

SEP 6 1968

Roger S. Boyd, Assistant Director, Reactor Projects
Division of Reactor Licensing

THRU: Charles G. Long, Chief, RPB-3, DRL /S/

MEETING WITH DUKE POWER COMPANY ON STATUS OF UNRESOLVED ITEMS - DOCKETS
50-269/270/287

On August 29, 1968, a meeting was held with representatives of Duke Power Company to discuss items which were left unresolved at the time of issuance of Construction Permits for the Oconee Units 1, 2 and 3 (reference my memo to P. A. Morris, dated July 29, 1968). An attendance list is attached. It was agreed that Duke would submit written documentation on those items which were resolved at this meeting with enough copies to distribute to all holders of the PSAR.

The schedule for submittal of the operating license Safety Analysis Report is June 2, 1969. The general content of SAR's was discussed, and Duke said that they would like us to look at an early draft of the report for content.

A. RESOLVED AREAS

The following items were discussed and we and Duke Power feel that these subjects can be substantially resolved by documentation of the work done to date.

1. Underwater Weir Design

The applicant has increased the thickness of rip-rap from 24 to 36 inches with a 35-foot coverage as a result of further studies of potential erosion of the top of the weir during postulated drawdown of the lake. Erosion on the slopes was minimized by excavating to material equivalent to the dam material. Stability analyses have shown that excess pore pressures are not a problem.

2. Detailed Design of ECCS

Duke Power interprets the ACRS comment that the staff should "review the detailed design of the ECCS and the analysis of its performance for the entire spectrum of break sizes as soon as the information is available" to refer to the functional design rather than the actual physical components. I agree with this interpretation. The spectrum of break sizes has been adequately treated in subsequent construction permit applications for which

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B&W is the nuclear steam supply vendor. The functional design of the ECCS has been revised by Duke to substantially comply with the "single passive failure during the recirculation mode" imposed on recent applicants (our interpretation of Criterion 44). We indicated that the proposed isolation valving between the high pressure injection trains should be further reviewed for all operating modes.

The design of the piping from the sump area does not meet the passive failure criterion up to the first isolation valve outside the sump. Duke indicated that Unit 1 piping was already in concrete. We recommended that Duke look at other means (such as the water-tight room proposed by VEPCO) as a means to cope with the failure in Unit 1. We indicated that while Unit 1 might be accepted without the passive failure capability in this area (since it is a recent requirement), Units 2 and 3 should have the provisions required on currently licensed plants.

The service water system has also been redesigned to cope with a passive failure. The high pressure injection system can operate in the recirculation mode by taking suction from the low pressure pumps.

3. Preoperational Monitoring Program

The preoperational monitoring program was discussed although Duke stated that since this area was not listed as a reservation in our Safety Evaluation, they did not feel obligated to document the discussion. Duke indicated that they have not complied with the Fish & Wildlife requests for documentation of their program to the Federal Agency but are coordinating their program with the local Fish & Wildlife office, the South Carolina Pollution Control Authority and the South Carolina Wildlife Resources Department. We urged that they also cooperate with the Federal Fish & Wildlife office.

Sampling will be conducted within the exclusion area and in villages up to 13 miles away. Sampling will begin in early 1969 (2 years before startup).

4. Earthquake and Accident Loads

B&W has combined the earthquake and accident loads in the design of this plant in the same manner as subsequently licensed plants. A report on the stresses imposed by blowdown forces on the reactor internals is scheduled for September 1968.

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5. Tornado Design of the Fuel Pool

The spent fuel pool has been designed to withstand the effects of turbine missiles and tornado effects by a concrete roof (2.9 ft thick) and concrete walls. Entrance doors to the structure also serve as blowout panels to withstand the effects of a pressure drop of 3 psi in 5 seconds. There will be 1 ft² of blowout panel for each 1000 ft³ of volume.

The concrete walls would withstand the postulated missiles unless specifically directed through the blowout panels. The thinnest wall (1 ft thick) would not withstand the heaviest missile but this wall is not critical to the protection of the pool at the height which the heavy missile could occur.

6. Steam Generator Research and Development

B&W stated that all R&D has been completed on the steam generators and that a report is scheduled by the end of 1968. It was stated that the tests have confirmed the ability to control the steam generators and that there is nothing to indicate concern in the primary and secondary side blowdown tests.

7. Independence of Power Supplies

The d.c. power supplies were reviewed by Duke and found susceptible to tripping two units as a result of a short on one of the d.c. panel boards. This will be overcome by installing the power supplies for Unit 3 as well as Unit 1 and 2. It was stated that there are now no interactions or single failures that could affect safety.

The physical separation of the batteries in Units 1 and 2 is about 30 feet between each of the four batteries. Cables which feed redundant circuits are physically separated and armored cable is used as a fire retardant. Loads for cable trays are planned by Duke engineers and not done in the field. Cable tray loadings will be in accordance with IPCEA tables. These topics and the rod drive bus arrangement were also discussed with C. Wylie of Duke and D. Sullivan of DRL after the meeting. The use of an averaging circuit on the flux detectors was also discussed, and Duke indicated that they may want to talk to us again on this topic.

8. Control Rod Drive Scram Bus

The arrangement proposed for the control rod drive scram bus is the same as for Crystal River and other recent B&W plants. Mr. Sullivan stated that it was a complex system but that it apparently met our requirements.

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B. UNRESOLVED AREAS

The following areas were not resolved at the meeting and B&W will have to perform further work.

1. Diversity of ECCS Actuation Signals

B&W indicated that a 10 psi containment pressure signal has been added to serve as a diverse actuation signal for the ECCS. We stated that an analysis showing that the 10 psi signal would indeed be a valid backup signal over the entire break size spectrum would be required. B&W indicated that they had not intended to do an analysis since they felt that the containment pressure signal was not a good signal and added it only in response to the ACRS request for diversity. We do not consider this item resolved and believe that an attempt must be made to incorporate a diverse signal of value to the safety of the plant.

2. Core Barrel Check Valves

B&W stated that the final sizing was eight valves, each 14 inches in diameter and stated that this was documented on the SMUD application. We stated we did not feel that this resolved our prior reservations since no analysis had yet been presented to show that extra relieving capacity was available as discussed at the time of the Duke review.

Mr. Levine stated that we were not satisfied with the B&W calculation of the interaction of blowdown and injection flow in the annulus and would require further analyses.

3. Thermal Shock

B&W continues to work on the thermal shock calculations. Current estimates are fracture propagation through about 30% of the plate. Duke has reviewed the proposed Zion solution and finds it impossible to apply to the Oconee Units because of space limitations. No calculations have been made on the time required to fill the cavity around the vessel to a level above the core after a break in the vessel but my estimate, including full ECCS flow and vessel inventory, is about 10 to 15 minutes.

4. Xenon Oscillations

B&W indicated that studies on xenon oscillations would be completed in the next few months. It is not yet clear that part length rods will not have to be used.

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5. Thermal-Hydraulic Analyses

B&W stated that they have switched to the W-3 correlation and will license the plant on the basis of the W-3 correlation.

6. Quality Assurance

Mr. Lee stated that he would have further conversations with Dr. Beck on the subject of quality assurance.

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Brian K. Grimes
Reactor Projects Branch No. 3
Division of Reactor Licensing

Attachment:
Attendance List

Distribution:

- P. A. Morris
- F. Schroeder
- S. Levine
- D. F. Sullivan
- W. S. Seidel, CO, Atlanta
- W. R. Butler
- R. L. Waterfield
- R. J. Mattson
- R. R. Powell
- C. G. Long
- B. K. Grimes
- H. J. Richings
- N. H. Davison
- Supple. (3)
- DRL Reading
- RFB-3 Reading

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ATTENDANCE LIST

MEETING WITH DUKE POWER COMPANY
AUGUST 29, 1968

Duke Power Company

Austin Cole Thies
Edwin Dean Powell
Paul Hodges
Barton
John Edwin Smith
Lionel (None) Lewis
Linwood Clayton Dail
Thomas Fulton Wyke
Warren Herbert Owen
Charles Joseph Wylie
Edward Castle Fiss
William States Lee
William Humphrey Grigg
Roy Baker Snapp

B&W

Donald Wheaton Montgomery
William Reuben Smith

DRL

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S. Levine
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B. K. Grimes
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R. J. Mattson
R. R. Powell