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Highlights on
LWR Plant Analyzer Project
for
July 1982*

PROGRAM: LWR Plant Analyzer Development
FIN #A-3227

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* Work carried out under the auspices of the U.S. Nuclear Regulatory Commission.

This letter covers the highlights of the LWR Plant Analyzer Development Program for the month of July 1982. The program is budgeted under the activity number 601901-10.

Current activities in this program center around the implementation of the High-Speed Interactive Plant Analyzer program HIPA-PB2 for BWR simulations on the special-purpose, high-speed peripheral processor AD10 of Applied Dynamics International, for the purpose of comparing the processor's computing speed with that of the CDC-7600 computer executing the same BWR model.

1. Software Implementation of HIPA-PB2
(H. S. Cheng, S. V. Lekach, A. N. Mallen and W. Wulff)

The previously developed HIPA-PB2 code for simulating thermohydraulic transients in the Peach Bottom 2 BWR power plant has been checked and executes now at twice the real-time computing speed.

There is a discrepancy in the response of the single-phase liquid in the downcomer and plena to compression, causing the downcomer entrance flow to decelerate rather than to surge toward the core while the vapor voids in the core are collapsing. The discrepancy is currently being checked out.

Computational noise appears at computational speeds higher than three times real-time speed. Efforts are underway to identify these sources of noise either as round-off noise or computational instability. The former source would require adjustments in scaling, while the latter source requires a change in the selection of integrating algorithms.

2. Model Development and Implementation
(K. Fujiki)

The prompt neutron kinetics equation of the point kinetics model is being integrated implicitly, as described previously. The method is now working, and work continues on the explicit integration of the delayed neutron equations.

3. Other Activities
(W. Wulff)

A program overview has been presented to the NRC Division of Operating Facilities at a meeting on Simulating the Consequences of Control System Failures, held on July 23, 1982, in White Flint, Maryland.

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