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Peter A. Morris, Director
Division of Reactor Licensing

POST-CONSTRUCTION-PERMIT REVIEW OF METROPOLITAN EDISON'S THREE MILE ISLAND STATION (DOCKET 50-289, CPPR-40)

The items listed below are identified as follow-on items to the construction permit review of Met-Ed's Three Mile Island Station, for which a construction permit was issued in May 1968. A meeting will be held with the applicant to discuss the follow-on items. Your comments are requested.

1. Research and Development Items

   a. Sodium Thiosulfate

   We stated in our Safety Evaluation, on page 50, that we believe that the needed 5.2-reduction factor for the 2-hour dose could be achieved by the sodium thiosulfate-sodium hydroxide spray system. Since that time (February 5, 1968), we have adopted a more conservative evaluation procedure. For example, the same spray system design was provided on Crystal River and, using our present methods of evaluation, was accorded a removal factor of 3.7 for the 2-hour dose. We should advise Met-Ed that we require improvements in their spray system design (or, possibly, their containment design which now has a leak-rate specification of 0.2% at design pressure).

   b. Other R&D Programs

   The other programs include: once-through steam generator; control rod drives; in-core neutron detectors; thermal-hydraulic programs; core cooling aspects; and xenon oscillations. We plan to ask the applicant to present at the meeting a summary description of the progress to date on each item and the anticipated schedule for completion.

2. Initial Decision of ASLB

   No items were raised in the Initial Decision of a follow-on nature.

3. Safety Evaluation (S.E.)

   a. Combined Seismic and LOCA Loads (p. 11 of S.E.; also p. 35)

   Additional information was presented on Crystal River--answer to Question 9.11. We will ask for a progress report and completion schedule. Met-Ed provided some very preliminary guidance in the answer to our Question 15.2.

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b. Diversified Signal for ECCS (p. 19 of S.E.)

B&W initially agreed to provide ECCS signal diversification in Met-Ed's summary at the hearing. We require additional information concerning the basis of selecting 10 psig RB pressure as the alternate signal. (Duke has promised the information in their SAR, to be submitted next summer.)

c. Separation of Control and Safety (p. 18 of S.E.)

We said in the S.E. that we would review the final design of the instrumentation systems in which the same signal is used for control and safety, keeping in mind the ACRS recommendation of separation "to the fullest extent practicable." At the Met-Ed meeting we should discuss changes, if any, Met-Ed proposes to make. We should also state what information we will require in a final detailed design (such as prints, test data, failure analyses, etc.). We should also inform Met-Ed of our current position.

d. Reactor Building Fan Coolers (S.E. p. 20)

We should review the status of design of the fan coolers, in particular the shaft seals and winding insulation. As stated in the S.E., we may impose further testing on a prototype unit. Our review should come in advance of the POL, and schedule should be discussed at the meeting with Met-Ed.

e. Dilution System Controls (S.E. p. 21-22)

We will review the final design on boron dilution system controls for review against IEEE-279. We should discuss preliminary design at the meeting, as none was offered in the PSAR.

f. GDC No. 11 (S.E. p. 22)

We need an expanded outline as to the procedures to be used by Met-Ed in going to "cold shutdown" from without the control room. Met-Ed should be encouraged to provide this at an early date as it could affect their final design. Met-Ed only reluctantly agreed to comply with our interpretation.

g. Pressure Vessel Thermal Shock (S.E. p. 24)

We said in the S.E. that we would review the calculational details on pressure vessel thermal shock when available. Since that statement was made, several B&W plants have been processed through the CP process. We have continued to review this problem, without final resolution. We should notify Met-Ed that we require formal filing of the B&W calculations to date. We should also discuss possible design changes to minimize thermal shock effects.

h. Quality Assurance (S.E. p. 29)

Since the CP for this plant was processed prior to the increased emphasis by DRL, QA will be a significant follow-on item. (Per memo from Boyd to Morris of September 23, 1968, Dr. Beck will be notified of the meeting.)

i. Failed Fuel Element Detector (S.E. p. 43)

We stated that we would review any proposals made by the applicant in this regard. The applicant should provide us with his current status of design. We should further state our information requirements, which include time response, sensitivity, redundancy, etc.

4. Hearing Transcript

a. Failed Fuel Element Detector (pp. 260-264): See 3-i above.

b. Splitting Scram Bus (pp. 315-319)

The applicant stated that he was going to modify the scram buses so that failure of one bus to release rods would not prevent a reactor scram. We will ask Met-Ed for design details.

c. Pressure Vessel Inspection (pp. 334-336)

We will ask B&W if there is any progress on remote UT, or other means, for inspection of the reactor vessel.

d. Quality Assurance (pp. 342-347): See 3-h above.

5. Follow-On Items on Airplane Hardening

a. We need to review the design, or determine the schedule, for the final analysis of all structures intended to survive the design basis crash. Only the containment was reviewed during the CP review.

b. Our consultant on fire protection measures, Dr. Irving Pinkel of NASA-LRC, recommended that the designer pay close attention to the fog spray system in the ventilation inlets. He also emphasized high quality and reliability in the explosive mixture detection instrumentation. We should determine design progress in these areas. Further details of our expressed concerns are listed on page 7 of the Addendum to the Safety Evaluation.

c. Our Safety Evaluation Addendum (of April 26, 1968) states on page 5 that detailed calculations will be performed by the applicant during construction to illustrate the ability of the containment to withstand an airplane strike on the cylinder wall. (The dome was considered previously.) These calculations should be reviewed.

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