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SUBJECT: Requests concurrence w/mods to post-fuel loading initial test program for FSAR Sections 14.2.10.2, "Initial Criticality" & 14.2.12.96, "Loss of Offsite Power Test."

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June 29, 1983

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

License Condition 2.C(16) of Operating License NPF-15 for San Onofre Unit 3 requires that SCE conduct the post-fuel loading initial test program set forth in Section 14 of the San Onofre Units 2 and 3 Final Safety Analysis Report (FSAR) without making any major modifications to the test program unless such modifications have been identified and have received prior NRC approval.

The purpose of this letter is to identify and obtain your concurrence regarding modifications to the following activities discussed in Section 14 of the San Onofre Units 2 and 3 FSAR relative to the San Onofre Unit 3 post-fuel loading initial test program:

1. Section 14.2.10.2, Initial Criticality

2. Section 14.2.12.96, Loss of Offsite Power Test

With respect to Section 14.2.10.2, the FSAR currently states that initial criticality for San Onofre Units 2 and 3 will be achieved in the following manner:

"A. With the RCS boron concentration at the refueling concentration all CEA's will be withdrawn to approximately 6 inches withdrawal and dropped to the lower CEA stop, by manual trip, to demonstrate the operability of the trip paths.

B. Withdraw the shutdown, the part-length, and finally the regulating CEA's in predetermined increments, monitoring the inverse multiplication at each withdrawal on at least two excore nuclear channels.

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C. The CEA's will be exercised to demonstrate CEA group overlap, programmed sequencing, and PDIL insertion limitations.

D. Commence a continuous RCS dilution at a controlled rate, while monitoring the inverse multiplication on at least two excore channels until criticality is achieved."

As discussed in item D above, dilution to criticality has been the standard method of achieving criticality on previous CE plants. The design of previous CE plants provided for a direct dilution path to the suction of the charging pumps which facilitated a constant dilution rate and, hence, a constant rate of reactivity insertion due to a readily controlled charging rate. Consequently, very little additional RCS dilution was experienced during stabilization after dilution to the charging pumps was secured.

However, the San Onofre Units 2 and 3 design does not provide for a direct dilution path to the suction of the charging pumps. All dilution is performed through the Volume Control Tank (VCT) of the Chemical and Volume Control System (CVCS). Therefore, RCS dilution may continue as the VCT contents mix with the RCS even after the source of demineralized water to the VCT has been secured. Consequently, a significant amount of time is required to achieve stability after dilution to the VCT is secured for San Onofre Units 2 and 3.

The San Onofre Unit 2 Startup Report was submitted to NRC Region V on April 20, 1983. As discussed in the Startup Report, the initial approach to criticality for Unit 2 was conducted at 320°F and 600 psia to facilitate low power physics testing required for a prototypical plant. The predicted critical boron concentration (CBC) under these conditions was estimated to be approximately 830 ppm with an acceptance criteria of ±100 ppm. The approach to initial criticality was conducted by diluting at approximately 2 ppm/min to an RCS concentration of 1250 ppm followed by a slower dilution rate of approximately 1 ppm/min to reach the estimated CBC of 830 ppm. During the approach it was determined that initial criticality would be attained at 870 ppm (well within the acceptance criteria for this first-of-a-kind core), and as a precautionary measure CEA groups 4, 5 and 6 were inserted in order to remain subcritical until the RCS boron concentration had stabilized. Criticality was subsequently achieved on San Onofre Unit 2 by withdrawing CEA's.

Based on the experience obtained at San Onofre Unit 2, relative to mixing of the VCT and the RCS, SCE proposes to achieve initial criticality on San Onofre Unit 3 by first diluting and stabilizing the RCS at a boron concentration slightly less than the estimated all-rods-out CBC of 832 ppm while in a lightly rodded configuration to preclude criticality and then withdraw CEA's in a controlled manner until criticality is achieved. Specifically, initial criticality for San Onofre Unit 3 would be obtained at 545°F and 2250 psia in the following manner:

A. Items A, B and C of Section 14.2.10.2 of the FSAR would be completed.

B. After performing the necessary CEA exercises discussed above, CEA Groups 6, 5 and 4 will be inserted in a manual sequential mode, until Groups 6 and 5 are inserted to their lower group stops, and until Group 4 is inserted to a position of approximately 100 inches withdrawn.

C. The RCS will be diluted to approximately 980 ppm at approximately 2 ppm/min. At this point, dilution will be secured for mixing and stabilization.

D. After stabilization, boron dilution will be resumed at approximately 1 ppm/min., and the RCS will be stabilized at a boron concentration slightly less than the estimated all-rods-out CBC of 832 ppm.

E. CEA's will be withdrawn until criticality is achieved. CEA's will be withdrawn in a manual sequential mode, stopping at approximately 5 inch intervals to plot the inverse count rate to determine the margin to criticality.

SCE considers that the proposed method for obtaining initial criticality at San Onofre Unit 3 provides for a controlled approach to initial criticality. Adequate shutdown margin is available throughout the proposed evolution. Specifically:

A. Control rod withdrawal from the lightly rodded configuration provides adequate available shutdown margin based on the fact that the calculated available shutdown worth is 8.3% $\Delta k/k$ which is significantly more than the 5.15% $\Delta k/k$ required by Technical Specification 3.1.1.1, and that the control rod configuration is well within the zero power dependent insertion limit specified in Technical Specification 3.1.3.6.

B. The approach to initial criticality is controlled by performing inverse count rate plots at every 5 inches of rod withdrawal.

With respect to Section 14.2.12.96, the Loss of Offsite Power Test will be conducted at a 20% power level for San Onofre Units 2 and 3 as indicated in Table 14.2-2 of the FSAR. This test is included as part of the Natural Circulation Test Program for San Onofre Unit 2 and is scheduled to be performed after the 80% Natural Circulation Test. The 80% Natural Circulation Test for San Onofre Unit 2 was initially scheduled to be performed during the 80% power plateau, with the Loss of Offsite Power Test to be performed (at 20% power) after the 80% trip, during the post 80% power plateau as indicated in Table 14.2-2A. The NRC's letter of May 23, 1983 subsequently approved deferral of the Natural Circulation Test Program for San Onofre Unit 2 until later in the startup test program prior to completion of the San Onofre Unit 2 startup test program.

The Natural Circulation Test Program is being conducted on San Onofre Unit 2 because of the prototypical nature of the plant and similar testing is not required for San Onofre Unit 3. Consequently there is no 80% reactor trip required for San Onofre Unit 3 subsequent to the 80% power plateau and an unnecessary reduction in power to the 20% power level would be required to perform the Loss of Offsite Power Test at the post 80% power

plateau. In order to avoid reducing power after the 80% power testing has been completed, SCE proposes to perform the Loss of Offsite Power Test for San Onofre Unit 3 during any 20% power level prior to completion of the San Onofre Unit 3 startup test program.

The current startup testing schedule for San Onofre Unit 3 indicates that initial criticality is scheduled for mid July 1983 and that 20% power is scheduled to be initially attained in late August 1983. Accordingly, your timely approval of the proposed changes is requested to support the startup testing program for San Onofre Unit 3.

SCE considers that the proposed changes do not involve a significant hazard consideration in that they do not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. In addition, it is concluded that: (1) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

If you have any questions or comments, please let me know.

Very truly yours,

M. O'Connell for K.P.B.

cc: H. Rood (Open by addressee only)