



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 101 TO FACILITY OPERATING LICENSE NO. NPF-10
AND AMENDMENT NO. 90 TO FACILITY OPERATING LICENSE NO. NPF-15

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE, CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

DOCKET NOS. 50-361 AND 50-362

1.0 INTRODUCTION

By letter dated August 30, 1991, Southern California Edison Company, et al. (SCE or the licensee) submitted a request for changes to the Technical Specifications (TS) for San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The proposed changes would revise TS 3/4.3.1, "Reactor Protection System Instrumentation," and TS 3/4.3.2, "Engineered Safety Features Actuation System Instrumentation." These amendments modify the channel functional and logic units surveillance test intervals from monthly to quarterly.

2.0 EVALUATION

The proposed amendment is based on topical reports CEN-327-A and CEN-327-A Supplement 1. Both reports were prepared by Combustion Engineering for the Combustion Engineering Owners Group (CEOG). The purpose of these reports was to evaluate the safety impact and provide justification for extending the current 30 day surveillance test interval for both RPS and ESFAS instrumentation. Both reports used probability risk analysis techniques to demonstrate that the proposed surveillance interval extensions do not result in increased plant risk when compared with current technical specification requirements.

The NRC evaluation and acceptance of the topical reports is documented by a safety evaluation report (SER) that was sent to the chairman of the CEOG on November 6, 1989. The NRC found that the referenced topical reports provide an acceptable generic basis to support plant specific TS changes for extending both RPS and ESFAS channel functional test intervals from monthly to quarterly.

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The CE analysis estimated a slight increase in RPS unavailability as a result of extending the surveillance test interval. The analysis also estimated a reduced core melt frequency based on a reduction in surveillance test induced transients. The overall effect of the proposed change on safety was determined to be negligible. The result of reduced ESFAS testing on core melt frequency was found to be similar to that for RPS.

The San Onofre Units 2 and 3 Technical Specifications in section 3/4.3.1 provide instrumentation operability and surveillance requirements for the RPS. Technical Specification 4.3.1.1 and Table 4.3-1 specify the modes and frequency for the performance of channel checks, channel functional tests and channel calibration for each RPS channel.

The staff SER for CEN-327 concluded that the CE report did not address the effects of drift in both the sensors or instrument strings. The effects of drift are plant specific and therefore should be included with each individual plant analysis. As stated in the generic SER, each licensee should confirm that they have reviewed drift information including as found and as left values for each instrument channel involved and have determined that the drift occurring in that channel will remain bounded by the setpoint methodology for the extended surveillance interval. Additionally, the licensee should maintain records of the setpoint calculations and associated data to support future staff audits.

The licensee stated that the calibration of transmitters and signal processing equipment is normally done at each refueling interval and is not affected by the proposed increase in the functional test surveillance interval. The surveillance test calibration interval for this equipment is not being changed. However, the licensee stated that an increase from monthly to quarterly for the channel functional test does affect the bistable trip units. The licensee performed an analysis of the bistable trip unit drift records including as found and as left values. The licensee concluded that the trip setpoints will be within the established pass/fail criteria when testing is performed quarterly.

The staff requested the licensee to confirm that for any proposed extension of monthly functional test intervals, the bases for the 24 month calibration surveillance interval will not be compromised. The licensee stated that the surveillance and corrective maintenance history indicates that problems are identified as a result of the shift channel checks and during routine monitoring of plant parameters. Since the monthly functional test involves the injection of simulated signals into the RPS/ESFAS logic, any failure relating to instrument calibration would not be detected by this testing methodology. However, a channel check may reveal information identifying a calibration related problem. The channel check surveillance is not being revised by the licensee and will continue to be performed once per shift.

The CEQG topical report addressed the channel functional test frequency for all the functional units referenced in Table 4.3-1 except for the manual reactor trip, reactor trip breakers, and seismic high trip. The manual reactor trip functional test is currently specified to be performed every refueling outage and is not being revised. The reactor trip breakers channel functional test interval will remain 18 months. Functional units for the reactor protection system logic, core protection calculators, and control element assembly calculators were not identified as specific dominant cut sets in CEN-327-A but were considered in the analysis. Although seismic high is not listed as a cut set for RPS, the licensee has proposed that the seismic high functional test frequency be revised from monthly to quarterly based on the similarity of bistable design with the loss of load trip function. The licensee stated that the analysis used to justify the loss of load trip function functional test is also applicable to the seismic high functional unit. This conclusion was confirmed by CE.

Table 4.3-2 specifies the functional test surveillance requirements for the ESFAS. Topical report CEN-327-A addressed all the functional units referenced in Table 4.3-2 except for the containment cooling actuation signal (CCAS), the control room isolation signal (CRIS), the toxic gas isolation signal (TGIS), the fuel handling isolation signal (FHIS), and the containment purge isolation signal (CPIS). The licensee proposed to extend the surveillance interval for CCAS from monthly to quarterly with CRIS, TGIS, FHIS, and CPIS remaining as specified in the current TS. Again, CEN-327-A does not specifically address CCAS but the licensee stated that the CCAS and the SIAS share the same type of bistable and are designed similarly. Therefore, the licensee stated that the associated analysis justifying a functional test interval extension for SIAS is also applicable to CCAS. This conclusion was confirmed by CE.

3.0 CONCLUSION

The RPS/ESFAS test interval evaluation presented in CEN-327-A and CEN-327-A Supplement 1 developed a fault tree model for the four classes of RTS and three classes of ESFAS design. Each model addressed common mode failures, operator errors, reduced redundancy, and random component failures. These models were used to evaluate the RTS and ESFAS availability based on a 30 day and 90 day test interval. The CE analysis (CEN-327-A and CEN-327 Supplement 1) concludes that there would be a slight increase in RPS unavailability as a result of extending the test interval from monthly to quarterly. The analysis also concluded that reducing the test interval would reduce the scram and core melt frequency based on the expected reduction in test induced transients/scrams. The staff found these estimates to be acceptable. The staff SER for CEN-327-A found the overall impact of reduced testing intervals on safety to be negligible. The results of the CE analysis regarding reduced ESFAS testing on core melt frequency was found to be similar to RPS.

The staff SER for CEN-327-A required the licensee to evaluate the effects of drift on the proposed functional test interval extension. The licensee

reviewed the drift data (as left, as found) for the affected instrumentation and determined that the projected drift is bounded by the current setpoint calculations. The evaluation results are acceptable to the staff.

The functional units not specifically referenced in CEN-327-A for surveillance interval extension but proposed by the licensee to be included in the TS amendment (seismic high and containment cooling actuation signal) utilize similar bistables and/or design when compared to functional units analyzed by CEN-327-A. The staff finds the basis for including the additional functional units acceptable.

Based on the above, the staff finds the licensee proposal to incorporate the quarterly surveillance test intervals for RPS and ESFAS instrumentation as referenced by CEN-327-A and CEN-327-A Supplement 1 to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (56 FR 49926). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (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.

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Date: February 28, 1992