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# I. <u>Plant\_Conditions</u>

Unit 1 was in Mode 1 (Power Operation) at 100 percent power.

## II. Description of Event

## A. Event Description:

On April 28, 1992, at 1249 PDT, a containment ventilation isolation (CVI) actuation occurred. This event constitutes an Engineered Safety Feature (ESF) actuation. A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii) on April 28 at 1429 PDT.

The output signal of Radiation Monitor (RM) 14B (IL)(MON) (plant vent radioactive gas monitor) exceeded its alarm setpoint, causing the CVI actuation. The redundant monitor did not detect any elevated activity. level, and therefore the response of RM-14B was considered spurious. After verifying that no high radiation condition existed, the control room operators reset the CVI logic and returned the containment ventilation system to its normal operating mode.

During maintenance activities on Unit 2, the I&C technicians discovered a loose connector in the test box that was used on the Unit 1 RM-28B at the time of the Unit 1 event. The loose connector resulted in generation of electronic noise in the circuitry of RM-14B, since RM-28B is in close proximity to RM-14B. The electronic noise caused the output of RM-14B to exceed its alarm setpoint and ultimately led to the CVI.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

C. Dates and Approximate Times for Major Occurrences:

1.	April 28,	1992; at	1249	PDT:	Event/Discovery date – RM-14B spurious high radiation alarm caused the CVI actuation.
2.	April 28,	1992; at	1429	PDT:	A four-hour, non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii).

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	. D.	Other Systems or Secondar	y Functions Affected:	
		None.		
	Ε.	Method of Discovery:		
		The event was immediately and indications received	apparent to plant op in the control room.	erators due to alarms
	F.	Operators Actions:		· ·
	1	The operators determined radiation alarm because t any elevated activity lev conditions existed and th room operators reset the ventilation system to its	that the CVI was due he redundant monitor el. After verifying at RM-14B responded m CVI logic and restore normal mode of opera	to a spurious high (RM-14A) did not detect that no high radiation ormally, the control d the containment tion.
	- G.	Safety System Responses:		
		All containment ventilati designed.	on isolation valves (	NH)(V) closed as
	III. <u>Cause</u>	of the Event		
	Α.	Immediate Cause:		
		The immediate cause of th from RM-14B.	e CVI was a spurious	high radiation alarm
	В.	Root Cause:		
		The root cause of this ev used during maintenance o generation of electronic of RM-14B exceeded its al	ent was a loose conne n RM-28B. The loose noise in the circuitr arm setpoint and ulti	ector on the test box connector resulted in ry of RM-14B. The output mately led to the CVI.
	IV. Analy	vsis of the Event		•
	A CVI actua conta preve healt	is a conservative actuati I high radiation condition Linment ventilation system Ention function. Consequen Th and safety of the public	on, regardless of pla had occurred during would have been ready tly, this event did r	nt conditions. If an the event, the to perform its accident not adversely affect the

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## V. <u>Corrective Actions</u>

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- A. Immediate Corrective Actions:
  - 1. After verifying that no high radiation conditions existed, the control room operators reset the CVI logic and restored the containment ventilation system to its normal mode of operation.
  - 2. After discovering the loose connector, the I&C technicians. repaired the test box.
- B. Corrective Actions to Prevent Recurrence:
  - 1. An ·I&C maintenance bulletin will be issued to discuss the event and precautions to take during similar maintenance activities.
  - 2. The event and precautions discussed in the maintenance bulletin will be included in the I&C quarterly maintenance training seminar.
  - 3. Discussions will be held in a tailboard with appropriate electrical maintenance personnel on precautions to take during similar maintenance activities on radiation monitors.
  - 4. I&C technicians will make a visual inspection of other test boxes to identify similar connector problems.

## VI. Additional Information

A. Failed Components:

None.

B. Previous LERs on Similar Problems:

Similar spurious system initiations were reported in a number of LERs, including LER 1-86-007-01, LER 1-86-014-01, LER 1-86-015-01, LER 1-87-003-01, 1-88-005, and 1-91-006. Although these previous LERs discuss various spurious actuations, none of the corrective actions would have precluded recurrence of the CVI reported in LER 1-92-005.

 As discussed in PG&E letter DCL-89-254, dated October 2, 1989, "Noise Reduction Task Force Final Report LER 1-86-007-01, LER 1-86-014-01, LER 1-86-015-01, and LER 1-87-003-01," power transients affecting CVI-related radiation monitors have caused several CVIs. Reducing CVIs caused by power transients is being addressed by several corrective actions: (1) training to reduce power transients caused by human error; (2) adding CVI bypass

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switches to allow disabling of the CVI function during radiation monitor maintenance; and (3) initiating a Radiation Monitor System upgrade program to replace existing radiation monitors with equipment that is less sensitive to electrical noise. The time delay circuitry modification already implemented reduces spurious CVIs caused by noise on the signal input; however, the output relays of the monitors are still sensitive to transients on their power supply. These corrective actions would not have prevented the current LER.

2. LER 1-88-005, "Containment Ventilation Isolation Due to Electronic Noise and Late Issuance of a 10 CFR 50.72 Required Report Due to Inadequate Guidance." This LER reported a CVI actuation signal that was generated by RM-14A due to an electronic noise generated when an I&C technician energized RM-13 during maintenance. The late reporting was due to inadequate guidance contained in an administrative procedure regarding exemptions to reporting requirements. The time delay circuitry change installed in radiation monitors that actuate the CVI system and the revision of the procedure on reporting ESF actuations would not have prevented the current LER.

3. LER 1-91-006, "Actuation of Containment Ventilation Isolation Due to a Spurious High Radiation Alarm Resulting From Radio Frequency Energy Generated by a Faulted Motor." This LER reported a CVI due to a spurious high radiation alarm from containment air particulate monitor RM-11. The root cause for the spurious high radiation alarm and resulting CVI was due to radio frequency interference (RFI) produced when the RM-11 sample pump seized. After the pump seized, the pump motor faulted and arced over to a bus ground. The arcing produced sufficient RFI to induce the spurious high radiation signal. The design change to provide thermal overload protective circuitry for the sample pump motors and the upgrade of the radiation monitoring system to reduce sensitivity to noise would not have prevented the current LER.

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