SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

Brian Katz
Vice President

May 27, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: **San Onofre Nuclear Generating Station, Units 2 and 3**
Docket Nos. 50-361 and 50-362
Proposed Change Number (PCN) 561
Degraded Voltage Setpoints

Reference: Letter from Daniel P. Breig (SCE) to Document Control Desk (NRC), dated May 11, 2005, Subject: "Docket Nos. 50-361 and 50-362, Licensee Event Report No. 2005-003, San Onofre Nuclear Generating Station, Units 2 and 3

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Southern California Edison (SCE) hereby requests the following amendments to Facility Operating Licenses NPF-10 and NPF-15 for San Onofre Units 2 and 3, respectively: In Technical Specification (TS) 3.3.7, "DG-Undervoltage Start," revise Surveillance Requirement (SR) 3.3.7.3.a to lower the allowable values for dropout and pickup of the degraded voltage function.

Currently, the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 switchyard minimum voltage immediate access offsite power source operability is 218 kV. SCE has, however, performed recent evaluations that indicate 222.2 kV is required for operability of the immediate access offsite power source (Reference). The limiting case is for one unit shut down and a subsequent trip of the remaining unit. If post trip voltages are between 218 kV and 222.2 kV, the degraded voltage relays could cause SONGS to separate from the immediate access offsite power source, thus protecting the safety functions but not remaining on offsite power. This proposed change lowers the allowable values for the degraded voltage protection scheme in order to re-establish 218 kV as the minimum switchyard voltage.

SCE is currently utilizing 222.2 kV as the minimum voltage necessary to support operability of the immediate access offsite power source. As a result, should one San Onofre Unit shut down during a high summer load period, grid conditions could force the unnecessary shutdown of the remaining unit.

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Approval of this proposed change will, therefore, reduce the potential for an unnecessary dual-unit shutdown during high summer load periods.

Since discovery of this condition in March 2005, SCE has proceeded expeditiously to notify the Nuclear Regulatory Commission (NRC), identify the necessary actions, perform the required electrical calculations, and design and implement plant modifications that are required to support these license amendment applications.

SCE requests, therefore, that this amendment be approved on an exigent basis in accordance with 10CFR50.91 by July 1, 2005. SCE requests that this amendment be issued effective as of the date of issuance, to be implemented within 30 days from the date of issuance.

SCE has evaluated this request under the standards set forth in 10 CFR 50.92(c) and determined that a finding of "no significant hazards consideration" is justified.

If you have any questions or require additional information, please contact Jack Rainsberry at (949) 368-7420.

Sincerely,

Brian Katz

Enclosures:

1. Notarized Affidavits
2. Licensee's Evaluation

Attachments

A. Existing Pages, Unit 2
B. Existing Pages, Unit 3
C. Proposed Pages, Redline and Strikeout, Unit 2
D. Proposed Pages, Redline and Strikeout, Unit 3
E. Proposed Pages, Unit 2
F. Proposed Pages, Unit 3
G. List of Regulatory Commitments
H. Calculation E4C-130, ICCN C-7
I. Calculation E4C-082, ICCN C-51
J. Calculation E4C-090, CCN C-117
K. Calculation E4C-090, ICCN C-134
L. Calculation E4C-130, ICCN C-3
M. Calculation E4C-082, ICCN C-47
N. Calculation E4C-090, ICCN C-130

cc: B. S. Mallett, Regional Administrator, NRC Region IV
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3
B. M. Pham, NRC Project Manager, San Onofre Units 2 and 3
S. Y. Hsu, Department of Health Services, Radiologic Health Branch

ENCLOSURE 1

NOTARIZED AFFIDAVITS

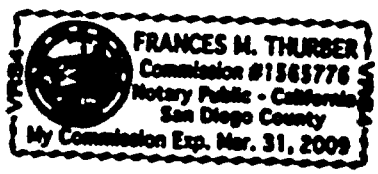
UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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 Amendment Application No. 236

SOUTHERN CALIFORNIA EDISON COMPANY, et al. pursuant to 10CFR50.90, hereby submit Amendment Application No. 236. This amendment application consists of Proposed Change No. 561 to Facility Operating License No. NPF-10. Proposed Change No. 561 is a request to revise Technical Specification Surveillance Requirement 3.3.7.3.a to lower the voltage settings for the degraded voltage setting.

State of California
County of San Diego



Brian Katz
Brian Katz, Vice President

Subscribed and sworn to (or affirmed) before me on this 27th day of May, 2005,

by Brian Katz,

personally known to me or proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Frances M. Thurber
Notary Public

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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 Amendment Application No. 220

SOUTHERN CALIFORNIA EDISON COMPANY, et al. pursuant to 10CFR50.90, hereby submit Amendment Application No. 220. This amendment application consists of Proposed Change No. 561 to Facility Operating License No. NPF-15. Proposed Change No. 561 is a request to revise Technical Specification Surveillance Requirement 3.3.7.3.a to lower the voltage settings for the degraded voltage setting.

State of California
County of San Diego

Brian Katz

Brian Katz, Vice President

Subscribed and sworn to (or affirmed) before me on this 27th day of May, 2005,

by Brian Katz,

personally known to me or proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Frances M Chumbley

Notary Public

ENCLOSURE 2

LICENSEE'S EVALUATION

PCN 561

Degraded Grid Voltage

1.0 INTRODUCTION

This letter is a request to amend Operating Licenses NPF-10 and NPF-15 for San Onofre Nuclear Generating Station (SONGS) Units 2 and 3, respectively.

This license amendment request will revise Technical Specification (TS) Surveillance Requirement (SR) 3.3.7.3.a to lower the voltage settings for the degraded voltage function. This proposed change will prevent the degraded voltage protection circuits from transferring the 4.16 kV Class 1E buses to the Diesel Generator (DG) standby power source when voltage on the offsite transmission network (normal preferred power source) is at or above 218 kV. Approval of this proposed change will re-establish 218 kV as the minimum analyzed switchyard voltage for the normal preferred power source necessary to support operability of the immediate access offsite power source.

2.0 PROPOSED CHANGE

Currently, SR 3.3.7.3.a, "Degraded Voltage Function," states that the dropout voltage allowable value is $\geq$ 4196 V and that the pickup voltage allowable value is $\leq$ 4281 V. This proposed change will revise these allowable values to $\geq$ 4123.0 V and $\leq$ 4144.6 V for dropout and pickup, respectively.

In addition, a footnote will be added to these allowable values which will state, "Dropout and pickup values will be set to $\geq$4151.0 V and $\leq$4172.8 V, respectively, until actions identified in SCE submittal dated May 27, 2005 are completed."

In summary, these proposed changes will prevent the degraded voltage protection circuits from transferring the 4.16 kV Class 1E buses to the DG standby power source when voltage on the offsite transmission network (normal preferred power source) is at or above 218 kV. Approval of this proposed change will re-establish 218 kV as the minimum switchyard voltage necessary to support operability of the immediate access offsite power source.

3.0 BACKGROUND

Existing Design Configuration

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 (Reference 1) 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 (Reference 2), supplemented in correspondence dated November 16, 1993, February 8, 1994, January 18, 1995 and February 2, 1995 (References 3 through 6).

NRC staff reviewed and approved the current degraded voltage allowable values in a Safety Evaluation Report issued November 29, 2000 (Reference 7) in support of Facility Operating License Amendment Nos. 174 (Unit 2) and 165 (Unit 3). SCE had requested these Amendments in a submittal dated July 20, 2000 (Reference 8).

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 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 4.16 kV Class 1E bus to the standby power source.

2. Degraded Voltage Protection

a. Sustained Degraded Voltage Protection

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 detection scheme.

The voltage and time delay settings are such that the permanently connected Class 1E loads will not be damaged due to a degraded voltage condition. The existing 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. This scheme is designed 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. 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 4.16 kV Class 1E bus will separate from the preferred power source and transfer to the DG.

Recently Identified Problem

The minimum offsite grid voltage that supports operability of the immediate access offsite power source (also referred to as the normal preferred power source) is 218 kV. SCE has recently performed evaluations that indicate that below an analyzed offsite grid voltage of 222.2 kV, the 4.16 kV Class 1E bus voltages might not be able to recover above the upper reset limit of the degraded voltage protection circuits. For the limiting case of one unit shut down and a trip of the remaining unit, the post-trip voltage could be between 218 kV and 222.2 kV (For the purposes of this PCN, all offsite grid voltages refer to this limiting case of post-trip voltage when the remaining unit is already shut down). In this case the SDVS/DGVSS relay could cause San Onofre Units 2 and 3 to separate from the immediate access offsite power source even though offsite power

would have provided sufficient voltage to support plant safety equipment operability. This situation was reported to the NRC in Licensee Event Report (LER) 2005-03, dated May 11, 2005 (Reference 9).

Based on SCE's recent evaluations, the offsite grid must now supply 222.2 kV to the San Onofre Units 2 and 3 switchyard, rather than 218 kV, in order to support operability of the immediate access offsite power source. Due to the unique location of the San Onofre Units 2 and 3 switchyard, i.e., major intertie between the SCE and SDG&E systems and geographically distant from other power generating plants, meeting the 222.2 kV requirement is problematic when one unit is shut down, particularly during high-summer load periods. Therefore, it is likely that the shutdown of one unit could initiate a TS required shutdown of the remaining unit during such a peak summer load period.

Proposed Resolution of Problem

To correct this situation, SCE has performed calculations to demonstrate that operability of plant equipment can be supported at lower voltages on the 4.16 kV Class 1E buses. This proposed change lowers the allowable values for the degraded voltage protection relays to reflect the new minimum required voltage levels. The proposed allowable values are $\geq$ 4123.0 V and $\leq$ 4144.6 V for dropout and pickup, respectively. This will allow San Onofre to re-establish 218 kV as the minimum offsite grid voltage necessary to support operability of the immediate access offsite power source.

In order to fully implement this proposed change, certain modifications and testing must be completed. Based on the available windows for performing this work, all required modifications and testing may not be completed by the requested approval date of July 1, 2005 for this proposed change.

Therefore, as part of this proposed change, a footnote will be added to the proposed degraded voltage dropout and pickup allowable values that will allow for interim degraded voltage allowable values. All modifications and testing required to implement the proposed interim option are expected to be completed by July 1, 2005. The proposed interim allowable values (4151.0 for dropout, 4172.8 for pickup) are between the current and proposed allowable values. This interim option allows SCE to temporarily establish 219.5 kV as the minimum offsite grid voltage necessary to support operability of the immediate access offsite power source until such time as the final proposed degraded voltage allowable values may be implemented.

Modifications and testing necessary to implement the final proposed change are expected to be completed within a short time following July 1, 2005. Once all modifications and testing are completed, the proposed interim allowable values will no longer be applicable, and the proposed allowable values of $\geq$ 4123.0 V and $\leq$ 4144.6 V for dropout and pickup, respectively, will be effective from that time forward.

Modifications and Testing Required for Implementation

Proposed Interim Change (219.5 kV)

SCE has identified several tests and modifications that will be necessary in order to implement the proposed Interim Option (219.5 kV). These include:

- Motor Control Center (MCC) Starter Open/Close Coils Pickup Voltage performance validation tests
- MCC 480/120V Control Power Transformers (CPT) performance validation tests
- Control Power Transformer replacements with lower impedance and higher power rating (100VA to 300VA)
- Interposing relay installation in MCC control schemes
- Power cable upgrades for 120 VAC loads from MCC panels

SCE expects that the modifications and testing described above for the proposed interim change will be completed by July 1, 2005. Other tests and modifications necessary to implement the proposed interim change may be identified prior to July 1, 2005. All necessary modifications and testing will be completed prior to implementation of the proposed interim degraded voltage allowable values.

Proposed Change (218 kV)

SCE has identified several additional tests that will be necessary in order to implement the proposed change (218 kV). These include:

- Additional MCC Motor Starter Open/Close Coils Pickup Voltage performance validation tests
- Additional MCC 480/120V CPT performance validation tests

The suitability of circuits tested and/or modified as part of interim option (219.5kV) will be confirmed to be acceptable prior to implementation of the final option (218kV).

SCE expects that the testing described above for the proposed change will be completed shortly after July 1, 2005. Other tests and modifications necessary to implement the proposed change may be identified prior to implementation. All necessary modifications and testing will be completed before implementation of the proposed degraded voltage allowable values.

4.0 TECHNICAL ANALYSIS

Existing protection scheme

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 existing degraded voltage protection scheme is designed to ensure that the 4.16 kV Class 1E buses separate from the grid and transfer to the DG when 4.16 kV Class 1E bus voltage may be degraded. The existing allowable values are $\geq$ 4196 V and $\leq$ 4281 V for dropout and pickup, respectively.

Proposed Protection Scheme (218 kV)

The proposed degraded voltage protection scheme is designed to ensure that the 4.16 kV Class 1E buses (1) do not separate from the normal preferred power source and do not transfer to the DG when the switchyard voltage is above 218 kV, and (2) provide adequate voltage to support operability of plant equipment.

SCE Calculation E4C-130, ICCN C-7, is provided in Attachment H. The calculation contains the SCE methodology to determine total loop uncertainty, pickup and dropout settings, and allowable pickup and dropout values of the degraded voltage protection relay. The allowable value for the measured relay dropout voltage in accordance with the proposed SR 3.3.7.3.a is $\geq$ 4123.0 V and the pickup voltage is $\leq$ 4144.6 V. The proposed allowable values are lower than the existing allowable values and the range between dropout and pickup for the proposed allowable values is smaller than the range between dropout and pickup for the existing allowable values. This was accomplished by eliminating unnecessary conservatism in the allowable value setpoint calculations.

SCE calculations E4C-082, ICCN C-51, E4C-090, CCN C-117, and E4C-090, ICCN C-134, are provided in Attachments I, J, and K, respectively. The calculations show that:

1. when the switchyard voltage is 218 kV or above the degraded voltage protection scheme with the new settings will not transfer the 4.16 kV Class 1E buses to the DG from the normal preferred power source, and

2. The new analytical dropout limit will be adequate to support operability of plant electrical equipment at the 4160 V and 480V levels. For Emergency Safety Features (ESF) motors that are required to mitigate the consequences of a Design Basis Accident, motor terminal voltages during the starting and accelerating period are adequate such that the corresponding motor torque is constantly more than the load requires.

Evaluation of the effect of this proposed change on voltages at the 120 V level is ongoing, and will be completed by July 1, 2005. This evaluation will determine what additional modifications similar to those described in this PCN will be necessary in order to ensure operation consistent with the attached calculations of voltage at the 4160 V level. All such identified modifications will be implemented prior to implementing this proposed change.

Proposed Interim Protection Scheme (219.5 kV)

The proposed interim degraded voltage protection scheme is designed to ensure that the 4.16 kV Class 1E buses (1) do not separate from the normal preferred power source and do not transfer to the DG when the switchyard voltage is at or above 219.5 kV and (2) provide adequate voltage to support operability of plant equipment.

SCE Calculation E4C-130, ICCN C-3, is provided in Attachment L. The calculation contains the SCE methodology to determine total loop uncertainty, pickup and dropout settings, and allowable pickup and dropout values of the degraded voltage protection relay. The allowable value for the measured relay dropout voltage in accordance with the proposed footnote to SR 3.3.7.3.a is $\geq$ 4151.0 V and the pickup voltage is $\leq$ 4172.8 V. The proposed interim allowable values are lower than the existing allowable values and the range between dropout and pickup for the proposed interim allowable values is smaller than the range between dropout and pickup for the existing allowable values. This was accomplished by eliminating unnecessary conservatism in the allowable value setpoint calculations.

SCE calculations E4C-082, ICCN C-47, and E4C-090, ICCN C-130, are provided in Attachments M and N, respectively. The calculations show that:

(1) when the switchyard voltage is 219.5 kV or above the degraded voltage protection scheme with the new settings will not transfer the 4.16 kV Class 1E buses to the DG from the normal preferred power source, and

(2) The new analytical dropout limit will be adequate to support operability of plant equipment at the 4160 V and 480V levels. Evaluation of the effect of this proposed change on voltages at the 120V level is ongoing, and will be completed by July 1, 2005. For Emergency Safety Features (ESF) motors that are required to mitigate the consequences of a Design Basis Accident, motor terminal voltages during the starting and accelerating period are adequate such that the corresponding motor torque is constantly more than the load requires.

Evaluation of the effect of this proposed change on voltages at the 120 V level is ongoing, and will be completed by July 1, 2005. This evaluation will determine what additional modifications similar to those described in this PCN will be necessary in order to ensure operation consistent with the attached

calculations of voltage at the 4160 V level. All such identified modifications will be implemented prior to implementing this proposed change.

Setpoint Calculation Methodology

SCE has performed the setpoint calculations for the degraded voltage protection circuits using the standard methodology for San Onofre Units 2 and 3. This methodology is described in SCE Standard JS-123-103C Revision 4, "Instrument Setpoint/Loop Accuracy Calculation Methodology" (Reference 10), which is consistent with ISA-67.04.01-2000 (Reference 11) and ISA-RP67.04.02-2000 (Reference 12). The TLU and allowable value calculation methodology for the degraded voltage protection circuits is consistent with "Method 3" calculation methodology.

SCE is aware of the ongoing generic issues with setpoint calculation methodology, particularly as described in the NRC's letter to NEI dated March 31, 2005 (Reference 13). Because the degraded voltage protection setpoints do not constitute a Limiting Safety System Setting (LSSS), the NRC concerns identified in Reference 12 do not apply to this proposed change.

However, In order to streamline the review and support an expeditious approval of this proposed change, SCE is including additional information and commitments as noted below:

1. SCE has performed an evaluation and determined that the proposed degraded voltage allowable values are slightly conservative to values calculated using "Method 2."

2. SCE commits to ensuring that when performing instrument setpoint calibrations, the as-left value is always left or adjusted to within the established setting tolerance band for the setpoint for calibrations of the degraded voltage setpoints. This practice is in accordance with existing San Onofre procedures.

3. In addition, it should be noted that SCE is a participant in the NEI Setpoint Methodology Task Force (SMTF) that is currently drafting a Technical Specification Task Force (TSTF) traveler to standardize how utilities determine trip setpoints and allowable values for LSSS trip setpoints and allowable values. This effort is expected to result in NRC approval as a Consolidated Line Item Improvement Project (CLIIP) sometime in 2006. SCE intends to evaluate the industry solution contained in the CLIIP and implement as appropriate.

Conclusion

The safety function of the degraded voltage protection signals is to ensure operability of Class 1E equipment. The effect of this proposed change would be to allow continued

operation while the 4.16 kV Class 1E buses remain on the offsite sources of AC power when offsite voltage is as low as 218 kV. To determine the acceptability of this proposed change, SCE has evaluated the voltages that would occur for Class 1E equipment based on the proposed changes. This evaluation determined that acceptable voltages could be maintained at the 4160 V and 480 V safety buses (See Attachments J, K and N, Calculation E4C-090, CCN C-117, ICCNs C-134 and C-130, respectively).

Electrical calculations, equipment modifications, and testing are necessary to implement this proposed change. All identified evaluations, modifications, and testing will be implemented before the degraded voltage protection settings are changed. Therefore, operation in accordance with this proposed change will continue to support operability of plant equipment.

REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

Southern California Edison (SCE) has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10CFR50.92, "Issuance of Amendment," as discussed below:

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

   Response: No.

   This proposed change revises the Technical Specification (TS) Surveillance Requirement (SR) 3.3.7.a allowable values of the Degraded Voltage Function. This proposed change will allow Southern California Edison (SCE) to re-establish 218 kV as the minimum voltage on the offsite transmission grid necessary to support operability of the immediate access offsite power source (also referred to as the normal preferred power source. This will be accomplished by lowering the dropout and pickup settings, including allowable values for dropout and pickup of the degraded voltage protection relays. Following approval of this proposed change, the 4.16 kV Class 1E buses would be capable of remaining on the normal preferred power source at or above a grid voltage of 218 kV while protecting all Class 1E equipment from degraded grid conditions.

   The degraded voltage protection circuits are designed to protect electrical equipment against the effects of degraded voltage on the offsite transmission networks. Therefore, these circuits are generally not considered to be accident initiators. However, spurious actuation of the degraded voltage protection relays could result in the loss of the preferred power source (offsite source of alternating current (AC) power). The proposed change lowers the allowable values for both dropout and pickup for the degraded voltage protection relays. This results in an

increase in operating margin and a lower probability of spurious actuation of these degraded voltage signals. Therefore, there is no increase in the probability of a Loss of Offsite Power (preferred power source) as a result of this proposed change.

The safety function of the degraded voltage protection circuits is to ensure the operability of Class 1E equipment. SCE has performed calculations that demonstrate that operation in accordance with this proposed change will not result in operation of plant equipment at degraded voltages. Therefore, there is no increase in the consequences of any accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of any accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed allowable values of the degraded voltage relays will provide an acceptable level of protection for plant equipment.

   This proposed change affects only the voltage settings of the degraded voltage protection relays. There is no other change to the degraded voltage function. There are no physical modifications necessary to the degraded voltage protection relays. There are no changes to the actions performed by the relays following actuation. Therefore, there are no new failure modes or effects introduced by this proposed change.

   Therefore, this proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   The proposed degraded voltage protection schemes are designed to ensure that plant equipment will not operate at a degraded voltage. The proposed degraded voltage allowable values will not affect the existing protection criterion for plant equipment. This maintains the existing margin of safety for plant equipment.

   Therefore, there is no significant reduction in the margin of safety as a result of the proposed amendment.

Based on the above, SCE concludes that the proposed amendments present no significant hazards consideration under the standards set forth in 10CFR50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

General Design Criterion (GDC) 17, "Electric Power Systems"

GDC 17 states in part:

> "Electric Power Systems – An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents...
>
> Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.
>
> Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies."

Currently, the San Onofre Units 2 and 3 switchyard minimum voltage that supports plant safety equipment operability is 218 kV for the normal preferred power source. The most limiting condition for offsite grid voltage (i.e., the condition that would approach 218 kV) involves one San Onofre Unit shut down and a trip of the remaining San Onofre Unit.

SCE has recently performed evaluations that indicate that below an offsite grid voltage of 222.2 kV, the 4.16 kV Class 1E bus voltages might not be able to recover above the

upper reset limit of the degraded voltage protection circuits. For the case of one unit shut down and a trip of the remaining unit, the post-trip voltage could be between 218 kV and 222.2 kV. In this case the degraded voltage protection relays could cause San Onofre Units 2 and 3 to separate from the immediate access offsite power source (normal preferred power source) even though offsite power would still be available at acceptable voltage levels.

This proposed change lowers the allowable values for the degraded voltage protection relays. The proposed allowable values will ensure San Onofre Units 2 and 3 will not separate from the immediate access offsite power source when offsite power is still available at or above 218 kV. This minimizes the probability of losing electric power from the immediate access offsite power source as the result of a unit trip.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10CFR20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22(c)(9). Therefore, pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

REFERENCES

1. Letter from Mel B. Fields (NRC) to Harold B. Ray (SCE) dated March 17, 1995, Subject: "Issuance of Amendment for San Onofre Nuclear Generating Station, Unit 2 (TAC No. M87830) and Unit 3 (TAC No. M87831)."

2. Letter from Richard M. Rosenblum (SCE) to Document Control Desk (NRC) dated September 30, 1993, Subject: "Docket Nos. 50-361 and 50-362, Amendment Application Nos. 136 and 120, Change to Technical Specifications 3/4.3.2, 'Engineered Safety Features Actuation Systems,' San Onofre Nuclear Generating Station, Units 2 and 3."

3. Letter from W. C. Marsh (SCE) to Document Control Desk (NRC) dated November 16, 1993, Subject: "Docket Nos. 50-361 and 50-362, Additional Information for Amendment Applications 136 and 120, Degraded Grid Voltage Protection, San Onofre Nuclear Generating Station, Units 2 and 3."

4. Letter from W. C. Marsh (SCE) to Document Control Desk (NRC) dated February 8, 1994, Subject: "Docket Nos. 50-361 and 50-362, Additional Information for Amendment Applications 136 and 120, Offsite Power Compliance with General Design Criterion 17, San Onofre Nuclear Generating Station, Units 2 and 3."

5. Letter from W. C. Marsh (SCE) to Document Control Desk (NRC) dated January 18, 1995, Subject: "Docket Nos. 50-361 and 50-362, Additional Information for Amendment Application Nos. 136 and 120, 'Degraded Grid Voltage,' San Onofre Nuclear Generating Station, Units 2 and 3."

6. Letter from Richard M. Rosenblum (SCE) to Document Control Desk (NRC), dated February 2, 1995, Subject: "Docket Nos. 50-361 and 50-362, Supplement 1 to Amendment Application Nos. 136 and 120, Change to Technical Specifications 3/4.3.2, "Engineered Safety Features Actuation Systems," San Onofre Nuclear Generating Station, Units 2 and 3."

7. Letter from L. Raghavan (NRC) to Harold B. Ray (SCE), dated November 29, 2000, Subject: "San Onofre Nuclear Generating Station, Units 2 and 3 - Issuance Of Amendments Re: Degraded Voltage And Loss Of Voltage Setpoints (TAC Nos. MA9641 and MA9642)."

8. Letter from D. E. Nunn (SCE) to Document Control Desk (NRC) dated July 20, 2000, Subject: "Docket Nos. 50-361 and 50-362, Supplement 1 to Proposed Technical Specification Change Number NPF-10/15-488, Degraded Voltage and Loss Of Voltage Setpoints, San Onofre Nuclear Generating Station (SONGS) Units 2 and 3."

9. Letter from D. P. Breig (SCE) to Document Contro Desk (NRC), dated May 11, 2005, Subject: "Docket Nos. 50-361 and 50-362, Licensee Event Report No. 2005-03, San Onofre Nuclear Generating Station, Units 2 and 3."

10. SCE Standard JS-123-103C Revision 4, "Instrument Setpoint/Loop Accuracy Calculation Methodology."

11. ISA-67.04.01-2000, dated February 29, 2000, "Setpoints for Nuclear Safety-Related Instrumentation."

12. ISA-RP67.04.02-2000, dated January 1, 2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation."

13. Letter from James A. Lyons (NRC) to Alex Marion (NEI), dated March 31, 2005, Subject: "Instrumentation, Systems, and Automation Society S67.04, Methods for Determining Trip Setpoints and Allowable Values for Safety-Related Instrumentation."

Attachment A

(Existing Pages)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ 4196 V ii. Pickup ≤ 4281 V SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

Attachment B

(Existing Pages)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ 4196 V ii. Pickup ≤ 4281 V SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

Attachment C

(Proposed Pages)

(Redline and Strikeout)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ ~~4196~~4123.0 V* ii. Pickup ≤ ~~4281~~4144.6 V* SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

* Dropout and pickup values will be set to ≥4151.0 V and ≤4172.8 V, respectively, until actions identified in SCE submittal dated May 27, 2005 are completed.

Attachment D

(Proposed Pages)

(Redline and Strikeout)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ ~~4196~~4123.0 V* ii. Pickup ≤ ~~4281~~4144.6 V* SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

* Dropout and pickup values will be set to ≥4151.0 V and ≤4172.8 V, respectively, until actions identified in SCE submittal dated May 27, 2005 are completed.

Attachment E

(Proposed Pages)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ 4123.0 V* ii. Pickup ≤ 4144.6 V* SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

* Dropout and pickup values will be set to ≥4151.0 V and ≤4172.8 V, respectively, until actions identified in SCE submittal dated May 27, 2005 are completed.

Attachment F

(Proposed Pages)

SONGS 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: a. Degraded Voltage Function: i. Dropout ≥ 4123.0 V* ii. Pickup ≤ 4144.6 V* SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3554 V and ≤ 3796 V Time delay: ≥ 0.75 seconds and ≤ 1.0 seconds at 0 V.	24 months

* Dropout and pickup values will be set to ≥4151.0 V and ≤4172.8 V, respectively, until actions identified in SCE submittal dated May 27, 2005 are completed.

Attachment G

List of Regulatory Commitments

SONGS Units 2 and 3

List of Regulatory Commitments

1. Following completion of testing of control power transformers and starter pickup, modify degraded voltage dropout and pickup settings to change from proposed interim allowable values to the proposed allowable values as described in PCN-561.

2. Prior to implementing the proposed interim change (219.5 kV) SCE will complete all necessary evaluations, modifications, and testing.

3. Prior to implementing the proposed change (218 kV), SCE will complete all additional necessary evaluations, modifications, and testing.

4. SCE will ensure that following calibration of degraded voltage settings, as-left values will be left or adjusted to within the established setting tolerance band for the setpoint.

5. SCE will follow industry issues and evaluate any Technical Specification Task Force (TSTF) travelers on setpoint calculation methodology, and implement such TSTF travelers as appropriate.