March 1, 1993

Docket No. 52-003

Mr. Nicholas J. Liparulo Nuclear Safety and Regulatory Activities Westinghouse Electric Corporation P.O. Box 355 Pittsburgh, Pennsylvania 15230

Dear Mr. Liparulo:

SUBJECT: STAFF'S REVISED ESTIMATE OF THE SCHEDULE FOR THE ADVANCED BOILING WATER REACTOR

Enclosed for your information is a copy of SECY-93-041, "Advanced Boiling Water Reactor (ABWR) Review Schedule," dated February 18, 1993. If you should have any questions regarding this matter, please contact the project manager, Thomas Kenyon, at (301) 504-1120.

Sincerely.

Original Staned Byr

Jerry N. Wilson, Acting Director Standardization Project Directorate Associate Directorate for Advanced Reactors and License Renewal Office of Nuclear Reactor Regulation

Enclosure: SECY-93-041 dtd 2/18/93

cc w/enclosure. See next page

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Mr. Nicholas J. Liparulo Docket No. 52-003 Westinghouse Electric Corporation AP600

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(Information)

February 18, 1993

SECY-93-041

The Commissioners

From: James M. Taylor Executive Director for Operations

Subject: ADVANCED BOILING WATER REACTOR (ABWR) REVIEW SCHEDULE

<u>Purpose</u>: To provide the Commission with the staff's revised estimate of the schedule for completing its review of the ABWR.

Background:

For:

In SECY-91-161, "Schedules for the Advanced Reactor Reviews and Regulatory Guidance Revisions," May 31, 1991, the staff submitted its estimated schedules for completing its reviews of the ABWR and other standardized and advanced reactor projects. In its staff requirements memorandum (SRM), the Commission directed the staff to inform it of changes to the schedules. In its quarterly status reports and semi-annual briefings, the staff has kept the Commission informed of the current status of these reviews.

The staff is preparing revised integrated estimates of the schedules for reviewing the evolutionary and passive reactor projects, including the Electric Power Research Institute's (EPRI's) Advanced Light Water Reactor Requirements Document, GE Nuclear Energy's (GE's) ABWR and Simplified Boiling Water Reactor, the ABB-Combustion Engineering, Inc.'s (ABB-CE's) System 80+, and the Westinghouse Electric Corporation's AP600. The ABWR is the first design to be reviewed. The staff initially prepared a detailed schedule based upon the "final" Standard Safety Analysis Report (SSAR) submittal date proposed by GE and that reflects unique aspects of the review that are not anticipated for the other projects. Due to the difficulty in achieving complete resolution of numerous issues related to the inspections, tests, analyses, and acceptance criteria (ITAAC), GE has indicated that its

NOTE: TO BE MADE PUBLICLY AVAILABLE IN 3 WORKING DAYS FROM THE DATE OF THIS PAPER

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CONTACT: C. Poslusny 504-1132 schedule for resolution of open items will need to be

delayed. Therefore, this paper provides, in lieu of a fixed schedule, a proposed timeline for the staff ABWR review indicating the duration of significant milestones leading to the notice of design certification rulemaking for the ABWR. Specific review schedules for the ABWR and other projects will be addressed in a subsequent paper.

Discussion:

The staff planned to issue a final safety evaluation report (FSER) on the GE ABWR to the Commission in August 1992, in accordance with SECY-91-161. However, the staff encountered difficulties in resolving first-of-a-kind issues, found a large number of open issues that are not yet resolved, and has not received timely, high-quality design information from the applicant on topics such as ITAAC and severe accidents. Therefore, the staff issued a draft FSER (DFSER) to the Commission on October 14, 1992. The DFSER included 379 open items (of which 175 pertain to ITAAC) and 266 confirmatory items.

The staff originally prepared a revised estimate of the schedule to complete the ABWR design certification based upon the "final" SSAR submittal date proposed by GE and using the assumptions described in the enclosure. Due to the difficulty in achieving complete resolution of numerous issues related to the ITAAC, GE has indicated that its schedule for resolution of open items will need to be delayed. Specifically, the staff's review of GE's most recent version of the ITAAC resulted in the large number of DFSER open items and hundreds of detailed comments requiring ITAAC revisions for acceptability. In addition, GE participated in an industry review of its ITAAC and was in the process of incorporating revisions based on inputs received. To accelerate the development of a final set of staffapproved ITAAC, NRR established a multi-disciplined ITAAC review team, met with GE in January, and expended nearly 1500 staff hours to reach agreement with the applicant on about 10 out of the approximately 90 system ITAAC for the ABWR. GE expended at least as much resources to prepare and support the meeting. Based on the above, the staff expects that GE will need to expend a significant amount of dedicated staff resources over the next several months to complete the additional system ITTAC with the necessary level of quality, to complete action items identified by the review team, and to revise the SSAR to incorporate new design information reflected in the final ITAAC. This will be a tremendous technical and administrative task, and therefore, GE will revise its schedule for providing its final SSAR and ITAAC.

The timeline, provided in lieu of a schedule, is a very aggressive one and can only be access if the ABWR review retains its top priority and GE submits timely, highquality information on the open and confirmatory issues. In a future Commission paper, the staff will submit specific schedules for the ABWR and the other projects.

When preparing the timeline, the staff considered its review experience base for milestone duration and compressed the proposed elapsed times. In addition, the staff made certain assumptions about reviews that are beyond NRR's control. GE must provide high quality SSAR and ITAAC information on an accelerated basis. Reviews of the final SER and FDA package by the Office of General Counsel (OGC) and the Advisory Committee on Reactor Safeguards (ACRS) will be required to be completed in a shorter time than previously requested by those organizations.

<u>Coordination</u>: OGC and ACRS have received letters dated February 9, 1993, requesting them to meet their respective review milestones.

<u>Conclusions</u>: Upon considering the assumptions discussed in the enclosure, the staff estimates that it can complete the review of the ABWR in accordance with the following aggressive schedule:

	MILESTONE		<u>DURATION (months</u> <u>from SSAR</u> <u>submittal</u> )
1	issue	advance copy of FSER	4.5 months
	issue	FDA	9 months
į.	issue	proposed certification rule	10 months

The attachment to the enclosure is a chart of the timeline for the ABWR review through the time at which the FDA, the proposed rule, and <u>Federal Register</u> notice are issued. The staff discussed possible hearing schedules in SECY-92-170, "Rulemaking Procedures For Design Certification," May 8, 1992, and SECY-92-381, "Rulemaking Procedures For Design Certification," November 10, 1992. - 4 -

These milestones can be achieved only if GE submits high quality SSAR and ITAAC information and NRR, OGC, and the ACRS expedite their reviews. The ABWR schedule when finalized may affect the review schedules for the other ALWR projects, including the EPRI Advanced Light Water Reactor Requirements Document, the ABB-CE System 80+, the Westinghouse Electric Corporation AP600, and the GE Simplified Boiling Water Reactor. The staff will continue to assess resources it needs to ensure that it can adequately support the finalized ABWR review schedule.

Note:

Senator Johnston and Congresswoman Lloyd have shown an interest in these matters. Therefore, copies of this paper will be submitted to these and other appropriate committees. Copies will also be submitted simultaneously to the Office of Management and Budget (OMB) and the U.S. Department of Energy (DOE). The staff recommends that this paper be made publicly available within 3 work days from the date of this paper.

James M. Taglor Executive Director for Operations

Enclosure: Schedule Assumptions for the Review of the Advanced Boiling Water Reactor

DISTRIBUTION: Commissioners OGC OCAA OIG OPA OCA OPP EDO ACRS ASLBP SECY

# SCHEDULE ASSUMPTIONS FOR THE REVIEW OF THE ADVANCED BOILING WATER REACTOR

## Introduction

The following is a discussion of the process and assumptions the staff used in estimating a very aggressive timeline for completing the design certification review of GE's Advanced Boiling Water Reactor (ABWR).

#### Background

In SECY-91-161, "Schedules for the Advanced Reactor Reviews and Regulatory Guidance Revisions," May 31, 1991, the staff submitted its estimated schedules for completing its reviews of the ABWR and other standardized and advanced reactor projects. The staff is preparing revised integrated estimates of the schedules for reviewing the evolutionary and passive reactor projects, including the EPRI Advanced Light Water Reactor Requirements Document, the GE ABWR and Simplified Boiling Water Reactor, the ABB-Combustion Engineering, Inc. System 80+, and the Westinghouse Electric Corporation AP600. The ABWR is the lead design to be reviewed. The staff has prepared a detailed timeline to reflect unique aspects of the review that are not anticipated for the other projects. This enclosure addresses the review milestones for the ABWR. The staff will address the review schedules for the ABWR and the other projects in a subsequent paper to the Commission.

## Discussion

The staff planned to issue a final safety evaluation report (FSER) on the GE ABWR to the Commission in August 1972, in accordance with SECY-91-161. However, the staff encountered difficulties in resolving first-of-a-kind issues, found many open issues that are not yet resolved, and has not received timely, high-quality design information from the applicant on topics such as ITAAC and severe accidents. Therefore, the staff issued a draft FSER (DFSER) to the Commission on October 14, 1992. The DFSER includes 379 open items (of which 175 pertain to ITAAC) and 266 confirmatory items.

#### Assumptions Used

The staff used the following assumptions to reevaluate the schedule in SECY-91-161 for the ABWR. This is the first review of its kind, for which many of the assumptions are best estimates that are not supported by historical precedent. The staff must dedicate individuals to perform a thorough

ENCLOSURE

review of the information to be submitted by GE to resolve open issues. The review schedule will be compressed and will require high quality, timely, and consistent SSAR and ITAAC submittals from GE.

#### Resolution of Policy Issues

The staff discussed policy issues for the ABWR in SECY-90-016, "Evolutionary Light Water Reactor Certification Issues and Their Relationship to Current Regulatory Requirements," January 12, 1990, and the draft Commission papers, "Issues Pertaining to Evolutionary and Passive Light Water Reactors and Their Relationship to Current Regulatory Requirements" and "Design Certification and Licensing Policy Issues Pertaining to Passive and Evolutionary Advanced Light Water Reactor Designs" that were forwarded to the Commission on February 20, and June 25, 1992, respectively.

In the SRM of June 26, 1990, the Commission gave guidance for those issues discussed in SECY-90-016. The final paper consolidating the staff's positions on remaining policy issues that affect the ABWR is expected to be issued to the Commission in March 1993. The staff needs the Commission's guidance on these issues prior to completion of the ABWR technical review. This will ensure that any guidance that departs from the staff's positions can be resolved in a timely manner on the ABWR application.

## Completion of Technical Review

GE must resolve all DFSER open issues in order to prepare the final, certified SSAR. The technical staff is conducting intensive meetings and teleconferences with GE to agree upon what is required in the standard safety analysis report (SSAR) and Tier 1 information for resolving all of the open issues. Resolution will be agreed upon by submitting marked pages of the SSAR and ITAAC. Once resolution is agreed upon, GE will submit a final, certified SSAR and Tier 1 document, under oath or affirmation.

The technical staff will prepare its information for the FSER based upon the marked pages of the SSAR and ITAAC, and will submit draft information to ADAR. After the revised SSAR is submitted, the staff will verify that the confirmatory issues are acceptable and submit its final safety evaluations. To meet the schedule, the staff will have to incorporate this information more rapidly than was done for the DFSER. This effort will be more difficult because the staff will have to focus on the content and consistency of the SSAR, ITAAC and FSER to ensure acceptable, supportable resolution of all issues.

# Independent Quality Assurance Review

To resolve inconsistencies found between the SSAR and Tier 1 information, the staff has determined that it must perform an independent quality assurance review. The staff can meet the overall schedule only by completing this review in approximately 1 month and only if it does not find any significant problems between the SSAR and the Tier 1 information.

## Legal Review

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The Office of the General Counsel (OGC) informed NRR that it needed 1 month to review the entire FSER, which would delay the schedule by 1 month. Therefore, OGC has been requested to review portions of the FSER as they are being prepared. To compensate for this staggered review, the staff scheduled OGC to perform their final review of the entire FSER in parallel with the ACRS's review. The comments from this review will be incorporated into the publication version of the FSER.

### Senior Management Review

In a 2-week period, senior staff managers will perform the final, expedited review of the advance copy of the FSER and are not expected to make significant changes because the staff prepared and reviewed the SER over a long period of time. Any significant problems will affect the schedule.

# ACRS Review

The staff requested that the ACRS accept an advance copy of the FSER for review without final approval from OGC and the technical editor. The staff also requested that the ACRS complete its review of the FSER in a period of 1 month, which is much less than the 3 months the Committee stated was necessary in its July 18, 1991, letter. The staff expects that the ACRS will find only minor problems with the FSER during this final review because the staff has been interacting with the Committee continually throughout the review and has submitted several versions of the SER to the Committee for review.

One scenario for the ACRS to complete its review within a single month is as follows:

- The staff would make a presentation on resolving major FSER issues, concerns previously discussed by the ACRS, results of the independent QA review, and the completed status of the review at the Full Committee meeting during the first week of the targeted month.
- Subcommittees would meet during the next 2 weeks to discuss the advance copy of the FSER.
- The ACRS would hold a special Full Committee meeting in the fourth week of the target month, in which it would complete its review and write a favorable letter.

FDA Issuance and Review of Design Control Document

When the FDA is issued to support design certification, the technical review of the application by the staff and the ACRS ends. In an SRM of April 21,

1992, the Commission noted that, "consistent with the policy of finality reflected in [10 CFR] Parts 50 and 52, once the staff issues an FDA, the staff will be bound by the safety decisions that are rendered in the FDA." Therefore, the staff will be able to make changes to the design after the FDA is issued only by instituting an analogue rulemaking process.

Although the Director of NRR can legally issue an FDA without approval of the Design Control Document (DCD), the DCD must be approved by the staff before a rulemaking can begin. The DCD controls the design of all plants that reference the certification. Therefore, the staff needs to verify that the DCD fully conforms to the SSAR and FSER, as modified by the requirements of the Office of the Federal Register. While this verification should not affect the ABWR review to this point, such a review has not been done before and the staff believes that the first review should be performed before the FDA is issued. Therefore, the staff has allotted time to review and approve the DCD before the FDA is issued.

#### Hearing Schedule

The amount of time required for the rulemaking hearings is difficult to estimate without past experience. In SECY-92-170, "Rulemaking Procedures For Design Certification," May 8, 1992, and SECY-92-381, "Rulemaking Procedures For Design Certification," November 10, 1992, OGC estimated that a hearing could take from 1 to 2 years to complete. As discussed in the November 23, 1992, Commission meeting with OGC on this subject, 18 months would be a good estimate and is consistent with the estimate in SECY-91-161.

Attachment

# Time Line for ABWR Review (Months from SSAR Submittal)

