Docket File

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

March 31, 1971

R. C. DeYoung, Assistant Director for Pressurized Water Reactors, DRL
THRU: C. G. Long, Chief, PWR Project Branch No. 2, DRL CGL

MEETING WITH METROPOLITAN EDISON ON THREE MILE ISLAND UNIT 1,
DOCKET NO. 50-289

SUMMARY

We met with Met-Ed on March 23, 1971, to discuss onsite meteorology, use of sodium thiosulfate, and long-term core cooling, in connection with the OL application for Unit 1.

As a result of the meteorology discussion, we are still unconvinced that Pasquill "F" and 1m/sec represents a 5% probability condition; we are continuing our study. We told Met-Ed that our calculation model for dose reduction for a sodium thiosulfate plant was unchanged from that given them in a November 1970 meeting. A 2-hour dose problem still exists for this plant (D ≥ 328 Rem). We discussed long-term cooling for a cold-leg break, with the potential for buildup of solids in the vessel. B&W has two people working full time on a thermal-hydraulic code model, in an attempt to show adequate circulation of the vessel fluids.

Details of the meeting are in the enclosure. A list of attendees is also enclosed.

DFRoss

D. F. Ross
PWR Project Branch No. 2
Division of Reactor Licensing

Enclosures:
1. List of Attendees
2. Meeting Minutes

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R. W. Klecker
E. Markee
W. Nischan

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ENCLOSURE 1

LIST OF ATTENDEES

Met-Ed

J. Bachofer, Jr.

GPU

D. H. Reppert
S. Bartnoff

B&W

D. Nitti
J. F. Mallay
M. M. Agen
W. R. Smith
W. S. Delicate
J. M. Cutchin
F. R. Thommasson

P-LA

Keith Woodard

NOAA

I. VanderHoven

AEC/DRL

Earl Markee
W. Nischan
D. F. Ross
C. G. Long

ENCLOSURE 2

MEETING WITH MET-ED ON MARCH 23, 1971 RE THREE

MILE ISLAND NUCLEAR UNIT 1 (50-289)

1. Meteorology

Keith Woodard of PLA discussed the new TMI-1 meteorological station. Trouble with the ΔT meter has been frequent; thermistor wires keep breaking. As a result, little data are available. About 2 months of bivane data at 100' elevation have been accumulated. He discussed six points that had been given to him as an agenda:

a. Calms Classification

They now categorize calms as $\mu = 0.5$ m/sec with the indicated Pasquill condition from the bivane.

b. Calm Percentages

Calm percentages are now being reevaluated. They occur slightly less than 4% of the time.

c. Unsteady Conditions

Unsteady wind conditions are also being reevaluated. If the horizontal range was > 125°, it was arbitrarily limited to 125° in the data reduction for daytime conditions (Pasquill "B"). At night, if $\mu < 3$ mph and range > 75°, the range was set at 30°. Unsteady wind conditions are now being tagged in the data reduction for retrieval purposes. They occurred 2.3% of the time, in 2 months of data. Most unsteady conditions occurred around dawn.

d. Woodard commented on the distribution of Pasquill conditions. He said errors in reducing range might have overproduced "A" conditions.

e. Woodard discussed transition from 100' data to 30' data. He said that some trees, 75-100' tall, exist on the island and that the meteorology tower needed to be above that. The tower is 300-400' from the nearest trees. He has estimated that going from 100' to 30' reduces wind speed by about a factor of two. VanderHoven said that he thought the factor of two seemed reasonable. Increased turbulence might mitigate the effect of reduced wind spped on X/Q, Woodard said.

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f. Woodard discussed the procedure used in preparing Table 2-16; he said the WINDOW program was used.

VanderHoven asked about the 65% recovery factor on meteorological data. He was concerned about the loss of blocks of data. Some difficulty in getting replacement parts for the tower has been experienced according to Woodard.

VanderHoven still wonders why 50-60% of categories are D or E; he thinks it is too high. For example, should 5% "F" frequency be adjacent to 30% "E"?

Woodard discussed the new data. There has been difficulty with the temperature instrument, and no data are yet available. He has tried to set Pasquill categories with the bivane output, but he has only 2 months of data. The average windspeed was 6.1 mph vs a 2-year average greater than 7 mph. On the 5% probability level the X/Q is close to "F", 1 m/sec. For large horizontal ranges he saw significant vertical range. About 3 more months will be required to obtain and reduce 2 months of ΔT data.
We caucused and decided that:

1. No additional information was now needed from Met-Ed.

2. We foresee Safety Guide No. 4 as a lower limit on X/Q; Pasquill "F" and 1 m/sec might be nonconservative.

3. We are going to research the effect of using 100' tower data to get 30' values.

We communicated these points to Met-Ed.

2. Sodium Thiosulfate

Our previous discussion with Met-Ed in November 1970 on sodium thiosulfate disclosed to Met-Ed our dose calculational procedures.

We told Met-Ed that there would be no changes in that model on a time scale relevant to Unit 1.

As a result the 2-hour dose is 328 Rem thyroid. (The current leak rate for the containment is 0.2%/day.) We told Met-Ed that the meteorology is not going to improve, and may get worse. Consequently, we said they must take action to modify their design so as to comply with Part 100.

3. Long-Term Core Cooling

We presented our calculations on buildup of solids wherein heat transfer from the core following a cold leg break is by evaporation only (thus causing a concentration of solids in the vessel). Jim Mallay of B&W said that our input assumptions were reasonably correct. Don Nitti of B&W said that the buildup of solids should not proceed beyond the point when the original mass of solids would be in solution in the vessel. We agreed that we had not taken that into consideration. We predicted that boric acid would reach saturation between 12-24 hours.

B&W stated that they were working on a computer analysis of the thermal-hydraulic aspects of the problem. They hope to show that there is some circulation and purging of solids. No time-table of resolution is available.

This concluded the meeting.