1997, while performing troubleshooting on the Nine Mile Point Unit 1 (NMP1) stack gas radiation monitor (RAM-112-08A), an unexpected isolation of the containment vent and purge system was experienced. The design function of RAM-112-08A is to provide indication and alarm only, but due to troubleshooting activities and a system interaction due to an undetected equipment problem, an isolation occurred during troubleshooting efforts on the radiation monitor.

The root cause of this event has been determined to be insufficient precautions (13) during troubleshooting activities. A contributing cause was equipment degradation.

The cause of the Engineered Safety Feature (ESF) actuation was verified, the signal was reset and the drywell vent and purge valves were reopened. The degraded power supply was replaced, and RAM-112-08A was tested and returned to service.

The appropriate plant personnel who could encounter similar situations have been briefed on this event. Information about this event has been placed in work history to help ensure that future troubleshooting efforts incorporate adequate precautions to prevent adverse system interactions.



FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Nine Mile Point Unit 1	05000220	97	- 14	- 01		02 OF 04

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

I. DESCRIPTION OF EVENT

On November 25, 1997, while performing troubleshooting on the Nine Mile Point Unit 1 (NMP1) stack gas radiation monitor (RAM-112-08A), an unexpected isolation of the containment vent and purge system was experienced. The design function of RAM-112-08A is to provide indication and alarm only.

RAM-112-08A had been experiencing a series of random downscale alarms. Troubleshooting failed to determine the cause of the intermittent downscales. The monitor and detector were sent out and refurbished by a vendor. After reinstallation, the downscale conditions continued. A troubleshooting plan was developed, concentrating on the high voltage power supply and cabling to the detector. It was determined that troubleshooting needed to be performed on the circuit while energized, since the plan included taking voltage readings of the high voltage power supply output to the detector. Voltage readings taken at the back-plane of the monitor indicated a degraded high voltage at the output of the high voltage card, Pin X. The power supply had been set to 900 VDC, however, only 560 VDC was measured. Based on consultation with the vendor, it was concluded that connector P1, the combined high voltage to the detector and input signal to the monitor, should be disconnected and the high voltage measured with the circuit unloaded. This testing would determine where the voltage loss was occurring, either in the chassis or external to the chassis.

When the technician disconnected connector P1, computer point C061 (Offgas Effluent Stack Monitoring System (OGESMS) trouble) tripped and annunciator H1-3-8 (Stack Trouble) alarmed. Both of these plant impacts were expected due to alarm relays being de-energized. The technician then attached the Digital Multi-Meter (DMM) to the chassis common and the DMM probe to Pin X.

Immediately, stack gas radiation monitors RAM-RN10A and RAM-RN10B received a false high-high radiation signal. Containment Vent and Purge Isolation Valves CIV-201-07, CIV-201-08, CIV-201-09, CIV-201-10, CIV-201-16, CIV-201-17, CIV-201-31, and CIV-201-32 closed as required. The technician removed the probe when alarms sounded and the relays reset as designed.

II. CAUSE OF EVENT

The root cause of this event has been determined to be insufficient precautions applied during troubleshooting activities. The isolation event was triggered when the DMM probe was being attached to the high voltage source (Pin X). The revised troubleshooting plan did not consider the possibility of creating an arc between adjacent connectors with the DMM probe and, therefore, did not identify that any additional electrical safety precautions were necessary. In addition, discussions held among the technician, system engineer and supervision following generation of an earlier arc during troubleshooting activities did not adequately consider the potential consequences. Therefore, the troubleshooting activities continued without attempting to shield adjacent conductors from potential arcs.



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RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY
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II. CAUSE OF EVENT (cont'd)

A contributing cause of this event was equipment degradation. The 24 VDC power supply for RAM-112-08A was found to have an internal wire with a section of insulation worn away. This degradation created an intermittent short to ground. It is postulated that this short to ground existed at the same time that an arc was drawn between the high voltage power source (Pin X) and the adjacent 24 VDC power source (Pin Y) during troubleshooting. This arc created an elevated voltage on the ground bus. Since the ground bus is common to other radiation monitors, the elevated voltage caused a change-of-state in a paired-set of transistors in monitors RAM-RN10A and RAM-RN10B. This resulted in a trip condition being generated and a subsequent isolation of the containment vent and purge isolation valves.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73(a)(2)(iv), "any event or condition that resulted in a manual or automatic actuation of an Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

The containment (torus and drywell) vent and purge system isolation valves were open to provide ventilation to the containment for access during plant shutdown for personnel comfort. The securing of this ventilation for a short duration had no significant impact on plant operation or safety. During power operations, the valves are normally closed, and are only opened for minimal times as required for venting, purging or nitrogen makeup to the torus or drywell. If the isolation would have occurred during power operation with the valves open, the only impact would have been to temporarily secure this venting, purging or makeup process. The safety function of the valves is to isolate and the valves performed as designed. Therefore, this event posed no safety consequence to the plant, plant personnel or the general public.

IV. CORRECTIVE ACTIONS

The cause of the ESF actuation was verified, the signal was reset and the drywell vent and purge valves were reopened.

The degraded power supply was replaced, and RAM-112-08A was tested and returned to service. Subsequent testing of the degraded power supply determined the cause of the intermittent short to ground to be an internal wire with a section of insulation worn away.



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IV. CORRECTIVE ACTIONS (cont'd)

The appropriate plant personnel who could encounter similar situations have been briefed on this event. In addition, information about this event has been placed in work history to help ensure that future troubleshooting efforts incorporate adequate precautions to prevent adverse system interactions.

V. ADDITIONAL INFORMATION

A. Failed components: RAM-112-08A 24 VDC power supply

B. Previous similar events:

LER 89-16 described an ESF actuation caused by personnel error during a Technical Specification Surveillance Requirement involving source checking the OGESMS. This error involved failure to reset the isolation signal on one channel before proceeding to the other channel. As a result, the corrective actions taken for that event would not have precluded this event.

LER 97-13, "Engineered Safety Feature Actuation During Calibration Due to Personnel Error", described an isolation of the drywell vent and purge lines during calibration of stack gas radiation monitor RN10B. That event was caused by personnel error when an incorrect high activity gamma source was used to perform the calibration procedure. The corrective actions for that event included disciplinary action and reviewing the event with Chemistry personnel. Therefore, these actions would not have prevented this event.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Drywell	N/A	NH
Vent/Purge/Nitrogen System	N/A	LK
Radiation Monitors	MON	IL
Power Supply	JX	IL

