

April 16, 2001

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

Subject: **Docket No. 50-361 and 50-362**
60-Day Report
Licensee Event Report No. 2001-001
San Onofre Nuclear Generating Station, Units 2 & 3

Gentlemen:

This submittal provides a 60-day Licensee Event Report (LER) in accordance with 10CFR50.73(a)(2)(i). This LER is for missed Technical Specification Surveillance's for the Emergency Diesel Generators Automatic Voltage Regulators. Neither the health nor the safety of plant personnel or the public was affected by this occurrence.

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,



LER No. 2001-001

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

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NRC FORM 366 (MM-YYYY)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 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.		EXPIRES MM-YYYY	
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)							
FACILITY NAME (1) San Onofre Nuclear Generation Station (SONGS) Unit 2				DOCKET NUMBER (2) 05000-361		PAGE (3) 1 of 4	
TITLE (4) More Conservative Understanding of EDG Automatic Voltage Regulator TS Surveillance Testing Results in TS Violation							
EVENT DATE (5) MONTH DAY YEAR		LER NUMBER (6) YEAR SEQUENTIAL NUMBER REVISION NUMBER		REPORT DATE (7) MONTH DAY YEAR		OTHER FACILITIES INVOLVED (8) FACILITY NAME DOCKET NUMBER	
2 22 01		2001 001 00		4 16 2001		SONGS Unit 3 05000-362	
OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)					
POWER LEVEL (10) 100		20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(i)(C)	
		20.2201(d)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(A)	
		20.2203(a)(1)		20.2203(a)(4)		50.73(a)(2)(ii)(B)	
		20.2203(a)(2)(i)		50.36(c)(1)(i)(A)		50.73(a)(2)(iii)	
		20.2203(a)(2)(ii)		50.36(c)(1)(ii)(A)		50.73(a)(2)(iv)(A)	
		20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(v)(A)	
		20.2203(a)(2)(iv)		50.46(a)(3)(ii)		50.73(a)(2)(v)(B)	
		20.2203(a)(2)(v)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(C)	
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 R. W. Krieger, Vice President, Nuclear Operations				TELEPHONE NUMBER (Include Area Code) 949-368-6255			
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT
SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE). X NO					EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR		

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

On February 22, 2001, SCE recognized that at times in the past, one or more of the four Emergency Diesel Generators (EDG) have been aligned to an automatic voltage regulator (AVR) that was not included in all of the Technical Specification (TS) surveillance testing for the EDG. Consequently, even though this discrepancy is considered administrative in nature and surveillance testing in itself does not impact the operability of an EDG, SCE is reporting this condition in accordance with 10 CFR 50.73(a)(2)(i)(B) as this occurrence does not consist solely of a case of a late surveillance.

The cause was an inappropriate assumption that the AVR could be adequately tested as a sub-component to demonstrate its operability in support of the EDG. When the applicable surveillance procedure was developed, SCE did not incorporate the most conservative application of these TS surveillance requirements.

TS compliance was achieved by selecting an AVR that had been tested or completing the required surveillance testing. Subsequently, operator training was provided on the revised methodology for performing EDG surveillance testing. On April 6, 2001, SCE submitted a TS amendment application to clarify the applicable EDG surveillance requirements for ensuring AVR operability.

Because the AVRs were found operable when tested, SCE concludes this occurrence has no safety significance.

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	<u>Unit 2</u>	<u>Unit 3</u>
Reactor Vendor:	Combustion Engineering	Combustion Engineering
Mode:	Mode 1 – Power Operation	Mode 5 – Cold Shutdown
Power:	99.8 percent	N/A
Temperature:	540 degrees F	141 degrees F
Pressure:	2250 psia	349 psia

Background:

San Onofre Units 2 and 3 each have two emergency diesel generators (EDGs) {EK}, four total. Each EDG is equipped with two automatic voltage regulator (AVR) {RG} circuits. If one AVR becomes inoperable, plant operators are able to manually switch to the other AVR to restore EDG operability. Because the AVR selector switch momentarily interrupts power to the generator field, AVR swapping can be performed only when the EDG is not powering loads.

There are four basic features that an AVR must be capable of performing.

- Maintain voltage under no load (minimum field current).
- Maintain voltage under full diesel generator load (corresponding field current).
- Operate in parallel with offsite power source.
- Respond dynamically under transient conditions.

Technical Specification (TS) 3.8.1, AC Sources - Operating, requires, in part, two EDGs to be operable in Modes 1 through 4, and each EDG capable of supplying one train of the onsite Class 1E AC Electrical Power Distribution System. Various TS surveillance requirements (SRs) confirm different aspects of EDG operability as shown in Table 1 (see Additional Information section).

Description of the event:

During the 6-month and 24-month EDG surveillance testing, only the AVR {RG} aligned to the EDG at that time undergoes surveillance testing, SCE's practice has been to alternate EDG AVR lineups for the monthly surveillance tests. In 1999, SCE evaluated whether this practice complies with the requirements of the TS because an EDG is often aligned to an AVR that has not undergone the most recent 6-month or 24-month surveillance testing. SCE concluded that the AVR was a sub-component of the EDG and determined an AVR, which had previously passed a 24 month surveillance test and was tested bimonthly, was considered capable of performing its intended function.

In February 2001, after observing a recently performed EDG surveillance test, an NRC resident inspector questioned the adequacy of the EDG surveillance testing. The issue at the time was whether the AVR is an integral part of the EDG, which therefore requires each AVR to have the same level of testing as the EDG to comply with the TS. On February 22, 2001 (discovery date), SCE recognized that at times in the past, one or more of the four EDGs have been aligned to an AVR that was not included in all of the TS SR testing for its associated EDG (AR 010201358). Consequently, even though this discrepancy is considered administrative in nature and surveillance testing in itself does not impact the operability of an EDG, SCE is reporting this condition in accordance with 10 CFR 50.73(a)(2)(i)(B) as this occurrence does not consist solely of a case of a late surveillance.

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Cause of the Event:

The cause was an inappropriate assumption that the AVR could be adequately tested as a sub-component to demonstrate its operability in support of the EDG. When the applicable surveillance procedure was developed, SCE did not incorporate the most conservative application of these TS SRs.

Corrective Actions:

On February 22, 2001, TS compliance was achieved by selecting an AVR that had been tested or by completing the required surveillance testing.

On February 27, 2001, operator training was provided on the revised methodology for performing EDG surveillance testing.

On April 6, 2001, SCE submitted a TS amendment application to clarify the applicable EDG surveillance requirements for ensuring AVR operability.

Safety Significance:

Because the AVRs were found operable when tested, SCE concludes this occurrence has no safety significance. SCE also evaluated this issue using NRC Manual Chapter 0610* (dated 10/6/00) for Significance Determination Process (SDP) entry (Attachment 0609.02). SCE concludes the issue would be categorized as a minor violation with no color assigned.

Additional Information:

In the last two years, SCE submitted one report involving an EDG and an AVR. LER 3-1999-006 reported that plant operators caused an EDG to be inoperable for longer than allowed by the TS when they inadvertently aligned an EDG to an inoperable AVR (an AVR that had been tagged out as inoperable), a cause not present in this case.

LICENSEE EVENT REPORT (LER) **TEXT CONTINUATION**

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Table 1
Emergency Diesel Generator Technical Specifications
Applicable to Automatic Voltage Regulators

Technical Specification	Surveillance Requirement (Paraphrased)	Frequency	AVR Functions verified Operable
SR 3.8.1.2	Start testing (w/prelube); Maintain voltage and frequency within limits.	Monthly	(1)
SR 3.8.1.3	Synchronized and loaded run for ≥ 60 minutes.	Monthly	(2) (3)
SR 3.8.1.7	Fast-start testing (w/o prelube); Verify voltage and frequency are maintained within limits.	Semi annual	(1)
SR 3.8.1.9	Largest load rejection test; Verify voltage and frequency are maintained within limits.	24 months	(1) (4)
SR 3.8.1.10	Full load reject; Verify voltage and frequency are maintained within limits.	24 months	(1) (2) (3) (4)
SR 3.8.1.11	Verify a Loss of Voltage Signal causes EDG Start and that EDG loads within 10 seconds; Verify voltage and frequency are maintained within limits.	24 months	(1)
SR 3.8.1.12	Verify a Safety Injection Actuation Signal (SIAS) causes EDG Start and that EDG attains minimum voltage and frequency within 9.4 seconds; Verify voltage and frequency are maintained within limits.	24 months	(1)
SR 3.8.1.14	Verify EDG runs for at least 24 hours (at \geq full load) while paralleled to the grid.	24 months	(2) (3)
SR 3.8.1.15	EDG Restart test after a 2 hour or longer run at full load; Verify voltage and frequency are maintained within limits.	24 months	(1)
SR 3.8.1.16	On simulated restoration of offsite power, Verify EDG can be synchronized with offsite source while loaded and transfers loads to offsite source; Verify voltage and frequency are maintained within limits.	24 months	(3)
SR 3.8.1.17	With EDG operating in parallel with offsite power, verify a simulated or actual SIAS overrides EDG test mode, returns EDG to ready-to-load mode, maintains voltage and frequency within limits, and automatically re-energizes emergency loads from offsite power.	24 months	(1) (3)
SR 3.8.1.19	On a simulated restoration of offsite power in conjunction with an actual or simulated ESF signal, verify (a) emergency busses de-energize, (b) loads are shed from emergency busses, (c) EDG auto-starts from standby and (1) energizes permanent loads within 10 seconds, (2) auto sequences emergency loads, (3) maintains voltage within limits, (4) maintains frequency within limits, and (5) powers loads for ≥ 5 minutes.	24 months	(1) (4)
SR 3.8.1.20	Simultaneous start of both EDGs; Verify both maintain voltage and frequency within limits.	10 years	(1)

AVR Functions:

1. Maintain voltage under no load (minimum field current).
2. Maintain voltage under full diesel generator load (corresponding field current).
3. Operate in parallel with offsite power source.
4. Respond dynamically under transient conditions.