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ACCESSION NBR:8809080161 DOC.DATE: 88/08/31 NOTARIZED: NO DOCKET #
 FACIL:50-361 San Onofre Nuclear Station, Unit 2, Southern Californ 05000361
 AUTH.NAME AUTHOR AFFILIATION
 MORGAN,H.E. Southern California Edison Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-019-00:on 880801,eighteen month 125 V battery svc
 test inadequate due to FSAR inconsistency.W/880831 ltr.
 W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
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INTERNAL: ACRS MICHELSON	1 1	ACRS MOELLER	2 2
ACRS WYLIE	1 1	AEOD/DOA	1 1
AEOD/DSP/NAS	1 1	AEOD/DSP/ROAB	2 2
AEOD/DSP/TPAB	1 1	ARM/DCTS/DAB	1 1
DEDRO	1 1	NRR/DEST/ADS 7E	1 0
NRR/DEST/CEB 8H	1 1	NRR/DEST/ESB 8D	1 1
NRR/DEST/ICSB 7	1 1	NRR/DEST/MEB 9H	1 1
NRR/DEST/MTB 9H	1 1	NRR/DEST/PSB 8D	1 1
NRR/DEST/RSB 8E	1 1	NRR/DEST/SGB 8D	1 1
NRR/DLPQ/HFB 10	1 1	NRR/DLPQ/QAB 10	1 1
NRR/DOEA/EAB 11	1 1	NRR/DREP/RAB 10	1 1
NRR/DREP/RPB 10	2 2	NRR/DRIS/SIB 9A	1 1
NUDOCS-ABSTRACT	1 1	REG FILE 02	1 1
RES TELFORD,J	1 1	RES/DSIR DEPY	1 1
RES/DSIR/EIB	1 1	RGN5 FILE 01	1 1
EXTERNAL: EG&G WILLIAMS,S	4 4	FORD BLDG HOY,A	1 1
H ST LOBBY WARD	1 1	LPDR	1 1
NRC PDR	1 1	NSIC HARRIS,J	1 1
NSIC MAYS,G	1 1		

LICENSEE EVENT REPORT (LER)

Facility Name (1)						Docket Number (2)						Page (3)					
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2						0 5 0 0 0 3 6 1						1 of 0 5					
Title (4)																	

18-MONTH 125-VOLT BATTERY SERVICE TEST INADEQUATE DUE TO AN FSAR INCONSISTENCY

EVENT DATE (5)				LER NUMBER (6)				REPORT DATE (7)				OTHER FACILITIES INVOLVED (8)					
Month	Day	Year	Year	/// Sequential ///	/// Revision ///	Month	Day	Year	Facility Names		Docket Number(s)						
0 8	0 1	8 8	8 8	0 1 9	0 0	0 8	3 1	8 8	SONGS, UNIT 3		0 5 0 0 0 3 6 2						
OPERATING MODE (9)				THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)													
POWER LEVEL (10) 1 0 0 //////////////////////////////////// //////////////////////////////////// //////////////////////////////////// //////////////////////////////////// //////////////////////////////////// ////////////////////////////////////				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)		50.36(c)(2)		50.73(a)(2)(vii)		Other (Specify in							
				20.405(a)(1)(iii)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		Abstract below and							
				20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		in text)							
				20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)									

LICENSEE CONTACT FOR THIS LER (12)

Name										TELEPHONE NUMBER							
H. E. Morgan, Station Manager										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	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

Yes (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO										Expected Submission Date (15)		Month	Day	Year

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

On 8/01/88, during a review of the 125-volt battery design in response to a Nuclear Safety Concern, it was determined that an FSAR inconsistency had resulted in the 18-month battery service test not adequately demonstrating the 6-hour design duty cycle of battery banks C and D, contrary to Technical Specification 4.8.2.1.d. An adequate surveillance test was performed to ensure battery operability for fuel cycles 1, 3 and 4 for both Units, since for each of these cycles the 8-hour performance discharge test was performed in lieu of the service test, as permitted by TS 4.8.2.1.e. For fuel cycle 2 of both Units, battery operability was not demonstrated because the 18-month interval service test was performed using the incorrect 90-minute duty cycle.

The service test procedure was developed from the battery load profile calculation. This calculation was based on FSAR Sections 8.1 and 8.3, pertaining to electrical power design features, which reflects a design rating of 90 minutes for batteries C and D. This is inconsistent with FSAR Sections 6 and 15 which indicate that the batteries are required to operate up to 6 hours following an accident to support Shutdown Cooling (SDC) valve operation. Consequently, the 6-hour duty cycle requirement was not included in the calculation.

The battery calculation was revised to include an appendix which demonstrates that the battery can support SDC system initiation at times greater than 8 hours post-accident. Prior to the next service test, currently scheduled to be performed at the Unit 2 cycle 5 refueling outage, the FSAR, battery load calculation and service test procedure will be revised to reflect the correct duty cycle.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

SAN ONOFRE NUCLEAR GENERATION STATION UNIT 2	DOCKET NUMBER 05000361	LER NUMBER 88-019-00	PAGE 2 OF 5
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Plant: San Onofre Nuclear Generating Station
Units: 2 and 3
Reactor Vendor: Combustion Engineering
Event Date: 8/01/88

A. CONDITIONS AT TIME OF THE EVENT:

Unit 2 - Mode 1, Full Power
Unit 3 - Mode 5, Cold Shutdown

B. BACKGROUND INFORMATION:

The D.C. electrical power system (EIIS System Code EJ) consists of four independent 125-volt battery (EIIS Component Code BTRY) banks and their associated distribution systems. The batteries are designed to supply sufficient power to safety related equipment required for the safe shutdown and cooldown of the plant following a Design Basis Accident concurrent with a loss of offsite power.

Battery banks C and D supply A.C. power, via separate inverters, to two 10-inch motor-operated Shutdown Cooling (SDC) System (EIIS System Code BP) isolation valves, HV-9377 and HV-9378, respectively (EIIS Component Code ISV), and to other safety related loads. The Final Safety Analysis Report (FSAR), Sections 6 (Engineered Safety Features) and 15 (Accident Analyses), indicates that SDC may be initiated at any time up to 6 hours subsequent to an accident. In order to initiate SDC flow, both HV-9377 and HV-9378, which are in series, are required to be opened remotely from the Control Room. No credit is taken for SDC flow initiation via the parallel 16-inch SDC line since the two 16-inch isolation valves have no source of battery power and the FSAR assumes a loss of offsite electrical power and the additional failure of an emergency diesel generator (EIIS Component Code DG) (EIIS System Code EK).

Technical Specification (TS) 3.8.2 requires battery bank C and D to be operable in modes 1 through 4. Periodic tests are performed as required by TS Surveillance Requirements to verify battery operability. Included in these requirements is an 18-month battery service test (TS 4.8.2.1.d) which demonstrates that the battery capacity is adequate to supply and maintain in operable status all of the actual or simulated emergency loads for the design duty cycle. As described above, the design duty cycle should have been 6 hours post-accident. In accordance with TS 4.8.2.1.e, an 8-hour performance test may be performed in lieu of the service test required by TS 4.8.2.1.d.

As part of the original plant design, the loads connected to Batteries C and D were not required to operate beyond 90 minutes following an accident. Prior to initial startup of Units 2 and 3, the 10-inch SDC line was added to the plant and the duty cycle of Batteries C and D became 6 hours versus 90 minutes.

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C. DESCRIPTION OF THE EVENT:

1. Event:

In response to a Nuclear Safety Concern which questioned the ability of the batteries to support shutdown cooling initiation following a design basis event, a review of the battery design and the surveillance test procedures was initiated. During this review on August 1, 1988, it was determined that the 18-month interval service test was performed for the 90-minute duty cycle and, therefore, did not demonstrate operability of the batteries for a 6-hour duty cycle.

A review of plant records indicates that an adequate surveillance test was performed to ensure battery operability for fuel cycles 1, 3 and 4 for both Units, since for each of these fuel cycles an 8-hour performance discharge test was performed. For fuel cycle 2 of both Units, battery operability was not demonstrated because the 18-month interval service test was performed using the 90-minute duty cycle.

Review of this issue included an evaluation of the battery design bases, reassessment of the battery design, review of emergency operating procedures, surveillance procedures, test results, and battery performance calculations. This review concluded that, based upon performance testing, the batteries would support shutdown cooling initiation at times in excess of the required 6 hours. In fact, battery calculations indicate that with the current loads there is sufficient capacity to ensure SDC initiation at times greater than 8 hours post-accident.

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

None.

3. Sequence of Events:

Not applicable.

4. Method of Discovery:

The event was discovered as a result of a review of the battery design in response to a Nuclear Safety Concern.

5. Personnel Actions and Analysis of Actions:

Not applicable.

6. Safety System Responses:

Not applicable.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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D. CAUSE OF THE EVENT:

1. Immediate Cause:

The surveillance procedure for the 18-month battery service test required a test duration of 90 minutes as described in the battery load profile calculation. This test length does not demonstrate a battery capacity of at least 6 hours.

2. Root Cause:

The cause of the incorrect service test and calculation is due to an inconsistency in the FSAR. While FSAR Sections 6 and 15 indicate SDC initiation up to 6 hours following an accident, FSAR Sections 8.1 and 8.3 pertaining to electrical power design features, including the batteries, require a design rating of 90 minutes for batteries C and D and does not accurately describe use of these batteries post-accident. Because the battery load profile calculation was based on FSAR Sections 8.1 and 8.3, the 6-hour duty cycle requirement was not included in the calculation.

E. CORRECTIVE ACTIONS:

1. Corrective Actions Taken:

- a. Prior to cycle 4 operation for both Units, 8-hour battery performance tests were performed.
- b. The battery calculation was revised to include an appendix which demonstrates that the battery can support SDC system initiation at times greater than 8 hours post-accident.

2. Planned Corrective Actions:

- a. FSAR Sections 8.1 and 8.3 will be revised to reflect the use of the batteries post-accident.
- b. The load profile calculation will be revised to accurately reflect the design bases described in the revised FSAR sections 8.1 and 8.3. Other design documents will be revised, as appropriate.
- c. Battery surveillance procedures will be revised prior to the next service test, currently scheduled to be performed at the Unit 2 cycle 5 refueling outage, to reflect the service test requirements described in the revised load profile calculation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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F. SAFETY SIGNIFICANCE OF THE EVENT:

Review of this issue included an evaluation of the battery design bases, reassessment of the battery design, review of emergency operating procedures, surveillance procedures, test results, and battery performance calculations. These tasks resulted in the determination that based upon performance testing, the batteries would support shutdown cooling initiation at times in excess of the required 6 hours. Therefore, there are no safety consequences associated with this event.

G. ADDITIONAL INFORMATION:

1. Component Failure Information:

Not applicable.

2. Previous LERs on Similar Events:

None.

3. Results of NPRDS Search:

Not applicable.

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

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SAN CLEMENTE, CALIFORNIA 92672

H. E. MORGAN
STATION MANAGER

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August 31, 1988

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

Subject: Docket No. 50-361
30-Day Report
Licensee Event Report No. 88-019
San Onofre Nuclear Generating Station, Units 2 and 3

Pursuant to 10 CFR 50.73(a)(2)(i)(B), this submittal provides the required 30-day written Licensee Event Report (LER) for occurrences involving inadequate testing of the Unit 2 and Unit 3 125-volt battery banks. Since the systems, cause and corrective actions for these occurrences are the same, a single report is being submitted for Unit 2 in accordance with NUREG-1022. Neither the health and safety of plant personnel or the public was affected by these occurrences.

If you require any additional information, please so advise.

Sincerely,

Handwritten signature: H. E. Morgan for HE Morgan

Enclosure: LER No. 88-019

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)

Handwritten: REC 2 11