

May 4, 2000

U.S. Nuclear Regulatory Commission
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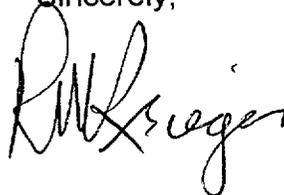
Subject: **Docket Nos. 50-361 and 50-362**
Voluntary Licensee Event Report No. 2000-003
San Onofre Nuclear Generating Station, Units 2 and 3

Gentlemen:

This submittal provides a 30-day Licensee Event Report (LER) in accordance with 10CFR50.73(a)(2)(ii) describing a condition outside the design basis of the plant. While this occurrence is applicable to both Units 2 and 3, a single report for Unit 2 is being submitted in accordance with NUREG-1022, Rev. 1. Neither the health nor the safety of plant personnel or the public was affected by this occurrence.

Any actions listed are intended to ensure continued compliance with existing commitments as discussed in applicable licensing documents; this LER contains no new commitments. If you require any additional information, please so advise.

Sincerely,



LER No. 2000-003

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3

IE 22%

NRC FORM 366 (MM-YYYY)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES MM/DD/YYYY Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If a document used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)		

FACILITY NAME (1) San Onofre Nuclear Generation Station (SONGS) Unit 2	DOCKET NUMBER (2) 05000-361	PAGE (3) 1 of 5
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TITLE (4)
CREACUS Boundary Inleakage -- Outside the Design Basis

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 NAME	DOCKET NUMBER
04	06	2000	2000	-- 003 --	00	05	04	2000	SONGS Unit 3	05000-362
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)	100	20.2203(a)(1)		20.2203(a)(3)(i)		<input checked="" type="checkbox"/> 50.73(a)(2)(ii)		50.73(a)(2)(x)	
		20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71	
		20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER:	
		20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
		20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)	
NAME R. W. Krieger, Vice President, Nuclear Operations	TELEPHONE NUMBER (Include Area Code) 949-368-6255

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

SUPPLEMENTAL REPORT EXPECTED (14)					EXPECTED SUBMISSION DATE (15)			
<input type="checkbox"/> YES	(If yes, complete EXPECTED SUBMISSION DATE).			<input checked="" type="checkbox"/> X	<input type="checkbox"/> NO			

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 4/3/2000, SCE performed a visual inspection of control room (CR) cabinet area normal and emergency A/C units. During the inspection, SCE discovered the condensate drain lines to both normal A/C units were not capped and would have provided a pathway for unfiltered air to enter the control room envelope. Upon discovery, SCE capped the drain lines. Subsequently, on 4/5/2000, after removal of insulation, SCE inspected the CR cabinet area normal A/C units and discovered one or more tears in an expansion boot. SCE immediately initiated actions to repair this damage.

On 4/6/2000, based on engineering judgement, SCE concluded that when combined, the uncapped drain lines and the expansion boot tears could have caused aggregate unfiltered air inleakage into the control room from these sources to exceed the 10 scfm assumed in the UFSAR. Consequently, SCE is reporting this occurrence as a condition that was outside the design basis of the plant. Due to the passage of time, SCE did not identify the cause of the uncapped drain lines. The worn expansion boot appears to be a result of wear against an internal support member.

Even though 10 scfm inleakage might have been exceeded for a few hours, the actual dose received by control room operators during postulated accidents remained within the criteria provided in GDC 19; therefore, the safety significance was minimal.

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Plant:	San Onofre Nuclear Generation Station (SONGS) Units 2 and 3	
Discovery Date:	April 6, 2000	
Reactor Vendor:	Unit 2 Combustion Engineering	Unit 3 Combustion Engineering
Mode:	Mode 1 – Power Operation	
Power:	100 percent	

Background:

The San Onofre Nuclear Generating Station (SONGS) has a common control room (NA) for Units 2 and 3. The control room (CR) cabinet area has two normal air conditioning (A/C) units (ACU), and four emergency A/C units (ACU). The emergency A/C units actuate as part of the Control Room Emergency Air Cleanup System (CREACUS) (VI). Table 1 shows the Unit, equipment ID, mode of operation, and description for each of the CR cabinet area A/C units.

Table 1: CR Cabinet Area A/C Units

Unit	Equipment ID	Operation	Description
2	S21510ME422	Normal	CREACUS Boundary CR Cabinet Normal A/C Unit "A"
3	S31510ME425	Normal	CREACUS Boundary CR Cabinet Normal A/C Unit "B"
2	S21510ME424	Emergency	CREACUS Boundary CR Cabinet Emergency A/C Unit "A"
2	S21510ME423	Emergency	CREACUS Boundary CR Cabinet Emergency A/C Unit "B"
3	S31510ME427	Emergency	CREACUS Boundary CR Cabinet Emergency A/C Unit "A"
3	S31510ME426	Emergency	CREACUS Boundary CR Cabinet Emergency A/C Unit "B"

Each CR cabinet area normal A/C unit shares a common discharge duct (DUCT) with a CR cabinet area emergency A/C unit (S21510ME422 shares with S21510ME424, and S31510ME425 shares with S31510ME427).

During the emergency mode of operation, the control room HVAC is designed to pressurize the control room to at least 0.125 inches water gauge (wg) positive pressure relative to the outside ambient pressure to prevent unfiltered inleakage. Also during the emergency mode of operation, the CR cabinet area normal A/C units remain on until the chilled water supply leaving the emergency chillers (CHU) reaches the operating temperature of 48 degrees Fahrenheit. Then, the CR cabinet area normal A/C units can be stopped manually. As noted in the Updated Final Safety Analysis Report (UFSAR) Section 9.4, the essential chiller might not be started for up to two hours following a Loss of Coolant Accident (LOCA). Thus, the normal units may be in operation for several hours after CREACUS is placed in emergency mode.

In calculating the potential dose received by control room personnel following a severe radiological accident, the UFSAR assumes that the unfiltered inleakage to the control room is 10 standard cubic feet per minute (scfm) (Table 15.B-5, "Control Room Emergency Ventilation System Parameters").

In addition to control room personnel dose analysis, the UFSAR assessed the impacts of a toxic gas release on control room habitability. The UFSAR evaluated a simultaneous seismically induced failure of onsite chemical storage tanks concurrent with a degraded control room envelope caused by cracking of the plaster walls separating the control room from the cable riser galleries. In the analysis, no credit was taken for the plaster walls. The cable riser galleries volumes were combined with the control room volume. The leakage into the new control room volume via the cable risers was set equal to the forced

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ventilation flowrate into the cable riser galleries (2,740 scfm) in addition to the other leak paths used in the chlorine analysis.

Description of the Event:

On April 3, 2000, Southern California Edison (SCE) performed a visual inspection of CR cabinet area normal and emergency A/C units. During the inspection, SCE discovered the condensate drain lines (DRN) to both normal A/C units (S21510ME422 and S31510ME425) were dry and taking a slight suction on the local room air (AR 000400061). The open drain lines would have provided a pathway for unfiltered air to enter the control room envelope. At the time of this discovery, SCE believed that the uncapped drain lines, individually or together, would not have increased the unfiltered inleakage beyond the 10 scfm assumed in the UFSAR. Upon discovery, SCE capped the drain lines. SCE believes that these drain lines have been uncapped since initial startup of Unit 2 (circa 1982).

On April 5, 2000, after removal of insulation, SCE inspected the CR cabinet area normal A/C units and discovered one or more tears in an expansion boot (EXJ) of S21510ME422. At the time of this discovery, SCE believed that the identified tears in the expansion boot alone (i.e., separate from the drain lines) would not have increased the unfiltered inleakage beyond the 10 scfm assumed in the UFSAR. SCE immediately initiated actions to repair the damaged expansion boot. Also, SCE performed a smoke test to identify any other leaks.

Based on the failure mechanism of the expansion boot (contact wear between the boot material and structural members), SCE believes the boot tears may have existed for several years (SCE has not historically checked the expansion boots for wear).

SCE did not complete a detailed engineering study to quantify the potential unfiltered inleakage into the control room. Rather, on April 6, 2000 (discovery date), and based on engineering judgement, SCE concluded that when combined, the uncapped drain lines and the expansion boot tears of S21510ME422 could have caused aggregate unfiltered air inleakage into the control room from these sources to exceed the 10 scfm assumed in the UFSAR. Consequently, SCE is reporting this occurrence in accordance with 10CFR50.73(a)(2)(ii)(B) as a condition that was outside the design basis of the plant.

Cause of the Event:

Due to the passage of time, SCE did not identify the cause of the uncapped drain lines. The worn expansion boot appears to be a result of wear against an internal support member.

Corrective Actions:

SCE capped the drain lines and repaired the torn expansion bellows. Also, SCE will include the expansion bellows for S21510ME422 and S31510ME425 in the maintenance program for inspection and replacement (if necessary).

Safety Significance:

While the system may not have met the design basis inleakage assumption for a few hours, SCE believes that CREACUS was capable of performing its intended safety function and remained operable based on the following:

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1. Limited duration inleakage – The UFSAR design bases assumes an average control room unfiltered air inleakage of 10 scfm for the duration of a radiological accident. Based on the system configuration, after the normal A/C unit is secured (a few hours after the start of a postulated accident), the drain line and boot tears cease to be a source of inleakage. The potential for inleakage would also have been offset by assumptions regarding the operation of the emergency ventilation systems. With both train A and B in operation, the normal and expected configuration for the first few hours, the increase in control room pressure over single train operation might be great enough to preclude any inleakage.
2. 10CFR50 Appendix A, GDC 19 – SCE confirmed that post-LOCA radiological consequences to control room occupants would meet the 10CFR50 Appendix A GDC 19 control room habitability dose limits of 30 rem thyroid or 5 rem whole body gamma even if the unfiltered inleakage rate were to increase to 30 scfm for the event duration. As detailed in item 1 above, the unfiltered inleakage rates via the uncapped drain lines and expansion boot tears would not exceed 10 scfm each (20 scfm total). As such, consideration of additional unfiltered inleakage of less than 20 scfm would not challenge the plant’s ability to maintain control room habitability.
3. Toxic Gas Analysis Inleakage – As stated in the Background Section above, the inleakage during a seismically induced toxic gas release is assumed to be 2,740 scfm. An increase in inleakage due to the uncapped drain lines and expansion boot tears is negligible compared to the leakage assumed in the UFSAR.

Therefore, even though 10 scfm inleakage might have been exceeded for a few hours, the actual dose received by control room operators during postulated accidents remained within the criteria provided in GDC 19.

Because this condition would not have precluded control room personnel from performing their assumed safety functions, this condition alone would not prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition; remove residual heat; control the release of radioactive material; or mitigate the consequences of an accident. Therefore, this condition did not result in a Safety System Functional Failure (SSFF).

Also, SCE evaluated this occurrence using the latest draft of the NRC’s Reactor Safety Significance Determination Process (SDP) and concluded that no cornerstones were affected. Therefore, this condition appears to screen out as GREEN.

Additional Information

On August 28, 1986, the NRC issued IE Information Notice (IN) 86-76, “Problems Noted in Control Room Emergency Ventilation Systems.” This IN describes a condition where a 2-inch drain pipe on the cooling units downstream of the filter housing was drawing 41 scfm of unfiltered outside air into the system. SCE reviewed IN 86-76 but did not identify the open drain lines at that time. SCE is continuing to evaluate why this opportunity to identify the open drain lines was missed.

In the past three years, SCE has submitted two other LERs on CREACUS Inleakage: LER 2-98-013, Rev. 1, and LER 2-98-024.

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- LER 2-98-013, Rev. 1, "FSAR Assumptions Not Evaluated In The Control Room Post LOCA Dose Calculation Due To Personnel Error Placed Plant Outside its Design Basis," describes a condition where the thyroid dose to control room personnel may not have met the requirements of GDC 19 when the assumptions listed in the UFSAR as "design basis" are used. The Westinghouse analysis evaluating the containment leakage release path assumed the air in-leakage into the control room following a postulated accident was zero. This was a human error (non-utility, non-licensed) because NUREG 75/087 Standard Review Plan (SRP) Section 6.4 revision 1 Section III.3.d required the calculation to assume unfiltered leakage into the control room to be 10 scfm.
- LER 2-98-024, "Inadequate CREACUS boundary control during HVAC component maintenance," describes a condition where past activities resulting in the temporary removal of HVAC duct access hatches for the control room normal and emergency cabinet coolers may not have implemented the appropriate compensatory actions for work on CREACUS boundary components. This condition only existed during those brief time intervals in which the duct access panels and doors for the cabinet coolers were opened from 1985 to 1998 for various maintenance and inspection activities. Incorrect dampers, illustrated in the P&ID and HVAC plans and sections, is considered to have caused SCE personnel to inappropriately assess the impact on the CREACUS boundary.

Due to the types of errors and the times of their occurrence, corrective actions for these two LERs could not have prevented the condition identified in this report.