



Westinghouse
Electric Corporation

Water Reactor
Divisions

Nuclear Technology Division
Box 355
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NS-EPR-2644

August 19, 1982

Mr. James R. Miller, Chief
Special Projects Branch
Division of Project Management
U.S. Nuclear Regulatory Commission
Phillips Building
7920 Norfolk Avenue
Bethesda, Maryland 20014

SUBJECT: "Multiflex 3.0, A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structural System Dynamics (III), Advanced Beam Model", August 1982, WCAP-9735 Revision 1 (Proprietary) and WCAP-9736 (Non-Proprietary).

ATTENTION: Mr. Robert J. Bosnak, Branch Chief
Mechanical Engineering Branch

Dr. Brian Sheron, Branch Chief
Reactor System Branch

Dear Mr. Miller:

Enclosed are:

1. Twenty-five (25) copies of Westinghouse Topical Report, "Multiflex 3.0, A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structural System Dynamics (III) Advanced Beam Model", August 1982, WCAP-9735 Revision 1 (Proprietary).
2. Fifteen (15) copies of Westinghouse Topical Report, "Multiflex 3.0, A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structural System Dynamics (III) Advanced Beam Model", August 1982, WCAP-9736 (Non-Proprietary version of WCAP-9735, Revision 1).

Also enclosed are:

1. One (1) copy of Application for Withholding (Non-Proprietary).
2. One (1) copy of original Affidavit (Non-Proprietary).

The enclosed topical report is being submitted for NRC review and approval, and describes an improved computer code, MULTIFLEX 3.0, used to calculate the hydraulic force on the reactor internals structure and pressure vessel during a hypothetical loss-of-coolant accident (LOCA).

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This topical report augments information given in the previously submitted, and NRC approved, Westinghouse Topical Report, WCAP-8708, "Multiflex, A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structural System Dynamics", dated February 1976.

WCAP-8708 described the original beam model. The new information provided in the enclosed topical report is the description of an advanced beam model, i.e., the network downcomer model equivalent to two-dimensional fluid-structure interactions, the non-linear boundary conditions with impact damping, and the relative modal analysis for vessel motion; with the possible application of the sliding friction loss, and the external loads such as loop and cavity force.

The methodology of the advanced beam model has been verified against various experimental data and the conservatism has been estimated. It was found that the advanced beam model yields reasonably realistic hydraulic loads with a sufficient margin of conservatism.

Multiflex 3.0 is a substantial improvement in more realistically modeling the hydraulic loads on reactor internals structures and the pressure vessel during a LOCA. Therefore, Westinghouse intends to use this enhanced design tool in support of future plant specific and generic licensing submittals requiring such an analysis. Initial licensing applications may be associated with analysis in support of reactor internals modifications which may be made to several operating plants during 1983 to minimize the pressure differential across the reactor internals baffle plates, thus alleviating the potential for baffle joint jetting. NRC review of this topical report is therefore requested.

We are available to meet with the NRC to discuss the technical content of this topical report and to establish a review schedule which coincides with potential licensing applications. Please contact Mr. R. J. Skwarek, Manager of Reload Fuel and Forces Analysis, Nuclear Safety Department at 412/373-4637 if such a meeting is deemed necessary.

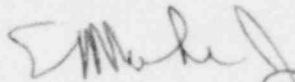
This submittal contains proprietary information of Westinghouse Electric Corporation. In conformance with the requirements of 10CFR 2.790, as amended, of the Commission's regulations, we are enclosing with this submittal an application for withholding from public disclosure and an affidavit. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission.

Correspondence with respect to the affidavit or application for withholding should reference AW-82-46 and should be addressed to R. A. Wiesemann,

Mr. J. Miller
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Manager of Regulatory and Legislative Affairs, Westinghouse Electric Corporation, P.O. Box 355, Pittsburgh, Pennsylvania 15230.

Very truly yours,



E. P. Rahe, Jr., Manager
Nuclear Safety Department

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Enclosures