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GPU 2491

Babcock & Wilcox

Power Generation Group

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July 31, 1974

Mr. R. W. Heward, Project Manager
GPU Service Corporation
Interpace Building
Parsippany, N. J. 07054

Subject: Three Mile Island Nuclear Station, Unit #1
ECCS Analysis
B&W Reference, NSS-5

TMI-ECCS

Dear Mr. Heward:

On January 4, 1974 the AEC issued the Final Acceptance Criteria (FAC) for ECCS evaluation on the form of revisions to 10 CFR 50.46. These revisions require that for plants which have operating licenses or which may receive an operating license on or before December 28, 1974, an ECCS evaluation be submitted to the AEC by August 5 which is performed with a model that conforms to the requirements of Appendix K of 10 CFR 50. B&W will provide the required submittal on a generic basis which will satisfy the above requirements for your plant.

The following information summarizes our status and schedule with respect to meeting the above referenced documentation for the revised ECCS evaluation. B&W has completed the final computations for the analysis of a generic 177 FA plant with lowered loops. The basis for this generic analysis is to use limiting values of key parameters, such as power level and containment building size, for all plants which are in this category. The spectrum of breaks has been analyzed and the results show that the worst break is a double-ended guillotine at the pump discharge. The peak linear heat rate which meets the limiting revised criteria (peak cladding temperature <2200F) is 18.00 kW/ft at the six foot elevation. This value is greater than the existing LOCA limit established under the Interim Acceptance Criteria (IAC) for your plant. Allowable linear heat rates at other elevations have also been established, and the results show some reduction in these values below the core midplane relative to the IAC results. Hence, some further restrictions in rod insertion limits will be required as a consequence for your plant. These additional restrictions are only temporary, since the LOCA limits were developed on a generic basis. B&W will perform additional analysis which will be based on the parameters specific to your plant to minimize the effect of the new rod insertion limits. This analysis will be performed as expeditiously as possible and the results will be transmitted to you as soon as they are available. We will provide you with the schedule for completion of this additional analysis by August 7, 1974.

By August 5, B&W will have submitted the following topical reports which provide the major portion of the necessary documentation for your plant.

H026405

Babcock & Wilcox

Mr. R. W. Heward, P.M.
GPU Service Corporation

Subject: ECCS Analysis -2- July 31, 1974

1. BAW-10091, "B&W's ECCS Evaluation Model Report with Specific Application to 177 FA Class Plants with Lowered Loop Arrangement"

2. BAW-10092, "CRAFT 2-Fortran Program for Digital Simulation of a Multinode Reactor Plant During Loss of Coolant"

3. BAW-10093, "REFLOOD - Description of Model for Multinode Core Reflood Analysis"

4. BAW-10094, "Babcock & Wilcox Revisions to THETA 1-B, A Computer Code for Nuclear Reactor Core Thermal Analysis - IN-1445"

5. BAW-10095, "Babcock & Wilcox Revisions to CONTEMPT - Computer Program for Predicting Containment Pressure - Temperature Response to a Loss-of-Coolant Accident"

Draft versions of each of these topicals have been reviewed by the AEC Staff. B&W has provided responses to the Staff's comments, most of which are relatively minor in nature, and B&W believes that the acceptance of the model will be obtained with little difficulty. The current AEC schedule calls for completion of their Safety Evaluation Report on the model by the end of August 1974.

The previous referenced topical reports will be forwarded to you as they are completed for filing with the AEC.

Attached you will find a suggested letter which you can use for transmittal to the AEC to demonstrate compliance for your plant to the FAC. This letter must be filed by your company with the AEC on or before August 5. Included in the letter are the following: 1) generic FAC LOCA limit curve and, 2) temporary revision to rod insertion limits and corresponding text changes for the Technical Specifications for your plant. This revision is based on LOCA limits as established on the basis of the revised ECCS analysis (BAW-10091).

As required by 10CFR 50.46 (a) (2) (iv), you are required to submit proposed technical specifications for approval and implement the more restrictive of the present and proposed rod insertion limits prior to 12:01 AM August 5.

Yours very truly,

E G Ward

E. G. Ward
Senior Project Manager

EGW:EWH
CC: T. M. Crimmins, GPU Service Corp., W/A
Jeff Fritzen, Met Ed, Reading, W/A
Don Grace, Met Ed, Reading, W/A
J. G. Herbein, Met Ed, Site, W/A
L. C. Rogers, B&W, Site, W/A
F. C. Heller, Philadelphia Sales, W/A

RECOMMENDED DRAFT

August 5, 1974

Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Giambusso:

On January 4, 1974 the AEC issued the Final Acceptance Criteria (FAC) for ECCS evaluation as revisions to 10 CFR 50.46. In compliance with these revisions, Babcock & Wilcox has developed an evaluation model which meets the requirements of Appendix K of 10 CFR 50. The description of this model is contained within their non-proprietary topical report, BAW-10091, "B&W's ECCS Evaluation Model Report With Specific Application to 177 FA Class Plants with Lowered Loop Arrangement," which has been submitted to the Directorate of Licensing (DOL) on August 5, 1974. In addition, B&W has provided supporting documentation for the computer codes utilized in this model in the following non-proprietary topical reports:

1. BAW-10092, "CRAFT 2-Fortran Program for Digital Simulation of a Multinode Reactor Plant During Loss of Coolant"

2. BAW-10093, "REFLOOD - Description of Model for Multinode Core Reflood Analysis"

3. BAW-10094, "Babcock & Wilcox Revisions to THETA1-B, a Computer Code for Nuclear Reactor Code Thermal Analysis - IN-1445"

4. BAW-10095, "Babcock & Wilcox Revisions to CONTEMPT - Computer Program for Predicting Containment Pressure - Temperature Response to a Loss-of-Coolant Accident"

The analysis presented in BAW-10091 for the BAW 177 FA class plants with lowered loop is generic in nature, since the plant parameters utilized in the analysis (such as the rated power level, fuel densification and containment building volume) are taken to be the most conservative values for all the plants of this type. Thus, the results contained in BAW-10091 provide an overly conservative analysis for all plants of this type and can be applied to the TMI Unit 1 Plant. As such, we adopt the results contained in BAW-10091 to this plant. These results demonstrate conformance to the criteria of 10 CFR 50.46 under the following operating conditions:

1. The peak linear heat rate is less than or equal to 17.2 kW/ft at the six foot elevation.

2. The plant is operating within the most restrictive limits of the present and the proposed Technical Specifications for the loss-of-coolant limits. These revisions are based on the LOCA limits as established from the revised ECCS analysis (FAC) (BAW-10091).

H026406 A

The proposed revisions in the rod insertions are attached. The most restrictive of the present and proposed rod insertion limits will be implemented prior to the end of August 4 for the TMI Unit 1 Plant and as such, continued full power operation for this plant is in compliance with 10 CFR 50.46. Final revised Technical Specifications will be submitted for the TMI Unit 1 Plant when Babcock & Wilcox completes the FAC analysis which is specifically for this plant.

Very truly yours,