

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 6 1	PAGE (3) 1 OF 0 3
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TITLE (4)
18 MONTH SNUBBER SURVEILLANCE DEFICIENCIES

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQ. NUMBER	REV. NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)	
1	2	8	4	0	7	0	1	2	5	8	5	0 5 0 0 0

OPERATING MODE (9) N

POWER LEVEL (10) 0 0 0

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

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	X 50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	X 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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME J. G. HAYNES, STATION MANAGER	TELEPHONE NUMBER 7 1 4 4 9 2 1 - 1 7 1 0 0
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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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR
0 3	1 5	8 5

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

On November 20, 1984, with Unit 2 defueled, the routine 18-month surveillance of Pacific Scientific Mechanical Snubbers (EIIS Component Code SNB) was initiated. As a result of these surveillance tests, a total of 88 deficient snubbers were identified, approximately an 8% failure rate out of the total inspected snubber population. These deficiencies are categorized as being caused by improper installation (13 snubbers), environmental degradation (3 snubbers), vibration (20 snubbers), hydraulic transients (26 snubbers), wear related degradation (25 snubbers), or manufacturing defect (1 snubber).

As corrective action all deficient snubbers have been replaced and an engineering evaluation of the effects of these snubbers on their piping systems and supports is being performed. At present, all Mode 6 required systems have had thermal analyses performed and for systems identified to require it, hydraulic transient analysis has been performed. As a result, no damage, other than to the snubbers, was found and after snubber replacement all systems remain capable of performing their function under the FSAR design basis. The results of the remainder of the evaluations will be reported as a revision to this LER. No Mode will be entered for which the engineering analyses for systems required to be operable in that mode have not been completed.

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 0 3 6 1	LER NUMBER (6)			PAGE (3)	
		YEAR 8 4	SEQ. NUMBER - 0 7 9	REV. NUMBER - 0 0		
					0 2	OF 0 3

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

On November 20, 1984, with Unit 2 defueled, the routine 18-month surveillance of Pacific Scientific Mechanical Snubbers (EIIS Component Code SNB) was initiated. On December 26, 1984, eight snubbers were determined to have been damaged during installation and were rendered inoperable contrary to Technical Specification Section 3.7.6. As a result of our continued surveillance testing, a total of eighty-eight snubbers have been identified as deficient. These deficiencies have been categorized as being caused by improper installation (13 snubbers), environmental degradation (3 snubbers), vibration (20 snubbers), hydraulic transients (26 snubbers), wear related degradation (25 snubbers), or manufacturing defect (1 snubber).

As the functional surveillance testing program uncovered the failures, the size of the test sample of the affected type of snubber was increased per Technical Specification Section 4.7.6.e. The failure rate of the small size snubbers (PSA 1/4, 1/2) was about 18 percent, which required the inspection sample to be expanded to 100 percent for this size. For both the medium (PSA 1, 3, 6, 10) and the large (PSA 35, 100) snubbers, no failures occurred in the sample population.

Where potentially damaging transients were suspected, snubbers within the transient boundary were visually inspected and freedom of motion was verified in accordance with Technical Specification Section 4.7.6.c. As part of this expanded inspection, three medium size snubber failures were identified. In addition to the Technical Specification inspection, physical walkdowns of these postulated transient pathways were performed to visually inspect for damage to other pipe supports or the piping itself. Selected snubbers, which were found damaged due to these hydraulic transients, were destructively tested to determine ultimate failure loads for transient analysis purposes.

All snubbers that failed to meet the functional testing acceptance criteria were removed for further testing and/or physical examination and were replaced with operable snubbers. Ultimately, all the inoperable snubbers (with the exception of three) were disassembled and inspected to determine the failure mode. Upon completion of this examination, thermal stress analysis is to be or has been performed for all lines associated with the inoperable snubbers. Fatigue analysis is to be or has been performed for all Class I lines involved. In addition, transient stress analysis has been performed on all lines having undergone a potentially damaging transient by postulating a transient path and using loading values based on physical evidence and operational data. At present, as a result of these analyses, it has been determined that for the systems required for Mode 6 operation, no damage was sustained and all of the systems remain functionally operable. The analyses for the systems required for Modes 1 through 5 is presently being performed and the results will be reported as a revision to this LER.

Although corrective action will not be finalized until the engineering analysis is completed, several preliminary corrective actions are being taken as follows:
(1) where transients have been identified, operational procedures are being reviewed, and equipment redesign is being pursued to minimize or accommodate future transients;

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

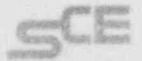
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		YEAR	SEQ. NUMBER	REV. NUMBER		
		8 4 -	0 7 9 -	0 0	0 3	OF 0 3

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

(2) to minimize environmental degradation, the addition of protective coverings for snubbers which are susceptible to this phenomenon is being evaluated; (3) to minimize vibration failures, measurement of the operational system vibration frequencies will be made where possible and compared to vendor supplied data to more accurately determine approximate life span of snubbers operating in these conditions and, where appropriate, supports less susceptible to vibration damage will be evaluated; (4) to preclude installation errors, maintenance procedures for installation and repair of snubbers are being revised to ensure proper installation; and, (5) the one identified manufacturing defect is not considered generic in nature, as it is one failure found in over 500 small snubbers tested and is being considered an isolated incident with no further action planned.

In addition to the other engineering analyses, seismic analysis is being performed on all affected piping systems to ensure that in a Design Bases Earthquake, these systems would have been capable of performing their intended safety function to achieve safe shutdown. The analyses completed to date, show that, although in some cases not meeting FSAR criteria (i.e., meeting code stress limits based upon FSAR criteria for damping), adequate margin existed in the original system's design to preclude damage to the affected piping systems. Those systems not meeting FSAR criteria were analyzed to a modified criteria which included Pressure Vessel Research Council recommended damping (ASME Code Case N-411) and an allowable stress of two times the yield stress. This type of analysis had previously been approved for San Onofre Unit 1 Return to Service Hot Shutdown Systems and is only being used to establish the operability of a system with damaged snubbers.

Southern California Edison Company



SAN ONCFRE NUCLEAR GENERATING STATION
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J. G. HAYNES
STATION MANAGER

January 25, 1985

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 84-079
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.36(c)(2), 10 CFR 50.73(a)(2)(i), and 10 CFR 50.73(a)(2)(ii), this submittal provides the required 30-day written Licensee Event Report (LER) for deficiencies identified during the routine 18-month snubber surveillance.

If you require any additional information, please so advise.

Sincerely,

RWKruiger for JG Haynes

Enclosure: LER No. 84-079

cc: F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2 and 3)
J. P. Stewart (USNRC Resident Inspector, Units 2 and 3)
J. B. Martin (Regional Administrator, USNRC Region V)
Institute of Nuclear Power Operations (INPO)

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