UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE NO. NPF-10

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, UNIT 2

DOCKET NO. 50-361

1.0 INTRODUCTION

By application dated September 22, 1998, Southern California Edison Company, et al. (SCE or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License Nos. NPF-10 and NPF-15) for San Onofre Nuclear Generating Station, Unit Nos. 2 and 3. The current technical specifications (TS) for the operating bypass removal bistable for Logarithmic Power Level - High, Reactor Coolant Flow - Low, Local Power Density - High, and Departure from Nucleate Boiling Ratio - Low currently use "THERMAL POWER" as the input process parameter. Thermal power is a term that includes decay heat, which is not a directly measurable parameter, thus is not a reasonable parameter for automatically establishing bistable conditions. The proposed changes would revise the input process parameter for these bistables from "THERMAL POWER" to "logarithmic power."

2.0 EVALUATION

TS Table 3.3.1-1, "Reactor Protective System Instrumentation," includes Notes "a" and "d" that identify operating bypass permissive and enable bistable values. Note "a" permits bypassing the Logarithmic Power Level - High (log power) trip when THERMAL POWER is > 1E-4% rated thermal power (RTP). Note "a" also requires automatic enable (specified in the TS as "automatic removal" of the bypass) of the log power trip to occur when THERMAL POWER is ≤ 1E-4% RTP during a decrease in reactor power. Note "a" is applicable in Mode 2. Note "d" permits bypassing the Reactor Coolant Flow- Low, Local Power Density - High, and Departure From Nucleate Boiling Ratio - Low (RCS Flow/LPD/DNBR) trips when THERMAL POWER is < 1E-4% RTP. Note "d" also requires automatic enable of the RCS Flow/LPD/DNBR trips to

occur when THERMAL POWER is ≥ 1E-4% RTP during an increase in reactor power. Note "d" is applicable in Modes 1 and 2.

TS 1.1 defines THERMAL POWER as follows:

> "THERMAL POWER shall be the total core heat transfer rate to the reactor coolant."

Thus, "THERMAL POWER" includes the decay heat produced in the core. This definition means that "THERMAL POWER" for SONGS Units 2 and 3 will not decay to less than or equal to 1E-4% RTP for many years after shutdown. In addition, "THERMAL POWER" is not a directly measurable parameter. Since "THERMAL POWER" will not decrease to less than or equal to 1E-4% RTP for normal duration plant outages, TS Table 3.3.1-1, note "d," would require the RCS Flow/LPD/DNBR trip bypasses to be removed during planned startup when the plants enter Mode 2. These trip setpoints have a wide variability at this power level due to large uncertainties in the measured parameters. This condition is expected to produce a trip signal as soon as the trip bypasses are removed. Therefore strict adherence to the notes as currently written would preclude plant startups.

The TS notes themselves require automatic removal of the bypasses under specified conditions, which would require the use of a measurable parameter. Since the decay heat component of "THERMAL POWER" is not directly measurable, it is not suitable for use for an automatic action. The use of logarithmic nuclear instrumentation instead of "THERMAL POWER" as the process parameter would also make the TS consistent with the design bases for establishing and removing the bypasses. The SONGS Unit 2 and 3 TS 3.3.1 Bases, as well as the Bases for the Standard TS for Combustion Engineering designed plants (NUREG-1432) use logarithmic nuclear instrumentation to establish the 1E-4% RTP bypass/enable. Final Safety Analysis Report (FSAR) Section 7.2 describes the bypass setpoints in terms of power, without specifying the specific parameter used. This section does, however, describe setpoints in terms of measured parameters. In addition, FSAR Section 15.4.1.1.3.B.1 states that the bypass setting of 1E-4% power is established based on logarithmic power. Thus the intended, as well as the only physically possible means of generating a signal from a measured parameter to automatically remove the bypass, and the intended parameter used to determine when these trips can be bypassed, is neutron flux, which is measured by logarithmic nuclear instrumentation.

Since neutron flux is, by design, the correct input process variable for the operating bypass permissive and enable bistable values described in TS Table 3.3.1-1 notes "a" and "d," the change to replace "THERMAL POWER" with logarithmic power is acceptable.

3.0 DESCRIPTION OF EMERGENCY CIRCUMSTANCES

The Commission's regulations in 10 CFR 50.91 contain provisions for issuance of an amendment where the Commission finds that emergency circumstances exist, in that failure to act in a timely way would result in prevention of either resumption of operation or increase in power up to the rated plant's licensed power limit. The emergency exists in this case in that the proposed amendment is needed to allow resumption of operation of SONGS Unit 2. The same

restraint does not apply to SONGS Unit 3, therefore the amendment for Unit 3 will be processed on a non-emergency basis.

SONGS Unit 2 is currently in an unscheduled outage to repair a leaking steam generator tube plug. On September 21, 1998, SCE engineers reviewed the setpoints for the Logarithmic Power Level, Reactor Coolant Flow, Local Power Density, and Departure from Nucleate Boiling Ratio operating bypass removal bistables. In the course of their review, they identified that the TS notes for the subject bypass bistables describes them in terms of "THERMAL POWER" whereas the process variable being measured is logarithmic power as sensed by the neutron flux instrumentation. Replacing "THERMAL POWER" with "logarithmic power" in these notes corrects this condition. By submittal dated September 22, 1998, SONGS requested a license amendment to correct this condition. This condition was previously unidentified.

The staff has determined that the licensee used its best efforts to make a timely application. Accordingly, the Commission has determined that emergency circumstances exist pursuant to 10 CFR 50.91(a)(5) and could not have been avoided, that the submittal was timely for Unit 2, and that the licensee did not create the emergency condition.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not:

(1) Involve a significant increase in the probability or consequences of any accident previously evaluated;

(2) Create the possibility of a new or different kind of accident from any previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

This amendment has been evaluated against the standards in 10 CFR 50.92 and the staff's final determination is presented below. It does not involve a significant hazards consideration because the change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes do not adversely impact structure, system, or component design or operation in a manner which would result in a change in the frequency of occurrence of accident initiation. The reactor trip bypass and automatic enable functions are not accident initiators. Consequently, the proposed TS changes will not significantly increase the probability of accidents previously evaluated. Clarifying the input process variable of the operating bypasses and automatic bypass removals of the affected reactor trips does not alter the setpoint nor manner of operation of the operating bypasses and automatic

bypass removals. Therefore, the consequences of previously evaluated accidents remain unchanged.

2. Create the possibility of a new or different kind of accident from any previously evaluated.

   No new or different accidents result from clarifying the input process variable of the operating bypasses and automatic bypass removals of the affected reactor trips. The results of previously performed accident analyses remain valid. Therefore, this amendment request does not create the possibility of a new or different kind of accident.

3. Involve a significant reduction in a margin of safety.

   The proposed change does not alter the setpoint nor the manner of operation of the operating bypasses and automatic bypass removals of the affected reactor trips. The change merely replaces the identification of the input process variable with the appropriate identification of power. Therefore, this amendment request does not involve a significant reduction in any margin of safety.

Accordingly, the Commission has determined that the amendment involves no significant hazards consideration.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the staff consulted with California State official for comment on the proposed issuance of the amendment. The California State official had no comment on the proposed amendment.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 made a final finding that the amendment involves no significant hazards consideration. 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.

7.0 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.

Principal Contributor: M. Gray

Date: September 25, 1998