SOUTHERN CALIFORNIA
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Brian Katz
Vice President

November 5, 2007

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

Subject: **Docket Nos. 50-361 and 50-362**
Supplement 1 and Response to Requests for Additional Information on the Proposed Amendment for Loss of Voltage Signal (LOVS) Relay Replacement, Proposed Change Number (PCN) 577
San Onofre Nuclear Generating Station, Units 2 and 3

References:
1. May 15, 2007 letter from N. Kalyanam (NRC) to Richard M Rosenblum (SCE), Subject: San Onofre Nuclear Generating Station, Units 2 and 3 (SONGS 2 and 3) - Request for Additional Information on the Proposed Amendment to Revise Loss Of Voltage Signal Relay Replacement (TAC NOS. MD5112 AND MD5113)

2. September 24, 2007 letter from N. Kalyanam (NRC) to Richard M. Rosenblum (SCE), Subject: San Onofre Nuclear Generating Station, Units 2 and 3 – Request for Additional Information on the Proposed Amendment to Revise Loss of Voltage Signal Relay Replacement (TAC Nos. MD5112 and MD5113)

3. March 30, 2007 letter from B. Katz (SCE) to Document Control Desk (NRC), Subject: San Onofre Nuclear Generating Station Units 2 and 3, Docket Nos. 50-361 and 50-362, Proposed Change Number (PCN)-577, LOVS Relay Replacement

Dear Sir or Madam:

By letters dated May 15, 2007 and September 24, 2007, the Nuclear Regulatory Commission issued requests for additional information (References 1 and 2) regarding Proposed Change Number (PCN)-577, LOVS Relay Replacement (Reference 3). Additionally, Southern California Edison (SCE) understands from a September 11, 2007 telephone conversation with members of the NRC staff that questions pertaining to Limiting Safety System Settings applied to our PCN-574 degraded voltage setpoints submittal also apply to PCN-577.

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NRR

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Enclosure 2 provides SCE's responses to the requests for additional information. As identified in Section 2.2.5 of Attachment 2 to Enclosure 2, SCE commits to measuring "As-Found" and "As-Left" data for the relay Dropout and Pickup values within six months of operation at the new setpoints.

The calculations in Attachment 2 to Enclosure 2 necessitate different Technical Specification setpoints than those requested in Reference 3. Therefore, Enclosure 3 Attachments A through F provide revised Technical Specification pages comprising Supplement 1 to PCN-577. The No Significant Hazards Consideration and the Environmental Consideration provided with PCN-577 both remain unchanged. Our PCN-574 and PCN-577 submittals both request a change on Technical Specification page 3.3-34. Therefore, if PCN-574 is approved before PCN-577, the pages in Enclosure 3 Attachments A through F will have to be resubmitted to incorporate the PCN-574 change.

If you have any questions or require additional information, please contact Ms. Linda T. Conklin at (949) 368-9443.

Sincerely,

Brian Katz

Enclosures

cc: E. E. Collins, Jr, Regional Administrator, NRC Region IV
N. Kalyanam, NRC Project Manager, San Onofre Units 2 and 3
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 and 3
S. Y. Hsu, California Department of Public Health, Radiologic Health Branch

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. 249 Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit Supplement 1 to Amendment Application No. 249. This amendment application consists of Proposed Change No. NPF-10-577 which is a request to revise Facility Operating License NPF-10 to alter the Loss of Voltage Signal (LOVS) to facilitate testing requirements. In accordance with 10 CFR § 50.30(b), the following affirmation is provided: Brian Katz states that he is Vice President of Southern California Edison, is authorized to execute this oath on behalf of Southern California Edison and, to the best of his knowledge and belief, the facts set forth in this letter are true.

State of California
County of San Diego

Brian Katz, Vice President

Subscribed and sworn to ~~(or affirmed)~~ before me on this 5th day of November, 2007,

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.

Dawn A. Farrell
Notary Public

DAWN A. FARRELL
Commission # 1623105
Notary Public - California
San Diego County
My Comm. Expires Nov 20, 2009

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. 234 Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit Supplement 1 to Amendment Application No. 234. This amendment application consists of Proposed Change No. NPF-15-577 which is a request to revise Facility Operating License NPF-15 to alter the Loss of Voltage Signal (LOVS) to facilitate testing requirements. In accordance with 10 CFR § 50.30(b), the following affirmation is provided: Brian Katz states that he is Vice President of Southern California Edison, is authorized to execute this oath on behalf of Southern California Edison and, to the best of his knowledge and belief, the facts set forth in this letter are true.

State of California
County of San Diego

Brian Katz

Brian Katz, Vice President

Subscribed and sworn to ~~(or affirmed)~~ before me on this 5th day of November, 2007,

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.

Dawn A. Farrell

Notary Public

DAWN A. FARRELL
Commission # 1623105
Notary Public - California
San Diego County
My Comm. Expires Nov 20, 2009

Enclosure 2

SCE Responses to NRC Requests for Additional Information

PCN-577
LOVS Relay Replacement

NRC Request for Additional Information of May 15, 2007

NRC Question 1:

Setpoint Calculation Methodology: Provide documentation (including sample calculations) of the methodology used for establishing the limiting setpoint (or NSP) and the limiting acceptable values for the as-found and as-left setpoints as measured in periodic surveillance testing described below. Indicate the related Analytical Limits and other limiting design values (and the sources of these values) for each setpoint.

SCE Response:

a. Documentation (including sample calculations)

Documentation (including sample calculations) of the methodology is provided in calculation E4C-015, revision 0, "TLU Calculation for Loss of Voltage Relays at Class 1E 4.16 kV Switchgear" (Attachment 2). This calculation establishes limiting setpoints and limiting acceptable values for as-found and as-left values as measured in periodic surveillance tests of Surveillance Requirement (SR) 3.3.7.3.b.

b. Limiting design values

As described in section 1.3 (Acceptance Criteria) of calculation E4C-015 (Attachment 2), the voltage and time delay setpoints of the loss of voltage signal (LOVS) relay were determined to meet the following design limits:

a) The time delay of the BE1-27 relay should be selected such that the time delay of the entire LOVS channel up to and including the associated auxiliary relays is less than or equal to 1.0 second as required by Technical Specification SR 3.3.7.3.b.

b) The LOV scheme should not actuate on a voltage dip during load sequencing or the largest motor starting.

c) Since Class 1E motors (460 V and 4.16 kV) are capable of sustained satisfactory operation with a voltage dip to 75% of rated voltage for 15 seconds, the LOV relay should operate within 15 seconds at 75% of the rated motor voltage.

d) The minimum operating voltage of the LOV relay should be greater than the voltage at the Class 1E 4.16 kV buses corresponding to 75% of the rated switchyard voltage of 230 kV per INPO SOER 99-1 (Reference 6.3.10 of Attachment 2).

NRC Question 2:

Describe the measures to be taken to ensure that the associated instrument channel is capable of performing its specified safety functions in accordance with applicable design requirements and associated analyses. Include in your discussion information on the controls you employ to ensure that the as-left trip setting after completion of periodic surveillance is consistent with your setpoint methodology. Also, discuss the plant corrective action processes (including plant procedures) for restoring channels to operable status when channels are determined to be "inoperable" or "operable but degraded." If the controls are located in a document other than the TS (e.g., plant test procedure), describe how it is ensured that the controls will be implemented.

SCE Response:

SCE Test Procedure SO2(3)-II-11.1A(B)-2, Surveillance Requirement, Unit 2(3) ESF Train A(B), Section 6.3 (provided as Attachment 1 for Unit 2 Train A), is performed every 24 months to verify setpoints (as-found) and to adjust setpoints (as-left). The numerical values for setpoints, measurement and test equipment, and acceptance criteria in these procedures are from design calculations. Attachment 1 is for the existing Technical Specifications (TS) and Channel 1 CV-2 relay. Channels 2 through 4 are similar. This procedure will be revised for the BE1-27 relay during implementation of the proposed amendment after NRC approval.

Inoperable or degraded channels are entered into the plant corrective action program per plant procedures, SO123-I-1.3, Work Activity Guidelines, and SO123-0-A5, Tech Spec Limiting Condition for Operation Action Requirement / Equipment Deficiency Mode Restraint (LCOAR / EDMRs). These are screened for operability by the Shift Technical Advisor (Operations) and referred to Engineering for evaluation.

Restoring the channels to "operable" status and the required testing noted above are governed by TS 3.3.7 and its SRs and are controlled by LCOARs or EDMRs as appropriate.

The surveillance test procedures are controlled by the San Onofre Nuclear Generating Station Quality Assurance program.

September 24, 2007 NRC Request for Additional Information on PCN-577

NRC Question 1:

Describe the criteria for determining the voltage and time delay setpoints of the loss of voltage signal (LOVS) relay.

SCE Response:

Please refer to the SCE response to NRC question 1 of May 15, 2007.

NRC Question 2:

Provide a calculation for the time delay setting of the LOVS relay.

SCE Response:

Please see section 8.2 of calculation E4C-015 (Attachment 2).

NRC Question 3:

Confirm that the LOVS relay will not spuriously trip during the starting of the largest motor concurrent with low grid voltage.

SCE Response:

The LOVS relay will not spuriously trip during the starting of the largest motor concurrent with low grid voltage.

As discussed in section 8.2.4 of calculation E4C-015 (Attachment 2), the minimum voltage dip at a Class 1E 4.16 kV bus during load sequencing is either:

a. higher than the LOV relay pickup voltage when the preferred offsite power source is supplying the bus, or,
b. the voltage dip is lower than the minimum relay pickup voltage but recovers before the minimum relay time delay when the emergency diesel generator is supplying the bus,.

NRC Question 4:

Provide the complete model number and the inverse timing characteristic curves of the new LOVS relay.

SCE Response:

a. The complete LOVS relay model number is:

    Basler undervoltage relay type BE1-27, model No. A3EC1JA0B0F

b. For the inverse timing characteristic curves of the new LOVS relay, please see Figure 3-2 of Attachment 9.6 of calculation E4C-015 (Attachment 2).

Questions from the September 24, 2007 NRC Request for Additional Information on PCN-574 that also apply to PCN-577

NRC Question 2:

Safety Limit (SL)-Related Determination: Please provide a statement as to whether or not the setpoint is a limiting safety system setting (LSSS) for a variable on which the SL has been placed as discussed in Title 10 of the Code of Federal Regulations (10 CFR), paragraph 50.36(c)(1)(ii)(A). Such setpoints are described as "SL-Related" in the discussions that follow. In accordance with 10 CFR 50.36(c)(1)(ii)(A), the following guidance is provided for identifying a list of functions to be included in the subset of LSSSs specified for variables on which SLs have been placed as defined in Standard Technical Specifications (STS) Sections 2.1.1, Reactor Core SLs and 2.1.2, Reactor Coolant System Pressure SLs. This subset includes automatic protective devices in TSs for specified variables on which SLs have been placed that: (1) initiate a reactor trip; or (2) actuate safety systems. As such these variables provide protection against violating reactor core safety limits, or reactor coolant system pressure boundary safety limits.

Examples of instrument functions that might have LSSSs included in this subset in accordance with the plant-specific licensing basis, are pressurizer pressure reactor trip (pressurized water reactors), rod block monitor withdrawal blocks, feedwater and main turbine high water level trip, and end of cycle recirculation pump trip (boiling water reactors).

For each setpoint, or related group of setpoints, that you determined not to be SL-Related, explain the basis for this determination.

SCE Response:

The LOVS relay setpoints are not Limiting Safety System Settings (LSSS) for a variable on which a safety limit has been placed as discussed in Title 10 of the Code of Federal Regulations (10 CFR), paragraph 50.36(d)(1)(ii)(A). The bus voltage setpoints are not related to the definition of "safety limit" in the regulation: [s]afety limits for nuclear reactors are limits upon important process variables that are found to be necessary to reasonably protect the integrity of certain of the physical barriers which guard against the uncontrolled release of radioactivity. Voltage on the class 1E buses provides a support function to safety-related components, but does not trigger engineered safety features activation systems or the reactor protection system.

NRC Question 3:

For setpoints that are determined to be SL-Related: The NRC letter to the Nuclear Energy Institute (NEI) Setpoint Methods Task Force (SMTF) (Reference 3), describes Setpoint-Related TS (SRTS) that are acceptable to the NRC for instrument settings associated with SL-related setpoints. Specifically: Part "A" of the Enclosure to the letter provides limiting condition of operation notes to be added to the TS, and Part "B"

includes a check list of the information to be provided in the TS Bases related to the proposed TS changes.

a. Describe whether and how you plan to implement the SRTS suggested in the September 7 letter. If you do not plan to adopt the suggested SRTS, then explain how you will ensure compliance with 10 CFR 50.36 by addressing items 3b and 3c, below.

b. As-Found Setpoint evaluation: Describe how surveillance test results and associated TS limits are used to establish operability of the safety system. Show that this evaluation is consistent with the assumptions and results of the setpoint calculation methodology. Discuss the plant corrective action processes (including plant procedures) for restoring channels to operable status when channels are determined to be "inoperable" or "operable but degraded." If the criteria for determining operability of the instrument being tested are located in a document other than the TS (e.g. plant test procedure) explain how the requirements of 10 CFR 50.36 are met.

c. As-Left Setpoint control: Describe the controls employed to ensure that the instrument setpoint is, upon completion of surveillance testing, consistent with the assumptions of the associated analyses. If the controls are located in a document other than the TS (e.g. plant test procedure) explain how the requirements of 10 CFR 50.36 are met.

SCE Response:

As discussed in the SCE response to the preceding question, the LOVS relay setpoints are not LSSSs for a variable on which a safety limit has been placed. Therefore, this question is not applicable.

NRC Question 4:

For setpoints that are determined not to be SL-related: Describe the measures to be taken to ensure that the associated instrument channel is capable of performing its specified safety functions in accordance with applicable design requirements and associated analyses. Include in your discussion information on the controls you employ to ensure that the as left trip setting after completion of periodic surveillance is consistent with your setpoint methodology. Also, discuss the plant corrective action processes (including plant procedures) for restoring channels to operable status when channels are determined to be "inoperable" or "operable but degraded." If the controls are located in a document other than the TS (e.g., plant test procedure), describe how it is ensured that the controls will be implemented.

SCE Response:

Please see the SCE response to NRC question 2 of the NRC Request for Additional Information of May 15, 2007, above.

Attachment 1 to Enclosure 2

SCE Test Procedure SO2(3) -II-11.1A(B)-2
Surveillance Requirement
Unit 2(3) ESF Train A(B)
Channel (Online) Test of
Loss Of Voltage (LOVS), Degraded Voltage (SDVS, DGVSS)
and Sequencing Relays and Circuits
Section 6.3, pages 12, 13, 16, and 17

(Unit 2 Train A provided, other unit and trains similar)

6.3 LOVS Channel 1 - Voltage Failure Detection Relay - 127F1 *(West. CV-2)*

NOTES:
1. The following tests of 127F1 *(CV-2)* relay supersede all test requirements of SO123-II-11.9 except Initial Test on replacement relays.
2. Use only Fluke Model 45 DMM, or equivalent, for calibration of the 127F1 *(CV-2)* relay. See Special Tools, Attachment 3.
3. Channel Timing tests may be performed using a relay test set as 127F1 relay AC voltage source and initiating timer start at AC Voltage Off condition.

6.3.1 Check Loss of Voltage Channel operating time:

T/S REQUIREMENT

.1 Connect timer(s) to monitor LOVS Channel operating time(s). *(time from loss of input voltage at 127F1 to contact closure of 127F1X1 and 127F1X2). (May be timed concurrently or in either order.)*

LOVS Channel Timer(s) Connected/Removed

Alteration	Location	Alteration (6.3.1.1)	Restoration (6.3.1.6)	
		Performed By (Init)	Performed By (Init)	Verified By (Init)
Connect Timer: 127F1 to 127F1X1	2A0415 / 2A0421			
Connect Timer: 127F1 to 127F1X2	2A0415 / 2A0421			

.2 Momentarily open No. 8 or 9 relay test switch of Relay 127F1 (or de-energize relay test set AC Voltage output) and check time(s) to contact closure of 127F1X1 and 127F1X2.

.3 LOVS Channel operating time Acceptance Criteria is 0.75 to 1.0 second from initiation *(loss of voltage)* to output *(actuation of the 127F1X1 and 127F1X2 relays).*

.4 Record As-Found results in the Data Table below.

.5 Repeat steps 6.3.1.1 through 6.3.1.4, if necessary to obtain time for second relay circuit.

LOVS Channel 1 Operating Time	As-Found time	**Performed by** (Initials)
127F1 to 127F1X1 contact closure	Sec.	
127F1 to 127F1X2 contact closure	Sec.	
Acceptance Criteria: 0.75 to 1.0 seconds		

.6 Disconnect the timer(s) installed to monitor LOVS Channel operating time(s). Enter verification at step 6.3.1.1.

6.3.2 Open/verify open TS2 Cutouts 1/2 and 3/4 for Relay 127F1 DC CONTROL Power *(Ref. Print# 30299)*

Alteration	Location	Alteration (6.3.2)	Restoration (6.8.1)	
		Performed By (Init)	Performed By (Init)	Verified By (Init)
Open TS2 Cutouts 1/2 & 3/4	2A0415			

T/S REQUIREMENT

6.3.3 Check 127F1 *(CV-2)* relay minimum trip voltage. Acceptance Criteria is 101.54 to 108.47 Volts. Enter As-Found value in the Data Table after step 6.3.7.18.

6.3.4 Perform minimum roll test on the relay. Enter verification in the Data Table at step 6.3.7.18.

NOTE: As-Found Acceptance Criteria for the LOVS Channel timing is verified at step 6.3.1.3. The Desired Operating Time here is for the 127F1 *(CV-2)* undervoltage relay only with an allowance for the operating time of the associated auxiliary relays.

6.3.5 Check operating time of the 127F1 relay at 120 to 0 Volts. *(For information only)* Record As-Found time in the Data Table after step 6.3.7.18.

CAUTION **Do NOT attempt to manually operate target vanes on the relay. The targets can be damaged by manual operation with a pencil or pointed object.** CAUTION

6.3.6 Check operation of the ICS target. This current should ***NOT*** be greater than the ICS tap setting. Enter verification in the Data Table after step 6.3.7.18.

6.3.7.17 Any other evaluations the technician deems prudent and necessary.

.18 Enter verification of satisfactory electrical and mechanical inspection in the Data Table below.

LOVS Channel 1 Voltage Failure Relay - As-Found

Relay ID	Min Trip Voltage (6.3.3)	Minimum Roll (6.3.4)	127F1 Oper. Time 120V → 0V Trip Time (6.3.5)	Target P/U (6.3.6)	Elect & Mech. Inspection (6.3.7.18)	**Performed By Initials**
127F1	V	[ ]	Secs	[ ]	[ ]	
Acceptance Criteria	101.54 to 108.47 V	✓ Sat	*(Information Only)*	✓ Sat	✓ Sat	

NOTE: Set relay minimum trip for contact closure on decreasing voltage.

6.3.8 If necessary, adjust and re-check relay minimum trip. It should be within 103.95 to 106.05 VAC. Adjust control spring as necessary. Record the As-Left minimum trip voltage in the Data Table at step 6.3.13.

6.3.9 Perform minimum roll test on the relay with the relay's tap screw and time dial set to the desired points. Enter verification in the Data Table at step 6.3.13.

NOTE: As-Left Acceptance Criteria for the LOVS Channel timing will be verified at step 6.9.3.1. The Desired Operating Time here is for the 127F1 *(CV-2)* undervoltage relay only with an allowance for the operating time of the associated auxiliary relays.

6.3.10 With the relay's tap screw and time dial set to the desired points, check the 127F1 relay operating time to be within 0.82 to 0.92 Second for 120 to 0 Volts *(This is a preliminary setting of the relay)* Slight adjustment of the time dial may be necessary to obtain the desired times Record As-Left operating time in the Data Table at step 6.3.13. *(For information only)*

6.3.11 If the relay does ***NOT*** meet the desired operating time of Step 6.3.10, calibrate the relay by adjusting the permanent magnet and time lever position to obtain the desired time.

6.3.12 If calibration is performed, repeat Steps 6.3.8 through 6.3.10. If desired operating time cannot be met, refer to Step 6.1.1.

6.3.13 Close main relay contacts and pass sufficient DC current through the trip circuit to close contacts of the ICS. This current should ***NOT*** be greater than the ICS tap setting. The operation indicator target should drop freely. Enter verification in the Data Table below.

LOVS Channel 1 Voltage Failure Relay - As-Left

Relay ID	Min Trip Voltage (6.3.8)	Minimum Roll (6.3.9)	127F1 Oper. Time 120V → 0V Trip Time (6.3.10)	Target P/U (6.3.13)	**Performed By Initials**
127F1	V	[ ]	Secs	[ ]	
Acceptance Criteria	103.95 to 106.05 V	✓ Sat	(0.82 to 0.92 Sec) *(Information Only)*	✓ Sat	

6.3.14 Upon completion of acceptable relay test/calibration, fill out an OD-45 Relay Data Card and place it on relay 127F1. ___

6.3.15 If the relay is new or was replaced during performance of this procedure, record relay model, serial number / date code, if present. If not new or replaced, mark this step N/A.

Model	s/n:	date code:

6.3.16 Voltage Failure Relay restoration:

.1 Remove all relay test plugs and test leads. ___

.2 Check all links, tap screws and adjustments are secured and tight. ___

.3 Re-install relay covers and reset all targets. ___

Section 6.3 Performed By (Init) ____
(Restoration will be completed in Section 6.8)