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Files
THRU: R. L. Tedesco, Chief, Reactor Project Branch 2, DRL

THREE MILE ISLAND UNIT 2 ACRS CONSTRUCTION PERMIT REVIEW, JULY 1969
DOCKET NO. 50-320

On July 10, 1969 the Three Mile Island Unit 2 (TMI #2) application for a construction permit was reviewed by the ACRS. The following are the principal areas which were discussed during the ACRS review.

DRL & ACRS Meeting

In the meeting with the Committee, we presented the matters which will require continued review or matters which we and the applicants were in disagreement. These matters are identified in section 19.0 Conclusion of our Report to ACRS for TMI #2.

We reviewed the grouted tendon surveillance proposed by the applicants and indicated our position was that the applicants should be required to provide embedded instrumentation to provide a means of monitoring the prestress condition of the containment structure.

The ACRS indicated they could not support this position requiring embedded instrumentation for surveillance since they felt the proposed pressure test with the tendon design margin was adequate surveillance.

We indicated the research and development effort to determine the acceptability of the alkaline sodium thiosulfate spray additive was still being reviewed. It was indicated to the Committee that the use of the sodium thiosulfate additive appears to be an acceptable additive which is stable and compatible with material found in the containment providing a system design includes a means of sampling and controlling the spray solution pH to > 8.0 during and following the loss-of-coolant accident. It was also indicated to the Committee that the TMI #2 was committed to installation of HEPA filters and reduction of containment design leak rate to comply with the Part 100 guideline limits if sodium thiosulfate iodine removal constants are inadequate.

Applicants-DRL-ACRS Meeting

The following matters were discussed with the applicants concerning the TMI #2 design and the applicants' response is indicated.

(1) Grouted Tendon Surveillance

The applicants presented the analysis of the reactor building tendon design margin. The results of this margin analysis were presented to the DRL staff and are contained in Attachment A of the meeting report covering the July 9, 1969 DRL meeting with the applicants.

(2) Alkaline Sodium Thiosulfate

The applicants indicated the research and development effort on alkaline sodium thiosulfate was completed and a draft report was being reviewed by DRL. It was indicated to the Committee that the TMI #2 design will have the capability of sampling and controlling the spray solution pH by permitting the addition of NaOH or $Na_2S_2O_3$ if required.

(3) Primary Coolant Pump Flywheel

The applicants indicated to the Committee that the flywheel material will be ultrasonic inspected during fabrication and provisions will be made to provide access to the flywheel components for inservice inspection. B&W indicated they had analyzed the gyroscopic effect on the flywheel during a design basis earthquake. Also B&W indicated they would perform additional analysis to determine the consequences of a flywheel failure.

Since none of these commitments are documented, we will follow up on these matters to get necessary documentation during our post-construction review.

(4) Failure to Scram on Anticipated Transients

The Committee indicated to the applicants that the consequences of failure of the control rods to scram on anticipated transients such as loss of turbine should be analyzed. B&W agreed to review the anticipated transients and the consequences of failure of the control rod to scram.

This will be a follow-up item during post-construction review.

(5) Steam Binding Due to Steam Generator Tube Failure

The applicants indicated to the Committee that the analysis of the cold leg break with vent valves included an allowance for energy transferred from the secondary to the primary system

during the blowdown. B&W indicated this energy transferred from the secondary to the primary coolant was equal to 50 lbs/sec steam injected into the primary system which is equivalent to 13 failed steam generator tubes.

B&W also indicated they had looked at a 100 lbs/sec steam injection from secondary to primary which is equivalent to 30 failed steam generator tubes. No adverse effect on core cooling was noted due to a steam blockage.

(6) Sabotage

The applicants indicated to the Committee the TMI site will have a security fence and lighting around the site perimeter and all buildings. In addition all access to the island site will have controlled access gates and building doors will have controlled access.

(7) Radiolytic and Chemical Hydrogen Control

B&W presented to the Committee their analysis of controlling the hydrogen concentration below 4.1 v/o within the containment following a maximum hypothetical accident by purging at a controlled rate. The B&W analysis of the offsite doses are based upon the containment iodine being negligible at the time the purging is initiated.

The Committee did not react unfavorably to the method of purging provided the iodine removal rates could be supported.

(8) Common Mode Failure Analysis

B&W indicated to the Committee they were continuing to review their instrumentation system for common mode failures with DRL.

(9) Reactor Vibration Instrumentation

B&W indicated they had not considered installing instrumentation to monitor the reactor vibration during operation. The Committee indicated B&W should look at the possibility of instrumenting the reactor to detect changes in vibration characteristics as a means of early detection of an internal component deterioration or failure.

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