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

SOUTHERN CALIFORNIA EDISON COMPANY AND

SAN DIEGO GAS AND ELECTRIC COMPANY

DOCKET NO. 50-206

SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 43
License No. DPR-13

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Southern California Edison Company and San Diego Gas and Electric Company (the licensees) dated June 11, 1979, (Proposed Change No. 80) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

7908160216

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Provisional Operating License No. DPR-13 is hereby amended to read as follows:

   (B) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 43 , are hereby incorporated in the license. Southern California Edison shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 19, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 43

PROVISIONAL OPERATING LICENSE NO. DPR-13

DOCKET NO. 50-206

Revise Appendix A Technical Specifications and Bases by removing the following pages and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain vertical lines indicating the areas of change.

PAGES

2
3
7 (Intentionally Blank)
10
11
29

2.1 REACTOR CORE - Limiting Combination of Power, Pressure, and Temperature

Applicability: Applies to reactor power, system pressure, coolant temperature, and flow during operation of the plant.

Objective: To maintain the integrity of the reactor coolant system and to prevent the release of excessive amounts of fission product activity to the coolant.

Specification: Safety Limits

(1) The reactor coolant system pressure shall not exceed 2735 psig with fuel assemblies in the reactor.

(2) The combination of reactor system pressure and coolant temperature shall not exceed the locus of points established for the power level in Figure 2.1-1. If the actual pressure and temperature is above or to the left of the locus of points for the appropriate power level, the safety limit is exceeded.

Maximum Safety System Settings

The maximum safety system trip settings shall be as stated in Table 1.

TABLE 1

			TRIP SETTING
1.	Pressurizer High Level	≤	27.3 ft. above bottom of pressurizer
2.	Pressurizer Pressure: High	≤	2220 psig
**3.	Nuclear Overpower	≤	109% of indicated full power
*4.	Variable Low Pressure	≥	14.45 (1.313ΔT+T avg.) -7298.7
*5.	Coolant Flow	≥	85% of indicated full loop flow

* May be bypassed at power levels below 10% of full power.

** The nuclear overpower trip is based upon a symmetrical power distribution. If an asymmetric power distribution greater than 10% should occur, the nuclear overpower trip on all channels shall be reduced one percent for each percent above 10%.

Basis: Safety Limits

1. Reactor Coolant System Pressure

The Reactor Coolant System serves as a barrier which prevents release of radionuclides contained in the reactor coolant to the containment atmosphere. In addition, the failure of components of the Reactor Coolant System could result in damage to the fuel and pressurization of the containment. A safety limit of 2735 psig (110% of design pressure) has been established which represents the maximum transient pressure allowable in the Reactor Coolant System under the ASME Code, Section VIII.

2. Plant Operating Transients

In order to prevent any significant amount of fission products from being released from the fuel to the reactor coolant, it is necessary to prevent clad overheating both during normal operation and while undergoing system transients. Clad overheating and potential failure could occur if the heat transfer mechanism at the clad surface departs from nucleate boiling. System parameters which affect this departure from nucleate boiling (DNB) have been correlated with experimental data to provide a means of determining the probability of DNB occurrence. The ratio of the heat flux at which DNB is expected to occur for a given set of conditions to the actual heat flux experienced at a point is the DNB ratio and reflects the probability that DNB will actually occur.

It has been determined that under the most unfavorable conditions of power distribution expected during core lifetime and if a DNB ratio of 1.44 should exist, not more than 7 out of the total of 28,260 fuel rods would be expected to experience DNB. These conditions correspond to a reactor power of 125% of rated power. Thus, with the expected power distribution and peaking factors, no significant release of fission products to the reactor coolant system should occur at DNB ratios greater than 1.30.[1] The DNB ratio, although fundamental, is not an observable variable. For this reason, limits have been placed on reactor coolant temperature, flow, pressure, and power level, these being the observable process variables related to determination of the DNB ratio. The curves presented in Figure 2.1-1 represent loci of conditions at which a minimum DNB ratio of 1.30 or greater would occur.[1][2][3]

INTENTIONALLY BLANK

3.1.2 OPERATIONAL COMPONENTS

Applicability: Applies to the operating status of the reactor coolant system equipment and related equipment.

Objective: To identify those conditions of the reactor coolant system necessary to ensure safe reactor operation.

Specification:

A. At least one pressurizer safety valve shall be operable or open when the reactor head is on the vessel, except for hydrostatic tests.

B. The concentration of boron in the reactor coolant system shall not be reduced unless at least one reactor coolant pump or one residual heat removal pump is circulating reactor coolant.

C. The reactor shall not be made critical or maintained critical unless:

(1) Both pressurizer safety valves are operable.

(2) At least one steam generator is operable.

D. Whenever reactor power is greater than or equal to 10% of full power, three reactor coolant pumps shall be operating.

E. Whenever reactor power is less than 10% of full power, operation with one or two reactor coolant pumps operating shall be limited to less than 24 hours.

F. Operation may be conducted with 0, 1, 2 or 3 reactor coolant pumps operating during low power physics testing below 5% of full power.

Basis: One pressurizer safety valve is sufficient to prevent over-pressurizing when the reactor is subcritical, since its relieving capacity is greater than that required by the sum of the available heat sources, i.e., residual heat, pump energy and pressurizer heaters.

Prior to reducing boron concentration by dilution with make up water either a reactor coolant pump or a residual heat removal pump is specified to be in operation in order to provide effective mixing. During boron injection, the operation of a pump, although desirable, is not essential. The boron is injected into an inlet leg of the reactor coolant loop. Thermal circulation which exists whenever there is residual heat in the core, will cause the boron to flow to the core.

Lack of further mixing cannot result in areas of reduced boron concentration within the core. Prior to criticality the two pressurizer safety relief valves are specificed in service in order to conform to the system relief capabilities.[1]

Heat transfer analyses show that reactor heat equivalent to 8% of full power can be removed with natural circulation only; hence, for up to 24 hours the specified upper limit of 10% of full power with 1 or 2 reactor coolant pumps operating provides a substantial safety factor.

With three reactor coolant pumps in operation, the DNB ratio would not drop below 1.30 after a loss of flow with a reactor trip.[2] [3]

References: (1) Final Engineering Report and Safety Analysis, Sections 9 and 10.

(2) Final Engineering Report and Safety Analysis, Paragraph 10.2.

(3) Supplement No. 1 to Final Engineering Report and Safety Analysis, Section 3, Question 9.

TABLE 3.5.1

INSTRUMENT OPERATING CONDITIONS

Functional Unit	COLUMN I Minimum Operational Channels	COLUMN II Minimum Redundancy* Required	COLUMN III Required Operating Action if Column I or Column II Cannot be Met
1. Nuclear Power-Critical	3	For 3-Channel Operation --1 For 4 Channel Operation --2	Maintain hot shutdown conditions.
-Subcritical	3	1	Maintain hot shutdown if at least one source and one intermediate channel are available; otherwise maintain 10% $\Delta k/k$ shutdown margin.
2. Pressurizer Variable Low Pressure	2	1	Maintain load below 10% F. P.
3. Pressurizer Fixed High Pressure	2	1	Maintain hot shutdown conditions.
4. Pressurizer High Level	2	1	Maintain hot shutdonw conditions.
5. Reactor Coolant Flow -- 3-Loop Operation	3	1**/2***	Maintain load below 10% F.P.
6. Pressurizer Low Pressure (Safety Injection Function)	2	1	Maintain hot shutdown conditions.

* Redundancy is defined as N-M, where N is the number of channels in operation, and M is the number of channels in operation which, when tripped, will cause an automatic shutdown.

** For operation at $\leq$ 50% of full power

*** For operation at >50% of full power.