

Docket #50-346

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MAR 8 1976

Leon Engle, Project Manager, Light Water Reactor Br. 4, DPM
THRU: Sanford Israel, Section Leader, Reactor Systems Br., DSS

DAVIS-BESSE 1 PROPOSED SUMP TEST

Our review of the 1500 gpm ECCS flow test proposed by Toledo Edison for Davis-Besse 1 cannot be completed at this time for the following reasons:

1. Sufficient justification of the sump design to assure that vortexing would not occur has not been given. No studies or test data have been offered. The design of the anti-vortexing device is not supported by test data. What additional reduction, in available head in feet, does this device impose on the pumps? Available information (H. Woodhouse, POWER, May 1966) indicates that less than 3 feet of margin exists to minimum recommended pipe submergences. The applicant will be required to either provide a full-flow onsite vortex test, or conduct model tests to show that their sump configuration is not subject to vortex formation after a LOCA.
2. In response to a question pertaining to NPSH, the applicant raised the predicted flood level inside the containment 6.1 feet over the predicted level used for NPSH calculations in the FSAR. The reason offered was one of several errors discovered in the FSAR calculations. Provide a comparison of current calculations of predicted flood height with the previous calculations, clearly showing the original error. State the basis for the 360,000 gallons of water from the BWST and indicate the quantity of water still remaining in the BWST at the time of the shift to the recirculation mode.

Provide the calculations of pressure losses in the suction lines for each of the four pumps, including the values of all L/D's, areas, Reynolds Numbers, and friction factors. Clearly show where each value was derived, including all fittings in the suction piping. What pressure loss is attributed to the sump screens?

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3. Provide the manufacturer's test results (data/curves) for the four pumps used to determine the required NPSH. Confirm that these tests were conducted on the Davis-Besse 1 pumps (i.e., not prototypes).
4. Item 4 in the 1/3/76 letter from the applicant is not clear. The indication is that some means are provided to prevent excessive flows. Describe how the required ECCS flow will be established during the prep tests. State the flow criteria and describe its basis. Indicate the appropriateness of the flow criteria for both the injection mode and the recirculation mode. Discuss the potential for these settings becoming changed. Include a discussion of the uncertainties involved in the final established flow (in terms of \pm gpm).
5. With the proposed test setup consisting of a connector in the sump between the two suction lines, it appears that the means exist to achieve the maximum flow rate capability of one train (OH pump plus spray pump). The object of the test would be to confirm that the pressure losses submitted in the 1/3/76 letter from the applicant. Differences should only be due to entrance losses and temperature. Discuss means to confirm predicted entrance losses.

Provide all calculations utilized to predict the expected pressure losses for the cold sump test. Describe the criteria which will be used to satisfy yourself that the test verified the expected post-LOCA conditions and discuss the capability to vary flow to obtain more than one point on a plot of NPSH versus flow.

Describe the instrument to be used for the pressure drop measurements, include a diagram of its scale, and specify the instrument uncertainty involved.

Original signed by:

G. R. Mazetis
Reactor Systems Branch
Division of Systems Safety

cc: T. Novak D. Ross
S. Israel W. Minners
J. Watt
G. Mazetis

OFFICE →	DSS:RSB	DSS:RSB	DSS:RSB		
SURNAME →	G. Mazetis:db	S. Israel	T. Novak		
DATE →	3/5/76	3/5/76	3/5/76		