

April 12, 2006

U.S. Nuclear Regulatory Commission
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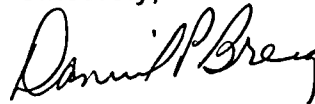
Subject: **Docket No. 50-362**
Licensee Event Report No. 2006-001
San Onofre Nuclear Generating Station, Unit 3

Dear Sir or Madam:

This submittal provides Licensee Event Report 2006-001 for the inadvertent fill of a steam generator during an Emergency Safety Features Actuation System subgroup relay test. The plant responded as designed and this event did not affect the health and safety of either plant personnel or the public.

If you require any additional information, please contact me.

Sincerely,



Unit 3 LER No. 2006-001

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

1. FACILITY NAME San Onofre Nuclear Generating Station (SONGS) Unit 3	2. DOCKET NUMBER 05000362	3. PAGE 1 OF 4
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4. TITLE
Emergency Subgroup Relay Test Causes Inadvertent Fill of Steam Generator

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
02	15	2006	2006-001-00			04	12	2006		

9. OPERATING MODE	10. POWER LEVEL	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR *: (Check all that apply)				
1	100	20.2201(b)		20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
		20.2201(d)		20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
		20.2203(a)(1)		50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	73.71(a)(4)
		20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
		20.2203(a)(2)(ii)		50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 368A
		20.2203(a)(2)(iii)		50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
		20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
		20.2203(a)(2)(v)		50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
		20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
		20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME D. P. Breig, Station Manager, Nuclear Generation	TELEPHONE NUMBER (Include Area Code) 949-368-9263
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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		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)				<input checked="" type="checkbox"/> X	<input type="checkbox"/> NO			

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

On 02/15/2006 at about 1034 PST, during a subgroup relay surveillance test of the Emergency Feedwater Actuation Signal 1 (EFAS-1) relay K-402B on Train B for Steam Generator (SG) E089, valves HV4706 and HV4715 did not close. The valves are in the Auxiliary Feedwater flowpath to SG E089. Operators terminated the surveillance. The main feedwater (MFW) control system responded as designed. SG E089 level rise stopped at about 77 percent and returned to the setpoint of about 67 percent by 1051 PST.

SCE discovered that a Cutler-Hammer test switch contact block failed. The coils of a return spring for a test switch contact plunger stuck together in the compressed state due to hardened grease at the return spring. This allowed the circuit to open and reset the timing relay in the test circuit, which removed the actuation signal.

SCE replaced the test switch contact block and re-performed the surveillance of the EFAS-1 subgroup relay K-402B with satisfactory results.

The contact block is used only during surveillance tests and is automatically removed from the active circuit upon receipt of a valid EFAS signal. Therefore, the safety significance of the contact block failure is minimal.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV NO	
San Onofre Nuclear Generating Station (SONGS) Unit 3	05000362	2006	--001 --	00	2 of 4

Plant: San Onofre Nuclear Generating Station (SONGS) Unit 3
 Event Date: February 15, 2006
 Reactor Vendor: Combustion Engineering
 Mode: Mode 1
 Power: 100 percent

Description of Event

On February 15, 2006, plant operators were performing a routine subgroup relay surveillance test of the Emergency Feedwater Actuation Signal 1 (EFAS-1) relay K-402B for Train "B" Steam Generator (SG) E089 in accordance with site operations procedures. This surveillance is required by Technical Specification (TS) 3.3.6, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip" Surveillance Requirement 3.3.6.2. The surveillance being performed was to verify that ESF subgroup relay [RLY] K-402B (EFAS-1) placed its actuated equipment in the required position.

To perform the surveillance for ESFAS subgroup relay K-402B (EFAS-1), plant operators manually initiate a test signal to K-402B (EFAS-1), which actuates the following components:

- Valve [V] HV4716, "Steam to Auxiliary Feedwater (AFW) [BA] Pump [P] Turbine P-140 Throttle Valve",
- Valve HV4706, "Auxiliary Feedwater Pump P-140 to SG E089 Discharge Valve", and
- Valve HV4715, "SG E089 Auxiliary Feedwater Containment Isolation Valve".

During normal plant operation, valves HV4706, HV4715, and HV4716 are closed. Valves HV4706, HV4715 are "jog" valves and will only move (open or close) when an actuation signal is present. To verify proper operation of the valves upon an EFAS-1 actuation signal, the surveillance test requires plant operators to align HV4706 and HV4715 to the open position. In the test mode, the expected system response for a K-402B, EFAS-1 actuation signal is the opening of HV4716 and the closing of HV4706 and HV4715. Valves HV4706 and HV4715 are in the AFW flowpath to SG E089. When valves HV4706 and HV4715 are closed, AFW flow would return to the condensate storage tank [KA] via a miniflow line.

At about 1034 PST, operators aligned HV4706 and HV4715 to the open position for the surveillance test. When ESFAS subgroup relay K-402B (EFAS-1) was actuated, operators observed that HV4716 opened (which started the turbine driven AFW pump) and that HV4706 and HV4715 did not move to their closed position. Operators responded by terminating the surveillance and closed HV4716. Valves HV4706 and HV4715 were closed shortly thereafter.

At about this same time, alarms 52A06 "E089 Level Hi/Lo" and 56A33 "E089 Level Hi Pretrip" actuated in the control room. The main feedwater control system (MFCS) [JB]

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV NO	
San Onofre Nuclear Generating Station (SONGS) Unit 3	05000362	2006	--001--	00	3 of 4

responded as designed and reduced main feedwater flow. Steam Generator E089 level rise stopped at about 77 percent and returned to the setpoint of about 67 percent by 1051 PST.

Actuation of the auxiliary feedwater system during a planned surveillance is ordinarily not reportable. Southern California Edison (SCE) is reporting this event in accordance with 10CFR50.73(a)(2)(iv) because the system actuated in a way that was not part of the planned evolution. This is consistent with the guidance provided in NUREG-1022, Rev. 2.

Cause of Event

This event occurred due to a failure of the test switch contact block [BLK] (Cutler-Hammer contact block part number 10250T55). The coils of a return spring for a test switch contact plunger stuck together in the compressed state due to hardened grease at the return spring. This changed the intended make-before-break operation of the test switch to break-before-make. This allowed the circuit to open and reset the timing relay in the test circuit, which removed the actuation signal.

Since valves HV4706 and HV4715 are "jog" valves, the contact block failure resulted in the valves losing their close signal, and not moving to their closed position.

Corrective Actions

SCE has taken or is evaluating the following corrective actions:

1. On February 15, 2006 at about 1713 PST, SCE replaced the test switch contact block and repeated the test for ESFAS subgroup relay K-402B (EFAS-1). The results were satisfactory.
2. Cutler-Hammer contact blocks part number 10250T55 are used in the ESFAS subgroup relay test circuits. There are four 10250T55 contact blocks installed in the plant, one each for Train A and Train B in both Units 2 and 3. The contact block replaced in item #1 (above) was not inspected for hardened grease because the cause evaluation was not completed at that time. Consequently, SCE plans to inspect and clean or replace the four Cutler-Hammer contact blocks.
3. SCE will evaluate other similarly configured Cutler-Hammer contact blocks to determine if they could be affected. This evaluation and any required corrective actions will be documented in SCE's corrective action program.
4. Prior to this event, these contact blocks were not required to be routinely inspected or replaced. SCE is evaluating replacing the contact blocks on a periodic basis.
5. SCE reviewed each ESFAS Subgroup Relay Test to determine if failure of any component (or combination of components) to fully go to the ESFAS position could cause unintended movement of air, gas, or water. SCE identified several similar

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV NO	
San Onofre Nuclear Generating Station (SONGS) Unit 3	05000362	2006	--001--	00	4 of 4

test procedures and has incorporated the lessons learned from this event into future pre-job briefs for these procedures.

Safety Significance

Failure of the test switch contact block could not prevent safety related plant equipment from performing its required safety function. The contact block is used only during surveillance and/or test evolutions and is automatically removed from the active circuit upon receipt of a valid ESFAS signal. Therefore, the safety significance of the contact block failure is minimal.

This test failure resulted in about 900 gpm of auxiliary feedwater going to SG E089 for approximately two minutes. Main feedwater flow to SG E089 is about 15,000 gpm. This system transient was within the capability of the main feedwater control system to control the steam generator level, and the system responded as designed.

Additional Information

Previous occurrences - In the past three years, SCE has not reported any other ESFAS test failures that caused an ESFAS system to respond in a manner that was not expected. However while performing a subgroup relay test for Unit 2 Train B EFAS-1 on September 11, 2001, valve 2HV4715 failed to close. SCE discovered that a Potter and Brumfield relay had failed and reported this event in voluntary LER 2002-001, "Aging Phenomenon Affects of Certain Potter and Brumfield Relays." In this event, valve 2HV4706 closed as expected and valve 2HV4715 was manually closed from the control room.

Potential Generic Consideration - The contact block is manufactured by Cutler-Hammer, part number 10250T55 and was dedicated by ABB Combustion Engineering (now Westinghouse) in accordance with 10CFR50 Appendix B and procured as a safety-related component. SCE's believes that the grease found on the failed spring was most likely introduced by Cutler-Hammer.

These contact blocks are used in a test circuit and would not create a substantial safety hazard at SONGS. However, at other facilities, these contact blocks could be used in critical applications and may potentially create a substantial safety hazard. Westinghouse has indicated they will review this issue.