

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8802220298 DOC.DATE: 88/02/17 NOTARIZED: NO DOCKET #
 FACIL:50-361 San Onofre Nuclear Station, Unit 2, Southern Californ 05000361
 AUTH.NAME AUTHOR AFFILIATION
 MORGAN,H.E. Southern California Edison Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 85-061-00:on 851218,main steam safety valves setpoints
 outside Tech Spec limits.

W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 8
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD5 LA	1 1	PD5 PD	1 1
	HICKMAN, D	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/NAS	1 1
	AEOD/DSP/ROAB	2 2	AEOD/DSP/TPAB	1 1
	ARM/DCTS/DAB	1 1	DEDRO	1 1
	NRR/DEST/ADS	1 0	NRR/DEST/CEB	1 1
	NRR/DEST/ELB	1 1	NRR/DEST/ICSB	1 1
	NRR/DEST/MEB	1 1	NRR/DEST/MTB	1 1
	NRR/DEST/PSB	1 1	NRR/DEST/RSB	1 1
	NRR/DEST/SGB	1 1	NRR/DLPQ/HFB	1 1
	NRR/DLPQ/QAB	1 1	NRR/DOEA/EAB	1 1
	NRR/DREP/RAB	1 1	NRR/DREP/RPB	2 2
	NRR/DRIS/SIB	1 1	NRR/PMAS/ILRB	1 1
	REG FILE 02	1 1	RES TELFORD,J	1 1
	RES/DE/EIB	1 1	RES/DRPS DIR	1 1
	RGN5 FILE 01	1 1		
EXTERNAL:	EG&G GROH,M	5 5	FORD BLDG HOY,A	1 1
	H ST LOBBY WARD	1 1	LPDR	1 1
	NRC PDR	1 1	NSIC HARRIS,J	1 1
	NSIC MAYS,G	1 1		

TOTAL NUMBER OF COPIES REQUIRED: LTTR 46 ENCL 45

R
I
D
S
/
A
D
D
S
/
A
D
D
S

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2DOCKET NUMBER (2)
0 5 0 0 0 3 6 1PAGE (3)
1 OF 07

TITLE (4)

MAIN STEAM SAFETY VALVES SETPOINTS OUTSIDE TECHNICAL SPECIFICATION LIMITS

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	1	8	8	5	8	5	—	0 6 1 — 0 0 0	2 1 7 8 8	SONGS, UNIT 3	0 5 0 0 0 3 6 2
												0 5 0 0 0 3 6 2

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																															
	3	20.402(b)		20.405(a)(1)(i)		20.405(a)(1)(ii)		20.405(a)(1)(iii)		20.405(a)(1)(iv)		20.405(a)(1)(v)		20.405(c)		50.73(a)(2)(iv)		50.73(a)(2)(v)		50.73(a)(2)(vii)		50.73(a)(2)(viii)(A)		50.73(a)(2)(viii)(B)		50.73(a)(2)(x)		73.71(b)		73.71(c)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
POWER LEVEL (10)	0 0 0																																

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

SUPPLEMENTAL REPORT EXPECTED (14)

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

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

On December 18, 1985, Unit 3 entered Mode 3 and continued to operate with three Main Steam Safety Valves (MSSVs) set outside the allowed band required by Technical Specification (TS) 3.7.1.1 a. Since this condition was not recognized at the time, the LCO Action Statement, which requires that the Power Level-High trip setpoint be reduced, was not met. On June 2, 1986, Unit 2 entered Mode 3 and continued to operate with three MSSVs similarly set outside the allowable band. In both cases, the deviations exceeded the maximum allowed value by less than 10 psi. There was no safety significance to these occurrences since under these conditions, peak primary pressure during the most severe transient (loss of condenser vacuum) would not be expected to increase above that predicted by the safety analysis.

The cause of the MSSVs setpoints deviating from the TS setpoints was the erroneous use of numerical data in performing the MSSV testing. A table used in the test procedure was developed based upon information obtained from the testing device manual and MSSV information stated in the TS. The data used to develop the table were incorrectly used, and there was no verification to establish whether the table was correct.

Normal operation of Units 2 and 3 continued until the error was discovered in February 1987, at which time Unit 2 was in Mode 3 and Unit 3 was in a refueling outage. In February and March 1987, respectively, the Units 2 and 3 MSSVs lift setpoints were correctly reset within TS limits.

Appropriate procedures will be revised to require a rigorous review by the Station Technical Division of changes to numerical data, or the application of new data, that is used to perform TS surveillance testing.

JER
11

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION	DOCKET NUMBER	LER NUMBER	PAGE
UNIT 2	05000361	85-061-00	2 OF 7

Plant: San Onofre Nuclear Generating Station (SONGS)
Units: 2 and 3
Reactor Vendor: Combustion Engineering
Event Date: 12/18/85

A. PLANT CONDITIONS AT THE TIME OF THE EVENT:

Mode: (3) Hot Standby

B. BACKGROUND INFORMATION:

The Main Steam Safety Valves (MSSVs) (EIIS System Code SB) (EIIS Component Code RV) provide overpressure protection for the secondary side of the Steam Generator (SG) (EIIS Component Code SG) and the main steam piping. Safety valve operability ensures that secondary system pressure is limited to not more than 110% of design pressure for the most severe transient.

Units 2 and 3 have nine safety valves on each of two main steam lines. The valves were manufactured by the Crosby Valve and Gage Company. The Technical Specifications (TS) specify a lift setpoint for each of the valves with a 1% tolerance. The valve on each steam line with the lowest setting is set to relieve at 1100 psia (design pressure of the Steam Generator). Seven of the valves on each steam line have TS setpoint requirements of 1107, 1114, 1121, 1128, 1135, 1142, and 1149 psia. The valve on each steam line with the highest setting is set to relieve at 1155 psia (105% of the SG design pressure).

TS require MSSV periodic setpoint testing to be performed in accordance with ASME Boiler and Pressure Vessel Code, Section XI, Article IWB-3510. The testing is performed in Mode 3 using a Dresser Hydroset lift assist device. Using hydraulic pressure, the Hydroset applies an upward force on the valve spindle. In addition, the pressurized steam applies an upward force on the valve seat (lift area). The hydraulic pressure of the Hydroset is increased until the combined upward force exceeds the downward force applied by the MSSVs spring and causes the valve to lift. The valve lift setpoint is calculated by adding actual steam header pressure to a steam pressure equivalent of the hydraulic pressure of the Hydroset.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 85-061-00	PAGE 3 OF 7
---	---------------------------	-------------------------	----------------

C. DESCRIPTION OF THE EVENT:

1. Event:

In April 1985, SCE began the preparations for performing the MSSV testing without relying on contractor assistance. In response to a request by SCE, Dresser had provided a table correlating the hydraulic pressure of the Hydroset to the steam pressure it represented. The key parameters in developing the table are 1) Hydroset hydraulic pressure, 2) Hydroset lift area, 3) steam pressure, and 4) MSSV lift area. The test procedure was revised to incorporate the Hydroset hydraulic pressure/steam pressure table.

In September 1985, during a refueling outage, the Unit 3 MSSVs were tested in accordance with the procedure. The testing resulted in an unusually high number of setpoints requiring adjustment. This prompted a review of the MSSV test procedure.

The review identified that the Hydroset table used during the Unit 3 MSSV testing was not valid. (The table was developed for MSSVs manufactured by Dresser Industries. The MSSVs in use at Units 2 and 3 were manufactured by the Crosby Valve and Gage Company). SCE developed a new table using the MSSVs orifice area as given in the TS, as well as information from the Hydroset manual. However, unknown at the time, the information obtained from the manual concerning the Hydroset lift area was misinterpreted. Additionally, the orifice area as stated in the TS is not the effective lift area of the valve. (The lift area of each MSSV is in excess of 21 in². The value listed in the TS and used in the safety analysis is the limiting orifice area of 16 in²). Consequently, the errors in the table would result in setting the MSSVs approximately 10 psi higher than expected. The erroneous table was incorporated into the test procedure and, based on a review of setpoints from previous testing, six valves were reset.

On December 18, 1985, during power ascension from the outage, Unit 3 entered and remained in Mode 3. Since SCE was unaware at the time that some MSSVs had incorrect setpoints, the requirements of TS Action Statement 3.7.1.1 a, which would have resulted in a reduction of the Power Level-High trip setpoint or shutdown to Mode 4, were not met.

In March 1986, during a refueling outage, all eighteen Unit 2 MSSVs were tested in accordance with the procedure containing the erroneous table. On June 2, 1986, Unit 2 entered Mode 3 and continued to operate with some MSSVs incorrectly set.

In January 1987, during a Unit 3 refueling outage, MSSV TS surveillance testing was again performed. In addition, the Crosby Valve and Gage Company performed a MSSV setpoint verification demonstration test using a new Crosby device called the portable Set Pressure Verification Device (SPVD). It was noted that the demonstration test results differed from the surveillance test results. A review of the test procedure was initiated.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION
UNIT 2

DOCKET NUMBER
05000361

LER NUMBER
85-061-00

PAGE
4 OF 7

In February 1987, with Unit 2 in Mode 3 and Unit 3 still in the refueling outage, errors associated with the Hydroset hydraulic pressure/steam pressure table were identified and corrected. Unit 2 MSSVs lift setpoint settings were properly reset in February 1987. In March 1987, during power ascension from the outage, the Unit 3 MSSVs were properly reset. The fact that the MSSVs lift settings had been set outside the limits of TS was not reported in a LER (see Additional Information, Section G).

The consequences of this condition for Unit 3 are as follows:

- 1) The valve on each steam line with the highest required relief setting shifted above the maximum allowed by the TS by approximately 8 psi and 4 psi.
- 2) Except for an additional valve which also shifted above the maximum allowed by the TS by less than 1 psi, all other valves shifted into the next higher TS acceptance band.
- 3) A total of 3 valves, therefore, were set incorrectly; one on SG E-089, and two on SG E-088.

The consequences of this condition for Unit 2 are as follows:

- 1) The valve on each steam line with the highest required relief setting shifted above the maximum allowed by the TS by approximately 8 psi and 3 psi.
- 2) Additionally, one valve deviated in such a manner that the valve shifted into the second higher TS acceptance band. All other valves shifted into the next higher TS acceptance band.
- 3) A total of 3 valves, therefore, were set incorrectly; one on SG E-088, and two on SG E-089.

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

None.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 85-061-00	PAGE 5 OF 7
---	---------------------------	-------------------------	----------------

3. Sequence of Events:

DATE	ACTION
04/85	MSSV TS surveillance procedure revised incorporating invalid Hydroset hydraulic pressure/steam pressure table obtained from the vendor.
09/85	During refueling outage, Unit 3 MSSVs tested in accordance with procedure. Unusually high number of setpoints requiring adjustment resulted in a review of test procedure.
10/85	New table developed and incorporated into procedure. Table incorrectly based on orifice area stated in TS and misinterpretation of vendor information.
12/85	Using new table, MSSVs found to still deviate from TS limits were reset during power ascension from the outage. Unit 3 entered Mode 3 with three MSSVs incorrectly set.
03/86	During refueling outage, Unit 2 MSSVs tested in accordance with procedure.
06/86	During power ascension from the outage, Unit 2 entered Mode 3 with three MSSVs incorrectly set.
01/87	During refueling outage, Unit 3 MSSVs tested in accordance with procedure. Crosby SPVD demonstration identified setpoint setting discrepancy. Review of test procedure initiated.
02/87	With Unit 2 in Mode 3 and Unit 3 in Mode 6, errors associated with table identified and corrected.
02/87	Unit 2 MSSV lift setpoints were properly reset.
03/87	Unit 3 MSSV lift setpoints were properly reset.

4. Method of Discovery:

In January 1987, after it was noted that the SPVD demonstration test results differed from the surveillance test results, a review of the test procedure was initiated. In February 1987, the errors in the Hydroset hydraulic pressure/steam pressure table were identified during this review.

5. Personnel Actions and Analysis of Actions:

Not applicable.

6. Safety System Responses:

Not applicable.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION	DOCKET NUMBER	LER NUMBER	PAGE
UNIT 2	05000361	85-061-00	6 OF 7

D. CAUSES OF THE EVENT:

1. Immediate Cause:

The Hydroset hydraulic pressure/steam pressure table was developed based upon vendor manual information regarding the lift area of the Hydroset which had been misinterpreted and the MSSVs orifice area as stated in the TS which was incorrectly used.

2. Root Cause:

Although the individual who developed the data for this test erred, SCE has determined the root cause to be a deficiency in the review of certain engineering data. Existing programs did not require the numerical data and calculations used in the development of the Hydroset hydraulic pressure/steam pressure table to be subjected to the formal rigorous process designed to assure accurate results.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

In February 1987, errors associated with the lift setpoint table were identified and corrected. In February and March 1987, respectively, the Units 2 and 3 MSSVs lift setpoints were properly reset within TS limits.

2. Planned Corrective Actions:

Appropriate procedures will be revised to require a rigorous review by the Station Technical Division of changes to numerical data, or the application of new data, that is used to perform TS surveillance testing. It is anticipated that the procedures will be revised by May 31, 1988.

F. SAFETY SIGNIFICANCE OF THE EVENT:

There was no safety significance to this event since analysis has shown that increasing all safety valve lift setpoints by 1% (approximately 11 psi) would result in an increase in peak primary pressure during the most severe transient (loss of condenser vacuum) of less than 1 psi. Since the deviations in the incorrectly set valves were less than 11 psi, and since the MSSVs have a greater relieving capacity than that assumed in the safety analyses, the peak primary pressure during the most severe transient would not be expected to increase above that predicted by the safety analysis.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 85-061-00	PAGE 7 OF 7
---	---------------------------	-------------------------	----------------

G. ADDITIONAL INFORMATION:

1. Component Failure Information:

Not applicable.

2. Previous LERs on Similar Events:

None.

3. Reportability Evaluation Process:

On January 20, 1988, it was determined following a review of historical data that the conditions described in this LER were reportable pursuant to 10 CFR 50.73 (a)(2)(i)(B) (i.e., Any operation or condition prohibited by the plants TS). This review was prompted by inquiries from the NRC resident inspectors.

SCE's review of this occurrence has not fully determined the cause of the failure to provide the required report. The best reconstruction of the events involved in the reportability process has been performed and follows herein.

In January 1987, after it was noted that the SPVD demonstration test results differed from the surveillance test results, a review of the test procedure was initiated. On February 5, 1987, the errors in the Hydroset hydraulic pressure/steam pressure table were identified during this review.

A reportability evaluation was performed and documented in February 1987. The evaluation (which at the time did not require approval by the Station Manager) concluded incorrectly that the condition was not reportable. The evaluation failed to recognize prior operation of the plants in a condition not allowed by the TS. It was SCE's intention to continue the reportability evaluation process, addressing operation of the plants in previous cycles, as that data became available. However, management processes failed to sufficiently follow-up and track this.

The approval cycle for reportability evaluations has been revised to include the Station Manager. Additionally, this event will be reviewed by appropriate Compliance personnel who perform reportability evaluations. A procedure is currently under development to prescribe the requirements for preparing LER's. In light of this event, this procedure will contain guidance to thoroughly review and follow-up on events that are potentially reportable. Forecast date for implementation of the procedure is April 30, 1988.

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

P. O. BOX 128

SAN CLEMENTE, CALIFORNIA 92672

H. E. MORGAN
STATION MANAGER

February 17, 1988

TELEPHONE
(714) 368-6241

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 85-061
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.73(a)(2)(i)(B), this submittal provides the required 30-day written Licensee Event Report (LER) for occurrences involving the Unit 2 and Unit 3 Main Steam Safety Valves (MSSV). Since these occurrences involved similar systems, cause and corrective actions, a single report is being submitted for Unit 2 in accordance with NUREG-1022. 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,

Robert K. Sieger
for H. E. Morgan

Enclosure: LER No. 85-061

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