APPENDIX 13

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QUESTION 13A.1 (DRL 13.1) Discuss the extent to which test results will be documented.

ANSWER For convenience, tests are categorized as pre-operational and construction testing. For both construction and pre-operational testing, detailed test procedures will be prepared. These procedures will be specific regarding intent, methods, and operating requirements for completing the test and will include blank data sheets to be used during the test. Upon completion and acceptance of the tests, these detailed test procedures and the filled-in data sheets will become a permanent record for the plant. These records will be maintained by the Plant Administrative Aid, who reports directly to the Plant Superintendent.

The pre-operational test program will be under the direction of the SMUD operating staff with assistance from B&W, Westinghouse, Bechtel, vendors and consultants as required. SMUD will actually operate the plant and equipment during pre-operational testing. The construction testing will be performed by independent labs or contractors under PEG direction. They resemble pre-operational tests in that they are defined by formalized procedures and data sheets and require formal reporting and acceptance. Examples of construction testing are: Containment final leak rate testing, system hydro-static tests, wiring continuity checks, initial adjustment and bumping of motors, etc.

QUESTION 13A.2 (DRL 13.2) Discuss your plans for measuring and/or verifying the threshold conditions for xenon oscillations. Include in your discussion the extent to which data from earlier plants will be used.

ANSWER At the startup of the Rancho Seco Nuclear Generating Station physics tests results and operational experience will be available from the Oconee Nuclear Power Plant.

Necessary and sufficient tests to demonstrate the behavior of xenon in the core will be performed during the startup physics testing program. The results of these tests will be checked against digital predictions; and, if necessary, the calculative model used on the Oconee unit will be adjusted to reflect these results depending on the confidence of the experimental data. 3

This type of information will be available shortly after the startup of Oconee 1, scheduled for the first quarter of 1971. The analysis of the data will be performed during and in the immediate time period following the collection of this data.

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Calculative model adjustments will be made if required, and this model will be used to verify the predicted behavior of the Rancho Seco plant. From this analysis, tests will be designed to check the response of the plant in regard to xenon oscillations. This work should be completed by the scheduled fuel loading date of December 1972 for Rancho Seco. 3

The physics testing program for Oconee 1, which is now scheduled to be carried out during the first quarter of 1971, has not been finalized; therefore, details are not available at this time.

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QUESTION 13A.3 (DRL 13.3) Provide a detailed outline of the test program for each engineered safety system. The outline should provide a set of test objectives for each system, a brief description of the proposed test, and a brief discussion on how achievement of design objectives can be assured.

ANSWER Engineered safety features of the plant will be tested as part of the overall precritical test program defined and summarized in Section 13.1 of the PSAR. The engineered safeguards portions of the planned precritical tests are outlined below.

The objective of each functional test is to determine that major components are properly activated by safeguard signals and to measure performance for comparison with component specifications and the system requirements presented in Section 6.0 of the PSAR. The objective of the operational tests is to demonstrate the performance of systems in each of their operating modes, i.e., single and redundant operation of components or systems, at normal and emergency operating levels.

1. High Pressure Injection

   a. Functional test for initiation and performance of valve operators and pumps.

   b. Operational test for initiation, delivery of high pressure injection flows, system and control in each redundant safeguard operating mode and the on-line test mode.

2. Low Pressure Injection

   a. Functional test for initiation and performance of valve operators, pumps, and heat exchangers. Heat exchanger testing will cover the specified range of flows and temperatures.

   b. Operational test of initiation, delivery of low pressure injection flow and system control in each redundant safeguard mode and the on-line test mode.

3. Nuclear Service Cooling Water and Raw Water Loops

   a. Functional test for initiation and performance of valve operators, pumps, and heat exchangers. Each heat exchanger to be tested over specified temperature range.

   b. Operational test for initiation and performance of each cooling loop.

4. Core Flooding Tanks

   Functional test for remote operation of stop valves, opening of check valves, and test of nitrogen cover gas pressure control.

5. Reactor Building Emergency Air Coolers

Functional test for initiation of valve operators, pumps, and fans. Cooling water flow in each cooler to be verified.

6. Reactor Building Spray System

a. Functional test for initiation and performance of valve operators and pumps including items associated with spray additive system.

b. Operational test for initiation of spray pumps and spray additive system. Verify delivery of spray additive to spray water. Establish rate of spray water delivery to spray headers (with return through test line). Demonstrate flow through spray heads using air or smoke. Demonstrate operation with pump suction taken from borated water storage tank.

7. Reactor Building Isolation

Functional test for closure of all valves on prescribed containment penetrations. Test to include operation of valves normally open only for specified short-term functions such as in the purge system and the sump drain lines. Building leak rate at design pressure to be established.

8. Integrated Safeguards Test

Functional test to demonstrate sequencing of active components in high pressure injection, low pressure injection, nuclear service cooling loop, reactor building emergency air coolers, reactor building sprays, and reactor building isolation systems in response to actual or simulated signals.

9. Emergency Power and Diesel Loading Test

Verify capability of nuclear service buses, power sources, including diesels to start and support safeguards loads.

Detailed system test requirements will be prepared for all safeguards systems when the system designs are finalized and the specific system components are identified and proper records will be maintained for all tests.

Determination of acceptable performance by each system shall be based upon:

a. Comparison of performance demonstrated in the individual tests to the design requirements contained in Section 6 of the PSAR.

b. Proper functioning in the Integrated Safeguards Test.