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Vice President

December 2, 2002

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

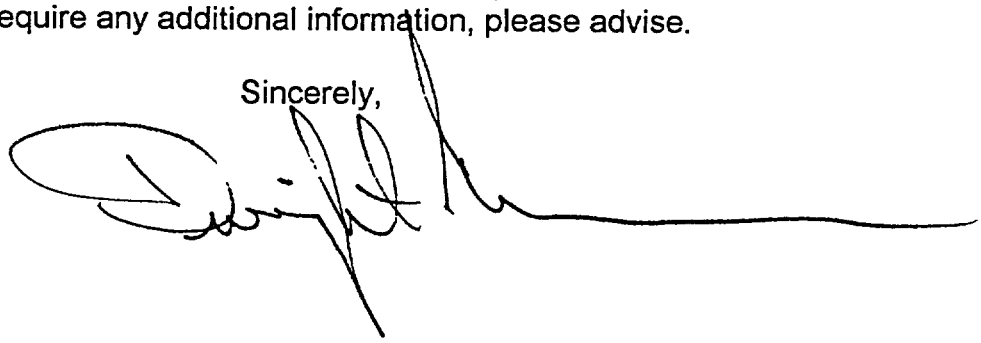
Subject: **Docket No. 50-361 and 50-362**
**60-Day Report**
**Licensee Event Report No. 2002-005**
**San Onofre Nuclear Generating Station, Units 2 and 3**

Gentlemen:

This submittal provides Licensee Event Report (LER) 2002-005 describing an inadequate Technical Specification surveillance test that is reportable in accordance with 10CFR50.73(a)(2)(i)(B). While this occurrence is applicable to both units, a single report for Unit 2 is being submitted in accordance with Section 5.2.7(8) of NUREG 1022, Revision 2.

Any actions listed are intended to ensure continued compliance with existing commitments as discussed in applicable licensing documents; this LER contains no new commitments. If you require any additional information, please advise.

Sincerely,



LER No. 2-2002-005

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3

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IE22

NRC FORM 366 (MM-YYYY) | U.S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES MM-YYYY

Estimated burden per response to comply with this mandatory information collection request 50 hrs Reported lessons learned are incorporated into the licensing process and fed back to industry Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), U S Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503 If a document used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| San Onofre Nuclear Generation Station (SONGS) Unit 2 | 05000-361 | 1 of 5 |

TITLE (4)
Missed TS SR for Salt Water Cooling System Check Valves

| 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 NAME | DOCKET NUMBER |
| 01 | 15 | 02 | 2002 | 005 | 00 | 12 | 02 | 2002 | SONGS Unit 3 | 05000-362 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |

| OPERATING MODE (9) | 1 |
|---|---|
| POWER LEVEL (10) | 100 |

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)

| | | | | | |
|---|---|---|---|---|---|
| | 20.2201(b) | | 20.2203(a)(3)(i) | 50 73(a)(2)(i)(C) | 50.73(a)(2)(vii) |
| | 20.2201(d) | | 20 2203(a)(3)(ii) | 50 73(a)(2)(ii)(A) | 50 73(a)(2)(viii)(A) |
| | 20.2203(a)(1) | | 20.2203(a)(4) | 50 73(a)(2)(ii)(B) | 50 73(a)(2)(viii)(B) |
| | 20.2203(a)(2)(i) | | 50.36(c)(1)(i)(A) | 50 73(a)(2)(iii) | 50 73(a)(2)(ix)(A) |
| | 20 2203(a)(2)(ii) | | 50 36(c)(1)(ii)(A) | 50.73(a)(2)(iv)(A) | 50.73(a)(2)(x) |
| | 20.2203(a)(2)(iii) | | 50 36(c)(2) | 50.73(a)(2)(v)(A) | 73.71(a)(4) |
| | 20 2203(a)(2)(iv) | | 50.46(a)(3)(ii) | 50.73(a)(2)(v)(B) | 73.71(a)(5) |
| | 20 2203(a)(2)(v) | | 50.73(a)(2)(i)(A) | 50 73(a)(2)(v)(C) | OTHER |
| | 20 2203(a)(2)(vi) | X | 50.73(a)(2)(i)(B) | 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| R. W. Waldo, Station Manager | 949-368-8725 |

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

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|---|
| | YES (If yes, complete EXPECTED SUBMISSION DATE). | X | NO | | | | |

ABSTRACT (Limit to 1400 spaces, I e., approximately 15 single-spaced typewritten lines) (16)


On 1/15/2002, Southern California Edison (SCE) failed to properly perform a Technical Specification (TS) Surveillance (SR) for the Salt Water Cooling System check valve that isolates the system from the non-safety related Service Water System. The missed TS SR was not discovered until 10/3/2002. The apparent cause for the delay in resolving this issue was that it was given a relatively low work priority and the issue was not identified as a potentially missed TS SR.

TS SR testing completed successfully 10/11/2002 using a temporary procedure, bringing both units into compliance with the TS. The surveillance procedure was revised on 11/15/2002. SCE is evaluating human performance and work processes to determine if additional corrective actions are required to reduce the probability of occurrence of similar events.

There was minimal safety significance for this event.

| | | |
|---|---|---|
| Plant: | San Onofre Nuclear Generation Station (SONGS) Units 2 and 3 | |
| Event Date: | January 15, 2002 | |
| Discovery Date: | October 3, 2002 | |
| | Unit 2 | Unit 3 |
| Reactor Vendor: | Combustion Engineering | Combustion Engineering |
| Mode: | Mode 1 – Power Operation | Mode 1 – Power Operation |
| Power: | 100 percent | 100 percent |

BACKGROUND:

The Salt Water Cooling (SWC) System (BS) provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation or normal shutdown, the SWC system also provides this function for various safety related and nonsafety related components. The SWC system consists of two separate, 100% capacity safety related cooling water trains. Each train consists of two 100% capacity pumps, one Component Cooling Water (CCW) heat exchanger, piping, valves, and instrumentation. The pumps and valves are remote manually aligned, except in the unlikely event of a Loss of Coolant Accident (LOCA).

Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.8, Salt Water Cooling (SWC) System, (applicable in Modes 1, 2, 3, and 4) requires two SWC system trains to be operable. An SWC system train is considered operable when the associated pump, and associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are operable.

DESCRIPTION OF THE EVENT:

On January 15, 2002, an operator (utility, licensed) questioned the test method used for the In-service Test (IST) for the SWC system seal and bearing water check valves (V) (Action Request (AR) 020100712). After isolating the Service Water System (SWS) (KG) from the SWC system, the operator opened the SWS vent valve per the test procedure to determine whether water was leaking past the check valve (test the check valve for closure). The expected result was little or no water would come out of the vent. Instead, the operator noticed that air entered the vent. The operator stated that the water was draining back into the pipe toward the SWC system pump and that it appeared the IST method didn't actually test the check valve for closure.

On January 16, 2002, the Action Request Review Committee (ARC) assigned a Field Assignment (FS) to the Cognizant Engineer (utility, non-licensed) to investigate the potentially inadequate IST method.

On February 11, 2002, the Cognizant Engineer concluded in the FS assignment that the IST was likely inadequate for the reason stated in the AR. The Cognizant Engineer then assigned an Other (OTH) assignment to the Design Engineering group to determine, in part, whether the IST for these particular check valves was required, since the SWC system pump continued to received adequate seal and bearing water flow with the SWS isolated.

On October 3, 2002 (discovery date), SCE determined that TS SR 3.7.8.3 was missed on January 15, 2002. The Design Engineer (utility, non-licensed) concluded that the IST is required to verify these check valves will close, and that the IST procedure did not adequately test the check valves for closure.

On October 4, 2002, efforts were started to revise the Check Valve Test Closed (CVTC) test and acceptance criteria. Because planning and check valve testing was expected to exceed 24 hours, a Probabilistic Risk Assessment (PRA) was performed. Based on the final PRA results, SCE conservatively concluded the testing should be completed within 16 days. Testing of all eight SWC system pump seal and bearing water check valves was completed on October 11, 2002. The tests confirmed that four valves were satisfactory and four valves were degraded (leaked) but operable (prevented an unacceptable loss of seal and bearing water flow).

Based on the guidance in NUREG 1022, Rev. 2, SCE has concluded that for reporting purposes, TS SR 3.7.8.3 was missed (not adequately performed) on January 15, 2002. TS SR 3.0.3 allows up to 24 hours or the surveillance interval, whichever is greater, to perform a missed surveillance. (A risk evaluation shall be performed for any delay greater than 24 hours, and the risk managed). However, testing was not completed until October 11, 2002. (TS SR 3.7.8.3 is performed quarterly. Consequently, the tests performed between January 15 and October 11, 2002, are also considered missed or failed TS SRs.) Because this event was not "solely" a missed surveillance, and involved more than an "oversight," the event is being reported in accordance with 10CFR50.73(a)(2)(i)(B).

On June 26, 2002, Unit 2 entered Mode 4 (lowest applicable mode for TS 3.7.8) from Mode 5 following a planned refueling outage. TS LCO 3.0.4 prohibits this operation (see Additional Information, Item 1) because 1) there was not a valid surveillance test of the SWC system pump seal and bearing water check valves, and, 2) TS LCO 3.7.8 has no Action that allows two trains of SWC system to be inoperable for an unlimited period of time. Consequently, with two trains of SWC system inoperable, the unit unknowingly entered TS LCO 3.0.3, requiring the unit be put into Mode 5. That Mode change is being reported in accordance with 10CFR50.73(a)(2)(i)(B) as an operation prohibited by TS.

CAUSE OF THE EVENT:

1. The preliminary cause of the inadequate IST in January 2002 was determined to be an unrecognized consequence of a design and maintenance change made in 1999. At that time, SCE changed the maintenance schedule on the SWC system pumps from an 18-month cycle to a 6-year cycle. When the maintenance frequency was decreased, the seal and bearing clearances could become greater, decreasing the pressure drop through the seals and bearings. The decreased pressure drop would increase the emergency seal and bearing water flow rate but decrease the supply pressure. The reduced supply pressure may not be adequate to insure salt water is lifted to the check valve during the IST. Hence, the test could fail to assure the check valve is closed even though seal and bearing flow meets the test's acceptance criterion.

   The SWS header is postulated to fail during a DBE. With a break at the low point of the SWS header, the filled SWS piping to the SWC system pump seals and bearings could create a siphon. If the seal and bearing water check valve failed to close, the siphon could divert salt water from the emergency seal and bearing water supply to the SWC system pump. However, the proceduralized IST method simulated a SWS piping failure at the high point by opening the piping at the high point vent. This breaks the siphon, allows air to enter the piping through the vent as the water drains toward the SWC pump. Consequently, salt water does not reach the check valve, and the IST method does not verify check valve function.

2. AR020100712 was brought to the ARC on January 16, 2002. The apparent cause for the delay in performing an acceptable IST is the ARC did not aggressively investigate the unexpected results of the IST. Rather than assign an Operability Assessment (OA) to answer the operator's

question regarding the adequacy of the CVTC test, the ARC assigned a relatively low priority FS (cognitive personnel error). See Additional Information Item 3.

3. The delay was exacerbated when the engineers assigned to evaluate the problem did not promptly identify the TS/IST requirements for the check valves and assess the adequacy of the test against those requirements (cognizant personnel error).

CORRECTIVE ACTIONS:

1. Testing of all eight seal and bearing water check valves was completed successfully using a temporary test procedure on October 11, 2002, bringing both units into compliance with TS 3.7.8. The four check valves that were found to be degraded but operable were repaired and retested satisfactorily.

2. The IST procedure was revised on November 15, 2002.

3. SCE is evaluating human performance and work processes to determine if additional corrective actions are required to reduce the probability of occurrence of similar events.

SAFETY SIGNIFICANCE:

There was little to no safety significance for the missed TS SR on January 15, 2002. The tests completed on October 11, 2002, demonstrated that all eight seal and bearing water check valves were operable. Therefore, there was no loss of function between January 15, and October 11, 2002.

SCE is performing an analysis to demonstrate that the pressure drop across the check valve in the fully open position in the reverse flow direction is sufficient to limit leakage under the most adverse break in the SWS piping so that the SWC system pump will remain operable even with the check valve fully open. Therefore, there was minimal safety significance to any failed but undetected TS SR ISTs prior to January 15, 2002. SCE will revise this LER should this conclusion change.

ADDITIONAL INFORMATION:

1. TS LCO 3.0.4 states that when an LCO is not met, entry into a mode in the Applicability shall not be made except when the associated Actions to be entered permit continued operation in the mode or other specified condition in the Applicability for an unlimited period of time.

2. TS SR 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable when a surveillance has not been completed within the specified frequency. A delay period of up to 24 hours or the specified frequency, whichever is greater, applies from the point in time that it is discovered that the surveillance has not been performed, and not at the time that the specified frequency was not met. If the delay is greater than 24 hours, a risk evaluation shall be performed and the risk managed.

3. On June 23, 2000, SCE reported (LER 2-2000-007) that on June 1, 2000 (AR 000600036), a TS SR was missed because of an apparent administrative error made during the implementation of the Standard Technical Specification (STS) in August 1996.

   However, on December 21, 2000 (AR 001201139), the NRC Resident Inspector at SONGS noted that the problem reported in LER 2-2000-007 had also been identified on January 5, 2000, but

not reported. SCE's investigation determined that the problem identification made in January had been given a low priority assignment for resolution and was not resolved until the TS Bases was changed on June 9, 2000, and that no reportability assignment (RPT) had been made to investigate the potential for a missed surveillance or reporting. The apparent cause was determined to be:

> "The AR and [Corrective Action (CA)] Processes ... require the generation of RPT assignments for potentially reportable conditions. In this case, it is apparent that none of the originator, the AR Administrative Staff, nor the recipient of the assignment action recognized the potential for noncompliance with the TS Bases and the need to generated a RPT assignment. ... Since it is likely that a person providing sufficiently detailed review would have questioned past compliance, the apparent cause is attributed to insufficiently detailed review."

The corrective actions for the discovery in December 2000 included reviewing the events with the ARC Administrative Staff, and placing a note on the AR system website. SCE recognizes that the corrective actions for this similar event (untimely recognition and correction of an inadequate surveillance) should have prevented the events reported herein, but did not. The corrective actions taken in response to the event reported herein will also consider the previous inadequate corrective actions.