

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8809290247 DOC.DATE: 88/09/20 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 88-022-00:on 880821,plant shutdown due to inoperable
 safety injection tank relief valve.

W/8 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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11/04/88

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 5					
Title (4) UNUSUAL EVENT -- PLANT SHUTDOWN DUE TO INOPERABLE SAFETY INJECTION TANK RELIEF VALVE																				
EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)									
Month	Day	Year	Year	///	Sequential	///	Revision	Month	Day	Year	Facility Names				Docket Number(s)					
0 8	2 1	8 8	8 8	---	0 2 2	---	0 0	0 9	2 0	8 8	NONE				0 5 0 0 0					
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																	
POWER LEVEL (10) 1 0 0 ////////////////////			<input type="checkbox"/> 20.402(b)					<input type="checkbox"/> 20.405(c)					<input type="checkbox"/> 50.73(a)(2)(iv)					<input type="checkbox"/> 73.71(b)		
			<input type="checkbox"/> 20.405(a)(1)(i)					<input type="checkbox"/> 50.36(c)(1)					<input type="checkbox"/> 50.73(a)(2)(v)					<input type="checkbox"/> 73.71(c)		
			<input type="checkbox"/> 20.405(a)(1)(ii)					<input type="checkbox"/> 50.36(c)(2)					<input type="checkbox"/> 50.73(a)(2)(vii)					<input type="checkbox"/> Other (Specify in		
			<input type="checkbox"/> 20.405(a)(1)(iii)					<input checked="" type="checkbox"/> 50.73(a)(2)(i)					<input type="checkbox"/> 50.73(a)(2)(viii)(A)					Abstract below and in text)		
			<input type="checkbox"/> 20.405(a)(1)(iv)					<input type="checkbox"/> 50.73(a)(2)(ii)					<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
			<input type="checkbox"/> 20.405(a)(1)(v)					<input type="checkbox"/> 50.73(a)(2)(iii)					<input type="checkbox"/> 50.73(a)(2)(x)							
LICENSEE CONTACT FOR THIS LER (12)																				
Name H. E. Morgan, Station Manager										TELEPHONE NUMBER AREA CODE 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	MANUFAC- TURER	REPORTABLE TO NPRDS	////////	CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS	////////									
B	B P	R V	C 7 1 0	Y	////////						////////									
SUPPLEMENTAL REPORT EXPECTED (14)																				
<input type="checkbox"/> Yes (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO										Expected Submission Date (15)		Month	Day	Year						
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																				

At 1550 on 8/21/88, with Unit 2 at 100% power, the relief valve for Safety Injection Tank (SIT) #7 prematurely lifted during a routine operation to increase nitrogen pressure in the SIT. The pressure in the SIT could not be restored and maintained above the minimum required SIT operating pressure; a plant shutdown was initiated at 1852 pursuant to Technical Specification (TS) 3.5.1 and an Unusual Event (UE) was declared in accordance with the Emergency Plan Implementing Procedures (EPIPs). Subsequently, the relief valve was gagged, and the SIT was repressurized to within TS limits. After verifying that the reactor safety functions were satisfied, the UE was closed out at 2025 in accordance with the EPIPs. The reactor was manually tripped and Mode 3 entered at 2213. A cooldown and depressurization of the Reactor Coolant System was initiated. At 0445 on 8/22/88, pressurizer pressure was decreased below 715 psia, the minimum pressure at which TS 3.5.1 is applicable. The safety significance of this event was minimal since the TS required actions were performed within the specified times.

The cause of the relief valve prematurely lifting was that the sharp top edge of the spindle, which travels with the valve disc and moves when the valve changes position, was apparently catching on the inside surface of the hollow adjusting bolt, through which the spindle travels and which was found to be poorly machined. This condition would have resulted in a low setpoint during calibration.

The inner surface of the adjusting bolt and the sharp edge of the spindle were polished. The valve was satisfactorily tested. The other SIT relief valves' adjusting bolts will be inspected for poor machining and polished as necessary during the next refueling outage for both Units 2 and 3.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 88-022-00	PAGE 2 OF 5
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Plant: San Onofre Nuclear Generating Station
Unit: Two
Reactor Vendor: Combustion Engineering
Event Date: 08-21-88
Time: 1550

A. CONDITIONS AT TIME OF THE EVENT:

Mode: 1, Power Operation

B. BACKGROUND INFORMATION:

Four Safety Injection Tanks (SITs) (EIIS System Code BP) (SIT #7, 8, 9, and 10) provide a means to flood the core with borated water following depressurization due to a large break loss of coolant accident (LOCA). Each SIT is provided with connections for filling, draining, pressurizing, venting and sampling, as well as a relief valve (EIIS Component Code RV) (715 psia setpoint) to prevent overpressurization.

Technical Specification (TS) 3.5.1 requires that each SIT shall be operable with a nitrogen cover pressure of between 615 and 655 psia while in modes 1, 2, and 3 (with pressurizer pressure greater than 715 psia). With one SIT inoperable due to low cover pressure, TS 3.5.1 Action "a" requires that the SIT be restored to operable status within one hour or the plant must be in hot standby within the next 6 hours and hot shutdown within the following 6 hours.

C. DESCRIPTION OF THE EVENT:

1. Event:

At 1550 on 8/21/88, with Unit 2 at 100% power, the relief valve for SIT #7 prematurely lifted during a routine operation to increase nitrogen pressure in the SIT. The pressure in the SIT could not be restored and maintained above the minimum TS required SIT operating pressure; a plant shutdown was initiated at 1852 pursuant to TS 3.5.1 and an Unusual Event (UE) was declared in accordance with the Emergency Plan Implementing Procedures (EPIPs). Subsequently, the relief valve was gagged, and the SIT was repressurized to within TS limits. After verifying that the reactor safety functions specified in the Emergency Operating Instructions (EOIs) were satisfied, the UE was closed out at 2025 in accordance with the EPIPs.

The reactor was manually tripped in accordance with normal shutdown procedures, and mode 3 was entered at 2213. A cooldown and depressurization of the Reactor Coolant System (EIIS System Code AB) was initiated. At 0445 on 8/22/88, pressure was decreased below 715 psia, the minimum pressure at which TS 3.5.1 is applicable.

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

None

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3. Sequence of Events:

<u>DATE</u>	<u>TIME</u>	<u>ACTION</u>
8/21	1550	When attempting to increase SIT 7 pressure, the relief valve (PSV-9356) prematurely lifted at 623 psia, lowering the SIT pressure below the TS required 615 psia.
	1623	SIT 7 pressure decreased to 285 psia, and the relief valve closed (in accordance with its preset blowdown value).
	1655	SIT 7 pressure at 617 psia when relief valve lifted again.
	1728	SIT 7 pressure decreased to 285 psia, and the relief valve closed.
	1850	Containment entry made and relief valve gagged.
	1852	Plant shutdown initiated and UE declared.
	1905	Gag partially removed, and the relief valve lifted again. Gag reinstalled and SIT 7 repressurized to 615 psia.
	2025	Closed out UE.
	2213	Manually tripped reactor, entering mode 3.
8/22	0445	Pressurizer pressure less than 715 psia and exited TS 3.5.1.
8/23	0340	After refurbishing relief valve, SIT 7 returned to operable status.

4. Method of Discovery:

The operator who was attempting to pressurize the SITs noted that pressure in SIT 7 was decreasing. Also, control room alarms were received when SIT 7 pressure decreased below the alarm setpoint.

5. Personnel Actions and Analysis of Actions:

Operators responded properly by performing the required plant shutdown within the time limits specified in the TSs. After manually tripping the reactor, the operators responded properly in accordance with the EOIs, ensuring all reactor safety functions were satisfied.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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6. Safety System Responses:

Plant response to the manual reactor trip was in accordance with design.

D. CAUSE OF THE EVENT:

1. Immediate Cause:

SIT 7 relief valve (PSV-9356) prematurely lifted, resulting in a decrease in SIT 7 pressure.

2. Intermediate Cause:

The cause of the relief valve prematurely lifting was that the sharp top edge of the spindle, which travels with the valve disc and moves when the valve changes position, was catching on the inside surface of the hollow adjusting bolt through which the spindle travels. The presence of this condition during setpoint calibration would have resulted in the relief valve setpoint being based upon the sum of the interference force between the spindle and the adjusting bolt and the spring force, rather than upon the spring force alone which is the design condition. When the spindle movement within the adjusting bolt is not hindered, the valve would relieve at a pressure lower than the setpoint.

3. Root Cause:

The inside surface of the adjusting bolt was found to be poorly machined by the manufacturer.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

PSV-9356 was disassembled and reassembled using new parts, including disc, spindle, spring and washers, and body and cap gaskets. The inner surface of the adjusting bolt and the sharp top edge of the spindle were polished. The valve was satisfactorily tested.

2. Planned Corrective Actions:

The adjusting bolts for the remaining SIT relief valves for both Units 2 and 3 will be inspected for poor machining during the next refueling outage. The spindles and adjusting bolts will be polished as necessary at that time.

F. SAFETY SIGNIFICANCE OF THE EVENT:

Although all four SITs are required to meet the injection requirements for a large break LOCA of the cold leg (three SITs to satisfy the injection function and the contents of one SIT assumed to be lost out the break), the safety significance of this event was minimal since the TS required actions were performed within the specified times.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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G. ADDITIONAL INFORMATION:

1. Component Failure Information:

PSV-9356 is an ASME Section III, Class 2, nozzle type, JMBU-S style, 3/4 inch relief valve manufactured by Crosby Valve and Gage Co.

2. Previous LERs on Similar Events:

None

3. Results of NPRDS Search:

Two failures of JMBU style S relief valves were reported. Each failure was caused by degradation of the disc assembly O-ring, which was possibly caused by age or fatigue.

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

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September 20, 1988

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 88-022
San Onofre Nuclear Generating Station, Unit 2

Pursuant to 10 CFR 50.73(a)(2)(i), this submittal provides the required 30-day written Licensee Event Report (LER) for an event involving the completion of a plant shutdown required by Technical Specifications. This event had no effect on the health and safety of either plant personnel or the public.

If you require any additional information, please so advise.

Sincerely,

H E Morgan

Enclosure: LER No. 88-022

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)

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