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NUCLEAR POWER
SYSTEMS DIVISION

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RHB-027-80

MFN-074-80

March 31, 1980

U.S. Nuclear Regulatory Commission
Division of Project Management
Office of Nuclear Regulatory Regulation
Washington, D.C. 20555

Attention: Denwood F. Ross, Jr., Deputy Director

Subject: NUREG-0578 REQUIREMENT 2.1.9
IMPLEMENTATION BY BWR OWNERS' GROUP

Gentlemen:

This letter is to confirm the agreements made between Mr. C.O. Thomas of your staff and Messrs S.T. Rogers (PG&E), P.W. Marriott (GE) and R.A. Hill (GE) in a telephone conversation on March 14, 1980 and to transmit material committed in that conversation for your review. The purpose of the call was to identify the contents of the BWR Owners' Group submittals addressing NUREG-0578 Requirement 2.1.9, and to establish dates for those submittals. One copy of the material committed for the March 31, 1980 submittal is furnished herewith. Sixty copies will be furnished under separate cover.

The BWR Owners' Group is presently developing symptom-based Emergency Procedure Guidelines to address:

1. All reactor coolant inventory-threatening events
2. Containment control
3. Plant cooldown to cold shutdown conditions following an in-plant emergency.

When completed and after discussion with training personnel from all BWR utilities, these guidelines will be submitted to the NRC for review by May 30, 1980. The BWR Owners' Group agreed to transmit a copy of the current working draft of the symptom-based guidelines to the NRC by March 31, 1980, and it is provided herewith.

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It was agreed that the Chapter 15 event review committed in the September 6, 1979 meeting between the Owners' Group and the NRC would be submitted to the NRC by March 31, 1980; it is provided herewith. Further, it was agreed that guidelines would not be prepared for the off-normal (non-emergency) events discussed in Chapter 15. The specific justification for not preparing such guidelines will be provided with the final submittal of the Emergency Procedure Guidelines.

The BWR Owners' Group is currently considering the extent to which operator guidance is required for the remainder of the FSAR Chapter 15 events. It is expected that those events which are plant emergencies will result in symptoms which require entry into the symptom-based guidelines. If this is the case, the symptoms associated with each event will be identified for each plant type and submitted by May 30, 1980. Finally, it was agreed that additional analyses of loss-of-feedwater events, including system degradations, would be submitted to the NRC by March 31, 1980; they are provided herewith.

To summarize the above agreements:

By March 31, 1980

1. The current working draft (Rev. 7) of the symptom-based Emergency Procedure Guidelines are submitted herewith.
2. The committed FSAR Chapter 15 event review, entitled "Other Operational Transients", is submitted herewith in prepublication form (it will be published in a subsequent revision to NEDO-24708).
3. An analysis of loss-of-feedwater events which provides the technical basis for the guidelines is submitted herewith in prepublication form (this report, which replaces Section 3.2.1 of NEDO-24708, will be published in a subsequent revision to NEDO-24708).

By May 30, 1980

1. An event tree study of BWR performance during inventory-threatening events, entitled "Probabilistic Analysis of BWR Systems for Small LOCA Events", will be submitted (this was not mentioned in the referenced telephone conversation, but was committed by the Owners' Group in the September 6, 1979 meeting between the Owners' Group and the NRC).

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2. The Emergency Procedure Guidelines will be completed and submitted.
3. The relationship between the Emergency Procedure Guidelines and the Chapter 15 events will be documented and submitted.

The remainder of this letter addresses in detail the BWR Owners' Group implementation of all provisions of NUREG-0578 Requirement 2.1.9, which requires licensees to:

- a. Provide the analysis, emergency procedures, and training to substantially improve operator performance during a small break loss-of-coolant accident.
- b. Provide the analysis, emergency procedures, and training need to assure that the reactor operator can recognize and respond to conditions of inadequate core cooling.
- c. Provide the analysis, emergency procedures, and training to substantially improve operator performance during transients and accidents, including events that are caused or worsened by inappropriate operator actions.

These requirements have been or are being satisfied by the BWR Owners' Group in the following ways:

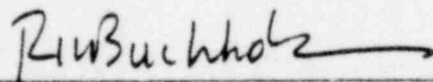
- a. Small Break LOCA - Analyses are provided in Reference 1; emergency procedure guidelines are provided in References 1 and 2.
- b. Inadequate Core Cooling - Analyses are provided in Reference 3; emergency procedure guidelines for "mechanistic/realistic" events are provided in References 1 and 2; emergency procedure guidelines for "nonmechanistic/unrealistic" events are to be included in the symptom-based Emergency Procedure Guidelines as discussed above.
- c. Transients and Accidents - Analyses are provided in Reference 1, in revised loss-of-feedwater analyses submitted herewith, and in the Chapter 15 event review ("Other Operational Transients") submitted herewith; emergency procedure guidelines, as appropriate, are to be included in the symptom-based Emergency Procedure Guidelines as discussed above.

Appendix A of NUREG-0578, in the section entitled "Position" for Requirement 2.1.9, contains certain specific provisions supplementary to those of the main text. The ways in which these have been or are being satisfied by the BWR Owners' Group are as follows:

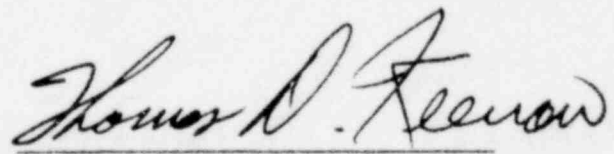
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- a. Small-Break Test Predictions - Predictions of the Two-Loop Test Apparatus small break tests are provided in References 4 and 5.
- b. Analyses of Low Inventory With and Without Forced Flow - These are provided in References 1 and 3.
- c. Analyses of Loss of Natural Circulation - These are provided in Reference 1.
- d. Bases for Water Level Instrumentation - These are provided in References 1 and 6.
- e. Analysis of FSAR Chapter 15 Events With Single Active Failures and Operator Errors - Inventory-threatening events (events with a breach in the reactor coolant system pressure boundary and/or a loss-of-feedwater and other makeup systems) are exhaustively covered in References 1 and 3, and in the revised loss-of-feedwater analyses submitted herewith. These analyses cover cases far more severe than single active failures and their consequential failures; they also encompass failure of the operator to perform required control manipulations and operator actions that could cause the complete loss of function of a safety system.
- f. Event Tree Analyses - These will be provided in the forthcoming study, "Probabilistic Analysis of BWR Systems for Small LOCA Events". Comprehensive computer calculations to supplement the event trees are provided in References 1 and 3, and in the revised loss-of-feedwater analyses submitted herewith.
- g. Analyses by the NRC Office of Research - These are not required of the BWR Owners' Group.

It is clear from the foregoing discussions that actions have been or are being taken by the BWR Owners' Group to satisfy all of the provisions of NUREG-0578 Requirement 2.1.9. With delivery of the enclosures to this letter and the May 30, 1980 submittal discussed above, the BWR Owners' Group will consider its role in the implementation of NUREG-0578 Requirement 2.1.9 to be complete.



R.H. Buchholz, Manager
BWR Systems Licensing



T.D. Keenan, Chairman
BWR Owners' Group

/mac

cc: BWR Owners' Group

References Attached

References

1. "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors," NEDO-24708, August 1979.
2. Letter, T. D. Keenan to D. F. Ross, "Revised NEDO-24708 Small Break Operator Guidelines," November 16, 1979.
3. Letter, R. H. Buchholz to D. F. Ross, "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors," (prepublication form of NEDO-24708 Section 3.5.2.1.), November 30, 1979.
4. Letter, R. H. Buchholz to D. F. Ross, "Pretest Prediction of TLTA Small Break Test I," December 18, 1979.
5. Letter, R. H. Buchholz to D. F. Ross, "Pretest Prediction of TLTA Small Break Test II," March 12, 1980.
6. Letter, R. H. Buchholz to D. F. Ross, "Bulletins and Orders Task Force Request for Information," (prepublication form of NEDO-24708 Section 3.5.2.3.), December 28, 1979.