



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 43 TO PROVISIONAL OPERATING LICENSE NO. DPR-13

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1

DOCKET NO. 50-206

1.0 Introduction

By letter dated June 11, 1979 (Proposed Change No. 80), Southern California Edison Company (the licensee) submitted proposed changes to the Appendix A Technical Specifications and Bases for the San Onofre Nuclear Generating Station, Unit 1, License No. DPR-13. These proposed changes would restrict operation of San Onofre Unit 1 with less than all reactor coolant loops in service. The licensee's request is based on our Evaluation and Model Technical Specifications pertaining to the Systematic Evaluation Program (SEP) Topic IV-1.A, which was issued by our letter dated April 30, 1979.

2.0 Discussion

The majority of the presently operating BWR's and PWR's are designed to permit operation with less than full reactor coolant flow. That is, if a PWR reactor coolant pump or a BWR recirculation pump becomes inoperative, the flow provided by the remaining loop or loops is sufficient for steady state operation at some definable power level, usually less than full power.

Plants authorized for long term operation with one reactor coolant pump out of service have submitted, and the staff has approved, the necessary ECCS, steady state, and transient analyses. The remaining PWR and BWR licensees have Technical Specifications which require reactor shutdown within 24 hours if one of the operating loops becomes inoperable and cannot be returned to operation within the time period.

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3.0 Evaluation

By letter dated October 3, 1978, the licensee stated that Technical Specification 3.1.2.D permits operation up to 10 per cent of full-reactor power with two of the three reactor coolant loops idle and up to 60 per cent of full-reactor power with one loop inoperative. Section 10.2 of the Final Engineering Report and Safety Analysis (FERASA) was cited as the supporting basis for operation in the reduced reactor coolant flow modes.

We have reviewed the referenced material presented by the licensee and find, that although the Technical Specifications do permit operation in the N-1 and 2 loop modes, the justification on which this Technical Specification was based is inadequate in light of current licensing criteria. A review of the FERASA revealed that the analysis performed by the licensee described a complete and simultaneous loss of reactor coolant flow. The transient was analyzed assuming full-reactor power and full reactor flow (3 operating loops). The result of this analysis indicates that San Onofre Unit 1 could sustain such a transient without violating fuel integrity limits, Departure from Nucleate Boiling Ratio (DNBR). However, this analysis does not envelope the effects that transients could have when operating in the reduced flow configuration. In addition to reviewing the referenced material, the accident and transient analyses presented in the FERASA and supplemented by Appendix A, Section 5, to cover cycle 2 and subsequent operating cycles were reviewed with respect to operation with less than all loops in service. Based on our review of this material we find that these analyses address accidents and transients initiated from full flow conditions but cannot be related to N-1 loop operation.

Since the existing information on the docket does not provide an adequate basis for operation with less than all loops in service, a Technical Specification change for San Onofre Unit 1 is required to prohibit such operation until we have reviewed and approved an accident and transient analysis addressing this mode of operation. Since San Onofre Unit 1 uses stainless steel clad fuel, the Emergency Core Cooling System (ECCS) performance analysis may be performed under the guidelines of the ECCS Interim Acceptance Criteria for light water reactors.

Based on the information presented in Final Engineering Report and Safety Analysis (Paragraph 10.2) we have concluded that operation of the facility for a period less than 24 hours at a power level no greater than 10 per cent of rated power while in the N-1 and N-2 loop configuration would not present a significant safety issue. This is based also on the fact that the licensee has performed heat transfer analyses which show that natural circulation can remove reactor heat equivalent to 8 per cent of rated power; therefore, operating at an upper limit of 10 per cent of rated power with one or two pumps would provide an adequate safety margin. We further conclude that low power physics testing (below 5 per cent of full power) with 0, 1, 2 or 3 reactor coolant pumps operating is acceptable and would not present a significant safety issue.

In lieu of an analysis supporting N-1 loop operation or until such an analysis is approved by the staff, we find the proposed restrictions acceptable.

4.0 Environmental Considerations

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

5.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: July 19, 1979