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SUBJECT: Requests permission to operate auxiliary feedwater pump w/
 babbitt bearings in motors until 820730. Time needed to allow
 completion of bearing failure evaluation & corrective action
 determination. Probability of high energy line break small.

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 TITLE: Equipment Qualification (OR & PRE-OL)

NOTES: J Hanchett 1cy PDR Documents. ELD Chandler 1cy. 05000361
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June 10, 1982

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

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
 San Onofre Nuclear Generating Station
 Units 2&3

SCE's letter of November 6, 1981 submitted Revision 2 to the "Environmental Qualification Report per Requirements of NUREG-0588" for San Onofre Units 2&3. Item A1 in Table 5-1 of the report stated that the auxiliary feedwater pump motor qualification testing would be completed by December, 1981. Files would be updated based on review of test results.

On February 2, 1982, SCE submitted an updated status of outstanding items identified in Tables 5-1 and 5-2 of the above mentioned report. Item 2 of the update stated that all qualification testing for the auxiliary feedwater pump motor had been completed and analyzed. The motor was assigned a life of 40 years. The data file was complete and was transmitted to the central file. The motors were qualified in accordance with IEEE 323-1974 requirements (Category I requirements of NUREG-0588). The item was considered closed.

The auxiliary feedwater pump motors were manufactured by Siemens-Allis and were originally equipped with babbitt bearings. The pumps are located in the condensate storage tank building. In 1979 a postulated steam line break analysis as described in Section 3.6A.3.5.2 of the FSAR indicated that a maximum temperature of 302°F would be reached in the room housing the pumps. Based on this room temperature, it is anticipated that the bearings would experience a temperature of 363°F. The babbitt bearings have a maximum operating temperature of 300°F. Therefore, replacement bearings made from cast iron were selected to meet the pipe break criteria. Cast iron bearings are widely used in refrigerators, automobiles, and the machine tool industry. A new lubricating oil compatible with cast iron bearings was also chosen. The revised motor configuration passed the 48 hour endurance test as required in Section 2.C(19)1 of the Operating License.

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Recently, a Unit 2 auxiliary feedwater pump motor bearing failure destroyed the motor shaft. The cause of this failure is under investigation by the bearing designer and an independent consultant. Until SCE understands the cause of this failure, SCE believes it prudent to operate the pumps in their original design configuration to ensure high system reliability. SCE has therefore re-installed the babbitt bearings in the motors. Babbitt bearings typically do not destroy the shaft when a failure occurs. As a result of the above action, the electric driven auxiliary feedwater pumps cannot be declared environmentally qualified for the worst case main steam line break in the auxiliary feedwater pump room.

SCE requests the staffs' concurrence that it is not necessary to postulate a high energy line break in the auxiliary feedwater pump room during the period between now and July 30, 1982 to allow time to complete the evaluation of the bearing failure and to determine corrective action.

The basis for this request is as follows:

1. There is a low probability of a pipe break in the 20 feet of high energy line involved.
2. The plant can be shutdown without the auxiliary feedwater pumps by using the main feedwater and condensate pumps.
3. During the period of this request the plant will operate at low power levels allowing more time for operator action.
4. The short time involved decreases the probability of a significant event occurring.
5. The motors with babbitt bearings have passed the 48 hour endurance test.
6. Primary stresses in the steam lines are well below limits.
7. The auxiliary feedwater pump turbine steam lines will be visually inspected on a daily basis to detect leaks.

The items above all reduce the probability of an event occurring where the auxiliary feedwater system is not available. Combining the items above, the overall probability of a high energy line break in the steam supply line is extremely small.

SCE will examine other alternatives for environmental qualification should the cast iron bearings prove unreliable. Those alternatives include, but are not limited to:

1. Modify the design of the motors using other types of bearings and oil.

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2. Add walls to separate the motor driven pumps from the steam driven pump.
3. Provide forced cooling of electric motors using chilled water.
4. Provide a spray or ice system to the pump room to reduce the maximum temperature during a postulated high energy line break.
5. Remove the steam line from the room.

SCE would like to meet with the NRC staff prior to June 30, 1982 to discuss the status of this evaluation.

If you have any questions or comments, please contact me.

Very truly yours,



cc: D. Kirsch, NRC, Region V