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DESCRIPTION:

Ltr trans the following:

ENCLOSURES:

Nonroutine 30-Day Report #75-08 concerning Reactor Building temperatures in excess of those expected during normal operation
.....

PLANT NAME: Three Mile Island #1

FOR ACTION/INFORMATION 10-31-75 JGB

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** SEND ONLY TEN DAY REPORTS

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METROPOLITAN EDISON COMPANY

POST OFFICE BOX 542 READING, PENNSYLVANIA 19603 TELEPHONE 215 – 929-3601

October 24, 1975
GQL 1638

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

J. P. O'Reilly, Director
U.S. Nuclear Regulatory Commission, Region I
631 Park Avenue
King of Prussia, PA 19406

Dear Sirs:

Regulatory File Cy.

Docket No. 50-289
Operating License No. DPR-50
Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Nonroutine 30-Day Report 75-08

In accordance with Section 6.7.2.b.2 of the Technical Specifications for TMI-1 enclosed please find Nonroutine 30-Day Report 75-08 which deals with Reactor Building temperatures in excess of those expected during normal operation.

We trust this submittal satisfies the reporting requirements stated above and any concerns you may have. If you should have any questions please contact me.

Sincerely,

R. C. Arnold
Vice President

RCA:CWS:ilm

File: 20.1.1/7.7.3.6.1

Attachments

1476 234
12403

METROPOLITAN EDISON COMPANY (MET-ED)
THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1)
DOCKET NO. 50-289
OPERATING LICENSE NO. DPR-50

Nonroutine 30-Day Report 75-08

1. Description of Variance

During the summer months Reactor Building (RB) internal temperatures in excess of the 110°F sustained temperature assumed in the FSAR have been experienced. Average temperatures approaching 130°F have been experienced above elevation 320 feet and 110°F-120°F below elevation 320 feet on days when wet bulb temperature has been greater than approximately 75°F.

2. Designation of Apparent Cause of Variance

It has been determined that the RB heat load is nearly twice as high as the heat load as originally predicted by B & W. Although the RB industrial coolers are rated for twice the design (B & W) heat load they have not performed up to their design rating.

A RB heat load of twice the design heat load is suspected to be caused by possible chimney effects created by gaps in some system insulation. Convection air flow caused by the chimney effect could cause an increase in RB heat load.

Two areas of concern with regard to these increased temperatures are the components within the RB that experience these temperatures and the RB structrual integrity.

With regard to RB structural integrity, the Reactor Building Containment Shell has been reanalyzed for the additional thermal stress created by the operating temperatures experienced (i.e. 110°F to 120°F below the 320' elevation and 130° F above elevation 320'). The Working Stress Design method of ACI318-63 was used as specified in the FSAR. The calculated stresses were found to exceed the allowable stress values for the reinforcing steel permitted at the time that the RB was originally designed. However for the identical reinforcing steel used for construction of the RB, Section III Division 2 of the ASME Boiler and Pressure Vessel Code (Jan. 1, 1975), permits a higher allowable stress. Using this higher allowable stress calculated stress values were within allowable limits.

In addition, the containment shell has been checked using the alternate design method of ACI318-63, the Ultimate Strength Design. Using the Ultimate Strength Design method, the most critical section under the governing load combination was determined to have a 1.63 factor of safety.

The "Reactor Containment Building First Tendon Surveillance Test One Year After S.I.T.." discussed the effect of the higher temperatures on the tendons. As indicated in Section 5.1 of this report, "the effect of a local high ambient temperature on the vertical tendons is negligible. The hoop tendons would experience approximately a 3.4 percent greater loss of prestress force, which would not jeopardize the structural integrity of the Reactor Building."

It should also be noted that during the times that RB temperatures rise above 110° F the outside ambient temperature is well above the 21.4°F temperature used for RB design stress analysis. The design thermal stress therefore was based on a thermal stress represented by about a 90° differential temperature and the stress differential temperature for the high temperature conditions experienced at TMI-1 is less than 70°F.

With regard to the components within the RB, a detailed analysis has been conducted and all safety related components and coatings have been determined to be compatible with the operating temperatures to which they are subjected.

Analyses have also been conducted to determine the effect, if any, that the increased operating temperature has on post LOCA containment conditions. It was determined that none of the maximum post LOCA temperature or pressure conditions specified in the FSAR would be exceeded.

In summary the probability and consequences of an accident are not increased and the possibility of an accident not previously analyzed has not been created by this increased RB temperature.

3. Corrective Actions

In addition to the analyses mentioned above, an investigation is in progress to locate any insulation conditions that may be contributing to a RB heat load greater than design. Further, efforts have been and are being made to improve the industrial cooler performance.

Until such time as the above actions are completed and the appropriate corrective actions are taken the following action will be taken if RB average temperatures rise above 130°F above 320' or 120°F below 320',

> RB emergency cooling will be initiated as necessary to reduce temperatures below those quoted above.

It should be noted that the conditions described above do not now exist in that outside ambient temperatures are well below 75°F wet bulb. Further, a FSAR change is being prepared to address these increased temperatures.