

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 3

TITLE (4)
INOPERABLE SNUBBERS - MAIN STEAM TO AUXILIARY FEEDWATER PUMP TURBINE

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 4	1 7	8 5	8 5	0 1 7		0 0	0 5	1 6	8 5		0 5 0 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										
POWER LEVEL (10) 1 0 0	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								TELEPHONE NUMBER		
J. G. HAYNES, STATION MANAGER								7 1 1 4 4 2 - 7 7 0 0		

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	B	I S N B	P 0 2 9	Y					

SUPPLEMENTAL REPORT EXPECTED (14)											EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE)											X NO		

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

On April 16, 1985, with Unit 3 in Mode 1 at 100% power, a routine post-maintenance surveillance identified a failed Pacific Scientific Mechanical Snubber. The snubber was on the Main Steam line to the Auxiliary Feedwater Pump Turbine (AFWPT). The failed snubber was replaced. On April 17, an engineering evaluation determined that the snubber had been damaged by hydraulic transient. A total of twenty-nine additional snubbers, which may have seen this transient, were manually stroked. Seven showed transient damage and two were environmentally degraded.

An engineering evaluation of the effects of these snubber failures on their piping systems and supports concluded there was no system damage, other than to the snubbers, and the system remains capable of performing its function under the FSAR design basis.

As corrective actions, all deficient snubbers have been replaced, and the existing steam traps will be replaced with orifices to reduce the possibility of condensation induced hydraulic transients.

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

On April 16, 1985, with Unit 3 in Mode 1 at 100% power, routine maintenance was being performed on a Pacific Scientific Mechanical Snubber (EIS Component Code SNB). The snubber was on the Main Steam Line (EIS System Code SB) to the Auxiliary Feedwater Pump Turbine (AFWPT) (EIS Component Code TRB). The maintenance involved placing a protective boot over the snubber. This was performed because during previous visual surveillances this snubber was identified as having signs of corrosion. The snubber was disconnected to apply the boot and prior to reinstallation, per procedure, the snubber was manually stroked to verify operability. It failed to stroke properly and was replaced. On April 17, an engineering evaluation, pursuant to Technical Specification 4.7.6, was performed to determine the cause of the failure and its affect on the supported system. As a result, it was determined that the snubber had been damaged internally by a hydraulic transient.

Pursuant to Technical Specification 4.7.6, all additional snubbers which may have seen this transient were manually stroked. A total of thirty snubbers were stroked, of which a total of ten were noted to be degraded. Eight showed transient damage and two were environmentally degraded. All ten of the snubbers were replaced and an engineering analysis was performed to determine their effect on the supported system. To preclude the environmental damage observed, protective boots will be added to the two snubbers to protect them from the warm, moist environment which led to their failure.

It was not possible to determine exactly when the transient occurred, therefore, the analyses were performed conservatively assuming that these snubbers have been in their "as found" condition since initial criticality. As a result, it was determined that the piping system would have remained functional had a Design Basis Earthquake (DBE) occurred.

Although the analyses show that the seismic, thermal and transient loads exceeded the FSAR criteria, adequate margins existed in the original design to preclude damage to this piping system. In order to verify this, the seismic analysis was performed using 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. For the thermal and transient analyses, modified criteria of two times the yield stress were also used.

The thermal and fatigue analyses indicated that the piping would remain functional for at least 1350 thermal cycles with the snubbers in the "as found" condition. This exceeds the total number of expected thermal cycles for the life of the plant.

The calculated AFWPT steam inlet nozzle loads were 2.4 times the vendor's recommended maximum design loads, however, discussions with the AFWPT vendor concluded that if there were no substantial increases in the vibration readings of the AFWPT, then the turbine did not experience any damaging effects. Inservice testing was performed. As a result, the vibration readings were acceptable and had not changed appreciably since initial inservice testing in October 1983.

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Our evaluation concluded that the source of the hydraulic transient came from the steam generator E089 main steam header. It is postulated that condensation resulted in a water slug which passed through the main steam inlet lines to the AFWPT because of incomplete draining during system heatups prior to AFWPT startup. These lines are manually drained of condensed steam and if the draining is inadequate, it is possible to pass a water slug through the system to the AFWPT. Past history of AFWPT operation indicates that water has passed through the system on multiple occasions.

As corrective action, during the next refueling outage the existing steam traps will be replaced by orifices, which will allow continuous removal of condensation and a more constant temperature in the system. This has already been implemented for Unit 2. As interim corrective action, a program for draining the current system configuration is being developed consisting of manual draining during startup and at regular intervals during normal operations. In addition, during the next refueling outage the snubbers discussed earlier will be functionally tested as part of the refueling interval snubber surveillance testing.

Although there was snubber damage, no damage to any other supports, piping, or the AFWPT was observed. Analysis of the lines and data from the inservice testing of the AFWPT has shown that the system has been functional under all operating conditions which the unit has experienced since initial criticality. Therefore there was no safety significance to this event.

Similar occurrences were previously reported in LER 85-002 (Docket No. 50-362) and LER 84-079, Revision 1, (Docket No. 50-361).

Southern California Edison Company



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May 16, 1985

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

Subject: Docket No. 50-362
30-Day Report
Licensee Event Report No. 85-017
San Onofre Nuclear Generating Station, Unit 3

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 inoperable snubbers identified during routine maintenance activities. Neither the health and safety of plant personnel nor the health and safety of the public was affected by this event.

If you require any additional information, please so advise.

Sincerely,

JG Haynes

Enclosure: LER No. 85-017

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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