

Reference 8

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: Karl Seyfrit, Assistant Director for Technical
Programs, Reactor Operations Inspection, I&E

FROM: Paul S. Check, Chief, Core Performance Branch, DSS

SUBJECT: ANALYSIS OF ROD DROP TEST IN DAVIS-BESSE 1

The Reactor Physics Section of the Core Performance Branch has reviewed the material provided by Region III of I&E on the resolution of the discrepancy in the pseudo rod drop accident analysis for the Davis-Besse Unit 1 reactor. Our comments on this test are enclosed. We find the resolution of the discrepancy to be acceptable.



Paul S. Check, Chief
Core Performance Branch
Division of Systems Safety

Enclosure:
As stated

cc: S. Hanauer
R. Mattson/T. Schroeder
D. Ross
D. Fieno
S. Weiss
J. Crosswell, Region III
R. McDermott
W. Brooks

Contact: W. Brooks, x27577

7908200181

DAVIS-BESSE-1 D DROF TEST

When the pseudo rod drop test was performed at Davis-Besse-1 it was found that the value of the linear heat rate violated acceptance criteria when extrapolated to full power. The experiment is performed at 40% of full power and a power map is obtained with the rod fully inserted into the core. The resulting linear heat rate and DNBR are then extrapolated to full power and the results compared to the appropriate limits.

This procedure is a conservative one since if the rod drop were to occur at full power core peaking factors would be less than those at 40% of full power. This is due in major part to the fact that at full power the moderator density in the high power regions of the core is smaller relative to other regions than is the case at 40% of full power.

The original calculation of the extrapolated linear heat rate (LHR) used conservative values for the local radial peaking factor (maximum pin to assembly power ratio) and axial segment peaking factor (maximum segment power to average segment power ratio). These values were intended to be appropriate for any location in the core at which the peak might occur. In fact the peak usually occurs at mid-height in the core where the axial segment peaking factor is very low and in an assembly where the local peaking factor is much smaller than the enveloping factor used in the original analysis of the experiment. The actual values for both peaking factors are available from the plant process computer which produces a power map for the core. The use of these values instead of the enveloping ones is an acceptable method of analysis for the experiment.