

NRC PDR



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MEMORANDUM FOR: Karl Kniel, Chief, Core Performance Branch, DSS  
THRU: Daniel Fieno, Leader, Reactor Physics Section, CPB/DSS *DF*  
FROM: Marv Dunenfeld, Reactor Physics Section, DPB/DSS  
SUBJECT: BNL-DSS PHYSICS TECHNICAL ASSISTANCE MEETING ON  
AUGUST 30, 1979

M. Dunenfeld visited BNL on August 30, 1979 to discuss progress on the DSS Physics Technical Assistance Program.

J. Carew reported the results of analysis of the TMI-2 source range detector response. We have been attempting to ~~calculate~~ the large variation in source range detector response observed during the early part of the TMI-2 accident. The results indicate the sensitive factor is voiding in the downcomer region of the reactor. A report is available (addressed to D. Fieno, from J. Carew, dated August 28, 1979) for anyone interested in further details of this work.

D. Diamond reported the progress made by S. Cheng on analyses being performed with MEKIN. A report is being written covering the BWR calculations and the rod ejection calculations performed by J. Herczic before he left BNL. The BWR rod drop calculations are not quite complete, as another case is in preparation which will try to duplicate more exactly the 2 dimensional TWIGL reference case with which the 3 dimensional MEKIN case will be compared.

A. Aronson reported that earlier problems in operability of the DWARF code have been solved. We have been modifying DWARF to enable use of an axially detailed model for EOL load follow analyses. This unfortunately makes DWARF run much slower than before. In retrospect, it seems it would have been wiser to modify NODE to do these calculations: a proposed activity for FY 81 is to program all the necessary searches into SIMULATE, which will replace NODE. The searches are on boron concentration, axial offset, control rod position, etc.

The BWR rod drop calculations mentioned above are not finished because they are awaiting completion of programming of revised reactivity edits in MEKIN. Also programming changes which allow variable specific heat and thermal conductivity in the fuel have not been tested. These efforts should be completed shortly.

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M. Todosow reported the results of the first load following cases performed with the modified version of DWARF. These cases duplicated three BOL cases that had been done by A. Buslik a few years ago. The results are essentially identical. This constitutes part of the check-out of the modifications to DWARF. The other part consists of comparing NODE and DWARF unrodded power distributions with and without temperature feedback. A 4th order polynomial fit of the cross sections with temperature for DWARF has provided excellent agreement in these power shapes. Therefore, it is considered that the modified code is checked out.

Running of the load follow cases for the EOL constant axial offset control and power distribution control analyses is now in progress. It is probable that this project will not be completed this fiscal year, as scheduled, and will run over at least two months in FY 80.

L. Eisenhart reported on the details of how he is setting up a system for generating cross sections for use in full core 3 dimensional kinetics calculations. He, and M. Todosow, also reported on the visits of Radkowsky and Rothenstein to BNL this summer, and their discussions of the Radkowsky work on the effect of fission products on the Doppler Coefficient. These discussions again point to the need for additional work to show if there is any reduction of the Doppler in the presence of fission products.

D. Cokinos reported on the status of generation of cross sections for the Quad Cities reactor. The simulation gives better agreement with data for center fuel locations than the core edge. This is usually the case for most power distribution calculations in the absence of more sophisticated treatment of the core boundaries.

  
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cc: See attached distribution