

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

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May 13, 1991

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

Subject: Docket No. 50-362
30-Day Report
Licensee Event Report No. 91-002
San Onofre Nuclear Generating Station, Unit 3

Pursuant to 10 CFR 50.73(d), this submittal provides the required 30-day written Licensee Event Report (LER) for an occurrence involving the inadvertent opening of a containment isolation valve. Neither the health nor the safety of plant personnel or the public was affected by this occurrence.

If you require any additional information, please so advise.

Sincerely,



Enclosure: LER No. 91 002

cc: C. W. Caldwell (USNRC Senior Resident Inspector, Units 1, 2 and 3)
J. B. Martin (Regional Administrator, USNRC Region V)
Institute of Nuclear Power Operations (INPO)

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LICENSEE EVENT REPORT (LER)

Facility Name (1)				Docket Number (2)				Page (3)			
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 3				0 5 0 0 0 3 6 2				1 of 0 7			
Title (4) INADVERTENT OPENING OF A CONTAINMENT PURGE SYSTEM ISOLATION VALVE											

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	4	12	91	---		---		0	5	12	NONE		0 5 0 0 0		

OPERATING MODE (9)				THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)							
1				20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
POWER LEVEL (10)				20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
1 0 0				20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		Other (Specify in Abstract below and in text)	
//////				20.405(a)(1)(iii) X		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								TELEPHONE NUMBER			
E. W. Krieger, Station Manager								AREA CODE 7 1 3 5 6 8 - 6 2 5 4			

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	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)								Expected Submission Date (15)		Month		Day		Year	
Yes (If yes, complete EXPECTED SUBMISSION DATE) XX NO															

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

On April 12, 1991, at 1959, an outer containment mini-purge isolation valve, 3HV-9821, was discovered open in violation of the requirements of Technical Specification (TS) 3.6.1.7.b, "Containment Ventilation System Limiting Condition for Operation." The valve was promptly closed by Control Room (CR) personnel. Subsequent investigation determined that 3HV-9821 had been inadvertently opened at approximately 2339 on April 11, 1991 by a Control Operator (CO) (utility, licensed) during reset of the actuation circuitry for 3HV-9821. The actuation circuitry had been armed earlier in the day during surveillance testing of 3RE-7865-1 which had begun at 1030 on April 8, 1991.

3HV-9821 was opened and remained open as the result of a number of deficiencies in the areas of operator performance, surveillance procedures, plant status monitoring systems, and switch labeling.

Corrective actions include: 1) the operator received appropriate guidance concerning performance in the area of problem solving and plant manipulation; 2) the surveillance procedure will be revised prior to its next use to prevent a similar inadvertent valve opening during testing; 3) a review of the radiation monitor and containment purge valve logic circuitry is being performed; and 4) the plant status monitoring systems are being evaluated for possible enhancements.

There was no safety significance to this event since the inner containment isolation mini-purge valve remained closed at all times. Also, 3HV-9821 would have closed on receipt of a ESFA3 signal or a high radiation signal from the containment purge vent stack radiation monitor.

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Plant: San Onofre Nuclear Generating Station
 Unit: Three
 Reactor Vendor: Combustion Engineering
 Event Date: 04-12-91
 Time: 1900

A. CONDITIONS AT TIME OF THE EVENT:

Mode: 1, Power Operation

B. BACKGROUND INFORMATION:

1. Containment Purge System:

The containment purge system is comprised of two sub-systems, each having a supply and exhaust unit, which are used under different circumstances to reduce airborne radioactivity to provide for personnel habitability inside containment [NH]. The normal purge system is used when the unit is shutdown and the mini-purge system is used when the unit is in operation and personnel entry into containment is necessary. For each of these systems, a supply unit fan [FAN] draws outside air through a prefilter [FLT] and discharges the air through two containment isolation purge valves [ISV] and ducting [DUCT] into the containment building. Each exhaust unit fan draws air from the containment building through ducting and two containment isolation purge valves and discharges the air to the containment purge stack. The mini-purge containment isolation valves are air operated and fail closed.

All containment mini-purge system isolation valves will close automatically on any one or more of the following Engineered Safeguards Features Actuation System (ESFAS) signals: 1) Containment Purge Isolation Signal (CPIS), 2) Safety Injection Actuation Signal (SIAS), and 3) Containment Isolation Actuation Signal (CIAS). All containment normal purge valves will close automatically on a CPIS signal. In addition, the outside containment purge system isolation valves will close on high radiation from the Containment Purge Stack Radiation Monitor [MON], RE-7828 (or the Plant Vent Stack Wide Range Gas Monitor, RE-7865-1, when it is aligned to sample the containment purge stack). This non Engineered Safeguards Feature (ESF) ensures that purge gaseous radiation release limits are not exceeded.

2. Radiation Monitors:

3RE-7828 generates an alarm and initiates the closure of the four outside containment purge/mini-purge isolation valves on high radiation levels, radiation monitor instrument failure, or on loss of power to the monitor.

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3RE-7865-1 can be aligned to sample either the plant vent stack or the containment purge stack. If aligned to the plant vent stack, 3RE-7865-1 generates an alarm [ALM] and initiates closure of the waste gas discharge header flow control valve [FCV] on high radiation levels, radiation monitor instrument failure, or loss of power to the monitor. If aligned to the containment purge stack, 3RE-7865-1 generates an alarm and initiates closure of the four outside containment purge/mini-purge isolation valves on high radiation levels, radiation monitor instrument failure, or loss of power to the radiation monitor.

3. Containment Purge System Isolation Valve Controls

As previously described, the mini-purge containment isolation valves are air operated. Air to open the valves is provided through two fail-closed solenoid valves [FSV] installed in series between the air supply and the valve actuator for each valve. One of these solenoid valves (which is normally open) is controlled by the selected non-ESF radiation monitor. The other solenoid valve (which is normally closed) is controlled by the valve's Control Room (CR) handswitch [HS] and the previously discussed ESFAS signals, such that an ESFAS actuation signal (to close the valves) cannot be overridden by a CR handswitch open signal.

Upon a loss of power or a high radiation alarm [RA] to radiation monitors, 3RE-7828 or 3RE-7865-1, the non-ESF solenoid valves are de-energized closing the associated purge valve and a reset switch in the CR is illuminated. When the close signal from the radiation monitor is cleared, this reset switch allows the non-ESF radiation monitor controlled solenoid valves to be opened. If the other solenoid valve is also open, the containment isolation valve will open.

This arrangement assures that an ESFAS signal to the containment purge system will close the outer containment purge isolation valves irrespective of the position of the non-ESF solenoid valve.

4. Technical Specification (TS):

TS 3.6.1.7.b, "Containment Ventilation System Limiting Condition for Operation," requires the containment purge supply and exhaust isolation valves to be OPERABLE, and each 8-inch containment mini-purge and supply isolation valve to be closed to the maximum extent practicable. These valves may be open for purge system operation for pressure control, for ALARA and respirable air quality considerations for personnel entry, and for surveillance tests that require the valve to be open.

TS 3.6.1.7 action "a.2" requires that with the 8-inch containment mini-purge supply and/or exhaust isolation valve(s) open for reasons other than as stated in Specification 3.6.1.7.b, the open valve(s)

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must be closed or isolated by a blind flange within 4 hours or the plant must be taken to HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

C. DESCRIPTION OF THE EVENT:

1. Event:

On April 12, 1991, at 1959, an outer containment mini-purge isolation valve, 3HV-9821, was discovered open contrary to the requirements of TS 3.6.1.7.b. The valve was promptly closed by Control Room (CR) personnel (utility, licensed) after determining that no activity was in progress which required it to be open. Subsequent investigation determined that 3HV-9821 had been inadvertently opened at approximately 2339 on April 11, 1991 by a Control Operator (CO) (utility, licensed) during reset of the actuation circuitry for 3HV-9821. The actuation circuitry had been armed earlier in the day during surveillance testing of 3RE-7865-1 which had begun at 1030 on April 8, 1991.

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

Not applicable.

3. Sequence of Events:

DATE	TIME	ACTION
4-8-91	1030	3RE-7865 surveillance initiated.
4-11-91	1812	3HV-9821 opened for loss of power test on 3RE-7865-1.
4-11-91	1813	3HV-9821 closed upon receipt of a loss of power signal from 3RE-7865-1.
4-11-91	~1900	Surveillance test of 3RE-7865-1 is completed for the shift.
4-11-91	2339	Unit 3 CO depresses the reset switch for 3HS-7828 and 3HV-9821 opens.
4-12-91	1959	3HV-9821 is discovered open and is closed.
4-14-91	1800	3RE-7865-1 surveillance is completed.

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4. Method of Discovery:

CR personnel discovered 3HV-9821 open during routine control board walkdowns.

5. Personnel Actions and Analysis of Action:

Upon discovery of the opened valve, CR personnel promptly closed 3HV-9821.

6. Safety System Responses:

Not applicable.

D. CAUSE OF THE EVENT:

SCE's investigation of this event found that during surveillance testing of 3RE-7865-1, 3HV-9821 was opened at 1812 on 4-11-91 using the CR handswitch for the valve. One minute later, 3HV-9821 closed as the result of a loss of power signal to 3RE-7865-1 as a part of the surveillance test. Following automatic closure of the mini-purge valve, the 3HV-9821 CR handswitch was left in a condition which resulted in the valve opening when the common reset switch for 3RE-7865-1 and 3RE-7828 was depressed.

Procedure

The surveillance procedure did not ensure that the logic for 3HV-9821 was reset to the normal valve closed condition by requiring that the CR close handswitch button be depressed immediately after testing the valve closure logic on a loss of power to the radiation monitors.

Labeling

As previously described, the radiation monitor and containment purge isolation valve logic circuitry design (which controls the containment purge/mini-purge valves), reopens the non-ESF air supply solenoid valve(s) when the reset switch is depressed. The reset switch was labeled "Containment Purge Stack Radiation Monitor 3RS-7828" indicating that it only affected the one radiation monitor. It did not contain any reference to its reset function with respect to 3RE-7865-1. As a result, prior to depressing the illuminated reset switch, the CO did not recognize that radiation monitor 3RE-7865-1 could also have actuated the reset switch.

Operator Performance

The CO did not follow established guidance for operator performance in the areas of problem solving and plant manipulation by 1) not fully investigating all reasons why the reset light was illuminated and 2) not consulting with other CR personnel who were fully aware of the status of the in-progress surveillance and the consequence of his action.

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In addition, during shift relief, procedures direct the operators to check the status of all ESF valves that have main control board indication, which includes this valve. This review was inadequately performed during the next two shifts and as a result the misalignment of 3HV-9821 was not detected during this period.

Plant Status Monitoring

When the reset switch was depressed, the change in 3HV-9821 position was indicated on the main control panel, the valve position status indication on one of the display pages of the Critical Functions Monitoring System (CFMS) and as an entry on the Plant Monitoring System (PMS) computer. The design of these systems does not initiate an audible alarm which would have alerted the operators to the change of valve position.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

- a. The CO who depressed the reset switch received appropriate guidance concerning performance in the area of problem solving and plant manipulation.
- b. A sign was posted adjacent to the reset switch warning CR personnel to check purge/mini-purge valves after resetting the reset switch to insure they are in the required position for the plant mode or evolution.

2. Planned Corrective Actions:

- a. Applicable radiation monitor surveillance procedures will be revised prior to their next use to require that the containment purge isolation valve open signal be removed at the handswitch immediately after each test of valve closure by a signal from a radiation monitor.
- b. A review of the radiation monitor and valve logic circuitry which controls the main purge/mini-purge valves is in progress to evaluate a design enhancement to eliminate valve reopening upon reset of the radiation monitor.
- c. As a result of a corrective action described in LER 90-010 (Docket Nos. 50-362), an engineering evaluation is being performed to identify critical Engineered Core Cooling System valves and Containment Spray system valves not having audible annunciation of misalignment whose initial position is critical to component or system operability. As a result of the late discovery of the misalignment of 3HV-9821, the scope of this evaluation is being expanded to include other valves

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which can be remotely positioned from the CR and can impact the containment isolation function. Appropriate corrective action will be implemented.

- d. The reset switch and the adjacent warning label will be relabeled to fully identify all equipment affected.
- e. This event will be reviewed with CR personnel emphasizing the function of the reset switch, shift turnover requirements, valve indication status, and CR communications.
- f. The existing computer based data systems are being evaluated to determine if they can be modified to provide the Operations staff with greater visibility of the status of critical valves. This evaluation is a result of a corrective action described in LER 90-010 (Docket Nos. 50-362).

F. SAFETY SIGNIFICANCE OF THE EVENT:

There was no safety significance to this event since the inner containment isolation mini-purge valve remained closed at all times. Also, 3HV-9821 would have closed on receipt of a CPIS, SIAS, CIAS or a high radiation signal from the radiation monitor.

G. ADDITIONAL INFORMATION:

1. Component Failure Information:
Not applicable.
2. Previous LERs for Similar Events:
None.