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MORGAN.H.E. Southern California Edison Co.
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SUBJECT: LER 90-008-00:on 900629,Unit 3 pressurizer liquid sample line outside ASME code allowable stresses.

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July 30, 1990

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

Subject: Docket No. 50-362
30-Day Report
Licensee Event Report No. 90-008
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 Unit 3 Pressurizer Liquid Sample Line. Neither the health and safety of plant personnel nor the public was affected by this occurrence.

If you require any additional information, please so advise.

Sincerely,

H E Morgan

Enclosure: LER No. 90-008

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 4

Title (4)

UNIT 3 PRESSURIZER LIQUID SAMPLE LINE OUTSIDE ASME CODE ALLOWABLE STRESSES

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 6	2 9	9 0	9 0	--- 0 0 8	--- 0 0	0 7	3 0	9 0	NONE	

OPERATING MODE (9)	5
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (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)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	___ Other (Specify in Abstract below and in text)
___ 20.405(a)(1)(iii)	___ 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 AREA CODE
H. E. Morgan, Vice President and Site Manager	7 1 4 3 6 8 - 9 4 7 0

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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 June 29, 1990, with Unit 3 shutdown for the Cycle V refueling outage, an engineering review of pipe stresses associated with the pressurizer liquid sample line conducted as part of the snubber reduction program determined that the stresses could exceed those allowed by Section III of the ASME Code under the most severe accident conditions. This review determined that the original stress calculation was not modeled in accordance with the as-built configuration of the sample line.

The root cause of this event was cognitive personnel error by the stress analyst and also the stress analysis reviewer. The stress analyst performed the stress calculation in error by not accurately modeling the as-built piping configuration. The reviewer also failed to identify the modeling error in the stress calculation.

The pressurizer liquid sample line pipe supports were modified such that the piping system conforms to the ASME Code. The equivalent piping system on Unit 2 will be similarly evaluated and modified if necessary, during the current plant shutdown to inspect the steam generator feedwater distribution ring. In addition, spot checks will be made on stress calculations that were performed by the stress analyst who made the modeling error. If any similar stress calculation errors are identified, all stress calculations that were performed by the stress analyst will be reviewed.

Plant: San Onofre Nuclear Generating Station
Unit: Three
Reactor Vendor: Combustion Engineering
Event Date: 06-29-90

A. CONDITIONS AT TIME OF THE EVENT:

Mode: 5, Cold Shutdown
RCS Temperature: ~112 F

B. BACKGROUND INFORMATION:

1. Design Process for Units 2 and 3:

As part of the design process for safety related piping systems, stress analysis is performed on these systems to ensure that they meet all applicable code requirements for the various design conditions (e.g., normal, upset, emergency, and faulted conditions). The stress analysis may be performed manually or through the use of computer models. In the latter case, stress isometric drawings are used as the basis for the computer models. The stress isometric drawings are developed from design drawings that are used by construction personnel to install the system piping.

2. Pressurizer Liquid Sampling System:

The pressurizer liquid sample line provides the means to measure the boron concentration of the pressurizer [AB, PZR] for comparison with the Reactor Coolant System (RCS) [AB] boron concentration. The pressurizer and RCS boron concentration is normally maintained within 50 ppm to preclude inadvertent reactivity changes to the reactor [AC].

To facilitate filling/draining the pressurizer liquid sample line, vent valve V-022 and drain valve D-065, along with other vents and drains were installed at various locations on the sample line during the initial design of the plant.

C. DESCRIPTION OF THE EVENT:

1. Event:

On June 29, 1990, with Unit 3 shutdown for the Cycle V refueling outage, an engineering review of pipe stresses associated with the pressurizer liquid sample line conducted as part of the snubber [SNB] reduction program determined that the stresses could exceed those allowed by Section III of the ASME Code under the most severe accident conditions. This review determined that the original

stress calculation was not modeled in accordance with the as-built configuration of the sample line. Specifically, the original stress calculation did not include the weight of valves V-022 & D-065, associated piping, and blind flanges. The sample line pipe supports [SPT] were subsequently modified such that the piping system now conforms to the ASME Code.

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

   Not applicable.

3. Sequence of Events:

   Not applicable.

4. Method of Discovery:

   As described in Section C.1 above.

5. Personnel Actions and Analysis of Actions:

   Not applicable.

6. Safety System Responses:

   Not applicable.

D. CAUSE OF THE EVENT:

Root Cause:

The root cause of this event was cognitive personnel error by the stress analyst and also the stress analysis reviewer. The stress analyst performed the stress calculation in error by not accurately modeling the as-built piping configuration. The reviewer also failed to identify the modeling error in the stress calculation.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

   The Unit 3 pressurizer liquid sample line pipe supports were modified such that the piping system conforms to the ASME Code.

2. Planned Corrective Actions:

   a. During the current plant shutdown to inspect the steam generator feedwater distribution ring, the Unit 2 pressurizer liquid sample line will be evaluated to determine ASME code compliance. If the evaluation indicates that the piping system is not in accordance with Section III of the ASME Code, the piping supports will be modified such that the piping system conforms to the ASME Code prior to restart from the current outage.

   b. Spot checks will be made of those stress calculations that were performed by the stress analyst who made the modeling error. If any similar stress calculation errors are identified, all stress calculations that were performed by the stress analyst will be reviewed.

F. SAFETY SIGNIFICANCE OF THE EVENT:

There is no safety significance to this event. The stress analysis indicated that, although in the event of a Design Basis Earthquake (DBE), the as-built system configuration would have resulted in system stresses being outside FSAR limits (ASME code allowable stresses would have been exceeded by only 7%), adequate margin existed in the original system's design to preclude damage to the system. The pressurizer liquid sample line was 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 (2Sy). This type of analysis is only being used to establish the operability of the pressurizer liquid sample system with inadequate piping supports. Since the stress calculation indicated that during a DBE, all stresses would have been below 2Sy, the system would have remained fully operable and capable of performing its design safety function during the DBE.

G. ADDITIONAL INFORMATION:

1. Component Failure Information:

   Not applicable.

2. Previous LERs for Similar Events:

   LER 1-88-009, Revision 1, reported a condition in which the emergency diesel generators could have exceeded an intended electrical load limit.

   LER 1-88-017 reported a condition in which the auxiliary feedwater storage tank minimum volume requirements for accident mitigation may have been inadequate.