GE Nuclear Energy

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

December 7, 1993

MFN No. 223-93
Docket No. 52-001

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington DC 20555

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

Subject: Submittal of Amendment 33, Non-Proprietary Information to GE's ABWR SSAR

References:

1. Submittal of Amendment 33, Proprietary Information to GE's ABWR SSAR, MFN No. 224-93, dated December 7, 1993

2. Submittal of Amendment 33, Safeguards Information to GE's ABWR SSAR, MFN No. 225-93, dated December 7, 1993

3. Submittal of ABWR Certified Design Material, 25A5447, Revision 2, MFN No. 213-93, dated December 7, 1993

Enclosed are twenty-two (22) copies of amended non-proprietary sections of the Standard Safety Analysis Report (SSAR) for the Advanced Boiling Water Reactor (ABWR). At the request of Chet Poslusny, an additional thirteen (13) copies of this amendment are being sent directly to the NRC Branch Chiefs listed on Attachment 1. Except as hereinafter noted, this submittal, in conjunction with prior ABWR submittals, completes satisfaction of the requirements of 10 CFR 52.47.

Amendment 33 also provides information resulting from GE's continuing internal SSAR verification process which has been conducted in full compliance with GE procedures governing treatment of engineering documentation. GE's verification process is intended to assure that the reissued ABWR SSAR (Amendment 31) as augmented by Amendments 32 and 33, accurately reflects its design documentation, is technically accurate and consistent within itself (including References 1 and 2), and accurately depicts the ABWR Certified Design Material (Reference 3). An affirmation letter complying with the filing requirements of 10 CFR 52.45(d) and 50.30(b) is attached.

Amendment 33 includes SSAR changes resulting from the following:

1. Letter, Boyce to Marriott, Initial Comments on GE Advanced Boiling Water Reactor Certified Design Material, dated September 27, 1993.

2. Letter, Boyce to Marriott, Comments on GE Advanced Boiling Water Reactor Certified Design Material, received by GE November 8, 1993.

Dist Per C. Poslusny
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1/22 } See attached list

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3. NRC ABWR ITAAC Independent Review Group Comments received by GE November 8, 1993.

4. NRC Comments on ABWR SSAR Amendment 32 received October 14, 1993 (attached to NRC meeting summary by C. Poslusny dated November 1, 1993).

5. Supplemental NRC Comments on ABWR SSAR Amendment 32 received November 8-10, 1993 (NRC meeting summary in preparation).

Disposition of the comments for items 1 through 3 above are addressed by the following transmittals:

1. Letter, Quirk to Wilson, Responses to Questions on the ABWR Certified Design Material (25A5447), dated October 20, 1993.

2. Transmittal from James to Boyce, Responses to Round 2 of ITAAC Comments, dated November 23, 1993.

3. Transmittal from James to Boyce, GE Responses to IRG Comments, dated November 22, 1993.

Disposition of all the comments for items 4 and 5 above are addressed in Attachment 3. In addition to disposition of each comment (indicated by "Item No." in the left hand column), a comment "type" as defined below was assigned:

1. **Editorial/Typo** (e.g., spelling, grammar, missed conversion, etc.)

2. **No Change Necessary** (e.g., already included, entry correct as is, etc.)

3. **New Information/Clarification** (e.g., information requested beyond Amendment 32, addition of clarifying information, etc.)

4. **Discrepancy** (e.g., incorrect cross-reference, missing information, etc.)

The purpose of categorizing the comments was to better determine the extent of potential discrepancies. The following summarizes the types of comments:

	Comment Type	Number	%
1	Editorial/Typo	56	17
2	No Change Necessary	76	23
3	New Information/ Clarification	136	42
4	Discrepancy	57	18
		325	

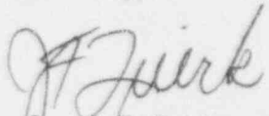
Each copy of the non-proprietary portion of Amendment 33 consists of two boxes of 8-1/2 x 11 inch pages, (one box for Chapter 16 and one box for the remainder of the chapters), and one box containing the Chapter 21 large size drawings.

About 75% of the 8-1/2 x 11 inch pages contain changes identified by bar-markers in the left hand column. The remaining pages result from automatic pagination (i.e., rollover). All of the pages are identified in Attachment 2 (Page Change Instructions).

Please note hat part of Appendix 3B contains information that is designated as General Electric Proprietary Information. This information is being submitted under separate cover (Reference 1).

Also, note that portions of Safeguards Information, Subsection 13.6.3, Appendix 19C and Subsection 20.3.15 are included in this amendment. This information is also being submitted under separate cover (Reference 2).

Sincerely,



Joseph F. Quirk
Project Manager
ABWR Certification
MC-782, (408) 925-6219

cc:

R.C. Berglund	(GE)
T.E. Murley	(NRC)
F. J. Miraglia	(NRC)
D.M. Crutchfield	(NRC)
C. Poslusny, Jr.	(NRC
D.J. McGoff	(DOE)
S.M. Franks	(DOE)
F.A. Ross	(DOE)
N.D. Fletcher	(DOE)
K.E. Stahlkopf	(EPRI)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:	)	
General Electric Company	)	
ABWR Standard Plant Design	)	DOCKET No. 52-001
Final Design Approval and Design	)	
Certification Application	)	

APPLICATION FOR REVIEW OF
"ABWR STANDARD SAFETY ANALYSIS REPORT"
FOR FINAL DESIGN APPROVAL AND DESIGN CERTIFICATION

Steven R. Specker, being duly sworn, states that he is Vice President and General Manager, GE Nuclear Energy, General Electric Company, that he is authorized on the part of said corporation to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

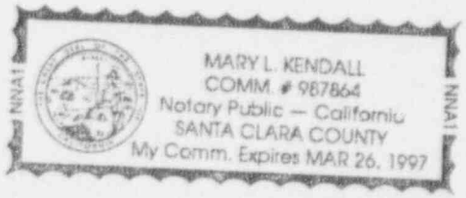
GENERAL ELECTRIC COMPANY

By: SR Specker

Steve R. Specker
Vice President and General Manager
GE Nuclear Energy

Subscribed and sworn to
before me this 7th day
of December 1993.

Mary L. Kendall
Notary Public



ATTACHMENT 1
DIRECT SHIPMENT OF AMENDMENT 33 TO BRANCH CHIEFS

Name	Mail Stop*
G. Bagchi	7H16
C. McCracken	8D3
R. Jones	8E21
R. Barrett	8H2
M. Rubin	10E7
G. Zech	10H6
J. Wermiel	8H1
D. Lange	10H20
L. Cunningham	10D3
C. Berlinger	7E1
C. Grimes	11E22
R. Gramm (2 copies)	10H6

* One White Flint North

Attachment 2

ABWR SSAR

Amendment 33 - Page change instruction

The following pages have been changed, please make the specified changes in your SSAR. Pages are listed as page pairs (front & back). Bold page numbers represent a page that has been changed by Amendment 33.

REMOVE PAGE No.	ADD PAGE No.
Replace Cover page and Table of Contents in front of each ABWR SSAR binder with updated Pages i thru vi.	
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The following pages have been changed, please make the specified changes in your SSAR. Pages are listed as page pairs (front & back). Bold page numbers represent a page that has been changed by Amendment 33.

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20.3.5-3 thru 6	20.3.5-**3 thru 6**
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7.4-1	21-274	2 of 6	**21-274**
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7.6-2*		1 thru 28	**21-307.1**
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*Reclassified - Proprietary to Non-Proprietary

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8.2-1	21-490	5 of 7	**21-490**
8.2-1	21-491	6 of 7	**21-491**
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9.5-8	21-553		**21-553**
9.5-9	21-554		**21-554**
9A.4-1	21-555		**21-555**
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9A.4-20	21-576		**21-576**
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PROPRIETARY

Remove all proprietary pages of the following figures:

Figure	7.2-10	Sheets 1 thru 72
	7.3-5	Sheets 1 thru 77
	7.6	Sheets 1 thru 28
	7.7-3	Sheets 1 thru 3

ATTACHMENT 3

NRC Comments on ABWR SSAR Amendment 32 and Dispositions

Item No.	Comment	Disposition	Comment Type (See Legend)
	Chapter 2, Geosciences:		
1	Table 2.1 SRP Section 2.5.3 Surface Faulting The table indicates that there are no limits on surface faulting at a site. The SSAR table should state that a site is not acceptable of there is fault at or near the ground surface.	Incorporated	4
2	Typographical error page 2.3-1 Section 2.3.1.2, (1) SSE Ground Motion, third line ... 3.7-2 "of" should be ... 3.7-2 "for."	Incorporated	1
3	Typographical error page 2.3-4 Section 2.3.2.19 third line, ... "water/resources" ... should be ... "water resources" ...	Incorporated	1
	Chapter 3, Civil Engineering:		
4	(Editorial comment): Conventionally, in SI units, kg and kgf represent the mass and force, respectively. Use of kgf/cm^2 is more appropriate than kg/cm^2 for force in all SSAR sections.	To be provided to NRC prior to March 4, 1993 (NRC letter dated November 9, 1993).	1
5	Subsection 3.3.2.3: The title should include "systems," and read "Effect of Failure of Structures, Systems or Components Not Design for Tornado Loads."	Incorporated	1
6	Subsection 3.7.1.2: The term $(3.5/f)^{0.2}$ in Equation 3.7-1 should be $(f/3.5)^{0.2}$.	Incorporated	4
7	Subsection 3.7.2 and 3H: GE did not provide the analysis method and procedures for seismic sliding evaluation in the SSAR as committed in the resolution of DFSER Open Item 3.7.2-1.	Analysis method and procedures provided at 2/22-25/93 Structural Audit. Added to Subsection 3.8.5.5.	3
8	Subsection 3.7.5.4 should be revised to reflect a commitment for the COL applicant to describe the process for completion of the design of balance-of-plant and non-safety related systems to minimize II/I interactions and propose procedures for an inspection of the as-built plant for II/I interactions.	Incorporated.	3
9	(Editorial Comment): Subsection 3.8.2.1.1.4: The word "torospherical" should be "torispherical."	Incorporated	1

10	Subsection 3.8.4.1.5: The phrase "...combination of both. Various type of frames form a support system with transverse and longitudinal bracing to the nearest wall or ceiling to take the seismic loads." Should be added to the end of the second paragraph.	Incorporated	4
11	Appendix 3A: The title of Figures 3A-9 and 3A-10 should be switched with each other.	Incorporated	4
12	Subsection 3A.3.2: In Equation 3A-1, it appears that the value for the coefficient (1000) and the term (σ_m) need to be corrected to account for the conversion from British units to metric units.	Coefficient of Equation (3A-1) converted to 70.	1
13	Subsection 3H.1.4.5: The loading conditions "H" and "L" should be "H'" and "L_o", respectively.	Incorporated	1
14	Subsection 3H.2.4.5: The first seven lines on Page 3H.2-11 should be deleted.	Incorporated	1
15	Table 3H.2-5, page 3H.2-20: "E" should be "E'". E' and E are used differently in Section 3H.3.4.3.3.2. (Usually, e' is used for SSE and E for OBE). Similarly, Subsection 3H.3.4.5 and 3H.3.5.3.2, the loading Condition "E" on Pages 3H.3-9 and 3H.2-11 should read "E'."	Incorporated	1
	(Editorial Comment): Table 3H.2.4.5 is duplicated.		
	Chapter 3, Mechanical Engineering:		
16	Subsection 1A.2.9 - Coolant System Values Testing Requirements (II.D.1) Subsection 1A.3.7, "Testing of SRV and Discharge Piping," was added in Amendment 30, and then was deleted in amendment 31. It contained a requirement for the COL applicant to confirm that any SRVs of discharge piping not similar to those that were tested in the generic program will be tested in accordance with NUREG-0737 guidelines. As discussed in FSER Section 14.1.3.3.5.11, this information provided the basis for the resolution of COL Action Item 3.9.3.3-1 and 14.1.3.3.5.11-1. Therefore, it should be included in the SSAR.	Incorporated	4

17	Subsection 3.9.1.5 - Inelastic Analysis Methods The CRD outer tube was deleted from the list of components that prevent ejection of the CRD in the unlikely event of a failure of the ASME Class 1 weld that attaches the CRD housing to the stub tube in the bottom head of the reactor pressure vessel. This is now not consistent with the discussion in SSAR Subsection 4.5.1.2.2.9, "Integral Internal Blowout Support," which states that the CRD outer tube and middle flange is one of the safety-related components in the load path that provides the anti-ejection function during this postulated event. The staff's evaluation of this issue in the FSER Section 3.9.1 included the outer tube as part of the load path. In addition, based on information in previous SSAR amendments, the staff's discussion in FSER Section 3.9.1 stated that the cylindrical bodies of the CRD guide tube, housing, and outer tube were the only parts of these components that were analyzed by inelastic analysis. SSAR Subsection 3.9.1.5 has now been revised to state that only the cylindrical body of the guide tube was analyzed inelastic ally. The SSAR should be revised to eliminate the discrepancy between Subsections 3.9.1 and 4.5.1.2.2.9.	Subsection 3.9.1 revised to be consistent with Subsection 4.5.1.2.2.9.	4
18	Table 3.9-1 - Plant Events The number of cycles/events for most of the plant operating events and some of the dynamic loading events listed in this table have been reduced by a factor of approximately 1.5. This reduces the number of cycles/events back to those reported in the SSAR Amendment 1 numbers for a 60-year plant life. This was Open Item 3.9.1-1. In response to this request, GE submitted Amendments 21 and 23 which generally increased these numbers by a factor of 1.5. The staff reported this in its FSER, Section 3.9.1 and found it acceptable. The number of cycles/events reported in Amendments 21 and 23 should be retained unless GE can justify the reduced numbers for a 60 year life.	Addressed in October 22, 1993 GE letter to NRC justifying all Table 3.9-1 entries with the exception of Events 6 and 14 which were increased by a factor of 1.5.	4
	Table 3.9-8, Inservice Testing Safety-Related Pumps and Valves		
19	a. B21 Nuclear Boiler System Valves, P 3.9-101 The figure for Valve F039 should be 5.1-3 sh.4	Incorporated	4

20	b. C41 Standby Liquid Control System Valves, P 3.9-104 The test parameter for Valve F003 should be R. Valves F026 and F700 are missing.	Incorporated	4
21	c. C51 Neutron Monitoring (ATIP) System Valves, P 3.9-105 The Code category for Valve J004 should be A,C.	Valve data reorganized for better categorization.	3
22	d. D23 Containment Atmospheric Monitoring System Valves, P 3.9-105 The testing of Valves F001 should be L (test parameter) at RO (test frequency) and S (test parameter) at 3 month (test frequency). The testing of Valves F004 through F008 should be L, P (test parameter) at RO (test frequency) and S (test parameter) at 3 month (test frequency).	Incorporated	4
23	e. E1 Residual Heat Removal System Valves, P 3.9-111 Valves F718 and F720 are missing.	Added valves E11-F718 and F720.	4
24	f. P54 Instrument Air System Valves, P 3.9-132 A reference to note (h3) should be added to the description column and S should be added to the test parameter column for Valves F276 and F277.	Incorporated	4
25	g. P54 High Pressure Nitrogen Gas Supply System Valves, P 3.9-132 A reference to note (h1) should be added to the description column for Valve F008.	Incorporated	4

26	h. T31 Atmospheric Control System Valves, P 3.9-135 and 3.9-138 A reference to note (h2) should be added to the description column for Valves F001 through F004 and F006. The Code category for Valve D001 should be D and its valve function should be I, P. The Code category for Valve D002, the wetwell rupture disk, should be D.	Incorporated	4
27	i. U41 Heating, Ventilation and Air Conditioning System Valves, P 3.9-139 The valve function for Valves F001 and F002 should be A, I and their testing should be P, L (test parameter) at 3 month (test frequency). Valves F003 and F004 are missing.	HVAC does not penetrate containment. "I" is for primary containment isolation only; thus, the valve function is "A". "L" is leak test for "I" only; thus, testing is "P" only. Valves F003 and F004 added.	3
28	Subsection 3.10.2.1.3.3 - Seismic Qualification by Testing The next to last sentence should be revised to read: "Operability of equipment is verified as described in Subsection 3.7.3.2," and the last sentence should be deleted. These changes are necessary in order to become more consistent with the staff's position in SECY-93-087, Which was approved in the SRM dated July 21, 1993.	Incorporated	3
29	Subsection 3.10.2.2.2 - Seismic Qualification by Testing For the reasons stated in 7 above, this Subsection should be completely revised to be more consistent with the criteria in Subsection 3.7.3.2.	Subsection 3.10.2.2.2 revised to be more consistent with the criteria in Subsection 3.7.3.2..	3

	Editorial Comments:		
30	a. Subsection 3.9.3.3.1 - MS Safety/Relief Valves The revision which was added to this Subsection requires some editorial changes (e.g., missing spaces between words, misspelled words, incomplete sentences).	Edited accordingly.	1
31	b. Subsection 3.9.6.2.1(1) Part of one sentence in the second paragraph is missing. The sentence should read: "The testing of each size, type, and model shall include test data from the manufacturer, field test data for dedication by the COL applicant, empirical data supported by test, of test (such as prototype) of similar valves that support qualification of the required valve where similarity must be justified by technical data."	Incorporated	1
32	c. Subsection 3.9.7.9 - Benchmark Problems The references throughout this subsection were changed from 3.9-11 to 3.9-5. They should remain as 3.9-11.	Incorporated	1
33	d. Subsection 20.3.5 - Response to RAI 210.8 The last sentence should state: "... need not be classified Quality Group A or Safety Class I, ..."	Incorporated	1
34	Subsection 6.1.2.1 The SSAR erroneously refers to ANSI 101.4. The correct reference should be ANSI 101.2.	Incorporated	1
	Section 3.11 The staff concludes the tables in Appendix 3I is acceptable. However, the following are discrepancies discovered in Appendix 3I should be corrected:		
35	1. The equipment and zones are not clearly identified in the reference figures discussed in sections 3I.2.1 and 3I.2.2, the zones cannot be determined from given information.	Subsection 3I.2.2 clarified.	3

36	2. The is a typo in Section 3I.3.3I, the word "designated" should be "designed".	Incorporated	1
37	3. In Table 3I-8, the Gamma dose rate for the heat exchanger is listed as 2, it should be 20.	Incorporated	4
38	4. In table 3I-10, the integrated Gamma dose for the RCW pump and heat exchanger should be 2700 or more.	Incorporated	4
39	5. It is not clear how the integrated dose for Gamma and beta is determined in Tables 3I-16, 3I-17, 3I-18 and 3I-19.	Clarified in Subsection 3.11.5.2 how the integrated dose for Gamma and Beta is determined.	3
40	ECGB identified an unresolved COL Action Item in FSER Section 14.1.3.3.5.11 which apparently has not yet been transmitted to GE. During the staff's review of TMI Item II.D.1, SSAR Subsection 1a.3.7, "Testing of SRV and Discharge Piping" was added in Amendment 30 at the staff's request. It contained a commitment for COL applicant to confirm that any SRVs or discharge piping not similar to those that were tested in the EPRI generic program will be tested in accordance with NUREG-0737 guidelines. As discussed on FSER Section 14.1.3.3.5.11, this information provided the basis for the resolution of COL Action Items 3.9.3.3-1 and 14.1.3.3.5.11-1. In Amendment 31 32, Subsection 1A.3.7 was deleted. Please inform GE that Subsection 1A.3.7, as written in Amendment 30 should be included in the SSAR.	Same as Item 16.	2
41	In trying to resolve one of Mr. Michelson's concerns the Piping DAC, the staff discussed with GE (T. James and M. Herzog) the need to include the following new statement in the Tier 1 Piping Design Description (Chapter 3.3): "Structures, systems, and components that shall be required to be functional during and following an SSE shall be protected against the effects of spraying, flooding, pressure, and temperature due to postulated pipe breaks and cracks in seismic Category I and NNS piping systems."	Incorporated	3

	Chapter 4		
42	4.2 Fuel System design On page 4.2-1, third paragraph GE should revise to state that "each COL applicant referencing the ABWR design may have different fuel and core designs which will be provided by the COL applicant to USNRC for review and approval instead of information.	Incorporated	3
	Chapter 6		
43	Table 6.2-7 did not identify which CIV's are locked closed. (FSER Section 6.2.4)	The P&ID for each system is shown in Table 6.2-7. The P&IDs identify which CIVs are locked closed.	2
	The staff concludes that the control room habitability systems meet the acceptance criteria of SRP Section 6.4 and are, therefore, acceptable pending satisfactory resolution of the following discrepancies:		
44	1. SSAR Section 6.4.2.1 and 6.4.2.4 should be revised to state that the positive pressure is maintained with respect to the surrounding spaces.	It was agreed that these subsections can remain "relative to the outdoor atmosphere". (See Item 47).	2
45	2. SSAR Section 6.4.2.3 has dropped the reference to NAA-SR-10100 for performing the control room in-leakage analysis which was in previous SSAR Amendments.	Since a pressurization test is being performed as part of ITAAC, it was concluded that the in-leakage analysis in unnecessary.	2
46	3. SSAR Section 6.4.2.3 has dropped the list of the leak paths to and from the MCAE and its evaluated effects, as supported by the performed in-leakage analysis, on MCAE to conform with the requirements of GDC 19.	Same as Item 45.	2
	The staff concludes that the SGTS has a removal efficiency of 99% for all forms of radioiodine. The staff further concludes that the system meets the acceptance criteria of SRP Section 6.5.1 and is, therefore, acceptable pending satisfactory resolution of the following discrepancies:		

47	1. Revise SSAR Section 6.5.1.1.2 and 6.5.1.3.1 to state that the negative pressurization is maintained relative to the surrounding spaces.	It was agreed that these subsections can remain "relative to the outdoor atmosphere" since the instrumentation is located outside the building. There was no change made to Subsection 6.5.1.3.2, and Subsection 6.5.1.3.1 was modified.	3
48	2. Revise SSAR Section 6.5.1.3.3 to address IE Bulletin 80-03 to state that the charcoal tray and screen will be all welded construction to preclude the potential loss of charcoal from absorber cells per IE Bulletin 80-03.	Subsection 6.5.1.3.3 has been revised as requested.	3
49	3. Revise SSAR Appendix 6A, Design Criteria (4), Maintenance, to state that the design is in compliance with this position since the Surveillance Requirements in SSAR Chapter 14 meets the intent of the Standard Technical Specifications requirements for SGTS and that it is also stated in SSAR Page 6B-1.	Incorporated	3
50	4. Revise SSAR Appendix 6A, Design Criteria (5), In-Place Testing Criteria, to add reference to ASME N510 in addition to the "Industrial Ventilation" reference for any testing performed.	Incorporated	3
51	5. Revise SSAR Appendix 6B to state ASME "Footnote 3" not "Footnote 2" on page 6B-65.	Footnote 2 is correct.	2
52	6. Revise SSAR Appendix 6B, Page 6B-9/10 to state "SRP Table 6.5.1-1" not "STP Table 6.5.1-1"	Incorporated	1
53	7. Revise SSAR Appendix 6B, Page 6B-2 to state "Operation of SGTS to mitigate offsite releases will not be affected by the absence of high flow alarm at the MCR."	Incorporated	1
54	8. Revise SSAR Section 6.5.1, Table 6.5-1, and Appendices 6A and 6B to reflect two filter trains.	Two filter trains already reflected.	2
	Chapter 7		
55	Typographical Error in Table 7.5-2 on page 7.5-21. The correct range required for Drywell/Wetwell Hydrogen Concentration should be 0-10 Volume % instead of 0-0 Volume %.	Corrected to be 0-30 Volume.	1
	Chapter 8		

56	Section 9.5.3.2.3.1 of SSAR Amendment 32 indicates that the Class 1E Associated Emergency Lighting subsystem is classified "Associated" because the subsystem's bulbs are not seismically qualified. This definition for associated is not consistent with the definition for associated that is defined in Section 8.3.3.5.1 of SSAR Amendment 32.	Incorporated. Statement was not intended to be a definition. However, to avoid possible confusion, this sentence (and a similar are in Subsection 9.5.3.2.2.1) were deleted. Also, the word "However," has been added at the beginning of the sentences following these two deletions.	3
57	Section 8.3.1.1.6.4 of SSAR Amendment 32 indicates that the design for protective relays meets positions 7 of RG 1.9. This is true for Rev. 2 of the RG but not Rev. 3. There is no position 7 in RG 1.9 Rev. 3. GE in SSAR Amendment 32 revised their SSAR to indicate compliance with RG 1.9 Rev.3 from compliance with Rev.2 of RG 1.9.	Incorporated. Subsection 8.3.1.1.6.4 has been corrected from "position 7" to "position 8". Similarly, Paragraph 14, 15 and 16 of Subsection 8.3.1.1.8.2 have been corrected from "see C.4...." to see Position 1.4...". Also, titles the were corrected in Table 1.8-20, and Subsections 8.1.3.1.2.2(2) and 8.3.1.2(2)(b).	4
58	The last sentence of Section 8.3.4.14 of SSAR Amendment 32 states "Furthermore, annunciation shall be provided to alarm in the control room whenever the breakers are in for service" is within GE's scope of supply as indicated in Sections 8.3.1.1.1 and 8.3.2.1.0.1 of SSAR Amendment 32. The design for alarming is not within a COL applicant's scope of responsibility as indicated in Section 8.3.4.14.	Incorporated. This sentence is deleted in Subsection 8.3.4.14.	3
59	The first sentence of the 10th paragraph of Section 8.3.3.1 of SSAR Amendment 31 and the March 31, 1993 draft SSAR states "Associated Class 1E circuits remain with or are physically separated in the same manner as those Class 1E circuits with which they are associated;..." was deleted from Amendment 32. Amendment 31 was consistent with the guidelines of Section 5.5.2 of IEEE 384 and position 4 of RG 1.75. With the deletion of this sentence in Amendment 32, associated circuits which do not have isolation device such as lighting circuits are no longer explicitly addressed in the SSAR, the design description in the SSAR is now inconsistent with the commitment to IEEE 384 guidelines, the deletion may be inconsistent with the staff's safety evaluation report conclusions.	Incorporated. This first portion of the sentence was inadvertently deleted because it was thought to be redundant to the remaining portion. However, the complete sentence has been restored to the original sentence intact.	3

60	Section 8.3.4.21 of SSAR amendment 32 should be revised to explicitly state, consistent with other SSAR sections, that the COL applicant shall be required to provide appropriate plant procedures for periodic testing of the diesel generator loading capabilities and the interlocks which restore the DGs to standby in the event of a LOCA or LOPP.	The technical specifications already require periodic testing of the diesel generator loading capabilities, as stated in Subsection 8.3.4.21. Therefore, no additional plant operating procedures are necessary for this part of the comment. However, the second sentence regarding testing of the interlocks has been modified as follows: "Appropriate plant procedures shall be provided for periodic testing of the interlocks which restore the units to emergency standby on event of a LOCA or LOPP."	3
61	Section 8.3.4.17 of SSAR amendment 32 which addresses inclusion of regulatory codes and standards in purchase specifications may not be appropriate as a COL action item as specified in the SSAR. Specifying which regulatory codes and standards should be used to meet ABWR plant design requirements is a GE responsibility. Assuring their inclusion in purchase specifications also appears to be within GEs scope of responsibility. The SSAR should be revised to indicate that it is a GE responsibility to specify which regulatory codes and standards should be used for the purchase of equipment. This inconsistency affects SER findings addressed in Section 8.3.6.1 of the SER.	Subsection 8.3.4.17 does not address regulatory codes and standards. GE agrees that regulatory codes and standards are GE responsibility, but these are already addressed in the SSAR text in accordance with the SRP. Rather, Subsection 8.3.4.17 provides a listing of common industrial standards to be included in the purchase specifications, which would be in addition to the regulatory codes and standards. The content of this section was added in response to a previous NRC request; not as a licensing issue, but for quality assurance purposes.	2
62	The use of the word "redundant" in Section 8.3.3.6.2.2 of SSAR amendment 32 and in the 2nd paragraph of Section 8.3.3.6.2.2.3 of SSAR amendment 32 incorrectly implies that safety related equipment need not be protected from design basis events if the event or missile only affects one of two redundant systems. The term "redundant" as used in these sections should be deleted.	Same as item 63	2
63	The use of the word "redundant" in Section 8.3.3.6.2.2 of SSAR amendment 32 and in the 2nd paragraph of Section 8.3.3.6.2.2.3 of SSAR amendment 32 incorrectly implies that safety related equipment need not be protected from design basis events if the event or missile affects one or two redundant systems. The term "redundant" as used in these section should be deleted. Similarly, the term "redundant" has been incorrectly used in item 2 of Section 8.3.3.6.1.1 of SSAR amendment 32.	Incorporated. The three references have been resolved as follows: Subsections 8.3.3.6.2.2 and 8.3.3.6.1.1: The word "redundant" was deleted from the two referenced sentences. Subsection 8.3.3.6.2.2.3: The word "redundant" was replaced with "Class 1E", so the sentence reads "....could jeopardize Class 1E cabinets and raceways."	3

64	The references 13.6.3 in Section 8.3.4.19 of SSAR amendment 32 should be 8.3.3.6.1.1(5).	Incorporated.	3
65	GE made a SSAR change due to ITAAC involving dc power supplies for the offsite circuits. Amendment 32 did not provide the bases to justify this change. This impacted a number of our safety findings regarding independence requirements of GDC 17. We have revised three FSER conclusions related this area to state that this aspect is now open.	Inserts at the end of the fifth paragraph of Subsection 8.2.3, and at second-to-last sentence in Paragraph (5) of Subsection 8.2.3: "The instrumentation and control circuits for the normal and alternate preferred power shall not rely on a single common DC power source [See Subsection 8.2.3 items (13) and (15)].	3
66	By SSAR Amendment 32, GE changed their design to specify that the I&C circuits at their dc power sources are routed in separate raceways separated to the extent practical versus are separated by floor, wall, or 50 feet at their power supplies. By draft SSAR 10/12/93, GE further revised Amendment 32 to indicate that the instrumentation and control circuits for the normal and alternate preferred power shall not rely on a single common dc power source. Based on these changes to the SSAR, the ABWR design will now permit sharing of dc power sources between offsite circuits. If the two offsite circuits share two or more common dc sources, by implication the I&C circuits for the independent offsite sources are interconnected. The 7th paragraph of SSAR Amendment 32 states that the feeder circuit breakers from the unit auxiliary and reserve auxiliary transformers to the medium voltage switchgear are interlocked to prevent paralleling the normal and alternate power sources. With the exception of these interlocks, there are no electrical interconnections between the instrument and control circuits associated with the normal preferred circuits. This statement in the SSAR is not consistent with the dc source interconnection defined above	Incorporated. The last sentence of the 7th paragraph has been deleted, since the "preferred" version of this information is already contained in the 5th paragraph. The remaining first sentence of the 7th paragraph has been moved just ahead of the 5th paragraph, because the commitment for the existence of the interlocks should proceed the statement that the interlocks are separated.	3

	Chapter 9		
	9.5.1.1 General Evaluation Fire Protection System		
	In **Amendment XX** GE indicates that they meet the design commitments as specified in the Branch Technical Position CMEB 9.5-1 except in four cases. GE identified the following deviations to the Branch Technical Position:		
67	1. Deviation from BTP CMEB 9.5-1, Section 7.j, Diesel Fuel Storage Areas. The staff finds GE's justification for having the diesel fuel oil day tanks inside the reactor building is acceptable pending satisfactory resolution of the following discrepancy: - Provide capacity in the fuel oil tank rooms to contain total contents of diesel fuel oil day tank and discharge from two fire hoses operating for 1/2 hour.	Justification provided under Subsection 9.5.1, new item (1).	3
	2. Deviation [illegible] CMEB 9.5-1, Section 7.i, Diesel Generato[illegible] The staff finds [illegible]ification acceptable pending satisfactory resolution of the following discrepancies:		
68	a. GE is to provide information to demonstrate the adequacy of the foam system utilizing closed heads.	See Item 69.	3
69	b. Should GE change it's design to an open head system, then the resolution of GI-57 will need to be revisited.	Justification provided under Subsection 19B.2.36. Item 68 is related to this item and justification for Item 69 covers this.	3
70	c. As discussed with the applicant in a meeting held on September 21, 1993, the diked area in the DG room is to be designed to the appropriate section of NFPA 15. The diked area is to be capable of containing 100% capacity of the tank and 1/2 hour of water application from the automatic foam sprinkler system and 2 manual hose stations.	It was agreed that it was sufficient for the diked area to be capable of containing 100% capacity of the tank and 1/2 hour of water application from the automatic foam sprinkler (2 manual hose stations not required).	3

71	3. Deviation from BTP CMEB 9.5-1, Section 13, Control Room Complex. The staff finds GE's justification acceptable pending satisfactory resolution of the following discrepancy: - The applicant is also to provide the rationale for lack of suppression and drainage in the control room subfloor.	Justification provided under Subsection 9.5.1, new item (2).	3
72	4. Deviation from BTP CMEB 9.5-1, Section 13, Outdoor transformers. The staff finds GE's justification is acceptable pending satisfactory resolution of the following discrepancy: - Specify that the wall separating the turbine from the transformers will be masonry and rated for at least one hour. Diking will be provided as described in NFPA 15.	Subsection 9A.4.3.2.1 and 9A.4.6 specify that the wall separating the turbine from the transformers will be masonary and rated for a least one hour. NFPA 15 has been added to the list of codes and standards.	3
	9.5.1.3.4 Automatic Foam Fire Suppression Systems		
	GE committed to meet the design aspects of GDC 3, Branch Technical Position 9.5-1 and Generic Issue 57, therefore, the staff concluded that the automatic foam fire suppression systems are acceptable pending satisfactory resolution of the following discrepancies:		
73	1. GE proposes to utilize closed head sprinklers for the foam system and has not adequately demonstrated its acceptability to control and extinguish a fire. GE is to provide the technical justification to demonstrate the adequacy of the foam system.	Repeat of Item 68	2
74	2. Should GE change it's design to an open head system, then the resolution of GI-57 will need to be revisited.	Repeat of Item 69	2
75	3. As discussed with the applicant in a meeting held on September 21, 1993, the diked area is to be designed to the appropriate section of NFPA 15. The diked area is to be capable of containing 100% capacity of the tank and 1/2 hour of water application from the automatic foam sprinkler system and 2 manual hose stations.	Reat of Item 70	2

	9.4.1.1 Control Room Habitability Area Heating, Venting, and Air Conditioning system (CRHA HVACS)		
	GE has addressed IE Bulletin 80-03 compliance by providing **future SSAR Amendment --**, which revises SSAR Section 9.4.1.1.4 to state that the charcoal tray and screen will be all welded construction to preclude the potential loss of charcoal from adsorber cell per IE Bulletin 80-03. Therefore, the emergency air filtration system of the CHRA HVAC system precludes the potential loss of charcoal from adsorber cells. By SSAR amendments up to including **Amendment --**, GE provided the SSAR Appendices 9C and 9D, and has provided acceptable justifications for the deviations. By SSAR **Amendment --**, GE revised SSAR Sections 9.4.1.1.4 and 9.1.1.1.5, stating that the unfiltered inleakage is controlled by the use of welded ducts, except galvanized steel is used for outdoor air intake and exhaust, and unfiltered in-leakage testing will be performed periodically on all system ductwork outside MCAE in accordance with ASME N510, respectively. By amendments up to and including **Amendment --**,GE revised the SSAR Section 9.4.1.1 and Table 9.4-4d to include electric heaters in the ESF filter trains. The staff concludes that the system is acceptable pending satisfactory resolutions of the following discrepancies:		
76	1. Revise SSAR Sections 9.4.1.1.3, 9.4.1.1.4, and 9.4.1.1.6 to state that the positive pressurization is maintained relative to the surrounding spaces.	It was agreed that these subsections can remain "relative to outdoor atmosphere". (See Item 47)	2
77	2. Revise SSAR Section 9.4.1.1.4 to state that the charcoal tray and screen will be all welded construction to preclude the potential loss of charcoal from adsorber cells per IE Bulletin 80-03.	Incorporated	3
78	3. SSAR Table 9.4-4 shows heating coil data in kcal/hr for each CRHA HVAC Division. Revise SSAR Table 9.4-4 to provide the electric heater ratings in kW.	Incorporated	3

79	4. The deleted SSAR Table 9.4-4d listed each division's electric heater capacity as 165 kW for MCR HVAC Divisions A and B emergency filtration units. Revise SSAR Section 9.4.1.1 to restore the above component data either in the tabulated form or in the SSAR text.	Table 9.4-4 updated to include all heaters.	3
80	5. Revise SSAR Section 9.4.1.2.6 to state that tests will be performed at a test facility to verify that the CRHA HVAC system fire dampers with fusible links close under anticipated air flow conditions.	Incorporated	3
81	6. Revise SSAR Appendix 9C, Section 9C.1.(4).(d) to state that the design is in compliance with this position since SR 3.4.3.1 SSAR Chapter 14 meets the intent of the Standard Technical Specifications requirements. Also, revise SSAR Section 9.4.1.1.7 to delete "except as noted in Appendix 9C."	Incorporated	1
82	7. Revise SSAR Appendix 9D to provide summation of pressure drop across the entire system as stated in the SSAR Section 9.4.1.1.6. Also, ASME N509 "Footnote 2" should be "Footnote 3" on Page 9D-5.	Incorporated	3
83	8. Revise SSAR Section 9.4.1.1.4, stating that the unfiltered inleakage is controlled by the use of "All welded black steel ducts except galvanized steel used for outdoor air intake and exhaust".	Inspection added to verify integrity of system.	3
84	9. Revise SSAR Section 9.1.1.1.5, stating that "The unfiltered inleakage testing will be performed periodically on all system ductwork outside MCAE in accordance with ASME N510", as agreed upon with GE for the resolution of USI B-66, Control Room Infiltration Measurements.	See Item 83.	3
85	10. Revise SSAR Figure 9.4-1, Sheet 2 of 5 to reflect an independent and separate discharge to MCAE and return from MCAE to each emergency filtration unit, as shown in Sheet 1 of 5. Also, revise SSAR text to include this.	Incorporated	4

86	11. Revise SSAR section 9.4.1.1.5 to state that "The charcoal filters will be tested with an acceptable gas for bypasses."	No change, already in Amendment 32	2
	9.4.1.2 Control Building Safety-Related Equipment AREA (CBSREA) HVAC System		
	The staff concludes that the CBSREA HVAC system is acceptable pending satisfactory resolution of the following discrepancies:		
87	1. SSAR Section 9.4.1.2.3 states that there is an electric heater for each of the CBSREA HVAC subsystems. However, SSAR Table 9.4-4d showing the electric heater capacity has been deleted.	Heater deleted from Subsection 9.4.1.2.3.	4
88	2. Provide rationale for maintaining a minimum temperature of 10°C in the winter.	Rationale provided to staff.	2
89	3. Reconcile the differences between ITAAC Figures 2.15.5b, 2.15.5c and 2.15.5d and SSAR Section 9.4.1.2.3 and SSAR Figures 9.4-1 Sheets 3,4, and 5 concerning the descriptions of the areas served.	It was agreed to provide this information with metrification (see Item 4).	4
90	4. Revise SSAR Section 9.4.1.2.6 to state that the test will be performed at test facility to verify that the CHRA HVAC system fire dampers with fusible links in HVAC ductwork are capable of closing under anticipated air flow conditions.	Repeat of Item 80.	3
	9.4.4 Turbine Island HVAC System		
	The staff concludes that the turbine island HVAC system meets the applicable acceptance criteria of SRP Section 9.4.4 and is, therefore, acceptable pending resolution of the following discrepancies:		
91	1. Revise titled captions of SSAR Tables 9.4-5 and 9.4-5a through 9.4-5c to confirm with SSAR Section 9.4.4. Reconcile SSAR section 9.4.4.2.1.5 areas with the areas shown in above tables.	Incorporated	4
92	2. Provide Capacity for the cooling coils serving SJAE A area recirculation unit air handler in SSAR Table 9.4-5b.	99,800 kcal/hr capacity provided.	3

93	3. Verify the capacity of cooling coils serving demineralizer pump and valves area recirculation unit air handler in SSAR Table 9.4-5a.	Verified	2
94	4. Revise Design Description in ITAAC Section 2.15.5 the turbine building (T/B) HVAC system to state "T/B lube oil area exhaust system with two fans.".	Incorporated. See ITAAC submittal.	4
	9.4.5.1 R/B Secondary Containment HVAC System		
	The staff concludes that the system complies with applicable SRP Section 9.4.5 acceptance criteria, and, therefore, is acceptable pending resolution of the following discrepancies:		
95	1. Section 9.4.5.1.1.2 should replace the words "outside atmosphere" by the words "surrounding spaces" in relation to the negative pressure of the secondary containment. ITAAC Table 2.15.5 should also be corrected to use the words "surrounding spaces".	It was agreed that this subsection can remain "relative to outdoor atmosphere". (See Item 47).	2
96	2. Table 9.4-4g should show that the exhaust fan flow rate is higher than the supply fan flow rate to ensure that the secondary containment is at a negative pressure with respect to surrounding spaces.	Incorporated	3
97	3. Table 9.4-4 filter capacity data for secondary containment exhaust should match with the exhaust fan capacity.	Incorporated	4
98	4. SSAR Section 9.4.5.1 should state that fire dampers with fusible links in the HVAC duct work are capable of closing under anticipated air flow conditions (ITAAC items).	Incorporated	3
	9.4.5.2 R/B Safety-Related Equipment HVAC System		
	The staff concludes that the R/B safety-related equipment HVAC system is acceptable pending the resolution of the following discrepancies:		
99	1. All the FCUs are automatically initiated upon secondary containment exhaust fan failure also since such a failure will result in the R/B secondary containment HVAC system isolation.	Text modified to match P&ID.	4

100	2. Section 9.4.5, Item 2 should delete the words "secondary containment" from the title of the HVAC system.	Incorporated	1
101	3. Section 9.4.5.2.2.1 should state that the FCUs will be sized to maintain the operational temperature of the subject rooms within 40°C.	Already included in Amendment 32	2
	9.4.5.3 R/B Non-Safety-Related Equipment HVAC System, R/B Mainsteam Tunnel HVAC System, and R/B RIP Power Supply Panel Room HVAC System		
	The staff concludes that the R/B non-safety-related equipment HVAC system, R/B main steam tunnel HVAC system, and R/B RIP power supply panel room HVAC system meet the applicable acceptance criteria of SRP Section 9.4.5 and are, therefore, acceptable pending the resolution of the following discrepancies.		
102	1. Section 9.4.5, Item 3 should read as "R/B Non-safety Related Equipment HVAC System".	Incorporated	1
103	2. Section 9.4.5, Item 3 and Section 9.4.5.8 should read as "Reactor Internal Pump Power Supply Panel HVAC System". SSAR Figure 9.4-5 shows that a closed cooling loop HVAC system cools the RIP power supply panels and not RIP ASD control panel rooms . Furthermore, RIP ASD control panel rooms are served by the safety related R/B electrical equipment HVAC system.	Clarification made in text.	3
104	3. Section 9.4.5.3.2 and Figure 9.4-3, do not match with respect to rooms for which FCUs are provided. GE should correct as appropriate so that the same names are used to identify the rooms both in the figure and the section.	See Item 89.	4
105	4. The SSAR tables do not list the quantity and capacity of all equipment for all the 10 rooms serviced by the R/B non-safety-related HVAC system (for example, fans and cooling coils for the 10 rooms are not listed).	Incorporated	3

106	5. Table 9.4-4h refers to filters for RIP ASD control panels. This should be deleted if it is an error. Equipment listing should be given for the R/B RIP power supply panel HVAC system.	It is not an error.	2
	9.4.5.4 R/B Safety-Related Electrical Equipment HVAC System		
	The staff concludes that the R/B safety-related electrical equipment HVAC system complies with applicable GDC referenced in of SRP Section 9.4.5 and, therefore, is acceptable pending the resolution as the following discrepancies:		
107	1. Section 9.4.5.4.2 sentence: "The divisional rooms....control panel rooms" is confusing and should be deleted.	Clarification provided.	3
108	2. Item 8 listed in the above section should be deleted. This is because as per Figure 9.4-5, the non-safety-related R/B RIP ASD power supply panel HVAC system takes care of the cooling needs of the power supply panel rooms.	Clarification provided.	4
109	3. Item 3 should be re-captioned as RIP ASD control panel rooms, Divisions B and C. GE should check whether HVAC Divisions A and B serve these control panel rooms since RCW Divisions A and B serve the RIP room coolers.	Clarification provided.	3
110	4. The system capability to maintain the rooms other than the DG engine rooms below 40°C identified in the ITAAC should be included in the SSAR section.	Provided in Amendment 32.	2
111	5. GE should explain why electric heaters needed to assure that the temperature in the subject rooms do not dip below 10°C are deleted in Amendment 32.	Justification provided to staff.	2
112	6. SSAR should state that the system has fire dampers with fusible links in the HVAC ductwork which are capable of closing under anticipated air flow conditions (ITAAC information).	Repeat of Item 80.	3

113	7. SSAR should state that Division B of the HVAC system serves electrical equipment rooms, Division II and IV and Figure 9.4-4, Sheet 2 should be revised to reflect the above.	Sheet 2 revised.	4
	9.4.8 Service Building Ventilation System		
	The staff concludes that the service building ventilation system meets the applicable acceptance criteria of SRP Section 9.4.3 and is, therefore, acceptable pending the resolution of the following discrepancies:		
114	1. Like the ITAAC, SSAR should identify 2 HVAC systems: TSC HVAC system and controlled area HVAC system. Staff prefers Section 11.5.2.2.4 language, i.e., " controlled area HVAC system". (ITAAC which says that one of the SB HVAC system is SB HVAC system should be corrected.) Staff has used the above wording in the write-up above.	SSAR modified to match wording of Section 11.5, ITAAC modified to be consistant.	3
115	2. Section 9.4.8.1.1 should be corrected since the TSC HVAC system operates during a high radiation mode in addition to operating during normal operation.	Incorporated	3
	3. SSAR Section 9.4.8 should include the following ITAAC information:		
116	a. High radiation mode of operation for the TSC HVAC system.	Incorporated	3
117	b. Location of both the HVAC systems (ITAAC should identify the location of the controlled area HVAC system).	Incorporated	3
118	c. Supply fan and ACU for the controlled area HVAC system.	ACU does not exist.	2
119	d. Toxic gas protection for applicable COL applicants (GE should provide COL license information).	Incorporated	3

120	e. Provision of 2 recirculation fans for the TSC HVAC system.	Incorporated	3
	4. SSAR Section 9.4.8 should be revised to include the following:		
121	a. Which areas are the "clean areas".	TSC and OSC added.	3
122	b. Provision of a radiation monitor in the outside air intake for the TSC HVAC system.	Incorporated	3
123	c. The components of ACU (i.e. heating coil and cooling coil) for the controlled area HVAC system)>	It was agreed that the COL applicant will provide.	2
124	d. Cooling and Heating sources for the ACUs in both the HVAC systems.	It was agreed that the COL applicant will provide.	2
125	e. Common air intake for both the HVAC systems.	Incorporated	3
126	5. Both the ITAAC and Section 9.4.8.1.2 should state that the TSC and clean areas are maintained at a positive pressure with respect to surrounding spaces.	It was agreed that this subsection can remain "relative to outdoor atmosphere". (See Item 47).	2
	CHAPTER 11		
127	ABWR SSAR Table 11.1-6 gives the fraction of steam activity treated by the condensate demineralizer as 1. This is inconsistent with the design flow rate of 1022 Cu. Meter/hour per condensate polisher vessel given in SSAR Table 10.4-4. There are 6 such vessels one of which is standby. The design flow rate through all five vessels corresponds to 0.67 of the total steam activity being treated by the condensate demineralizer. This is not un-common, since most reactors have forward pumping. Also, the value of 0.67 agrees with the fractions 0.18 and 0.01 of steam activity of iodines and others treated by the condensate demineralizer given in SSAR Table 11.1-7. For the above reasons, the staff requires GE to correct the subject entry from 1 to 0.67 in the SSAR Table 11.1-6.	The value of "1" referred to in the comment is shown in column 2 of Table 11.1-6 and is for the ANS 18-1 "Reference Plant" as defined in ANS 18-1, Table 1, column 4 which is a non-pumped forward plant and not the ABWR. As noted in the comment, the ABWR values which are given in the final row of Table 11.1-7 are correctly indicative of a pumped forward plant . Therefore, Table 11.1-7 correctly indicates the values used as indicated by the asterisk in Table 11.6-6.	2

	CHAPTER 12		
128	1. Page 12.3-10: delete the first line on the page. It is repeated from the last line on page 12.3-9. Also change the Amend. no. back to 31, except for the first line, Amend. 32 does not appear to have changed this page.	Incorporated. However, the page change (even though it was an oversight), requires the page to go from Amendment 32 to Amendment 33.	1
129	2. Page 12.3-19, line 11 from bottom: the last word should be "RWPs" not "raps".	Incorporated	1
130	3. Page 12.3-19, line 7 from bottom: line should start "the TIP spoolers" not "the TIP spoilers".	Incorporated	1
131	4. Page 12.3-22: sub-section 12.3.3.1(2) should reference the DAC Table 3.2(b). Suggest revising the penultimate sentence in this sub-section to state, "DAC Table 3.2(b) requires the COL Applicant to perform calculations for the expected airborne radionuclide concentrations to verify the adequacy of the ventilation system during the ITAAC stage of plant construction."	Incorporated	3
132	5. Figure 12.3-43: figure is missing the radiation zone designations.	Radiation zone designations added.	4
	CHAPTER 14		
	Preoperational Test Program		
133	In SSAR Section 14.2.3, Test Procedures, the last sentence should change the word power ascension tests to startup tests to make the sentence more correct with respect to the requirements of RG 1.68 which states that test procedures will be provided to the NRC 60 days before their intended use for preoperational tests and 60 days before fuel loading for startup tests (i.e., not power ascension tests).	Incorporated	3

134	In Section SSAR 14.2.10.2, 2nd sentence, GE states that "the procedure controlling this movement will specify that shutdown margin and subcritical checks be made at predetermined intervals throughout the loading, thus ensuring safe loading increments." To clarify this sentence, GE should revise this sentence to state "the procedure controlling this movement will specify that partial core shutdown margin demonstration and sub critical checks be made at predetermined intervals throughout the loading, thus ensuring safe loading increments as described in startup test abstract 14.2.12.2.3, Fuel Loading.	Incorporated	3
135	In Section SSAR 14.2.10.3., 1st sentence, GE should delete the first sentence from this section and insert this sentence at the beginning of the paragraph in section 14.2.10.4. The sentence currently states " Prior to initial criticality, the shutdown margin shall be verified for the fully loaded core. The sentence should be revised to state, "During initial criticality, the full core shutdown margin shall be verified for the fully loaded core as described in startup test abstract 14.2.12.2.4, Full Core Shutdown Margin Demonstration.	Incorporated	3
	Test Abstract 14.2.12.1.8, RHR System Properational Test		
136	The requirements of RG 1.139, Guidance for Residual Heat Removal, Position C.3, state that "to protect the RHR system against accidental over pressurization when it is in operation (not isolated from RCS), pressure relief in the RHR system should be provided with relieving capacity in accordance with the ASME boiler and pressure vessel code." Test Abstract 14.2.12.1.8, Acceptance Criteria (3)(c), should state "proper operation of system relief valves including timing, position indication, controlling function (if any for air operated valves), and verification of requirements" to meet the requirements of RG 1.139.	Incorporated	3

	Preoperational Test Abstract 14.2.12.1.41		
137	The staff's review identified that preoperational test abstract 14.2.12.1.41, " Pressure Suppression Containment Bypass Leakage Tests" removed reference to Subsection 6.2.6.2 for the applicable test procedures. Reference to subsection 6.2.1.1.5 was added for a description of and criteria for the test method. The acceptance criteria for the test method. The test abstract should be revised testing method and the acceptance criteria.	Incorporated	3
138	GE revised Section 6.2.1.1.5 in a markup dated September 30, 1993 to state that "the acceptance criteria for both the high and low pressure leakage tests shall be a measured bypass leakage area which is less than 10% of the suppression pool steam bypass capability specified in subsection 6.2.1.1.5.4 (i.e., 50 cm squared). GE also revised this section to discuss specific types of high and low pressure drywell to wetwell leakage tests that will be performed. GE plans to add cross reference 6.2.6. into test methods that would similarly be performed on the drywell for the high and low pressure suppression pool bypass leakage tests. The staff finds the incorporated into a future Chapter 14 SSAR amendment and the above changes to chapter 6 are incorporated in a future Chapter 6 SSAR amendment.	Incorporated	3
	Preoperational Test Abstract 14.2.12.1.43		
	GE removed much prerequisite and acceptance criteria information from Test Abstract 14.2.12.1.43, Wetwell to Drywell Vacuum Breaker System (WDVBS) Preoperational Test. GE removed prerequisite (3)(d), which requires approximate power sources are available for use to supply electrical power to all instrumentation. GE also removed the following acceptance criteria: (1) parts of acceptance criteria (3)(a), for testing of the system logic and timing features for proper operation of vacuum breaker valves, (2) parts of acceptance criteria (3) (b), verification on the operability conditions of instrumentation and alarms used to monitor WDVBS during loss of preferred power conditions, and (3) acceptance criteria (3)(d), "proper functioning of vacuum breakers test features".		

139	After Further review of Section 6.2.1.1.4, it was noted that the vacuum relief breaker valves are swing check valves which open passively due to negative pressure across the valve disk requiring no power source. Acceptance criteria for testing the system logic and timing feature are not needed for swing check valves (i.e., only required for MOVs). Acceptance criteria for vacuum breaker test features in Section 6.2.1.1.4. The prerequisite on the required more discussion is needed with GE to clarify the exact reason for all of the above deletions to this test abstract. The staff finds the above changes to the test abstract acceptable assuming the staff's interpretation of the information provided in Chapter 6 is correct as noted below. (1) Prerequisite (a) includes instrumentation used to monitor system and component parameters needed in this test is energized for the conduct of the test. (2) proper operation of any/all instrumentation under loss of offsite power is tested per preoperational test 14.2.12.1.45, "Electrical Systems Preoperational Test".	Clarification for the deletions have been provided to the staff. In addition, prerequisite (2)(d) pertaining to electrical power has been reinstated, Further clarification is contained in Subsection 6.2.11.5.8.1.	3
	Preoperational test Abstract 14.2.12.1.52		
140	The staff's review identified the following typographical error on page 14.2-94. Subsection (3) (b), fist paragraph, last sentence uses "my" which should be "may".	Incorporated	1
	Startup Test Program		
141	In SSAR section 14.2.12.2, General Discussion of Startup Tests, GE should add a sentence which states that "startup test procedures will be provided to the NRC 60 days before fuel loading" to be consistent with similar statements in Sections 14.2.3, Test Procedures, and Section 14.2.12.1, Preoperational Test Procedures.	Incorporated	3
	Startup Test 14.2.12.1.41		
142	The staff's review identified that startup test 14.2.12.2.41 indicates this test is deleted, however, review of prior amendments indicates that startup test 14.2.12.2.41 has never existed. This test should be removed or explanation provided for the test that is being deleted.	This startup test was deleted in Amendment 32.	2

	SSAR Section 14.2.13 COL License Information		
143	In SSAR Section 14.2.13.1, first sentence, GE should delete the words "site specific" and replace them with the words "COL applicant supplied". The words site specific is heavily used in the definition of interfacing systems. This will avoid any confusion with the 4 systems listed in this section as being interfacing systems since all of the listed systems are not interfacing systems.	Incorporated	3
144	In SSAR Section 14.2.13.2, Test Procedures/Startup Administrative Manual, states that the COL applicant will provide the following to the NRC, Item (4) "the approved preoperational and startup test procedures approximately 60 days before their intended use (Subsection 14.2.3)." Item 4 should be revised to state that " the approved preoperational test procedures approximately 60 days before their intended use and the startup test procedures approximately 60 days before fuel loading."	Incorporated	3
	Table 14.2-1, Power Ascension Test Matrix		
145	Table 14.2-1 should be renamed the Startup Test Matrix instead of the Power Ascension Test Matrix.	Incorporated	3
146	The requirement of RG 1.68, Appendix A, Position 5.c.c, state "demonstrate that gaseous and liquid radwaste processing, storage and release systems operate in accordance with design." Based on the staff's review of SSAR Amendment 23, the staff requested GE to revise Test Abstract 14.2.12.2.38 and Table 14.2-1 to include the Gaseous Radwaste System as part of the Gaseous and Liquid Radwaste Systems Performance Test to meet the intent of RG 1.68. GE revised the test abstract and the table in SSAR Amendment 30.		

	After further review of Table 14.2-1, Test Abstracts 14.2.12.2.1, Chemical and Radiochemical Measurements, 14.2.12.2.35, Offgas System Test, and 14.2.12.2.3-8, Gaseous and Liquid Radwaste System Performance Test, and GE Proprietary Sections 11.2, Liquid Radwaste Management and 11.3, Gaseous Radwaste Management System, the staff concluded that the Gaseous Radwaste System is the Offgas System; therefore this system is adequately discussed in test abstract 14.2.12.2.1, Chemical and Radiochemical Measurements. The test abstract discusses measurement testing of the release effluents but not radwaste processing and storage testing per the requirements of RG 1.68; therefore, the Liquid Radwaste system portion of the test is not an optional test as currently described in Table 14.2-1. Based on the above, the staff requests GE to make the following changes to SSAR Section 14.2 in Amendment 33. Test Abstract 14.2.12.2.38 should be renamed the Liquid Radwaste Management System Performance and Test Abstract 14.2.12.2.35 should be renamed the Gaseous Radwaste Management/Offgas System Performance per the titles used in Section 11.2 and 11.3. The description and acceptance criteria sections of Test Abstract 14.2.12.2.38 should delete all references to the gaseous radioactive waste system and Section 11.3. Additionally, GE should delete the 3rd through the 6th sentence in the description section. In table 14.2-1, Page 198, GE should substitute the "Gaseous Radwaste Management/Offgas System Performance" test for the "Offgas System Performance" test and substitute Liquid Radwaste management Performance test for the "Gaseous and Liquid Radwaste Systems Performance" test. GE should also delete the word optional for the Liquid Radwaste System Performance test in the table.	Incorporated	3
147	GE needs to verify that the page numbers are correct for all pages in Amendment 32. Page numbers were not properly changed from Amendment 31 to Amendment 32 when Section 14.2.13.3 was deleted.	Page numbers verified.	1

148	In Table 1.9, Item No. 14.3, Tests Exempt From License Conditions, Subsection 14.2.13.3, Page 1.9-10, should be deleted since Subsection 14.2.13.3 no longer exists in Chapter 14.	Item No. 14.3 deleted.	1
	The following generic comments are provided on problems with GE's use of SI units.		
149	Page 154, Units for vessel pressure are expressed in kg/cm**2*d. Since these are SI units, pressure is expressed in pascals or force per unit area (N/m**2) or kg*m/s**2/m**2 or kg/m*s**2. The above expressed units don't seem to make sense. d id defined as differential pressure? Even with d defined in this manner, the units don't match. GE seems to be mixing up SI units with english units. English units would be expressed as 1bf/ft**2.	See Item 4.	1
150	Page 164, Same as above. Units for reactor pressure are expressed as kg/cm**2-*g.Where g is defined as gauge pressure. Reactor pressure is usually expressed in pascals or force per unit area which breaks down like above to kg/m*s**2. With g defined in this manner, the units don't match.	See Item 4.	1
151	Page 165, 2nd paragraph, Same problem. Incorrect units for reactor pressure given as 10.5kg/cm**2 g, where g is defined as gauge pressure. Pressure is force per unit area which is N/m**2.	See Item 4.	1
152	Page 180, 1st paragraph. Again same problem with units. Vessel dome pressure expressed as 1.76kg/cm**2 d, where d is defined as differential pressure. Correct units are N/m**2.	See Item 4.	1
153	Page 182, 1st paragraph. Same problem. Vessel dome pressure expressed as 1.76kg/cm**2 d, where d is defined as differential pressure. Correct units are N/m**2.	See Item 4.	1
	EQUIPMENT SURVIVABILITY QUESTIONS (SCSB)		
154	1. Table 7.5-2 Suppression pool water level only measures 1.5 m above normal water level. Bottom of reactor vessel is 6.1 m above normal level and COPS is even higher. How does this effect EOPs to terminate containment flooding?	Instrument ranges changed to permit the EOPs to terminate containment flooding.	4

155	2. Table 7.5-2 Drywell atmosphere temperature only measures up to 110 C as opposed to Reg. Guide 1.97 of 227 C. DBA temperature reaches over 120 C see figures 6.2-7,8,15.	Correct. Modified Section 7.5 to reflect required ranges of R.G. 1.97	4
156	3. Table 7.5-2 Hydrogen concentration measures 0% as opposed to Reg. Guide 1.97 which indicates 30%.	Same as Item 55.	2
157	4. Table 7.5-2 Oxygen concentration cross-reference does not exist.	Reference incorrect. Changed to Subsection 7.5.2.1(2)(k).	4
158	5. Table 7.5-2 and test Suppression pool water temperature indicates 4 divisions with deviations and this is similar to drywell atmosphere temperature with 2 divisions (Reference supp. pool temp. for acceptability).	Subsection 7.5.2.1(2)(l) revised accordingly.	4
159	6. Fig. 6.2-13 Graph indicates temp. of 1767.7C.	Typographical error. Changed to 176.7°C.	1
160	7. Figs. 6.2-17 and 18 are identical.	No. Look at curves past 70 seconds. Figure 6.2-17 shows difference between drywell and reactor building. Figure 6.2-18 shows difference between wetwell and reactor building.	2
161	8. 7.5.2.1(2)(b) Rupture disks actuate at pressure of 70 psig.	They actuate at 90 psig (6.3 Kg/cm^2g). The instrument range provides a margin of greater than 10%.	3
162	9. Table 7.5-3 indicates Type A variable for Drywell water level. No discussion is provided on ranges, purpose etc. No mention in Table 7.5-2.	Deleted Drywell water level from Table 7.5-3 (not a type A variable). Added discussion on drywell water level in Table 7.5-2 and Subsection 7.5.2.1(2)(o).	4
163	10. 18A.5 (PC-1) Entry condition for hydrogen is not specified, only blank entry of Hi Alarm Level. EPGs say 2%.	Hydrogen level COL applicant dependent. 2% is not specified.	2
	11. Deleted		
164	12. Table 7.5-2 Suppression pool water temperature range up to 110 C but HCTL curve have suppression pool temperature up to 150 C.	Changed upper range to 140°C to accommodate all possible suppression pool temperatures.	3
165	13. Table 7.5-2 Drywell atmosphere temperature range up to 110 C but DWSIL curves go up to 319.5 C.	110°C changed to 226.7°C. 319.5°C defines the slope of the curve, it is not the maximum value.	3

	CHAPTER 19 (SPSB)		
166	1. A November 3, 1993 letter from GE (J. Fox) regarding "Primary Containment Pressure Control EPG-Low Pressure Venting" indicating that there is a potentially significant suppression pool bypass path that was not assessed in SSAR Section 19E.2.3.3, the containment event trees, or GE's MAAP analyses. This path involves a common nitrogen makeup line with separate branches to the drywell and wetwell. These lines (originating at penetrations X-80 and X-240) are said to provide a interconnecting path between the wetwell and drywell which equalizes the pressure between the two primary containment volumes. Furthermore, the valves in each of the branches (F040 and F041) are said to be open during normal operation. No instrumentation to detect flow through this path during an accident is apparent. The bypass analysis should be updated to reflect these lines as potential bypass paths. The validity of the CETs and supporting MAAP analyses should also be justified given this bypass path.	The interconnecting path between the wetwell and the drywell has been added to the bypass study. The results of the study indicate that the bypass risk is below the threshold which would require further consideration of this in the CETs or the MAAP analysis. Therefore, no further consideration of this path is necessary. The SSAR has been modified to reflect this additional pathway in the bypass study.	3
	CHAPTER 19		
167	Table 19.2-1 Table incorrectly identifies concrete used in containment as limestone rather than basaltic.	The statement in the SSAR is correct. As discussed further in Subsection 19E.2.1.2.1(3), the containment is assumed to be made of limestone-sand concrete. Only sacrificial concrete in the lower drywell is specified to be made of basaltic concrete. However, as this assumption will have little, if any, bearing on the performance of the containment, this item is deleted from the Key Assumptions, Table 19.2-1. Additionally, in reviewing the table, other features were identified which have been incorporated in the standard design. Thus, they are no longer "assumptions" and have been deleted from the table.	2

237	SSAR Fig. indicates that the radwaste tunnel slopes downward to the -8200 mm elevation at the RB and Control building (CB) ends of the tunnel. This is in direct contradiction to GE's discussion with the staff that the highest section of the tunnel would be at the RB and CB ends to ensure that any flooding in the tunnel would flow away from safety-related areas.	The R/B sumps are at -8200mm and the flow must be pumped upward to the radwaste building (Figure 1.2-23a). The T/B sumps are at 8800mm and the flow is downward to the radwaste building. The radwaste tunnels are sealed at each building wall.	4
238	4. Modify SSAR Subsection 3.5.1.1.3 to refer to Fig. 3.5-2, not 3.5-1	Incorporated	4
239	5. Modify the SSAR Subsection 3.5.4.5 to refer to SSAR Subsection 3.5.1.1.1.3, not 3.5.1.1.3	Incorporated	4
240	6. Add a statement in 3.6.1 that all walls, doors, floors and penetrations which serve as divisional boundaries will be designed to withstand the worst case pressurizations associated with the postulated pipe failures	Incorporated as item (12) of subsection 3.6.1.1.3 with a clarification of postulated pipe failures outside primary containment and within secondary containment.	3
241	7. GE has agreed to change the reference in SSAR Section 3.11 from Chapter 12 to Chapters 11 and 12.	Incorporated	3
	CHAPTER 6		
242	1. Section 6.2.1.1.1 (page 6.2-1), Item (4): typographic error, "flow form" should be read as "flow from".	Incorporated	1
243	2. Section 6.2.1.1.1 (page 6.2-1) Item(%): typographic error, "form the reactor core" should be read as "from the reactor".	Incorporated	1
244	3. Section 6.2.1.1.1 (page 6.2-2), Item(6), (7), and (8): similar typographic errors "form" should be read as "from".	Incorporated	1
245	4. Similar typographic errors on "form" vs. "from" spreading throughout the rest of Section 6.2.1 and maybe beyond. This is a generic typographic error. GE should identify all the specific errors and correct them.	Incorporated	1

246	5. Section 6.2.1.1.3.3.1.2 (page 6.2-10): Assumption No. 7 in the previous Amendments regarding feedwater enthalpy is missing in Amendment 32. Put it back.	Incorporated See Item 7 of Subsection 6.2.1.1.3.3.1.2.	4
247	6. Section 6.2.1.1.3.3.2.1. (page 6.2-12): Assumption No. 1 regarding critical flow model in the previous Amendments was taken away in Amendment 32. Put it back.	Incorporated See Item 1 of Subsection 6.2.1.1.3.3.2.1.	4
248	7. Section 6.2.1.1.3.5.1 (page 6.2-13 and -14): typographic errors on "Table" and "temperature".	Incorporated	1
249	8. Section 6.2.1.1.5.6.1 (page 6.2-26): typographic error on "the".	Incorporated	1
250	9. Section 6.2.1.2.2 (page 6.2-36): The break sizes of "150A" and "50A" should be "150mm" and "50mm".	The "A" carries the dimension of mm. The definition is provided in Figure 1.7-1. It is not necessary to duplicate.	2
251	10. Include Tables 6.2-37 a-e in Chapter 6 of the SSAR	Tables 6.2-37a - e do not exist.	2
	CHAPTER 9		
252	1. Add information to the SSAR regarding the COL applicant to provide a criticality analysis showing that the design of the new storage racks will be such that Keff will not exceed 0.98 with a fuel load of the highest reactivity, assuming optimum moderator conditions (foam, small droplets, spray, or fogging), as described in SRP Section 9.1.1.	Already required by Subsection 9.1.6.1 which references Subsection 9.1.1.1.1 which in turn requires the COL applicant to respond to Question 430.180 (all information requested).	2
253	2. Add information to the SSAR discussing the storage of defective fuel assemblies and provide design requirements in Table 3.2-1 of the SSAR.	Incorporated in Amendment 31. See Subsection 9.1.4.2.8 and Table 3.2-1.	2
254	3. Provide design requirements for the spent fuel pool liner in Table 3.2-1.	Incorporated	3
255	4. Incorporate information regarding protection of the filter-demineralizer resins in 9.1.3.	Incorporated	3

256	5. Modify SSAR Subsection 9.1.4.2.8 to clarify that defective fuel assemblies are placed in special storage containers and stored in the spent fuel storage rack, not the equipment storage rack, and correct SSAR Subsection 9.1.4.3 to state that the COL license information requirements are in SSAR Subsection 9.1.6.4, not 9.1.4.3.	Defective fuel storage is stored in the equipment storage rack. See Subsection 9.1.4.2.8 . COL license information requirements are incorporated in Subsection 9.1.6.4.	4
257	6. Correction SSAR Subsection 9.1.5.8 to refer to SSAR Subsection 9.1.6.6, not 9.1.6.7.	Incorporated	4
258	7. Modify the second paragraph of ITAAC 2.11.23 to include the Control Building in the list of buildings in which the PSW system is part of the Certified Design.	See ITAAC submittal	3
259	8. Modify SSAR Fig. 9.2-9 to include the discharge from the nonradioactive drain system. This connection is downstream of the hypocontact tank in the figure.	Included in Amendment 32.	2
260	9. Modify SSAR Subsection 9.2.5.1 (11) to include capability for full operational inspection and testing	Incorporated	3
261	10. Modify SSAR Subsection 9.2.5.10 to include inspections and tests during normal operation	Incorporated	3
262	12. Modification SSAR Subsection 9.2.9.1 (5) to refer to Table 9.2-1, not Table 9.2-2.	Reference should be to Table 9.2-3. Incorporated.	3
263	13. Remove references to Fig. 9.2-1a from SSAR Subsection 9.2.11.2	Incorporated	1
264	14. Modify Tables 9.2-4a-c to refer to safety-related and nonsafety-related instead if essential and nonessential	Decision was made between GE and NRC to not make this change.	2
265	15. Clarify the heat capacity. SSAR Subsection 9.2.11.2 states that the total reactor decay heat 4 hours after shutdown is 31.8 E6 kcal/hr but Tables 9.2-4 a-c indicate that each division will need to accommodate approximately 30 E6 kcal/hr	Decay heat does not appear in Tables 9.2-4 a-c. Each division of RCW has cooling loads from the RWR system in addition to other cooling loads.	2

266	16. Modify SSAR Subsection 9.2.14.2.2 to remove the next to the last sentence of the subsection (there is no safety-related equipment in the Turbine Building)	Statement is correct. For example, selected sensors for the RPS are located in the Turbine Building.	3
267	17. Modify SSAR Subsection 9.2.15.1.4 to clarify that on a LOCA signal, all standby pumps start and all standby valves open.	Incorporated	3
268	18. Modify SSAR Subsection 6.7.2 and ITAAC 2.11.13 to clarify that the supply valve to the bottled nitrogen supply also opens on a low pressure signal in the nondivisional portion of the system.	As indicated in the second paragraph of Subsection 6.7.2, the values between the non-divisional and divisional systems close on low pressure. Subsystem 6.7.2 and ITAAC 2.11.3 are consistent.	2
269	19. Delete references to Fig. 9.3-9 in SSAR Subsection 9.3.8.1.1 (5) (b)	Incorporated	3
270	20. Correct the reference to a COL Action Item made in SSAR Subsection 9.3.8.1.1 (5) (c). 9.3.12.1. does not refer to the DTS. It refers to the NRD. Make a separate COL Action Item for the DTS.	incorporated in Subsection 9.3.12.4 .	3
271	21. The staff indicated that GE's design capabilities for fire protection and mitigation in primary containment internal areas during shutdown conditions, supported by operational controls and procedures appear to adequately address the concerns. Further evaluation of this information will be completed and follow-up discussions will be conducted to provide feedback to GE and to identify any required SSAR changes if necessary. GE agreed to provide write-up in Section 9.5.1.3.12.	Incorporated in Subsection 9.5.1.3.12 .	3
272	22. The staff had requested a change in the SSAR to indicate that the smoke control capability would take into account the fact that the fire doors would be maintained open between a fire area and a non fire area. GE provided a revised markup which will be included in SSAR amendment and was found to be acceptable except that the words "maintain open" need to be included.	Incorporated in Subsection 9.5.1.1.6 .	3

273	23. The staff identified a statement in the SSAR that cables in trays with bottoms were not considered in the total combustible loading. This was not in compliance with Generic Letter 86-10 which states that all cables in trays need to be part of the total loading. GE agreed to delete the statements in the SSAR which indicate the exclusion. The staff found this to be acceptable. GE will provide additional changes if other exclusions are found in the SSAR.	Incorporated in Subsections 9.5.1.1.4, 9.5.1.1.5, 9A.2.4 and 9B.2.3.3	3
274	24. The staff identified that in the SSAR GE had referenced the ICBO 1495 Code for design of the type 1 walls. The staff stated that ASTM E-119 code needed to be referenced. GE committed to revising the SSAR and providing markups of the SSAR.	Incorporated in Subsection 9.A.3.6.	3
	25. GE provided a discussion of deviations from the BTP. GE provided a handout GE which justifies each deviation. The following is a summary of the discussions for each item.		
275	Additionally, GE is to provide a markup regarding DG room fire and manual FF.	The DG room has an automatic foam system as a fire suppression with closed head water sprinklers with fusible links. GE/NRC agree that current detection/suppression systems will prevent inadvertent actuation of the sprinkler system. The DG room has sufficient space to hold the suppressant and it will not cause any overflow should the door be opened for manual fire fighting.	2
276	a. High Impedance Faults - A deviation from the specification of the commitment to perform a high impedance fault analysis to ensure that such faults could not affect the operation of safety related equipment. GE provided an acceptable markup.	incorporated, see Subsection 9.5.13.12.	3
277	b. BTP Reference Error - The staff identified a typographical error in the SSAR BTP reference. GE provided an acceptable markup which corrected the error.	Appropriate reference to BTP CMEB 9.5-1 provided.	1

278	c. Diesel Fuel Storage Area - GE has located in the reactor building, outside secondary containment, 3 diesel fuel tanks which are greater than 1100 gallons in capacity. The staff requested that GE show that the sunken floor below each tank will accommodate fire suppression water and foam for 30 minutes without forcing spilled fuel to migrate to other areas of the plant. GE agreed to consider the staff's concern.	Justification provided under Subsection 9.5.1, new item (1).	3
279	d. Control Room Complex - GE committed to changing the design to add fire detection capability to the sub-floor area which was acceptable to the staff.	incorporated in Subsection 9.5.1, Item(2)	3
280	e. Plant Computer Room - GE indicated that this was not a deviation from the SRP and would not need to be further discussed.	No change.	2
281	f. Outdoor Transformers - For this item GE indicated that a commitment to NFPA 15 will be added to the SSAR and to indicate that the barrier walls to be used will be equivalent to a one-hour fire barrier.	Repeat of item 72	2
282	26. Clarify that the diesel engine is capable of operating for minutes without secondary cooling to ensure that the engine can operate at full load in excess of the time required to restore cooling water (RCW and RSW), which are sequenced onto the emergency power supply within 1 minute following a Loss of Preferred Power (LOPP)	Clarified	3
283	27. Modify SSAR Subsection 9.5.5.2 to state that the COL License Information is in SSAR Subsection 9.5.13.6, not 9.5.13.5	Incorporated	1
284	28. Modity SSAR Subsection 9.5.5.2 to state that the system is filled with high quality treated water from the Makeup Water (Purified) system, not the Demineralized Water System.	Incorporated.	3
285	29. Reinstate note 4 on Fig. 9.5-8 clarifying that the air dryer includes both pre- and after-filters	Incorporated.	3

286	30. Correction Fig. 9.5-9 to change the flow sensor shown on the lube oil sump tank to a level sensor, as had been agreed to and modified in an earlier version of the figure.	Incorporated.	3
287	31. Modify Fig. 9.5-6 to show the pressure sensors used to detect high pressure conditions in the crankcase (as discussed in SSAR Subsection 9.5.8.2) and to show the differential pressure gauge used to monitor plugging on inlet filters (as discussed in SSAR Subsection 9.5.6.3)	Incorporated.	3
	CHAPTER 10		
288	1. The Design Description of ITAAC 2.10.7 should add "IVs" on page 2.10.7-2 for the "Actions for Protective Action."	Incorporated, see ITAAC 2.10.7 .	3
289	2. Revise SSAR Chapter 15 for the turbine CV trip closure time to "0.08 seconds or greater."	Incorporated	3
290	3. Define "NBR" in SSAR Section 10.2.1.3.3	Incorporated	1
291	4. Revise SSAR Section 10.4.10 to refer to 10.4.3.5.1.2, not 10.4.3.5.1.3.	Subsection 10.4.3.5.1.3 is correct.	2
292	5. Revise SSAR page 10.0-iii/iv, Tables 10.4-4 through 10.4-6, Figure 10.4-4b, and the text of Section 10.4.6 to reflect system's designation as "Condensate Purification System (CPS)."	Incorporated	4
293	6. Revise the last paragraph of SSAR Subsection 10.4.7.2 to state "The system extends...outlet to (but not including) the seismic interface restraint outside containment." and the last paragraph of SSAR Subsection 10.4.7.3 to state "The portion which connects to the seismic interface restraint outside the containment...Reactor Building."	Incorporated	3
294	7. SSAR Figure 10.4-7 should reflect instrumentation and its corresponding locations as shown in ITAAC Figure 2.10.2a.	Figure 10.4-7 and ITAAC Figure 2.10.2a are not the same system.	2

295	8. Delete Subsections 10.4.5.9 and 10.4.5.10 on page 10.4-19 of the SSAR. These are already printed on page 10.4-18 as Subsections 10.4.5.7 and 10.4.5.8.	Incorporated	4
	CHAPTER 11		
296	1. Reinstate the P&ID s for the DTA previously found in SSAR Chapter 11		
297	Section 18.5 In forth paragraph replace "action item" with "license information requirement"	Incorporated	1
298	Section 18.8.1 In last sentence replace "action" with more suitable phrase	Replaced "action items are" with "license information is".	1
	Section 18.8.13		
299	Put period at end of second sentence	Incorporated	1
300	Insert "to" between the words actions and isolate in second sentence.	Incorporated	1
301	Insert ")" following "Table 18E-1" in last sentence.	Incorporated	1
302	What date for IEC964 on page 18E-20 and IEEE-1023 on Page 18E-21.	Dates are provided in Table 1.8-21.	2
303	What are dates for ANSI HSF-100 and IEC 964 on page 18E-24?	Dates are provided in Table 1.8-21.	2
	Section 13.5		
304	Where is the rest of sentence pertaining to "Loss of Feedwater System Failure? on page 13-5?	Sentence complete by replacing "." with")" at end of sentence.	1
305	What happened to autoblowdown in upper portion of page 13.5-8?	Autoblowdown applies only to PWRs.	2
306	What are dates for MIL-H-468558 and MIL-STD-1472D on page 13.5-8	Dates are provided in Table 1.8-21.	2

	Section 15.6		
307	Delete Subsection 15.6.7.2, analysis done using boundary Chi/Q.	Incorporated	3
	Section 11.2.5		
308	Add Sections 1001-2402 after 10CFR20 under item (2).	Incorporated	3
309	Insert "10 times" following the word within under item (5).	Incorporated	3
	Sections 8.2.4 and 8.2.		
310	Proposed staff interface requirements/conceptual design is provided in Attachment 1. GE to develop, in conjunction with the staff, final version suitable for inclusion with Amendment 33.	Final version in Amendment 33.	3
	COMMENTS RECEIVED 11/18 - 19/93		
	3.4.1-Flood protection Pending clarification in the SSAR of the following discrepancies:		
311	Modification of the 10th paragraph of SSAR Subsection 3.4.1.1.2 to "Analysis of the worst flooding due to pipe and tank failures and their consequences are performed in this subsection for the Reactor Building, Control Building, Radwaste Building, Turbine Building, and Service Building.	Same as Item 232	2
312	Modification of the third paragraph of SSAR Subsection 3.4.1.1.2.1.2 to correct "SWCU" to "SPCU".	Same as Item 233	2
	Make the following modifications to SSAR Table 3.4-1 and the related layout drawings,		
313	The first column of Table 3.4-1 and Fig. 1.2-6 say that the tunnel between the Reactor Building (RB) and Service Building (SB) is at 4800mm but Fig.1.2-6 does not clearly identify the access way and column 2 of the table, along with Figs. 1.2-14 and 1.2-15, show the access way at 3500mm. Also, Fig. 1.2-18 shows the access way at 3500mm (in addition, the access way is not clearly labeled on this figure.)	Same as Item 234	2
314	Columns 2 and 3 of Table 3.4-1 state that there is an access way between the control and service buildings at 3500mm. However, Fig. 1.2-15 does no t show this access way and Fig. 1.2-18 does not clearly label the access way.	Same as Item 235	2

315	Column 2 of Table 3.4-1 states that there is an access way between the service and turbine buildings at 3500mm but Fig. 1.2-18 does no t clearly label this access way.	Same as Item 236	2
316	SSAR Fig. indicates that the radwaste tunnel slopes downward to the -8200mm elevation at the RB and Control Building (CB) ends of the tunnel. This is in direct contradiction to GE's discussion with the staff that the highest section of the tunnel would be at the RB and CB ends to ensure that any flooding in the tunnel would flow away from safety-related areas	Same as Item 237	2
	3.5.1.1-**INTERNALLY-GENERATED MISSILES OUTSIDE CONTAINMENT**		
	Pending resolution of the following discrepancies:		
317	Modify SSAR Subsection 3.5.1.1.1.3 to refer to Fig. 3.5-2, not 3.5-1	Same as Item 238	2
318	Modify SSAR Subsection 3.5.4.5 to refer to SSAR Subsection 3.5.1.1.1.3, not 3.5.1.1.3	Same as Item 239	2
	3.6.1 - **PIPE FAILURES**		
	Pending correction of the following discrepancies:		
319	Addition of a statement in 3.6.1 that all walls, doors, floors, and penetrations which serve as divisional boundaries will be designed to withstand the worst case pressurizations associated with the postulated pipe failures	Same as Item 240	2
320	Inclusion of Tables 6.2-37 a-e in Chapter 6 of SSAR	Same as Item 251	2
	3.11 - EQUIPMENT QUALIFICATION		
321	SSAR Section 3.11.5.2 states that normal operational exposure is based on the radiation sources provided in chapter 12. The staff has determined that this reference is incorrect. GE indicated that this reference will change to state that the normal operational exposure is based on a source term provided in chapter 11, and inventory provided in chapter 12.	Same as Item 241	2
	CHAPTER 14		
322	Section 14.2.12.1.45.4(3)(j) of SSAR amendment 32 uses the phrase "...powered from wither preferred or standby sources..." Clarify the use of the word "wither" in this phrase.	The word is either. It has been corrected.	1

323	Section 14.2.12.1.45.4(3)(i) of SSAR amendment 32 references subsection 8.3.1.1.5.2. There is no subsection in the SSAR. Clarify where the design voltages are specified in the SSAR.	Subsection 8.3.1.5.2 changed to Subsection 8.3.1.1.5 in Subsection 14.2.12.1.45.4(3)(i). Design voltages are not specified in the SSAR. The use of design voltages in terms of ± 10% fluctuations are documented in GE letter "Response to NRC comments on SSAR Section 14.2" dated May 13, 1993. The phrase "as specified in" has been replaced with the phrase "in accordance with" for clarification of Subsection 14.2.12.1.45.4(3)(i)	4
324	Section 14.2.12.1.45.4(3)(j) of SSAR amendment 32 indicates that available bus voltage are specified in Subsection 8.3.1.1.8.3. Available bus voltages do not appear to be specified in this subsection. Provide clarification.	Available bus voltages are not specified in the SSAR The phrase "as specified in " has been replaced with the phrase "in accordance with" for clarification of Subsection 14.4.12.1.45.(3)(i).	3
325	Section 14.2.12.1.45.4(3)(h) of SSAR amendment 32 indicates that acceptable bus voltage frequency variations between no load and full load conditions are specified by subsection 8.2.3. Acceptable bus voltage and frequency variations between no load and full load conditions do not appear to be specified in this subsection. Provide clarification.	Bus voltage and frequency variations between no load conditions are not specified in the SSAR. The phrase "as specified in" has been replaced with the phrase "in accordance with" for clarification of Subsection 14.2.12.1.45.4.(3)(h).	3

Legend:

1 Editorial/Typos

2 No Change Necessary

3 New Information/Clarification

4 Discrepancy