NRC Form 366
(9/83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 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 3

TITLE (4)

SHUTDOWN COOLING SYSTEM VALVES PARTIALLY OPEN

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 5 0 0 0
1 2	2 3	8 5	8 5	0 3 6	0 0	0 1	2 3	8 6		0 5 0 0 0

OPERATING MODE (9)	5
POWER LEVEL (10)	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)		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, 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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE)		0 6	1 5	8 6
	NO				

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

At 1038 on 12/24/85, it was determined that Shutdown Cooling System Heat Exchanger isolation valves 3HV-8150 and 3HV-8151 had not been fully closed while operating in Mode 3 from 1859 on 12/18/85 to 0104 on 12/22/85 as required by Limiting Condition for Operation (LCO) 3.5.2 of SONGS Unit 3 Technical Specifications.

The condition resulted from premature actuation of valve motor operator position indication limit switches and Control Room indication of the valves being in the closed position.

As a result of this condition, Reactor Coolant System (RCS) cooldown rate exceeded the limits of LCO 3.4.8.1 for a short period of time after Shutdown Cooling System operation was commenced following termination of the startup from the first refueling outage.

Immediate corrective action was taken to ensure valve closure and additional corrective action is being evaluated in conjunction with our response to IE Bulletin 85-03, "Motor Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings." Additional corrective action resulting from this evaluation will be reported in a supplement to this LER.

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

Unit 3 had entered Mode 3 on 12/18/85 at 1859, following the first refueling outage. On 12/22/85 at 0104, the unit entered Mode 4 in order to perform maintenance on a Reactor Coolant Pump motor bearing. Cooldown continued, and on 12/24/85 at 0930 the Shutdown Cooling System (SDCS) (EIIS System Code BP), was aligned for warm-up, with the RCS at 181 degrees F, and the SDCS Heat Exchangers bypassed and isolated, as indicated by observation of the isolation valve position in the Control Room. When SDCS flow was aligned to the Reactor Coolant System (RCS) an initial increase in the RCS cooldown rate was expected, however, RCS temperature was found to decrease 30 degrees F in 31 minutes, which was considerably larger than expected.

Operators recognized the 30 degree per hour cooldown rate limitation of Technical Specification LCO 3.4.8.1 was being exceeded and attempted to reduce the rate of RCS temperature decrease by throttling SDCS loop injection valves (HV-9322, 9325, 9328, 9331) to reduce SDCS flow rate. At 1038, with RCS temperature at 135 degrees F, Control Room switches for Shutdown Cooling Heat Exchanger Isolation Valves HV8150 and HV8151 (EIIS Component Code ISV) were depressed and held in the closed position in order to confirm existing Control Room indication that these valves were indeed in the closed position. The RCS cooldown rate was immediately noted to decrease, thereby indicating SDCS flow had, until then, been permitted to take place through the SDCS heat exchangers, contrary to Control Room indication. With the SDCS Heat Exchanger Isolation valves indeed closed, the cooldown rate was adjusted and maintained within the limitations of Technical Specification LCO 3.4.8.1.

Limiting Condition for Operation (LCO) 3.5.2 of SONGS Unit 3 Technical Specifications, requires that two Independent Emergency Core Cooling System (ECCS) subsystems be OPERABLE in Modes 1, 2 and 3 (with pressurizer pressure greater than or equal to 400 psia). Surveillance Requirement 4.5.2.a requires that at least twice a day, the valve lineup be verified. This surveillance requirement was performed prior to the initial Mode 3 entry following the refueling outage, and twice daily thereafter, as required in Mode 3. The SDCS valves which were found to be partly open, are required to be closed by Surveillance Requirement 4.5.2, and are verified by observation of the Control Room position indication.

Subsequent investigation revealed that contrary to LCO 3.5.2 while operating in Mode 3, both SDCS heat exchanger isolation valves HV-8150 and HV-8151 could have been as much as 16% open, while Control Room indication of their position showed closed. This condition existed as a result of limit switch adjustments made during the refueling outage and the wiring of the motor operator limit switch as discussed below.

Due to the concerns raised by IE Bulletin 85-03, the LIMITORQUE motor operators for these valves had been adjusted to reduce the possibility of premature torque switch actuation and deenergization of the motor operator. The motor operators on these valves are protected from overload by torque switches. Because the force required to initially move the valve may exceed the setpoint of the torque switch, a torque switch bypass limit switch is provided to remove the torque switch from the circuit during the initial valve stroke. It was determined that the torque bypass switch had to be precisely set such that increased torque required to initially open valves against high differential pressure, would not result in deenergizing the motor operator.

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

After analyzing data taken by the Motor Operated Valve Analysis and Test System (MOVATS), and utilizing the maintenance procedures and the Limitorque instruction manual, the operating range of the torque bypass switch was increased. However, due to the design of the valve control circuitry, the torque switch bypass limit switch and the valve position indicating limit switch are on the same position indicating rotor. Therefore, when the position of the rotor was changed to extend the range of the bypass switch, it also affected the closed position indication.

These valves are throttle, or "jog", valves and are operated by holding the control switch in the direction of valve travel until the desired position is reached. A review of the MOVATS data, determined that the valves may have been as much as 16% open, while indicating "closed" in the Control Room. Of the other valves which were also adjusted, only one, HV-0396, was also affected, however, it remained in the full closed position. Valves which have a "seal-in" feature continue to torque closed upon pushbutton actuation, and were not adversely affected by the adjustment.

Maintenance and operations personnel were aware of the premature full closed indication resulting from the adjustment, and had planned to hold the valve switch for a brief period in the closed position after the "closed" indication was observed. The exact time to hold the switch was not specified in the procedures, and apparently, when the valves were operated on 12/18/85 for a surveillance test, they were not fully closed.

Immediate corrective action was taken to review the operation of the valves. Operating personnel observed the valve operation, and determined it was necessary to hold the valve switch in the closed position for at least 15 seconds after the 'closed' indication has been observed in order to obtain full valve closure. This information is being incorporated into the appropriate procedures.

Additional corrective action regarding limit switch settings and alteration of the switch configuration is currently under evaluation in accordance with the requirements of IE Bulletin 85-03. Results of further corrective action for these valves will be included in our response to IE Bulletin 85-03, and will be reported in a revision to this LER.

Technical Specification 3.4.8 limits the RCS cooldown rate to 30 degrees F per hour. Although this rate was exceeded for a brief time, the action statement requirements are to restore the allowable cooldown rate to within limits within 30 minutes. This requirement was complied with. Additionally, an analysis was performed by Combustion Engineering (the NSSS supplier) confirming that this cooldown rate had no affect on the integrity of the RCS.

The effects of the SDC valves not being fully closed, as related to system operability, were reviewed. With both HV-8150 and HV-8151 16% open, all ECCS safety functions would still be provided. This condition would have less effect on system operability than the effect of either HV-8150 or HV-8151 being in the open position, as described in FSAR Table 6.3-1, "Safety Injection System Failure Modes and Effects Analysis." Should a Low Pressure Injection Safety Injection (LPSI) pump, which is also used for shutdown cooling, fail to start, sufficient decay heat removal capacity would have been provided by the redundant LPSI pump, or by either High Pressure Safety Injection (HPSI) pump. Therefore, this event did not adversely affect safety. There are no reasonable alternative conditions which would have increased the severity of this event.

Southern California Edison Company
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January 23, 1986

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

Subject: Docket No. 50-362
30-Day Report
Licensee Event Report No. 85-036
San Onofre Nuclear Generating Station, Unit 3

Pursuant to 10 CFR 50.73(a)(2)(i), this submittal provides the required 30-day written Licensee Event Report (LER) for an occurrence involving the Shutdown Cooling System. 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,

HE Morgan

Enclosure: LER No. 85-036

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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