

February 15, 2004

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Docket Nos. 50-362**
Licensee Event Report No. 2003-001
San Onofre Nuclear Generating Station Unit 3

Gentlemen:

This submittal provides Licensee Event Report (LER) 3-2003-001 describing a December 17, 2003 event that resulted in two trains of ECCS and two trains of Containment Spray being inoperable for less than five hours. This event did not affect the health and safety of either plant personnel or the public.

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 so advise.

Sincerely,

Raymond Waldo

Enclosure

cc: B. S. Mallett, Regional Administrator, NRC Region IV
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3

JLZ

NRC FORM 366 (7-2001)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 <small>Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.</small>	EXPIRES 7-31-2004
LICENSEE EVENT REPORT (LER) <small>(See reverse for required number of digits/characters for each block)</small>			

1. FACILITY NAME San Onofre Nuclear Generation Station (SONGS) Unit 3	2. DOCKET NUMBER 05000-362	3. PAGE 1 OF 4
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4. TITLE
 Breaker failure coincident with planned maintenance results in both trains of Emergency Core Cooling Systems and Containment Spray being inoperable.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	17	2003	2003	001-00		02	15	2004	SONGS Unit 3	05000-362
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL	100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)
		<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 73.71(a)(4)
		<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(5)
		<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A
		<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	
		<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	
		<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	
		<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
		<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER	
NAME R. W. Waldo, Station Manager, Nuclear Generation	TELEPHONE NUMBER (Include Area Code) 949-368-8725

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE			
	<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)		X	NO			
					MONTH	DAY	YEAR

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

On December 15 and 16, 2003, Operators removed various Train "B" components from service for maintenance, including Train "B" Emergency Core Cooling System (ECCS) and Containment Spray (CS) components. On December 17, 2003, at 0315 PST, Train "A" Feeder breaker 3B0414 unexpectedly opened resulting in a loss of power to certain Train "A" ECCS and Containment Spray components. This caused Unit 3 to enter TS 3.0.3 for two trains of ECCS being inoperable and for two trains of containment spray being inoperable.

Operators initiated corrective actions to restore power to the Train "A" components and, at 0410 PST, began reducing power. At 0535 PST, Operators reported this event to the NRC (NRC Log No. 40396). At 0800 PST, power was restored to the Train "A" ECCS and CS components, and operators exited TS 3.0.3.

This event was caused by an isolated spurious actuation of a breaker solid-state trip device (SSTD). Subsequent testing confirmed that the affected breaker consistently tripped earlier than the manufacturers specified response times for the long time overcurrent trip time. SCE determined this was an isolated occurrence.

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Plant: San Onofre Nuclear Generating Station, Unit 3
 Event Date: December 17, 2003

Reactor Vendor: Unit 3
 Combustion Engineering
 Power: 100 percent

Description of the event:

On December 15 and 16, 2003, plant operators had removed the following Train "B" components from service for routine maintenance:

- Component Cooling Water (CCW) [CC] Heat Exchanger 3ME002 [HX]
- CCW Surge Tank 3T004 [TK]
- Low Pressure Safety Injection (LPSI) [BP] Pump (3P016) [P]
- Containment Spray [BE] Pump (3P013)
- Shutdown Cooling [BP] Heat Exchanger Outlet Valve (3HV6500) [V]
- Containment Emergency Sump [BE/BP] Outlet Valve (3HV9302)
- Train "B" High Pressure Safety Injection (HPSI) Pump 3P019 had also been declared inoperable because it is supported by Train "B" CCW.

Plant Operators had entered the appropriate Technical Specification Actions statements that cover the inoperability of the above listed components.

On December 17, 2003, at 0315 PST, with Unit 3 at about 100 percent power, a Train "A" 480V Class 1E Load Center [ED] Feeder breaker 3B0414 [BKR] unexpectedly opened and Motor Control Center (MCC) 3BE de-energized. All loads connected to MCC 3BE lost power, including the following Train "A" components:

- Train "A" HPSI header supply valves (3HV9327, 3HV9330, 3HV9324, 3HV9333)
- LPSI Header to Reactor Coolant loop valves (3HV9325, 3HV9328)
- Shutdown Cooling Isolation Valve (3HV9337)
- Containment Spray Isolation Valve (3HV9367)
- 1E Battery Charger 3B003 [EJ] (125 volt Safety Related Station Battery 3B009)
- CCW non-critical loop isolation valves (3HV6223, 3HV6236)
- Containment Emergency Sump outlet valve (3HV9305)

The unexpected opening of Feeder Breaker 3B0414 (Train "A") concurrent with a Train "B" maintenance outage caused Unit 3 to enter the following TS action statements:

- TS 3.6.6.1, Containment Spray and Cooling Systems: If two containment spray trains are inoperable or any combination of three or more trains of spray and cooling inoperable, TS 3.6.6.1 requires SCE to enter TS 3.0.3 immediately:

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- TS 3.5.2, ECCS Operating, does not provide an action for two trains of ECCS out of service. If two ECCS trains are out of service, SCE is required to enter TS 3.0.3:
- TS 3.6.3, Containment Isolation Valves: CCW non-critical loop isolation valves (3HV6223, 3HV6236) were inoperable for the period that MCC 3BE was de-energized. Performing TS 3.6.3, Action A.1 (isolating the affected flow path) would have terminated CCW flow to the Reactor Coolant Pump seal and motor cooling. Hence, Operators entered TS 3.6.3, Action G, which ultimately requires a plant shutdown, an action that was already being performed.
- TS 3.8.4, DC Sources – Operating: Battery Charger 3B003 de-energized when MCC 3BE de-energized (0315 PST). Operators declared the charger and its supported battery (3B009) inoperable and entered TS 3.8.4, Action “A” (inoperable battery) and Action “C” (inoperable charger). Not restoring the battery within two hours requires a plant shutdown (TS 3.8.4, Action B.1), an action that was already being performed.

Operators initiated corrective actions to restore power to MCC 3BE and, at 0410 PST, began reducing power in accordance with TS 3.0.3. At 0535 PST, Operators reported this occurrence to the NRC (NRC Log Number 40396) as required by 10CFR50.72(b)(2)(i) (TS required shutdown) and 10CFR50.72(b)(3)(v) (Loss of Safety Function).

The downpower proceeded without incident. The MCC bus and bus loads were tested with no faults found. SCE successfully tested the replacement breaker and installed it in breaker position 3B0414. After determining the source of the unexpected breaker trip to be the solid-state trip device (SSTD) for the breaker removed from position 3B0414 (see Cause of the Event below), at 0735 PST, SCE racked-in and closed the breaker re-energizing MCC 3BE. Operators reconnected the Train “A” components listed above and exited TS 3.0.3 at 0800 PST. Battery 3B009 was surveilled and declared operable at 0900 PST. At 1000 PST, Operators began increasing reactor power and the Unit was essentially at full power by 1500 PST. SCE is providing this follow-up report in accordance with 10 CFR 50.73(a)(2)(v) and 10 CFR 50.73(a)(2)(vii).

Cause of the Event:

SCE’s engineering judgment is that this event was an isolated spurious trip of an SSTD. Load Center breaker 3B0414 (model number KDON-600S) is equipped with an Asea Brown Boveri (ABB) SS4-type SSTD. This SSTD has two flag indicators that lock in to help diagnose the cause of a breaker trip - a long time overcurrent or a short time overcurrent trip. SCE found that 3B0414 had the long time overcurrent trip flag exposed as a result of the 12/17/2003 trip.

The SSTD was field-tested using the manufacturer’s supplied test box, which indicated that the SSTD was not functioning correctly. Subsequent investigative testing at the SONGS electrical shop found that the SSTD would initiate a breaker trip consistently earlier than the manufacturers specified response times for the long time overcurrent trip time. When the breaker was last overhauled in April 2002, the breaker (and SSTD) tested satisfactorily.

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Corrective Actions Taken:

Shutdown of Unit 3 commenced at 0410 PST on December 17, 2003. MCC 3BE was stripped of all loads and individually fed loads were checked for faults. Load Center breaker 3B0414 was replaced with an operable breaker.

While there is other SONGS operating experience with SSTD's, there was no similar operating experience found. SCE reviewed SONGS maintenance history on this serial number range of SSTD and found no other examples of this type of failure (i.e., trip curve drifting outside of the manufacturers response curve). Also, a review of industry operating experience did not locate any similar failures of this series SSTD.

Safety Significance:

SCE performed an assessment of the Core Damage Probability (CDP) and the Large Early Release Probability (LERP) for this event. The results of the assessment found that although the event resulted in a temporary increase in core damage and large early release frequencies, its limited duration yielded a low to moderate risk increase overall. The assessment determined the total increase in CDP and LERP as a result of this occurrence was 1.9E-06 and 1.3E-07, respectively. The assessment was based on the reported actual component unavailability and system alignments at the time of the event and did not credit any operator actions that may have been taken to recover MCC 3BE in response to an initiating event requiring ECCS operation.

There were no consequences to the public health and safety as a result of this event.

Additional Information:

In the past 3 years there have been no events where SONGS has lost two trains of safety systems or where the TS required the initiation of a plant shutdown.