



General Electric Company
175 Curtner Avenue, San Jose, CA 95125

September 7, 1994

MFN No. 106-94
Docket No. 52-001

Docket Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: R. W. Borchardt, Director
Standardization Project Directorate

SUBJECT: SUBMITTAL OF ABWR DESIGN CONTROL DOCUMENT (DCD)

REFERENCES:

1. Letter, Dennis M. Crutchfield to Joseph Quirk, dated August 3, 1994.
2. Letter, Thomas H. Boyce to Joseph Quirk, "Comments on Sections of the Draft Design Control Document (DCD)," dated August 23, 1994.
3. Letter, Jack Fox to Tom Boyce, "Requested Sections of the Draft ABWR DCD," dated August 2, 1994.
4. Letter, Joseph Quirk to Tom Boyce, "Revision to Draft DCD Introduction for the ABWR," dated August 30, 1994.

In accordance with direction of NRR project staff, GE is providing nine (9) copies of the subject DCD to the NRR recipients listed on Attachment 1. Further, one (1) copy is enclosed for the Document Control Desk. This is being done to accelerate the distribution process and ensure timely staff receipt of the DCD.

This submittal responds to the Reference 1 request for a complete DCD submittal to be provided to the staff in early September 1994. Included in this submittal are our responses (Attachment 2) to Reference 2 comments on Reference 3. It should be noted that these responses incorporate the related discussions at the August 23, 1994 meeting in Rockville, Maryland. Also included in this submittal are changes to our Reference 4 DCD Introduction which reflect the August 31, 1994 meeting.

Sincerely,

Joseph F. Quirk
Project Manager
ABWR Certification
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Enclosure to: Reg File
NRC PDR

Other enclosures
advanced directly

cc: with enclosure
 A.J. Beard (GE)
 N.D. Fletcher (DOE)
 S.P. Frantz
 (Newman, Bauknight ...)
 M.A. Rowden
 (Fried, Frank ...)

w/o enclosure
 T.H. Boyce (NRC)
 D.M. Crutchfield (NRC)
 J.N. Fox (GE)
 S.M. Franks (DOE)
 S.A. Hucik (GE)
 D.J. McGoff (DOE)

w/o enclosure
 F.J. Miraglia (NRC)
 N.T. Patel (GE)
 W.H. Rasin (NEI)
 F.A. Ross (DOE)
 W.T. Russell (NRC)
 K.E. Stahlkoph (EPRI)

ATTACHMENT 1

DIRECT SHIPMENT OF DCD REVISION 0 (DRAFT)
TO NRC RECIPIENTS

<u>QUANTITY</u>	<u>RECIPIENT</u>
1	PUBLIC DOCUMENT ROOM
2	RICHARD W. BORCHARDT
1	GOUTAM BAGCHI
1	CONRAD E. McCracken
1	TIMOTHY G. COLLINS
1	EDWARD J. BUTCHER
1	BRUCE A. BOGER
1	RICHARD J. BARRETT

ATTACHMENT 2

1

ABWR DCD SUBMITTAL OF AUGUST 2, 1994

GE RESPONSES TO NRC COMMENTS DATED AUGUST 23, 1994

I. Comments on DCD Tier 2* Items from NRC Projects and OGC

1. The method of delineation of Tier 2* information is as agreed to at the August 23, 1994 meeting at the NRC.
2. GE agrees. Same as response I.1 above.

II. Comments on DCD Tier 2* Items for Structural Codes and Standards

1. Note 1 in Table 3.8-4 of the DCD is deleted.
2. Table 2 of DCD/Introduction (Formerly Tier 2 Table 3.8-11) is revised by replacing ASME with ASME III, Division 2, in the first row, and by replacing ASME with ASME III, Division 1, in the second row.

III. Comments on DCD Tier 2* Items Pertaining to Motor-Operated Valves

The markings for identification of the commitments in the last two paragraphs at the bottom of Page 3.9-78 are removed.

IV. Comments on DCD Tier 2* Items Pertaining to Equipment Dynamic Qualification

1. Page 3.10-2, Second Paragraph
Delineation is made accordingly.

Page 3.7-21, First Paragraph

As agreed to in the GE/NRC meeting of August 23, 1994, delineation of Subsection 3.9.2.2.1.1 per next comment is also identified under Tests and Analyses of Table 6 of DCD/Introduction.

Page 3.9-14, Second Paragraph

Delineation is made accordingly in Subsection 3.9.2.2.1.1, which is listed in Table 6 of DCD/Introduction under "Test Input Motion."

2. The five identified areas of Table 6 of DCD/Introduction (former Tier 2 Table 3.10-1) are identified with the suggested subsections for Tier 2* designations, except for adding Subsection 3.7.3.1 as noted above in Item 1. It should be noted that Appendix 3K now is a collection of the paragraphs from the GE proprietary report NEDE-24326-1-P that correspond to the Tier 2*-designated- paragraphs of the former submitted Appendix 3K. This is done because of the Project direction to retain the proprietary references (see Tier 2, Subsections 3.9.8 and 3.11.7).

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*GE RESPONSES TO NRC COMMENTS
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V. Comments on DCD Tier 2* Items Pertaining to Piping Design Acceptance Criteria

GENERAL: GE had scrutinized thoroughly Section 3.12 of Advance SER of December 1993 before Tier 2* delineation for piping DAC in the submittal. Necessity of the delineations and their implications and ramifications were considered. Some commented delineations were already made. After GE/NRC meeting of August 23, 1994, GE has reviewed NUREG-1503 (FSER). GE appreciates the staff's specific comments, which are accepted except for few. As discussed and agreed at the meeting, the commented COL items are not delineated. Other exceptions are very minor issues that can be resolved quickly upon the staff's reconsideration following the review of the accompanying submittal incorporating the comments.

1. The comment is incorporated.
2. The comment is incorporated.
3. Since the COL action items require NRC staff review and approval, they are not required to be delineated.
4. Same as response V.3. above.
5.
 - a. SSAR Subsection 3.9.1.3 applies to other components also. SSAR Subsection 3.9.1.3.1 on snubbers and restraints is merely descriptive. One of the guideline for delineation is that descriptive information need not be designated. FSER Section 3.12.3.1 does not specifically identify key concerns for snubbers and restrains that necessitate delineation; it merely references FSER Sections 3.12.6 and 3.12.7, which are adequately covered by the incorporated delineations. Key concerns should be those that are unique to ABWR certification. Also, key concerns should be unique to piping system versus other components.
 - b. SSAR Subsections 3.7.3.6, 3.7.3.7.1, 3.7.3.7.2 and 3.7.3.8.1.6 are delineated accordingly.
 - c. The comment is incorporated.
 - d. The comment is incorporated, except for delineating SSAR Section 3.7.2.1.2 which is very general.
 - e. The comment is incorporated.
 - f. The comment is incorporated.

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- g. GE has delineated the last paragraph in SSAR Subsection 3.2.5.3 for walkdown of main steam leakage path.
6. The comment is incorporated.
7. Modeling of pipe supports was already include. See Table 7 of DCD/Introduction (former Tier 2 Table 3.9-11). There is no SSAR Subsection 3.7.3.3.6 mentioned in the comment. Subsection 3.7.3.3.1.6 of the DCD is delineated and excludes the reference to Subsection 3.7.5.3 which is a COL item (see response V.3 above).
8. The comment is incorporated. See response V.5.e above for Subsection 3.7.3.8.1.9.
9. a. Table 3.9-1 is applicable to other components. Sixty-year life is factored in Table 3.9-1; there is no discussion of factor 1.5 in Subsection 3.9.1. It is delineated in Subsection 3.9.3.1 on Page 3.9-28. Fatigue evaluation for ASME Class 2 or 3 piping by COL applicant is under same delineation. See Table 7 of DCD/Introduction, "Design Transients" and "Fatigue Evaluation of ASME Code Class 2 and 3 Piping". Relative to COL item Subsection 3.9.7.2, see response V.3 above.
- b. The restriction on use of ASME Code Case N-411-1 damping for ISM analysis is delineated in Subsection 3.7.3.8.1.10 and for energy absorbing supports in Subsection 3.7.3.8.1.7. See response V.5.c above.
- c. Subsection 3.7.3.7.2 for high frequency modes is delineated per response V.5.b above.
- d. Relative to COL item Subsection 3.9.7.2, see responses V.3 and V.9.a above.
- e. The comment is incorporated.
- f. Subsection 3.9.2.1.3 is descriptive for test program of feedwater line thermal stratification. Subsection 3.9.3.1, which makes the commitment of the test, is delineated for Thermal Stratification.
- g. The comment is incorporated.
- h. The comment is incorporated.
- i. The comment is incorporated. See responses V.5.b and V.9.c above for high-frequency modes.
- j. The comment is incorporated.

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- k. The comment is incorporated.
 - l. Third paragraph, last line of SSAR Subsection 3.9.3.1 (Page 3.9-27) is delineated.
 - m. Fourth paragraph, first line of SSAR Subsection 3.9.3.1 (Page 3.9-27) is delineated.
- 10.
- a. The comment is incorporated.
 - b. The comment is incorporated.
 - c. Subsection 3.9.3.4 is already delineated for safety factors of anchor bolts. This delineation is expanded to include base plate flexibilities.
 - d. The comment is incorporated.
 - e. The comment is incorporated.
 - f. The comment is incorporated.
 - g. The comment is incorporated.
 - h. The comment is incorporated.
 - i. The comment is incorporated.
 - j. The comment is incorporated.
 - k. The comment is incorporated.
 - l. The comment is incorporated.
- 11.
- a. The comment is incorporated.
 - b. The comment is incorporated.
 - c. Same as response V.3 above.
 - d. Same as response V.3 above.
12. Same as response V.3 above. Note that the LBB analysis is optional. Note also that FSER NUREG-1503, Section 3.12.8 states "... the use of the LBB approach has not been pre-approved by the staff in the ABWR design certification phase." Therefore, the analysis method in the SSAR is not delineated.

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VI. Comments on DCD Tier 2* Items Pertaining to Human Factors

- (1) The comment is incorporated.

The boiler-plate paragraph in Section 18E.1 delineates entire Appendix 18E, except for Section 18E.1, Introduction, which is merely editorially descriptive in nature and not technical. GE feels that, in order to include only the necessary material as Tier 2* material, some material, such as a historical or editorial description, should be excluded.

- (2) It should be noted that the comparison table will not be a part of the DCD. It was provided to staff to facilitate its review.
- (3) As explained in response VI(1) above, the boiler-plate paragraph added in Section 18E.1 delineates entire Appendix 18E, except for Section 18E.1, Introduction, which is merely editorially descriptive in nature and not technical. GE feels that, in order to include only the necessary material as Tier 2* material, some material, such as a historical or editorial description, should be excluded.

As agreed to in the GE/NRC meeting of August 23, 1994, all 44 pages are delineated except for a portion of Section 18E.1 as mentioned above.

GE agrees that Figure 18E-1, which is optional, is excluded from the boiler-plate paragraph added in Section 18E.1.

- (4) Table 18E-1 refers to Industrial Codes and Standards. For example, Items (III) (1)(a)(v) and (vi) of the table are IEEE-1023 and MIL-H-46855B, respectively. Table 1.8-21 of the DCD and SSAR lists the applicable revision (i.e., effective date or edition year) of the documents as mentioned in SSAR Section 1.8.2. In order that the documents referenced by Table 18E-1 are not delisted in the future from Table 1.8-21, such documents are identified by a marking "(5)" related to Footnote (5) at the end of Table 1.8-21 that states, "See Section 18E.1." See Pages 1.8-43, 1.8-46 and 1.8-47 for the example documents and Footnote (5). A clearer statement of Footnote (5) now made is as follows: "See Section 18E.1 for required use of this document."

VII. Comments on DCD Tier 2* Items and Chapter 19 Pertaining to Reactor Systems

1. a. The comment is incorporated. Third paragraph of Section 4.2 is delineated partially to include only Tab AY (NEDE-31152P). Subsection 4.3.2.1 and Figure 4.3-1 are also delineated.
- b. Figures 4.2-1 and 4.2-2 are delineated explicitly.

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- c. Paragraphs 4.2.3.1.2(1) and (2) are delineated.
 - d. References 4.2-1 and 4.2-2 are delineated explicitly.
 - e. The typographical error in Table 8 of DCD/Introduction (former Tier 2 Table 4.2-1) is corrected.
 - f. Per Project direction, proprietary SSAR Appendix 4B is not a part of the DCD but is delineated by a footnote.
 - g. The paragraph (j) identified in the comment is now included in Section 4.2, third paragraph, and delineated.
 - h. The last sentence of Section 4C.1 is delineated.
2. The issue of contents of DCD Chapter 19, and incorporation of shutdown risk evaluation was discussed at the August 23, 1994 meeting at the NRC.

Appendix 19L, ABWR Shutdown Risk Evaluation, and Appendix 19Q, ABWR Risk Assessment, are modified and included per the agreement at the meeting.

VIII. Comments on DCD Chapter 19 from Containment Systems

1. GE has included SSAR Chapter 19 material, as agreed to in the GE/NRC meeting of August 23, 1994.

The purpose of the cross-reference was two-fold: (1) To identify the SSAR Chapter 19 material that was not included in Chapter 19 and elsewhere of the proposed draft DCD package and (2) To breakdown the omitted SSAR Chapter 19 material into two portions so as to identify a portion that is supportive of the material in the proposed package or is deterministic per Guidances 5b, c, and d of NRC letter of August 3, 1994.

2. Same as response VIII.1 above.
3. The comment does not seem to be consistent with guidance of NRC letter of August 3, 1994. The DCD should be independent of FSER. However, as Table 2 of the cross-references in Attachment 3b of the August 2, 1994 submittal showed, material supporting containment features for severe accident (SSAR Table 19.8-7) was proposed to be retained in DCD Chapter 19 or other chapters.

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*GE RESPONSES TO NRC COMMENTS
DATED AUGUST 23, 1994*IX. Comments on DCD Chapter 19; Corrections for ABWR DCD

The comments made to 1/26/94 version and to 8/2/94 are considered and incorporated as appropriate.

X. Comments on DCD from Instrumentation & Controls

All comments were accepted in the GE/NRC meeting of August 23, 1994 and are incorporated. GE appreciates the staff's specific comments which facilitated the resolution.

Tables 9, 10 and 11 of DCD/Introduction identify the delineated material per the comments.