

Monthly Highlights

for

March 1985

Application of RAMONA-3B to BWR ATWS\*  
(FIN A-3273)

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\*Work performed under the auspices of the U.S. Nuclear Regulatory Commission.

## Application of RAMONA-3B to BWR ATWS

This project provides detailed, best-estimate, BWR ATWS analyses for the NRC Severe Accident Sequence Analysis (SASA) Program. In particular, several Browns Ferry Unit 1 MSIV closure ATWS analyses are being performed using the RAMONA-3B code with three-dimensional neutron kinetics. These calculations will not only improve understanding of the BWR behavior during an ATWS, but they can also be used for benchmarking similar calculations performed elsewhere by using the point kinetics codes such as RELAP5 and BWR-LACP.

The major activities performed during March 1985 are noted below.

### 1. MSIV Closure ATWS Calculation (L. Neymotin, G. C. Slovik and H. R. Connell)

RAMONA-3B calculations for MSIV closure ATWS (Transient No. 1) with complete condensation (or zero inlet subcooling) has been performed up to 500 s. The reactor core power in this calculation is only a few percent less than the previous RAMONA-3B calculation with the best-estimate condensation model.

During this month, a 1-D RAMONA-3B calculation for Transient No. 1 was also run up to 500 s. Comparisons with earlier 3-D calculations show very close agreement between the 1-D and 3-D cases for full-ATWS. Thus, this 1-D model can be used as a fast running tool.

Work has also started on the preparation of input decks for the two transient scenarios from the BNL workscope: (a) the manual rod insertion, and (b) partial scram. Core models with a quarter-core and half-core symmetry, respectively, have to be constructed before the calculations can begin. Also, arrangements have been made to obtain a realistic manual rod insertion pattern along with the appropriate timing of events.

### 2. Other Related Activities

A paper entitled, "Evaluation of BWR Emergency Procedure Guidelines for BWR ATWS Using RAMONA-3B code," has been written and submitted for presentation at the 3rd International Topical Meeting on Reactor Thermal Hydraulics, October 15-18, 1985, Newport, Rhode Island.

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