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THRU: R. J. Schemel, Chief, ORB-1, DRL

SUMMARY OF MEETING HELD IN BETHESDA NOVEMBER 5, 1970, WITH JERSEY CENTRAL POWER & LIGHT COMPANY (JCPL) AND GENERAL ELECTRIC COMPANY (GE)

Attendees

See attached list.

The purpose of this meeting was to discuss the results of the FLECHT tests as they related to the effectiveness of the Core Spray System at Oyster Creek Unit 1 for operation at the requested power level of 1690 MWt. A question had arisen during the ACRS review of the requested power increase (1600 MWt to 1690 MWt) as to the conflicting conclusions and extrapolations from test data to reactor conditions which were made by GE and the Idaho Nuclear Corporation (INC). INC was attending the meeting as consultants to DRS who are making an evaluation of the test results and their application to the Oyster Creek Unit 1 conditions.

John Hench was introduced by Sol Levy and he made a presentation of the FLECHT test results and the development of a new heat transfer correlation for the time after initiation of core spray (Rogers Correlation). He then showed that incorporation of this new correlation in the GE analytical model produced results which more closely matched the test data than results obtained with the previous correlation (Jansen Correlation). Mr. Hench pointed out that the Rogers Correlation incorporated the following features:

1. Heat transfer due to radiation between surfaces, rod to rod and rod to channel.

2. Heat transfer due to radiation to coolant.

3. Heat transfer due to convection to coolant.

4. Separate heat transfer coefficients for each of the four rod types and the channel.

5. Heat transfer coefficients based on recent high temperature data.

6. Channel wetting time is included as well as the effect of channel wetting on the heat transfer coefficient.

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Mr. Hench then showed graphs of the predictions of the GE analytical model with the specific test conditions input to the model for the stainless steel tests. The test data points were plotted on these graphs and good agreement was demonstrated. The heat transfer coefficients used in the model were derived from the stainless steel test data. Mr. Hench next showed graphs of the predictions of the analytical model for the zirconium tests along with the test data points. Good agreement was claimed by GE. The value of peak temperatures appeared to be quite good but there was a slight time shift in the prediction which indicated the peak occurring earlier than the test data showed. GE attributed this mainly to the limitation of the model in grouping similar rod types into four groups.

A question was raised by DRS concerning one of the graphs, Zr-2 rod 24. It was noted that during this test some anomalies occurred, such as heater short circuits and thermocouple faults. The particular thermocouple which supplied the data for this graph faulted at five minutes into the test, however, the graph showed no discontinuity or loss of test information. GE stated that the graph of that temperature was completed based on their judgment as to what the temperature was by looking at responses of other similarly placed thermocouples. It was suggested that the remaining data plots would be considered more credible if GE would indicate on the graphs where curves were based on something other than direct data.

The conclusions drawn by GE from the above comparisons and overall test results were:

1) FLECHT tests demonstrated the core spray effectiveness for a wide variety of conditions, and

2) Rogers Heat Transfer Correlation predicts FLECHT data very well.

DRS asked that the zirconium tests be discussed in more detail later.

GE then showed the results of their analytical model predictions for Oyster Creek using both heat transfer correlations. The results were:

Correlation	Power Level	Max KW/Ft	Peak Clad Temperature
Jansen	1690 MWt	15.4	1810°F
Rogers	1690 MWt	15.4	1870°F
Jansen	1930 MWt	17.5	1870°F
Rogers	1930 MWt	17.5	2020°F

At this point the project meeting was adjourned, and after a 10 minute break, the staff and GE convened to consider further the general problems of core spray cooling.

T. Wambach
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Enclosure:
Attendees

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