

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 148 TO FACILITY OPERATING LICENSE NO. DPR-13

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1

DOCKET NO. 50-206

1.0 INTRODUCTION

By letter of May 1, 1992, Southern California Edison Company (SCE or the licensee) submitted a request for changes to the San Onofre Nuclear Generating Station, Unit No. 1, Technical Specifications (TS) appended to Facility Operating License No. DPR-13. By letter of June 30, 1992, SCE clarified the May 1, 1992, submittal with several corrections that were editorial in nature. The requested changes would resolve an inconsistency between the TS basis of Moderator Temperature Coefficient (MTC) and the MTC value used in the main steam line break analysis. During recent investigative work on Chapter 15 of the Updated Final Safety Analysis Report (UFSAR), SCE discovered that the equivalent MTC value used by Westinghouse in their analysis of the main steam line break event was less limiting than the most negative end-of-cycle (EOC) TS limit.

2.0 **EVALUATION**

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Accidents that cause core overcooling must be evaluated for results when the MTC is most negative. One of the events that produces a rapid cooldown of the reactor coolant system due to the negative MTC is the steam line break event. Following a reactor trip for the postulated steam line break event, the large moderator temperature reduction combined with the large negative MTC may produce reactivity increases that are comparable to or even greater than the shutdown reactivity. When this occurs, a substantial fraction of core power is produced with all control rod assemblies inserted except the most reactive one.

The current TS 3.9(a) requires that the MTC for all rods withdrawn, EOC, and the rated thermal power condition be less negative than $-3.8 \times 10^{-4} \text{ } \text{k/k/}^{\circ}\text{F}$. Although Westinghouse uses the parameter moderator density coefficient (MDC) in the steam line break analysis, the MTC and the MDC are directly related. In transforming the equivalent MTC value used in the steam line break analysis (hot zero power. EOC, all rods in except most reactive one) to the hot full power, EOC, all rods out MTC value for SONGS 1 Cycle 11. SCE discovered that the TS limit was nonconservative. That is, the MTC value equivalent to the

MDC used in the analysis was less negative than the TS limit. Therefore, a new steam line break analysis was performed with a revised MDC equivalent to the prediction EOC, hot full power MTC value of $-3.18 \times 10^{-4} \Delta k/k/^{\circ}F$ for Cycle 11, in addition to the changes in safety injection line minimum boron concentration and shutdown margin discussed below. The results of this reanalysis, as presented in WCAP-13346, demonstrate that departure from nucleate boiling (DNB) will not occur and that all applicable acceptance criteria specified in Standard Review Plan 15.1.5 are met.

In order to provide a margin of safety with regard to uncertainty in analysis and measurement, a TS limit of -2.88 x $10^{-4} \Delta k/k/^{\circ}F$ was proposed. There was found to be no impact on the results of other existing safety analyses due to the proposed reduction in the negative MTC limit. Therefore, the proposed change which would revise the most negative MTC limit in TS 3.9 from -3.8 x $10^{-4} \Delta k/k/^{\circ}F$ to -2.88 x $10^{-4} \Delta k/k/^{\circ}F$ is acceptable. The associated changes in TS 3.9(b), which established surveillance requirements to ensure that the MTC limit in TS 3.9(a) is not exceeded, are also acceptable as well as the proposed changes to the Basis and references for TS 3.9.

In order to meet the required acceptance criteria for the steam line break event with the proposed change in the MTC value, changes were also necessary to the TS limits for safety injection line minimum boron concentration and shutdown margin. The current TS 3.3.3 specifies a minimum boron concentration limit of 1,500 ppm in the safety injection lines. This value would be increased to 3,000 ppm by the proposed change. The Basis for TS 3.5.2 states that a minimum shutdown capability of 1.9% $_{\Delta P}$ is required at EOC. The proposed change would increase this value to 2.05% $_{\Delta P}$. This increased shutdown margin is well within the existing available margin based on the current TS control rod insertion limits. These changes are required in order to ensure core subcriticality after a reactor trip for the revised steam line break analysis and do not adversely affect any of the other SONGS 1 licensing basis safety analyses.

The proposed changes will place more restrictive TS limits on MTC, safety injection line minimum boron concentration, and shutdown margin. Revised safety analyses have shown that these changes will ensure that all accidents, including the main steam line break, are bounded by the TS. The existing design and licensing basis remain valid. The staff, therefore, finds these proposed TS changes acceptable.

3.0 <u>STATE CONSULTATION</u>

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.

4.0 <u>ENVIRONMENTAL CONSIDERATION</u>

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The amendment changes 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 amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 22266). Accordingly, the amendment meets 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 amendment.

5.0 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: July 1, 1992