

NRC Form 366
(9/83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPRES: 8/31/85

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 4

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)	
0 9	2 7	8 5	8 5	0 2 9	0 1	0 2	0 3	8 6		0 5 0 0 0	
										0 5 0 0 0	

OPERATING MODE (9) 5

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)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
H. E. MORGAN, STATION MANAGER	7 1 4 3 6 8 - 6 2 4 1

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
C	S J	S N B	P O 2 9	Y	C	C C	S N B	P O 2 9	Y
C	B Q	S N B	P O 2 9	Y	C	A B	S N B	P O 2 9	Y

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On September 27, 1985, with Unit 3 in Cold Shutdown, the routine 18-month surveillance of Snubbers was initiated. As a result of this surveillance, a total of 60 deficient snubbers were identified. These deficiencies are categorized as being caused by improper installation (8 snubbers), environmental degradation (13 snubbers), vibration (17 snubbers), hydraulic transients (15 snubbers), or wear related degradation (9 snubbers). In addition, contrary to Technical Specification 4.7.6.b, one snubber was identified as having missed visual surveillance in February 1985, due to administrative oversight. This oversight has been corrected and this snubber has subsequently been surveilled satisfactorily.

As corrective action, all deficient snubbers have been replaced and an engineering evaluation of the effects of these snubber failures on their supported piping system and supports has been performed. All affected systems have had thermal and seismic analyses performed, and for systems identified to require it, hydraulic transient analysis was performed. In addition, seismic stress analysis was performed to ensure the affected systems would remain functional in a Design Base Earthquake (DBE). As a result, no damage, other than to the snubbers, was found and all affected systems remained capable of performing their safety function in all modes of operation and would have remained functionally operable in a DBE. Therefore, there was no safety significance to these snubber failures.

B602130349 B60203
PDR ADOCK 05000362
S PDR

IE22
1/1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

NRC FORM 3608
(9-83)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

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

On September 27, 1985, with Unit 3 in Cold Shutdown, and with the 18-month snubber surveillance in progress, a mechanical Pacific Scientific snubber (EISS Component Code SNB) was identified as failed due to installation damage, which rendered it inoperable contrary to Technical Specification 3.7.6. As a result of our continued surveillance testing, a total of 60 snubbers have been identified as deficient. These deficiencies have been categorized as being caused by improper installation (8 snubbers), environmental degradation (13 snubbers), vibration (17 snubbers), hydraulic transient (15 snubbers), or wear related degradation (9 snubbers). Two of the snubbers were damaged by more than one cause. In addition, contrary to Technical Specification 4.7.6.b, one snubber was identified as having missed visual surveillance in February 1985, due to administrative oversight. This oversight has been corrected and this snubber has subsequently been surveilled satisfactorily.

As the functional surveillance testing program uncovered the failures, the size of the test sample population of the affected type of snubber was increased per Technical Specification Section 4.7.6.e. 100% of the small size snubbers (PSA 1/4 and 1/2) were functionally tested. For the medium snubbers (PSA 1, 3, 6 and 10) only 4 failures were identified out of a total of 53 snubbers tested. For the large snubbers (PSA 35 and 100) no failures occurred in the sample population of 6 snubbers.

Where a potentially damaging transient was suspected, snubbers within the transient boundaries were visually inspected and freedom of motion was verified in accordance with Technical Specification Section 4.6.7.c. In addition to the Technical Specification inspections, 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 6 which were radiologically unavailable, were disassembled and inspected to determine the failure mode. Upon completion of this examination, thermal stress analysis was performed for all lines associated with the inoperable snubbers. Fatigue analysis was performed for all Class I lines involved. In addition, transient stress analysis was 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. As a result of these analyses, it has been determined that for all affected systems, no damage was sustained, other than the damaged snubbers, and all of the systems remain functionally operable.

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; (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

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

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

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; and (4) to preclude installation errors, maintenance procedures for installation and repair of snubbers have been revised to ensure proper installation.

In addition to the other engineering analyses, seismic analysis has been performed on all affected piping systems to ensure that in a Design Bases Earthquake (DBE), these systems would have been capable of performing their intended safety function to achieve safe shutdown. The analyses showed 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 is only being used to establish the functionality of a system with damaged snubbers if a seismic event would have occurred.

Based on the facts that all affected systems would have been capable of performing their intended safety functions in all modes of operation and that these systems would have remained functionally operable in a DBE, there was no safety significance to these snubber failures. Therefore, there are no reasonable or credible circumstances under which this event would have been more severe.

Similar events have occurred previously as most recently reported in LER 85-017 (Docket No. 50-362), LER 85-049 (Docket No. 50-361) and LER 86-001 (Docket No. 50-362).



Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

P. O. BOX 128

SAN CLEMENTE, CALIFORNIA 92672

February 3, 1986

H. E. MORGAN
STATION MANAGER

TELEPHONE
(714) 368-6241

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

Subject: Docket No. 50-362
Licensee Event Report No. 85-029, Revision 1
San Onofre Nuclear Generating Station, Unit 3

Reference: Letter, H. E. Morgan (SCE) to USNRC Document Control Desk,
dated October 25, 1985, Licensee Event Report No. 85-029

The referenced letter provided the required 30-day Licensee Event Report (LER) on deficiencies identified during the routine 18-month snubber surveillance. We have enclosed LER 85-029, Revision 1. It is being submitted to summarize the results of the engineering evaluations for all deficient snubbers and the corrective actions being taken to preclude recurrence.

If you require any additional information, please so advise.

Sincerely,

H E Morgan

Enclosure: LER No. 85-029, Revision 1

cc: F. R. Huey (USNRC Senior Resident Inspector, Units 1, 2 and 3)

J. B. Martin (Regional Administrator, USNRC Region V)

Institute of Nuclear Power Operations (INPO)

*IE22
1/1*