

January 18, 2000

Mr. Harold B. Ray
Executive Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 -
REQUEST FOR ADDITIONAL INFORMATION ON TECHNICAL
SPECIFICATION SURVEILLANCE REQUIREMENT CHANGE RE:
AC SOURCES OPERATING (TAC NOS. MA7153 AND M7154)

Dear Mr. Ray:

By letter dated November 8, 1999, you proposed changes to the plant's Technical Specification Surveillance Requirement (SR) 3.8.1.18. SR 3.8.1.18 requires that each automatic load sequence timer operate within ± 10 percent of its design interval. You requested a revision to the acceptance criteria for each timer from ± 10 percent of its design interval to ± 10 percent of its setting or ± 2.5 seconds, whichever is greater, with the exception of the 5-second load group for which the requested criteria are -0.5, +2.5 seconds. In order to complete the staff's review, we need the following additional information. We discussed these items with your licensing staff during telephone conference calls on December 16, 1999, and January 13, 2000.

CALCULATION E4C-082

1. Page 7 of the Calculation stated that the torque developed by the motor at any speed is inversely proportional to the square of the frequency. Please provide the basis for the above statement.
2. Page 133 — Table 2.1 lists Engineered Safety Features (ESF) motors out of sequence acceleration times. Please provide the basis of these times. How do these acceleration times compare with the vendor-provided times? If these are calculated times, please provide details for a few motors.
3. Page 135 — Section 2.2.B states that the momentary power surges above the 4700 kW rating during automatic sequencing are acceptable because each diesel generator unit is capable of being loaded to 5170 kW for 2 hours within a 24-hour period. Please provide the details of the transient loads in kW and kVA for different load sequence steps.

4. Page 139 — Section 3.4. Motor Control Center (MCC) Loading Assumptions, Item A.1, states that this equivalent load is a constant kVA load consisting of both static and motor loads at steady state running condition. When a diesel breaker is closed, the motor loads should be considered as constant impedance loads since the MCC buses are de-energized before the diesel generator breaker closure. Please explain.
5. Page 141 — Table 3.1 states that the MCC loads (MW and MVAR) are different from the Updated Final Safety Analysis Report (UFSAR), Table 8.3 -1. Please justify.
6. Page 145 — Section 4.0 states that (1) ESF motors running and starting parameters are not available from the calculation to the staff, and (2) the Aux Feedwater Pump is 0.6832 MVA, whereas UFSAR lists the Aux Feedwater Pump as 0.6823 MW. Please clarify the differences.
7. Page 239 — Section 8.6.B calculates equivalent starting motor loads of 86.15 KW + j 55.42 KVAR. The staff believes that motor starting power factor is very low and as a result, the KW component should be lower than the KVAR component. Please provide the basis of the above numbers.
8. Please discuss the impact of starting multiple loads on breaker coordination study.

ENCLOSURE 1 OF LETTER DATED NOVEMBER 8, 1999

1. Software Modeling Verification (Enclosure 1, Page 11 of 15) — You stated that analytical techniques and assumptions used in voltage analyses were verified against actual measurements. Please provide details (i.e., minimum voltage at the motor terminals, steady state voltage, acceleration time, and so forth).
2. Enclosure 1, Page 11 of 15 — The containment spray pump motor start time is shown as 1.9 seconds. Does this include breaker closing time? Provide the basis for 1.9 seconds. Has this acceleration time been adjusted for the voltage and frequency variations?
3. Enclosure 1, Page 11 — This states that actual acceleration times were reviewed to ensure that the actual times were consistent with the electrical analyses and were less than the assumed time. How did you obtain actual acceleration times? Have these acceleration times been adjusted for the voltage and frequency variations?
4. The staff believes that most licensees are using Agastat time delay relays as their automatic load sequence timers. What is the Industry experience with these timers?

H. B. Ray

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This request was discussed with Mr. Jack Rainsberry of your licensing staff on January 13, 1999. A mutually agreeable target date of March 17, 2000, for your response was established. If circumstances result in the need to revise the target date, please call me at the earliest opportunity.

If you have any questions regarding this matter, please write or call me at 301-415-1471.

Sincerely,

/RA/

L. Raghavan, Senior Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

cc: See next page

H. B. Ray

- 3 -

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/RA/

L. Raghavan, Senior Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

cc: See next page

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