

TOTAL NUMBER OF COPIES REQUIRED: LTTR 46 ENCL 45

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3										DOCKET NUMBER (2) 0 5 0 0 0 3 6 1				PAGE (3) 1 OF 0 5										
TITLE (4) SPURIOUS TRAIN "B" TGIS CHLORINE CHANNEL ACTUATION																								
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)											
1	1	0	7	8	7	8	7	0	2	3	0	0	1	2	0	4	8	7	SONGS, UNIT 3				0 5 0 0 0 3 6 2	
OPERATING MODE (9) 5			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 1 0 0			20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 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)				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)				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 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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS														
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR								
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input type="checkbox"/> NO		0	4	0	1	8	8					

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

On November 7, 1987, at 1055, with Unit 2 in Mode 5 and Unit 3 at 100% power in Mode 1, Train "B" TGIS initiated operation of both trains of CREACUS on receipt of a high chlorine gas signal. CREACUS operated in the isolation mode as designed, until it was determined that the signal was spurious and that no chlorine gas was present.

Fire detection and actuation supervisory system trouble alarms (which are fed from the same electrical source) were received simultaneously with the TGIS and CREACUS alarms.

The root cause investigation has not yet determined the cause of the actuation and is continuing. The investigation results will be reported in a supplement to this LER.

There is no safety significance to this event since all TGIS and CREACUS components operated as designed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNITS 2 AND 3	DOCKET NUMBER 05000361	LER NUMBER 87-023-00	PAGE 2 OF 5
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Plant: San Onofre Nuclear Generating Station (SONGS)
Units: 2 and 3
Reactor Vendor: Combustion Engineering
Event Date: November 7, 1987
Time: 1055

A. PLANT CONDITIONS AT THE TIME OF THE EVENT:

Modes: (5) Cold Shutdown - Unit 2
(1) Power Operation - Unit 3

B. BACKGROUND INFORMATION:

The common Unit 2 and 3 control room is designed to be automatically isolated by the Control Room Emergency Air Cleanup System (CREACUS) (EIIS System Code VI) to protect personnel from potential outside toxic gases. CREACUS is actuated to the isolation mode when the Toxic Gas Isolation System (TGIS) (EIIS System Code VI) detects chlorine, ammonia, butane or propane gas in the outside air intake. Technical Specification Limiting Condition for Operation 3.3.2, "Engineered Safety Features Actuation System," specifies a TGIS actuation set point for each of these gases.

There are two independent trains of both CREACUS and TGIS. In the event that either TGIS train detects a gas concentration above the LCO limits, TGIS actuates CREACUS to the isolation mode. Each CREACUS train then closes all control room air intake and exhaust pathways, and recirculates the air inside the control room spaces through HEPA filters and charcoal adsorbers.

480 volt AC Motor Control Centers (MCC) (EIIS System Code ED) (EIIS Component Code SWGR) BS (Train "B") and BQ (Train "A") provide electrical power for each TGIS train and certain other Engineered Safety Feature (ESF) systems. Additionally, MCC BS provides electrical power for the Units 2 and 3 fire detection and actuation systems. These MCCs are energized from either an off-site source or from an on-site emergency diesel generator of the associated train. Since these systems are common to both Units 2 and 3, operating power can be provided from either Unit.

The Unit 2 or 3 electrical power source for these two MCCs is selected by a transfer switch (EIIS Component Code 43). Each transfer switch consists of two circuit breakers and a Kirk Key Interlock to prevent closing both circuit breakers at the same time.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNITS 2 AND 3	DOCKET NUMBER 05000361	LER NUMBER 87-023-00	PAGE 3 OF 5
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C. DESCRIPTION OF THE EVENT:

1. Event:

On November 7, 1987, at 1055, with Unit 2 in Mode 5 and Unit 3 at 100% power in Mode 1, Train "B" TGIS initiated operation of both trains of CREACUS on receipt of a high chlorine gas signal. At the time, the MCCs supplied by 480 volt load center 2B06 for Unit 2 were being energized and the operating handle of the circuit breaker feeding MCC BS was repositioned.

CREACUS operated in the isolation mode as designed, until it was determined that the signal was spurious and that no chlorine gas was present.

Fire detection and actuation supervisory system trouble alarms (which are fed from the same electrical source) were received simultaneously with the TGIS and CREACUS alarms.

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

None.

3. Sequence of Events on November 7, 1987:

<u>TIME</u>	<u>ACTION</u>
1055	TGIS Train "B" initiated CREACUS on high chlorine signal. Fire detection and actuation system trouble alarms received.
~1105	Operators completed checks for evidence of chlorine gas. None was detected.
1345	TGIS Train "B" reset and both CREACUS trains were returned to standby.

4. Method of Discovery:

Control room annunciation of TGIS actuation and CREACUS operation in the isolation mode.

5. Personnel Actions and Analysis of Actions:

Operators promptly verified proper operation of both CREACUS trains. The operators then determined that there was no odor of chlorine in the vicinity of the control room air intake from which both TGIS Trains "A" and "B" samples are drawn; nor were any chlorine based compounds being used at the time. The human sense of smell is normally able to detect a chlorine concentration which is about one-half of the TGIS set point. TGIS and CREACUS were then reset.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNITS 2 AND 3	DOCKET NUMBER 05000361	LER NUMBER 87-023-00	PAGE 4 OF 5
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6. Safety System Responses:

Both trains of CREACUS started and operated as designed.

D. CAUSE OF THE EVENT:

SCE has not been able to determine the cause of the TGIS actuation. The following describes the evaluations conducted to date:

1. Valid Actuation

Valid actuation of TGIS has been discounted since Train "A" did not actuate and, as described above, the presence of chlorine was not observed.

2. Spurious Actuation

Spurious actuation of the TGIS chlorine channel would require either: (1) a failure in TGIS circuitry; (2) an outside influence on the chlorine channel such as radio frequency interference or electromagnetic interference; or (3) a perturbation in the TGIS power source. In this regard:

- a. Testing of the Train "B" TGIS circuitry did not identify any problems in the circuitry.
- b. Investigation of outside influences which might be capable of causing a spurious actuation of the chlorine channel has, to date, resulted in the following:

- 1) At the time of the actuation, an operator was energizing Unit 2 480 volt load center 2B06 (Train "B") and its associated MCCs. This switch gear is in the same room as MCC BS which powers TGIS Train "B" and could have been a source of radio or electromagnetic interference, or an electric noise spike.

However, an electric noise spike resulting from the switching operations could not have affected TGIS since MCC BS was energized by Unit 3 and the Unit 2 load center 2B06 feeder breaker to MCC BS was open. In addition, the conductors and switchgear in this room are enclosed thus minimizing radio frequency or electromagnetic interference resulting from switching operations.

Prior occurrences of TGIS chlorine channel actuation have not been observed during switching operations in this room. It is, therefore, not considered credible that energization of load center 2B06 caused the TGIS actuation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNITS 2 AND 3	DOCKET NUMBER 05000361	LER NUMBER 87-023-00	PAGE 5 OF 5
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- 2) While the operator was energizing load center 2B06 as described above, he observed the circuit breaker that controls power feed to MCC BS to be about 20 degrees from the mechanical stop for the closed position. The operator moved the handle to the mechanical stop. Upon release, it returned to the position originally observed by the operator.

If the circuit breaker was defective, movement of the operating handle could have caused a brief voltage perturbation. TGIS and the fire detection and actuation systems contain electronic components which are susceptible to spurious operation or trouble indication during voltage perturbations of six to eight cycles duration. The other systems powered from MCC BS are non-electronic and are equipped with a 13 second time delay in their loss of power alarms.

To evaluate this possible cause of the spurious TGIS, MCC BS voltage was monitored while the handle of the circuit breaker feeding MCC BS was repeatedly pushed to the closed mechanical stop. In each case, there was no voltage perturbation.

Thermographic inspection of the circuit breaker and the TGIS feeder breakers revealed no problem with the breaker or electrical connections.

E. CORRECTIVE ACTIONS:

SCE continues to investigate the cause of this TGIS chlorine channel actuation. The investigation results will be reported in a supplement to this LER.

F. SAFETY SIGNIFICANCE OF THE EVENT:

There is no safety significance to this event since all TGIS and CREACUS components operated as designed.

G. ADDITIONAL INFORMATION:

Previous LERs on Similar Events:

Other spurious TGIS chlorine channel actuations have not occurred. Further, the TGIS chlorine channels have been reliable and trouble free.

Implementation of corrective actions discussed in LER 85-010 (Docket Number 50-361) have significantly reduced other types of spurious TGIS actuations.



Southern California Edison Company

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December 4, 1987

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 87-023
San Onofre Nuclear Generating Station, Units 2 and 3

Pursuant to 10 CFR 50.73(a)(2)(iv), this submittal provides the required 30-day written Licensee Event Report (LER) for an occurrence involving a spurious actuation of the Toxic Gas Isolation System. Since this event involved shared systems between Units 2 and 3, a single report is being submitted in accordance with NUREG-1022. Neither the health and safety of plant personnel nor the health and safety of the public was affected by this occurrence.

If you require any additional information, please so advise.

Sincerely,

HEMog _____

Enclosure: LER No. 87-023

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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11