ENCLOSURE
AMENDMENT APPLICATIONS 189 AND 174
(PCN-488)

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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| Application of SOUTHERN, CALIFORNIA EDISON COMPANY, ET AL. for a class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 2 of the San Onofre Nuclear Generating Station | ) | Docket No. 50-361<br><br>Amendment Application No. 189 |

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10CFR50.90, hereby submit Amendment Application No. 189. This amendment application consists of Proposed Change No. PCN-488 to Facility Operating License NPF-10. PCN-488 is a request to revise the acceptance criteria of Surveillance Requirement 3.3.7.3 and to delete Surveillance Requirement 3.3.7.4.

Subscribed on this 11th day of August, 1999.

Respectfully Submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: Dwight E. Nunn

Dwight E. Nunn
Vice President

State of California
County of San Diego

On 8/11/99 before me, Mariane Sanchez,

personally appeared DWIGHT E. NUNN, personally known to me ~~(or proved to me on the basis of satisfactory evidence)~~ to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Signature Mariane Sanchez

MARIANE SANCHEZ
Commission #1196482
Notary Public - California
San Diego County
My Comm. Expires Oct 14, 2002

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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| Application of SOUTHERN, CALIFORNIA EDISON COMPANY, ET AL. for a class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 3 of the San Onofre Nuclear Generating Station | ) | Docket No. 50-362<br><br>Amendment Application No. 174 |

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10CFR50.90, hereby submit Amendment Application No. 174. This amendment application consists of Proposed Change No. PCN-488 to Facility Operating License NPF-15. PCN-488 is a request to revise the acceptance criteria of Surveillance Requirement 3.3.7.3 and to delete Surveillance Requirement 3.3.7.4.

Subscribed on this 11th day of August, 1999.

Respectfully Submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: Dwight E. Nunn

Dwight E. Nunn
Vice President

State of California
County of San Diego

On 8/11/99 before me Mariane Sanchez,

personally appeared Dwight E. Nunn, personally known to me ~~(or proved to me on the basis of satisfactory evidence)~~ to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Signature Mariane Sanchez

MARIANE SANCHEZ
Commission #1196482
Notary Public - California
San Diego County
My Comm. Expires Oct 14, 2002

**DESCRIPTION OF**
**TECHNICAL SPECIFICATION CHANGE PCN-488**
**SAN ONOFRE NUCLEAR GENERATING STATION Units 2 and 3**
**(SONGS 2 & 3)**

Change Number PCN-488 will revise Surveillance Requirement (SR) 3.3.7.3 of Technical Specification 3.3.7, "DG-Undervoltage Start," by providing allowable values in place of analytical limits for certain degraded voltage parameters, and by deleting unnecessary parameter limits in cases where plant safety is not affected. The change will also delete redundant SR 3.3.7.4.

**Existing Technical Specifications:**

Unit 2: See Attachment A

Unit 3: See Attachment B

**Proposed Technical Specifications:**

Unit 2: See Attachment C (redline and strikeout)

Unit 3: See Attachment D (redline and strikeout)

**Proposed Technical Specifications:**

Unit 2: See Attachment E

Unit 3: See Attachment F

**Supporting Calculation:**

Units 2 and 3: See Attachment G

**Description of Change:**

The proposed change to Technical Specification (TS) 3.3.7 consists of revising the acceptance criteria for Surveillance Requirements (SR) 3.3.7.3 and deleting redundant SR 3.3.7.4. Currently, SR 3.3.7.3 contains analytical limits--i.e., limits derived directly from engineering analyses without any margin. Southern California Edison (SCE) is proposing to replace the analytical limits with more restrictive allowable values--i.e., with values which define a range of acceptable as-found values during Surveillance Testing. SCE defines allowable values as follows.

Allowable Value (minimum) = Design limit + |Positive tolerance| + Engineering margin

Allowable Value (maximum) = Design limit - |Negative tolerance| - Engineering margin

Also, the proposed change will revise SR 3.3.7.3 to delete upper or lower bounds, as applicable, where the bounds have no safety significance.

Finally, the proposed change will delete redundant SR 3.3.7.4 in its entirety.

**Discussion:**

Undervoltage relay protection for the SONGS 2 & 3 Class 1E 4.16 kV buses is described in Updated Final Safety Analysis Report (UFSAR) Section 8.3.1.1.3.13.B. NRC staff reviewed and approved the protection scheme in a Safety Evaluation Report issued March 17, 1995 in support of Facility Operating License Amendment Nos. 118 (Unit 2) and 107 (Unit 3). SCE had requested these Amendments in a submittal dated September 30, 1993, supplemented in correspondence dated November 16, 1993, February 8, 1994, January 18, 1995 and February 2, 1995. SCE has subsequently refined the setpoint calculations that supported Amendment Nos. 118 and 107 and, with PCN-488, is proposing the substitution of more restrictive allowable values in place of the present analytical limits.

As described in the UFSAR, each of the two 4.16 kV Class 1E buses per Unit is equipped with undervoltage relays to permit automatic transfer to the alternate preferred power source and for diesel generator (DG) starting. The undervoltage relaying scheme is designed to perform the following functions:

1. Loss of Voltage Protection

Four undervoltage relays (Westinghouse CV-2 induction disc relays with inverse time characteristics) 127F1, F2, F3 and F4 are provided on each 4.16 kV Class 1E bus. The output contacts of the relays are combined in a two-out-of-four logic to generate a Loss of Voltage Signal (LOVS) with a time delay of approximately 1 second for complete loss of voltage.

LOVS performs the following:

a. LOVS with a Safety Injection Actuation Signal (SIAS) will transfer the 4.16 kV Class 1E bus to the standby power source (i.e., the DG);

b. LOVS without SIAS will transfer the 4.16 kV Class 1E bus to the alternate preferred power source if available. If the alternate power source is not available it will transfer the bus to the standby power source.

2. Degraded Voltage Protection

a. Four undervoltage relays (ASEA Brown Boveri ABB 27N, definite time delay solid

state relay), 127D1, 2, 3, and 4, along with four timing relays, 162D1, 2, 3, and 4, are provided on each 4.16 kV Class 1E bus for the degraded voltage protection scheme.

The voltage and time delay settings are such that the permanently connected Class 1E loads will be maintained within equipment operating voltage ranges. The 127D relays are set to operate at 4228 V, with a response time of 2 seconds. The 162D relays are set at 110 seconds. As such, a sustained degraded voltage signal will be generated within approximately 112 seconds. This signal will be blocked when the 4.16 kV Class 1E bus is powered from the DG. These signals are combined in a two-out-of-four logic and the resulting signal is referred to as the Sustained Degraded Voltage Signal (SDVS).

The SDVS performs the following:

(1) SDVS with SIAS will transfer the 4.16 kV Class 1E bus to the DG;

(2) SDVS without SIAS will transfer the 4.16 kV Class 1E bus to the alternate preferred power source, if available. If the alternate preferred power source is not available, SDVS without SIAS will transfer the 4.16 kV Class 1E bus to the DG.

b. Degraded Grid Voltage with SIAS Signal (DGVSS)

One output contact from each of the 127D1, 2, 3, and 4 undervoltage relays is used in a sustained degraded voltage protection scheme along with a set of timing relays for degraded grid voltage protection concurrent with a SIAS.

The voltage and time delay settings are such that signals will be generated with an intentional definite time delay upon initiation of a SIAS along with the degraded bus voltage as sensed by the 127D1, 2, 3, and 4 relays during the first load sequencing cycle only. Since this scheme is likely to actuate in the event of a SIAS with a degraded grid condition, these signals are combined in a two-out-of-four logic and the resulting signal is referred to as DGVSS. For this reason, the 4.16 kV Class 1E buses are transferred directly to the DG rather than to the alternate preferred power source, which is likely to be experiencing a degraded voltage condition as well.

The time delay for this signal is chosen to ride through the voltage transients and to ensure that adequate voltage is available on the 4.16 kV Class 1E bus during post accident Engineered Safety Features (ESF) load sequencing. This time delay is initiated by SIAS, and is independent of the time delay chosen for SDVS. Following the acceleration of the first load group during post accident ESF load sequencing, the degraded voltage scheme will have a brief duration in which to sense the voltage on the 4.16 kV Class 1E bus. If the voltage is below the minimum analyzed value, the bus will separate from the preferred power source and transfer to the DG.

SCE Calculation E4C-098, provided as Attachment G[1] and containing the SCE evaluation methodology, has determined that for the 27N relays (127D) tested for the Degraded Voltage Function by SR 3.3.7.3.a, the allowable value for the measured relay dropout voltage should be greater than or equal to 4196 V and the pickup voltage less than or equal to 4281 V. (See Section 2.1.1 of Attachment G.)

During surveillance testing, it is important to measure both the dropout voltage, at which the relay actuates upon sensing degraded bus voltage, and the pickup voltage, at which the relay resets to enable sequencing loads onto the bus. This ensures operability of the relay to both protect the ESF loads against degraded voltage and to enable ESF load sequencing. The current SR does not distinguish between dropout and pickup voltages; rather, it specifies a voltage range between 4181 and 4275 V, inclusive.

It is not necessary to impose an upper bound on relay dropout voltage nor a lower bound on relay pickup voltage, as the safety function of the relay for dropout can be assured at any voltage $\geq$ 4196 V, and the safety function of the relay for pickup can be assured at any voltage $\leq$ 4281 V. Therefore, SCE is proposing a minimum allowable value (only) for relay dropout, and a maximum allowable value (only) for relay pickup.

Specifically, the proposal is:

Degraded Voltage Function:

i. Dropout $\geq$ 4196 V
ii. Pickup $\leq$ 4281 V

As-found[2] dropout voltages have been between 4210.5 and 4239.9 V. These values are greater than the proposed minimum allowable value of 4196 V. Pickup voltages have been measured between 4233.25 and 4248.3 V. These values are less than the proposed maximum allowable value of 4281 V.

SCE Calculation E4C-098 has also determined (Section 2.1.1 of Attachment G) that for the 27N relays tested by SR 3.3.7.3.a.i (127D relays for SDVS and DGVSS), the measured relay time delay should be less than or equal to 2.17 seconds. The current SR specifies between 1.8 and 2.2 seconds, inclusive, which is the analytic limit. The proposed maximum allowable value is within this range. The measured operating time of the 27N relays has been between 1.99 and 2.03

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[1]Calculation E4C-098 was previously submitted in our January 18, 1995 correspondence in support of our September 30, 1993 amendment request. This calculation has been updated in Calculation Change Notice (CCN) 25 to support the present amendment request.

[2]As-found, measured values for this and subsequent parameters are documented in Section 4 of Attachment G.

seconds, less than the proposed maximum allowable value of 2.17 seconds.

For the SDVS function, it is not necessary to impose a lower bound on the 27N relay time delay. Any value ≤ 2.17 seconds will ensure that the relay is capable of performing its intended safety function. Therefore, SCE is proposing to delete the minimum allowable value for the SDVS function of the 27N relay time delay from SR 3.3.7.3.a.

SCE will define appropriate administrative limits on the time delay and voltage setpoints for the 27N relays to ensure proper bus operation. For example, while any dropout voltage setpoint greater than or equal to 4196 V is acceptable from a safety perspective, a setpoint greater than or equal to bus operating voltage would clearly be unacceptable. Thus, SCE will impose an administrative upper bound on the degraded voltage relay dropout voltage setpoint.

The specific proposal to revise SR 3.3.7.3.a, Degraded Voltage Function, is:

SDVS (Sustained Degraded Grid Voltage Signal):

Time delay:

i. 127D ≤ 2.17 seconds.

For the DGVSS function of the 127D relays, the relay must operate above a specified minimum time delay value in order to assure performance of the DGVSS safety function. Therefore, the minimum allowable value of 1.83 seconds (2.00 - .17 seconds) of Section 2.1.1 of Attachment G is proposed for inclusion in SR 3.3.7.3.a. The specific proposal to revise SR 3.3.7.3.a, Degraded Voltage Function, is:

DGVSS (Degraded Grid Voltage with SIAS Signal):

Time delay:

i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds.

SCE Calculation E4C-098 has further determined (Section 2.1.2 of Attachment G) that for the CV-2 relays tested by SR 3.3.7.3.b (Loss of Voltage Function), the measured time delay should be ≤ 1.0 seconds. The current SR specifies between 0.95 and 1.05 seconds, inclusive.

Measured operating times for the CV-2 relays for the recent Unit 2 refueling outage ranged between 0.91 and 1.01 seconds, inclusive (Section 4.3 of Attachment G). The one data point at 1.01 seconds would not meet the proposed allowable value. However, this datum resulted from the need to set the as-left value at or above 0.95 seconds, the minimum value under the existing TS. As explained in the following paragraph, SCE will, under the proposed revision, be able to set the as-left value lower than 0.95 seconds (Section 2.1.2 of Attachment G). Consequently,

SCE does not expect setpoint drift to cause the proposed allowable value of ≤ 1.0 seconds to be exceeded once the as-left values are relaxed.

It is not necessary to impose a lower bound on the CV-2 relay time delay. Any value ≤ 1.0 seconds will ensure that the relay is capable of performing its intended safety function; however, SCE will define an administrative lower limit for the time delay to ensure proper relay operation. Therefore, SCE is proposing to delete the minimum allowable value for the CV-2 relay time delay from SR 3.3.7.3.b. Similarly, it is not necessary to impose an upper bound on the CV-2 relay operating voltage. Any voltage ≥ 3554 V will ensure that the relay is capable of performing its intended safety function; however, SCE will define an administrative upper limit for the voltage to ensure proper bus operation. Therefore, SCE is also proposing to delete the maximum allowable value for the CV-2 relay operating voltage.

Specifically, the proposal for SR 3.3.7.3.b is:

Loss of Voltage Function ≥ 3554 V

Time delay: ≤ 1.0 seconds at 0 V

SCE Calculation E4C-098 has also determined (Section 2.1.3 of Attachment G) that for the Agastat relays tested by SR 3.3.7.3.a.ii (162D relays for SDVS), the measured relay time delay should be ≤ 128 seconds. The current SR specifies between 88 and 132 seconds, inclusive. The proposed allowable value is within this range. Measured operating time of the 162D relays has been between 108 and 116.6 seconds, less than the proposed allowable value of 128 seconds.

It is not necessary to impose a lower bound on the 162D relay time delay. Any value ≤ 128 seconds will ensure that the relay is capable of performing its intended safety function. However, SCE will define an administrative lower limit to ensure proper relay operation. Therefore, SCE is proposing to delete the minimum allowable value for the 162D relay time delay from SR 3.3.7.3.a.ii.

Specifically, the proposal is:

SDVS (Sustained Degraded Grid Voltage Signal)

Time delay:

ii. 162D ≤ 128 seconds

For the 162S relays in the DGVSS circuitry, the measured time delay should be 4.3 ± 0.14 seconds, inclusive (4.3 seconds ± 3.33%) (Section 2.1.3 of Attachment G). The current SR specifies between 4.11 and 4.49 seconds, inclusive (4.3 seconds ± 4.4%). The proposed allowable values are within this range. Measured operating time of the 162S relays has been

between 4.29 and 4.31 seconds, which is within the proposed range of allowable values (4.16 to 4.44 seconds, inclusive).

Specifically, the proposal is:

DGVSS (Degraded Grid Voltage with SIAS Signal):

Time delay:

ii. 162S $\geq$ 4.16 seconds and $\leq$ 4.44 seconds.

SCE Calculation E4C-098 has further determined (Section 2.1.3 of Attachment G) that for the Agastat relays tested by SR 3.3.7.3.a.iii (162T relays for DGVSS), the measured relay time delay should be 1.25 $\pm$ 0.37 seconds, inclusive (1.25 seconds $\pm$ 29.87%). The current SR specifies between 0.85 and 1.65 seconds, inclusive (1.25 seconds $\pm$ 32%). The proposed allowable values are within this range. Measured operating time of the 162T relays has been between 1.23 and 1.38 seconds, which is within the proposed range of allowable values (0.88 to 1.62 seconds, inclusive).

Specifically, the proposal is:

DGVSS (Degraded Grid Voltage with SIAS Signal):

Time delay:

iii. 162T $\geq$ 0.88 seconds and $\leq$ 1.62 seconds.

Finally, TS SR 3.3.7.4 currently requires verification that the response time of the DG-LOV channel is within 1.05 seconds. This SR is redundant with the Loss of Voltage Function time delay measurement of SR 3.3.7.3. SR 3.3.7.4 is not in NUREG-1432, Standard Technical Specifications, Combustion Engineering Plants. Accordingly, SCE is proposing to delete SR 3.3.7.4 in its entirety.

**No Significant Hazards Considerations:**

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to a facility operating license involves no significant hazards consideration if operation of the facility in accordance with a proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows.

1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

No.

Proposed Change Number (PCN)-488 revises the Technical Specification (TS) Surveillance Requirement (SR) acceptance criteria of the Loss of Voltage Signal (LOVS), Degraded Grid Voltage with Safety Injection Actuation Signal (DGVSS), and Sustained Degraded Voltage Signal (SDVS) relay circuits. These circuits are not accident initiators.

PCN-488 revises the TS SR acceptance requirements to make them more limiting than the present requirements. Because the revised acceptance criteria are more limiting than the present requirements, the consequences of accidents analyzed in the Updated Final Safety Analysis Report (UFSAR) are not increased. PCN-488 also revises the TS SR acceptance requirements to delete upper and lower bounds in cases where the deleted bound provides no safety benefit. Deleting bounds having no safety significance does not involve a significant increase in the probability or consequences of an accident previously evaluated.

PCN-488 deletes redundant SR 3.3.7.4, which is not in NUREG-1432, Standard Technical Specifications, Combustion Engineering Plants. Deleting a redundant requirement does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Consequently, the proposed amendment does not result in an increase in the probability of accidents evaluated in the UFSAR.

2) Does this amendment request create the possibility of a new or different kind of accident from any accident previously evaluated?

No.

PCN-488 revises the TS SR acceptance criteria of the LOVS, DGVSS, and SDVS relay circuits, which are not accident initiators, and deletes a redundant SR. PCN-488 does not introduce any revision in the hardware configuration of the protective circuitry for LOVS, DGVSS or SDVS. The measurement required by the deleted, redundant surveillance is required elsewhere in the TS. For these reasons, PCN-488 does not create the possibility of any new or different kind of accident from any previously evaluated.

3) Does this amendment request involve a significant reduction in a margin of safety?

No.

PCN-488 provides allowable values for the acceptance criteria for the TS SR for LOVS,

DGVSS and SDVS. As such, the revised values are more limiting than the current values, which represent design limits. Therefore, PCN-488 does not involve a significant reduction in a margin of safety.

PCN-488 also revises the TS SR acceptance requirements to delete upper and lower bounds in cases where the deleted bound provides no safety benefit. Deleting bounds having no safety significance does not involve a significant reduction in a margin of safety.

PCN-488 additionally deletes a redundant SR. Because the deleted surveillance is required elsewhere in the TS, this action does not involve a significant reduction in a margin of safety.

For these reasons, PCN-488 does not involve a significant reduction in a margin of safety.

Based on the negative responses to these three Commission criteria, SCE concludes that the proposed amendment involves no significant hazards consideration.

**Environmental Consideration:**

Southern California Edison has determined that the proposed TS change involves no changes in the amount or type of effluent that may be released offsite, and results in no increase in individual or cumulative occupational radiation exposure. As described above, the proposed TS amendment involves no significant hazards consideration and, as such, meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9).

**ATTACHMENT A**

**EXISTING TECHNICAL SPECIFICATION**
**SURVEILLANCE REQUIREMENTS 3.3.7.3 AND 3.3.7.4**
**SAN ONOFRE UNIT 2**

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.7.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.7.2 | Perform CHANNEL FUNCTIONAL TEST. | 24 months |
| SR 3.3.7.3 | Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows:<br><br>a. Degraded Voltage Function ≥ 4181 V and ≤ 4275 V<br><br>SDVSS (Sustained Degraded Grid Voltage):<br><br>Time delay:<br>i. 127D ≥ 1.8 seconds and ≤ 2.2 seconds.<br>ii. 162D ≥ 88 seconds and ≤ 132 seconds.<br><br>DGVSS (Degraded Grid Voltage with SIAS Signal):<br><br>Time delay:<br>i. 127D ≥ 1.8 seconds and ≤ 2.2 seconds.<br>ii. 162S ≥ 4.11 seconds and ≤ 4.49 seconds.<br>iii. 162T ≥ 0.85 seconds and ≤ 1.65 seconds.<br><br>b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V<br><br>Time delay: ≥ 0.95 seconds and ≤ 1.05 seconds at 0 V. | 24 months |
| SR 3.3.7.4 | Verify Response Time of required DG-LOV channel is within 1.05 seconds. | 24 months on a STAGGERED TEST BASIS |

**ATTACHMENT B**

**EXISTING TECHNICAL SPECIFICATION**
**SURVEILLANCE REQUIREMENTS 3.3.7.3 AND 3.3.7.4**
**SAN ONOFRE UNIT 3**

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.7.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.7.2 | Perform CHANNEL FUNCTIONAL TEST. | 24 months |
| SR 3.3.7.3 | Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows:<br><br>a. Degraded Voltage Function ≥ 4181 V and ≤ 4275 V<br><br>SDVSS (Sustained Degraded Grid Voltage):<br><br>Time delay:<br>i. 127D ≥ 1.8 seconds and ≤ 2.2 seconds.<br>ii. 162D ≥ 88 seconds and ≤ 132 seconds.<br><br>DGVSS (Degraded Grid Voltage with SIAS Signal):<br><br>Time delay:<br>i. 127D ≥ 1.8 seconds and ≤ 2.2 seconds.<br>ii. 162S ≥ 4.11 seconds and ≤ 4.49 seconds.<br>iii. 162T ≥ 0.85 seconds and ≤ 1.65 seconds.<br><br>b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V<br><br>Time delay: ≥ 0.95 seconds and ≤ 1.05 seconds at 0 V. | 24 months |
| SR 3.3.7.4 | Verify Response Time of required DG-LOV channel is within 1.05 seconds. | 24 months on a STAGGERED TEST BASIS |