LICENSEE EVENT REPORT (LER)

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SAN ONOFRE NUCLEAR GENERATING STATION (SONGS), Unit 2	0 5 0 0 0 3 6 1	1 of 0 9

Title (4)
Surveillances Not Current Upon Improved Technical Specification Implementation

EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
Month	Day	Year	Year	///	Sequential Number	///	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)
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0 2	0 4	9 7	9 7		0 0 1		0 1	0 3	0 3	9 7		0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)			
POWER LEVEL (10)	0 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 Abstract below and in text)
//////////////////////		___ 20.405(a)(1)(iii)	X 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	TELEPHONE NUMBER
R. W. Krieger, Vice President, Nuclear Generation	AREA CODE 7 1 4 3 6 8 - 6 2 5 5

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	//////
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SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
___	___				
Yes (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

Edison implemented new standard Technical Specifications (TS) for Units 2 and 3 on 8/5/96. Prompted, in part, by the condition reported in LER 2-96-009, Edison initiated a detailed review of the new TS to determine if the last surveillance for each diesel generator would satisfy the specific wording in the new TS Surveillance Requirements (SRs). During this review, Edison noted several instances where Edison should have requested delayed implementation of the new TS SRs. Other instances were noted where either the TS wording or the TS Bases wording could have been improved to provide additional clarity of meaning. This LER discusses these occurrences separately. Revision 1 reports two additional occurrences identified by the self assessment described below.

Most issues were caused by cognitive personnel error (utility, licensed and non-licensed) during the new TS review process. Reviewing personnel failed to recognize and account for differences between the old and new SR.

To assure strict compliance with TS SRs, a self assessment has been initiated to review each SR to verify that the current procedure and the current test of record meets the TS requirements. Meetings will be held with site supervision/management to discuss these occurrences and Management's expectations for performing effective reviews and for verbatim compliance.

Plant: San Onofre Nuclear Generating Station (SONGS) Units 2 and 3
Reactor Vendor: Combustion Engineering
Event Date: January 9, 1997
Event Time: 2014 PST

	Unit 2	Unit 3
Mode:	6, refueling	1, power operation
Power:	0%	99%
Temperature:	71 degrees F	normal operating temperature
Pressure:	atmospheric	

Background:

During the late 1980's, Edison began participation in an NRC pilot project to improve plant Technical Specifications (TS). This effort, the Technical Specification Improvement Program (TSIP), developed new standard TS for the plants of each major reactor vendor. SONGS Units 2 and 3 were the lead plants for the Combustion Engineering Owners Group, and the new SONGS TS were based on NUREG-1432, "Standard TS, Combustion Engineering Plants." Conversion from the old TS to the new TSIP TS was processed as an amendment to the existing specifications.

Typically with other TS amendments, Edison requests, and the NRC grants, 30 days to fully implement the approved TS amendment (to modify procedures, ensure the new Surveillance Requirements are current, etc.) following NRC approval. Due to the magnitude of the TS changes resulting from TSIP and their potential impact on plant documents and procedures, the NRC has allowed utilities to request longer implementation periods as well as delayed implementation for specific portions of the new TSIP TS. Delayed implementation was allowed for utilities to (1) ensure all surveillances were current, and (2) preclude plant shutdowns that could be needed to complete surveillances that could not be performed with the Unit in power operation.

Edison implemented the new TSIP TS for Units 2 and 3 on August 5, 1996 (Amendments 127 and 116, respectively). Edison did not request delayed implementation of any portions of the new TSIP TS.

Prompted, in part, by the condition reported in LER 2-96-009 (see "Additional Information," below), Edison initiated a detailed review of the new TSIP TS for the emergency Diesel Generators (DG's) [EK] to determine if the last surveillances performed for each DG (two each for Units 2 and 3) would satisfy the specific wording provided in the new TSIP TS Surveillance Requirements (SRs). During this review, Edison noted several instances where Edison should have requested delayed implementation of the new TSIP SRs. Other instances were noted where either the TS wording or the TS Bases wording could have been improved to provide additional clarity of meaning. This LER discusses these occurrences separately below.

Description of the Event:

Issue 1 **DG's inoperable when connected to offsite power in the speed droop mode(documented in Edison Action Request (AR) numbers 970100510 and 970100956)**

Load testing of a DG is performed with the DG connected in parallel with the offsite power supply. This places the governor in the speed droop mode. To increase DG load in this configuration, the speed setting is raised from the nominal setting of 60 Hz until the desired test load is achieved. (Actual DG speed does not increase; rather, the DG picks up load). When the DG is subsequently switched from the droop mode to the isochronous mode, as occurs when the DG output breaker opens, the DG frequency will then be at some value other than 60 Hz (usually in the 62 to 63 Hz range) due to the elevated speed

setting. This test methodology impacts (1.a) TS compliance, and (1.b) DG operability during droop mode testing as discussed below.

Issue 1.a SR 3.8.1.9.c, largest single load rejection test

On 1/9/97, Edison engineers (non-licensed) determined DG engine speed could exceed the speed/duration requirement of SR 3.8.1.9.c during performance of the largest single load rejection test.

SR 3.8.1.9.c states, in part:

> "... [w]ithin 4 seconds following load rejection, the frequency is >/= 58.8 Hz and </= 61.2 Hz."

The old TS (SR 4.8.1.1.2.d.2) stated, in part:

> "... maintain... frequency at 60 +/- 6.0 Hz."

Upon a load rejection, the DG governor can maintain frequency less than the 66 Hz limit of the old SR, but not necessarily less than the 61.2 Hz of the TSIP SR. On 1/13/97, Edison Management concluded that SR 3.8.1.9.c had not been current for Unit 2 DG 2G002 upon TSIP implementation because a surveillance test conducted on 3/19/95 did not meet the new TSIP TS frequency requirement. The 3/19/95 test results recorded an output frequency of 61.73 Hz at 4.0 seconds, satisfying the old TS but not the new TSIP TS. Test results for the other three DG's satisfactorily met the requirements of SR 3.8.1.9.c.

A load rejection test which had been performed on DG 2G002 on 1/6/97, prior to discovery of this discrepancy, had satisfied the TSIP SR. Therefore, 2G002 was operable on the 1/13/97 discovery date. However, between the 8/5/96 TSIP implementation date and 1/6/97, DG 2G002 did not have a surveillance record that demonstrated compliance with the new TSIP TS 3.8.1.9.c. Consequently, Edison is reporting this occurrence in accordance with 10CFR50.73(a)(2)(i).

Issue 1.b DG operability during droop mode testing

During the review of TSIP TS SR for DG's, on 1/9/97 Edison engineers (non-licensed) recognized the consequences of a DG frequency setting of other than 60 Hz were not supported by calculational results. As DG frequency during droop mode testing is set as high as 63 Hz, Edison now believes it prudent to consider a DG inoperable when it is operating in parallel with off-site power and the engine governor is in the speed droop mode and set at other than 60 Hz. Edison intends to modify the DG speed control circuity to eliminate this deficiency.

Because this condition was not recognized before 1/9/97, it is likely the DG's were operated in droop mode testing (and were therefore inoperable) when they were required by the TS to be operable. Consequently, because an unknown and inadvertent TS violation may have occurred, Edison is conservatively reporting this possibility in accordance with 10CFR50.73(a)(2)(i).

Issue 2 SR 3.8.1.14 and SR 3.8.1.15, DG real load during 24 hour run and hot restart tests (AR 970100642)

On 1/11/97 at 1710 PST, Edison determined that the surveillance tests of record upon TSIP implementation did not demonstrate compliance with SR 3.8.1.14 and SR 3.8.1.15. Edison considered the DG's for Unit 2 and 3 to be inoperable, which placed Unit 3 in SR 3.0.3. (Note: Because Unit 2 was shutdown in a refueling outage and Unit 3 was operating at full power, this situation immediately

2. Meetings will be held with site supervision/management to discuss these occurrences and Management's expectations for performing effective reviews and for verbatim compliance.

3. Special training to address the issues reported herein will be provided to personnel who make TS compliance, reportability, and operability determinations (the same corrective action reported in Edison's LER 2-96-009-01).

Safety Significance:

Edison believes that for issues 1.a and 2 through 8 above, the effected equipment was capable of performing its intended safety function. Therefore, there was no safety significance to these occurrences.

For issue 1.b, the low probability of a series of events potentially impacting DG function (e.g., safety injection actuation and loss of offsite power) occurring during the relatively short time periods that a DG is operated in the speed droop mode for testing makes the safety significance of this one issue very small.

Additional Information:

Edison submitted LER 2-96-009 on 1/16/97, describing an additional occurrence of failure to adequately implement a TSIP SR. Because implementation of TSIP is a one-time event, Edison has reported no other previous similar events.

impacted Unit 3 only). The former TS requirements and new TSIP requirements for the DG 24 hour load test and hot restart test are summarized in Tables 1 and 2.

Table 1
DG kW Loading During 24 Hour Load Test

	110% load (first 2 hours)	100% load (last 22 hours)
Former SR 4.8.1.1.2.d.8	5170 or more	4700 or more
TSIP SR 3.8.1.14	between 4935 and 5170, inclusive	between 4450 and 4700, inclusive

Table 2
DG kW Loading Prior to Start of DG Hot Restart Test

Former SR 4.8.1.1.2.d.8	4700 or more
TSIP SR 3.8.1.15	between 4450 and 4700, inclusive

When completing the previous TS SR, all four DG's had been loaded to greater than the kilowatt loading prescribed by the TSIP SR.

Edison management discussed this issue with NRC staff members in a telephone conference call on 1/12/97, during which Edison requested enforcement discretion of SR 3.8.1.14 and SR 3.8.1.15 until the NRC staff approves a license amendment to delay implementation of these SR's until the next Unit 3 refueling outage. During this telephone call, the requested enforcement discretion was granted, eliminating the need for Edison to shut down Unit 3 for the sole purpose of re-performing these surveillance tests at a lower maximum DG loading. Edison provided the required prompt written supporting documentation by letter dated January 13, 1997 and submitted the Unit 3 license amendment request on January 14, 1997.

The notice of enforcement discretion, dated January 15, 1997, states, in part:

> "The staff agrees with the licensee that both [Unit 3] E[mergency] DG's are fully functional and capable of performing their intended safety function. The basis for this is that the surveillance requirements contained in the pre-TSIP TS for these two tests are more rigorous than the current TS requirements, in that the kW loads were greater. The test loading was reduced to minimize the likelihood of damaging the EDGs during surveillance testing."

SR 3.8.1.3 (monthly 60 minute load test) and SR 3.8.1.10 (24 month full load rejection test) have comparable DG loading requirements to SR 3.8.1.14 and SR 3.8.1.15. The former surveillances were likewise not current upon TSIP implementation, but have since been performed to TSIP requirements satisfactorily.

Because the surveillance testing required by these TS SRs had been missed, Edison is reporting this occurrence in accordance with 10CFR50.73(a)(2)(i).

Issue 3 SR 3.8.1.8, Unit auxiliary transformer as second source of offsite pow. (AR 970101010)

Between 12/2/96 and 1/2/97, with Unit 2 in a refueling outage, the Unit 2 unit auxiliary transformers [EL][XFMR] were providing the alternate required offsite circuit for Unit 3. While reviewing the off-site power surveillances performed to date, on 1/16/97, Edison engineers (non-licensed) recognized this configuration did not satisfy TS SR 3.8.1.8 for Unit 3. This surveillance requires Edison to:

> "Verify automatic and manual transfer of AC power sources from the normal offsite circuit to **each** alternate **required** offsite circuit." (Emphasis added.)

The former SR (4.8.1.1.1.b) required Edison to:

> "...transfer... (manually and automatically) unit power from the normal offsite power source to **the** alternate offsite power source." (Emphasis added.)

The Unit 3 AC power sources automatic transfer tests had been performed when the Unit 2 **reserve** auxiliary transformers (RATs) [FK][XFMR] were the alternate source of supply. However, no transfer test to the Unit 2 **unit** auxiliary transformers (UATs) had been performed, as required by the new TSIP SR. Therefore, Edison is reporting this occurrence in accordance with 10CFR50.73(a)(2)(i).

Currently, the Unit 2 RATs are being credited as the Unit 3 alternate source of supply. Because Edison conservatively requires both Units to be off line to perform this test, Edison will administratively maintain this configuration until the Unit 2 UATs can be tested. Additionally, Edison will submit a TS change request to revise the requirement to test the transfer to a unit auxiliary transformer. This change will be submitted in time for NRC staff to consider and approve it before it becomes necessary for Unit 2 to rely on the Unit 3 unit auxiliary transformers as an alternate source of offsite power.

Issue 4 SR 3.7.8.4, Salt Water Cooling (SWC) Pump Auto start surveillance test (AR 970101326)

On 1/23/97, Edison Engineers (non-licensed) noted that SR 3.7.8.4 was not being implemented as required. TS SR 3.7.8.4 states:

> "Verify **each** SWC **pump** starts automatically, on an actual or simulated actuation signal." (Emphasis added.)

The previous TS SR also required each SWC pump to be test started. However, the procedure used to complete this surveillance only required one of the two SWC pumps per unit to be automatically started. The remaining pump has been tested with the breaker removed from its cubicle on an umbilical cord to verify the pump breaker closes at the specified sequencer time. In this test configuration, the engineered safety features activation signal does not "start the pump." Consequently, although the SWC pump function is adequately demonstrated by this and other testing performed to date, it does not comply with the exact wording of the SR. Edison is reporting this occurrence in accordance with 10CFR50.72(a)(2)(i).

Edison will revise the test procedure so that each SWC pump is started, as required.

In the course of the TS review discussed above, Edison also discovered issues 5 and 6 described below. These two occurrences do not meet the reporting criteria of 10CFR50.73, but are being included in order to provide a complete report.

Issue 5 SR 3.3.7.1, Channel checks on DG undervoltage (AR 970101049 and AR 970101382)

On 1/17/97, plant operators (utility, licensed), performing reviews for the TSIP Surveillance Self Assessment described below, questioned the procedure guidance for performing SR 3.3.7.1. SR 3.3.7.1 requires Edison to:

"Perform [a] CHANNEL CHECK"

every 12 hours to verify gross failure of the instrumentation has not occurred. TS 1.1 defines CHANNEL CHECK to

"...include, **where possible**, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter." (Emphasis added.)

For the class 1E 4.16 kV buses [EB], voltage was being obtained from only a single indication. Edison immediately modified the relevant plant procedure to require verification of class 1E 4.16 kV bus voltage with a second independent voltage indication and performed a satisfactory channel check.

Edison determined after further review that the purpose of the channel check is to detect malfunctions of the undervoltage relays, and that the past Edison practice of verifying that the undervoltage relays are not dropped out is sufficient to accomplish the required channel check. Therefore, this issue does not meet the reporting criteria of 10CFR50.73. Edison will change the TS Bases to clarify the basis for SR 3.3.7.1.

Issue 6 SR 3.8.1.9, DG reactive loading during largest single load rejection surveillance test (AR 970100356)

On 1/7/97, Edison engineers (non-licensed) questioned the phrase "maximum kVAR loading permitted during testing" contained in TSIP TS SR 3.8.1.9. It appeared the power factor loading requirement provided in NUREG-1432 had been incorrectly translated into the SONGS test procedure. Edison reviewed the DG surveillance test data and concluded Unit 3 DG 3G002 may not have satisfied the most conservative reading of the referenced TS phrase. Edison management discussed this issue in a telephone conference call with NRC staff members on 1/8/97, during which the staff indicated Edison had satisfactorily completed DG surveillance testing, and that the DG's could be considered operable. Consequently, this TSIP discrepancy does not meet the reporting criteria of 10CFR50.72 or 10CFR50.73.

Edison followed up the 1/8/97 conference call with a 1/12/97 letter describing how DG testing satisfies SR 3.8.1.9. To avoid future confusion on this issue, on January 24, 1997, Edison submitted a TS amendment request for SR 3.8.1.9.

Issues 7 and 8 were discovered after submission of the original report, and are being provided in Revision 1.

Issue 7 SR 3.1.5.4, Reed switch position transmitter channel functional test (AR 970101518)

On 2/4/97, the TSIP Surveillance Self Assessment (Corrective Action 1, below) identified that the existing Unit 3 surveillances of record did not fully satisfy SR 3.1.5.4. This surveillance requires Edison to:

> "[p]erform a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter channel"

every 24 months.

The reed switch position transmitters (RSPTs) provide information on control element assembly (CEA) position. Each CEA is instrumented by two independent RSPTs, each consisting of a series of magnetically actuated reed switches spaced at intervals along the CEA housing. The reed switches are wired with precision resistors in a voltage divider network. A magnet attached to the CEA extension shaft actuates the reed switches, causing voltages proportional to position to be transmitted for each channel.

Based on the TSIP Surveillance Self Assessment review, Edison concluded that a conservative channel functional test methodology should include verification of transmitter response for each RSPT stack over its full range. Edison had been performing this verification by means of other tests. However, because Edison had not been formally documenting such a verification for SR 3.1.5.4, Edison is reporting this occurrence in accordance with 10CFR50.73(a)(2)(i).

Edison management discussed this issue with NRC staff members in a telephone conference call on 2/5/97, during which Edison requested enforcement discretion of SR 3.1.5.4 until the NRC staff approves a Unit 3 license amendment to delay implementation of this SR until the next Unit 3 refueling outage. (Because Unit 2 was shutdown in a refueling outage, only Unit 3 was impacted by this issue.) NRC staff subsequently granted the requested enforcement discretion in a return telephone call on 2/5/97, eliminating the need for Edison to shut down Unit 3 for the sole purpose of documenting performance of the surveillance. Edison provided the required prompt written supporting documentation by letter dated February 6, 1997 and submitted the Unit 3 license amendment request on February 7, 1997.

The notice of enforcement discretion (NOED), dated February 10, 1997, states, in part:

> "...the staff has concluded that an NOED is warranted because we are clearly satisfied that this action involves minimal or no safety impact and has no adverse radiological impact on public health and safety."

This occurrence was caused by cognitive error of personnel implementing SR 3.1.5.4, who incorrectly believed this surveillance did not require the individual reed switch stacks to be tested.

Notwithstanding this SR test omission, Edison has other evidence adequately demonstrating that the RSPTs are completely operable. Edison will correct the procedure for performing the surveillance prior to performing the surveillance during the current Unit 2 refueling outage.

Issue 8 SR 3.4.102.3, Reactor coolant gas vent system flow test (AR 970200358)

On 2/10/97, the TSIP Surveillance Self Assessment (Corrective Action 1, below) identified that the existing surveillance test procedure did not fully satisfy

SR 3.4.102.3. This licensee controlled surveillance requires Edison operators to:

> "[v]erify flow through the reactor coolant vent system paths during venting during Mode 5"

every 24 months.

The reactor vessel head vent line is provided with a 0.188 inch diameter flow restricting gate valve [V] having a 0.188 inch diameter hole drilled through the valve disc (valve number MU995). Valve MU995 limits the maximum flow rate to less than the capacity of one charging pump [CV][P] during accident conditions. This, however, unnecessarily limits the rate of normal reactor coolant system filling and venting. Therefore, after MU995 was installed during the Cycle 8 refueling outage for each Unit (ending 5/23/95 for Unit 2 and 9/26/95 for Unit 3), Edison would open MU995 during controlled fill and vent evolutions, and close it prior to plant startup.

The self assessment identified that the procedure for performing licensee controlled SR 3.4.102.3 and pre-TSIP TS SR 4.4.10.3 had valve MU995 open. Consequently, the surveillance at the end of each Unit's Cycle 8 outage had not been performed with the RCGVS in the configuration in which it would be expected to perform its intended function. Edison is therefore reporting this occurrence in accordance with 10CFR50.73(a)(2)(i) for the period between the Cycle 8 surveillances and the adoption of the Licensee Controlled Specifications on 8/5/96.

Edison performed SR 3.4.102.3 with valve MU995 closed, as required, during Unit 2 reactor coolant system filling and venting on 2/10/97, toward the end of the Cycle 9 refueling outage. Edison will revise the surveillance procedure to require valve MU995 to be closed for the corresponding Unit 3 surveillance.

Cause(s) of the Events:

Issues 1.a and 3 were caused by cognitive personnel error (utility, licensed and non-licensed) during the review process for TSIP. Reviewing personnel failed to recognize and account for differences between the TSIP SR and the SR then in effect. While Issues 4, 7 and 8 pre-dated TSIP implementation, TSIP review was a missed opportunity to discover and correct this condition.

Issue 1.b was caused by an original plant design flaw that was not recognized until TSIP SR issues were being reviewed.

Issue 2 was caused by cognitive personnel error (utility, licensed and non-licensed). During the TSIP project, Edison personnel recognized that the new TSIP SR's contain less rigorous limitations than were present in the corresponding pre-TSIP SR's, and incorrectly believed that the new TS surveillances would be satisfied without further testing required.

Corrective Actions:

Beyond the corrective actions discussed above, Edison is taking the following actions:

1. To assure strict compliance with Technical Specification surveillance requirements, a TSIP Surveillance Self Assessment has been initiated. This self assessment will review each TS surveillance requirement to verify that both the current surveillance procedure and the current test of record meets, verbatim, the TS requirements.