

March 4, 1993

Docket 52-001

NOTE TO: JACK FOX, GE

FROM: MIKE JANUS, NRR/ADAR/PDST

SUBJECT: SUMMARY OF CHAPTER 3 DISCUSSIONS WITH B. BURTON

Enclosed is a summary of Chapter 3 issues, their status and important dates, prepared by B. Burton in response to the recently held teleconference calls involving these issues. Please call me at 301-504-3139 if you have any questions.

cc: Document Control Room /PDR
Chet Poslusny

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3/4/93

ABWR DFSER OPEN, CONFIRMATORY, COL ACTION, AND INTERFACE ITEMS

CHAPTER 3 - DESIGN OF SSCs

SSAR SECTION 3.4.1 - FLOOD PROTECTION

OPEN ITEMS

3.4.1-1 Provide flood analysis for turbine building.

RESOLVED (Confirmatory): 3/2/93 Phone call with GE. 10.4.5.5 is wrong reference. It should be 10.4.5.6. This reference will be changed to include the response from 430.73(b) regarding flooding in the Turbine Bldg from a break in CW piping. The 2.15 meters will be changed to 5 meters. Table 3.4-1 will be changed as follows:

1. Bldg heights for S/B, CB, Rw/B, and TB are changing.
2. Tunnel between RB and SB is at 4800mm.
3. Tunnel between CB and SB is Access at -2150mm.
4. Tunnel between RB, RwB, and TB slopes from 9800mm at RB (1.2-24) to 1500mm at RwB (1.2-23a). 3.4.1.1.2.5 will state that all ends of tunnel are sealed.
5. Tunnel between TB and SB is Access at 7900mm (1.2-24).

CONFIRMATORY ITEMS

- 3.4.1-3 Provide information regarding provisions to protect the control room from the effects of a pipe failure in the RSW piping in the control building.

RESOLVED (CONFIRMATORY): 3/2/93 phone call. GE will change SSAR from 2.15 meters to 5 meters.

SSAR SECTION 3.5.1.2 - INTERNALLY-GENERATED MISSILES (INSIDE CONTAINMENT)

OPEN ITEMS

- 3.5.1.2-1 Provide information showing that housing for rotating equipment can contain missiles or make this a COL Action Item.

RESOLVED (Confirmatory): 3/2/93 GE phone call. No Non-Proprietary document will be provided. SER must state that Proprietary document was used. SSAR Section 3.5.5, Reference 1 will be changed back to what it was before.

COL ACTION ITEMS

- 3.5.1.2-1 Provide procedures to ensure that equipment undergoing maintenance will be removed from containment during operation or will be seismically restrained.

RESOLVED (CONFIRMATORY): 2/26/93 fax changed 3.5.1.2.4 and added 3.5.4.7. This is acceptable.

NOTE: Change DFSER p. 3-15 (top of page) to refer to only motor-driven rotating machinery, not all rotating machinery.

SSAR SECTION 3.5.1.4 - MISSILES GENERATED BY NATURAL PHENOMENA

COL ACTION ITEMS

- 3.5.1.4-2 Provide information on protective features against missiles identified in 3.5.1.4-1 above.

OPEN: 3/2/93 GE phone call. GE says letter to PM (2/3/93) states that this is discussed in Chapter 2. If so, This section needs to refer to Ch. 2. I need to check this (3/10/93).

SSAR SECTION 3.5.2 - SSCs PROTECTED FROM EXTERNAL MISSILES

COL ACTION ITEMS

- 3.5.2-1 Provide information concerning protection of safety-related equipment from missiles generated by SSCs outside the ABWR design scope.

RESOLVED (CONFIRMATORY): 2/26/93 fax from GE added 3.5.4.8. This is acceptable.

NOTE: Section 3.5.4.5 still not correct. GE will change it (3/2/93 phone call)

SSAR SECTION 3.6.1 - PIPE FAILURES

CONFIRMATORY ITEMS

- 3.6.1-1 Remove references to LBB

CLOSED: 3/2/93 phone call. GE will keep the LBB references in the SSAR but make clear that no credit is taken for LBB and the LBB is an option that the referencing applicant MAY use if he chooses.

- 3.6.1-2 Modify Table 3I.3-15 to reflect worst case pressures (assuming failure of blowout panels to function properly).

OPEN: 3/2/93 phone call. GE is redoing the subcompartment pressurization analysis. When that's done, Ch. 6 and Ch. 3 will be modified and the chapters will agree.

COL ACTION ITEMS

3.6.1-4 Provide details on protection provided against the effects of piping failures to ensure main steam line isolation valve functional capability.

CLOSED: 3/2/93 phone call. GE clarified that this is a COL Action Item.

SSAR SECTION 3.11 - ENVIRONMENTAL QUALIFICATION

OPEN ITEMS

- 3.11.3-2 Show that GE's position regarding radiation protection for electronic components agrees with that of the staff.

RESOLVED (Confirmatory): 3/4/93 phone call. GE will clarify that electronic equipment exposed to ≥ 1000 R is considered to be in a harsh environment and will be qualified in accordance with 10 CFR 50.49. Other electrical equipment exposed to $\geq 10,000$ R is considered to be in a harsh environment and will be qualified in accordance with 10 CFR 50.49. Harold will provide guidance on qualification of mechanical equipment.

- 3.11.3-3 Explain why ABWR integrated gamma accident dose is lower than doses for operating reactors.

RESOLVED (Confirmatory): 2/25/93 submittal regarding this is being reviewed by Harold Walker and Jay Lee. Response by 3/10/93.

CONFIRMATORY ITEMS

- 3.11.2.1-1 Confirm that SSAR Section 3.11.1 will be updated to reflect compliance with NUREG-0588 and RG 1.89.

OPEN: 3/4/93 phone call. GE will change to specify RG 1.89.

- 3.11.3-3 Update figures 3I.3-1 through 3I.3-22 to include references to P&ID and IED drawings that will identify typical equipment for each zone.

RESOLVED (CONFIRMATORY): 3/4/93 phone call. Harold is reviewing. Response 3/10/93.

3.11.3-4 Update SSAR to include Table 3I.3-A and amended Appendix 3I tables to contain thermodynamic environmental conditions for both normal operating conditions and design basis accidents in order to develop time-based profiles for various identified zones.

OPEN: 3/4/93 phone call. GE will clarify installed life for equipment, total integrated dose, and remove references to SSAR section 12.2.3.1 and substitute a reference to the shielding DAC (3.7a) or, if references can't be made to the ITAAC in the SSAR, the words from the DAC will be used in the SSAR. GE will review the pressure and temperature values in the 3I tables after the new subcompartment pressurization analysis is done.

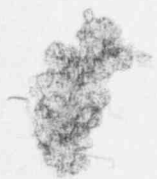
COL ACTION ITEMS

3.11.3-1 Address issues identified in IN 89-63 related to flooding above the flood level and equipment wetting.

CLOSED: 3/4/93 phone call. GE will ensure that terminology used in IN 89-63 is used in the SSAR. "Wetting" may not be appropriate.

3.11.3-2 Evaluate radiation effects on equipment in harsh zones for both normal operations and accident conditions.

OPEN: 3/4/93 phone call. GE will clarify installed life for equipment, total integrated dose, and remove references to SSAR section 12.2.3.1 and substitute a reference to the shielding DAC (3.7a) or, if references can't be made to the ITAAC in the SSAR, the words from the DAC will be used in the SSAR. GE will review the pressure and temperature values in the 3I tables after the new subcompartment pressurization analysis is done.



NOTES:

1. 3.11.2 should reference IEEE 323-1974
2. p. 3.11-11.1 is incorrect. It should be 3.11-1.1.
3. Change Section 3.11.6.2 to read "....in accordance with Reference 1."
4. p. 3.11-1.1 should read "....safety function within minutes.
5. SSAR should be changed to reference new App. 3K instead of topical report.

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Guidelines for Safety

Safety-Related Mechanical Equipment in a Harsh Environment

Although there are no detailed requirements for mechanical equipment, GDC 1, "Quality Standards and Records," and 4, "Environmental and Missile Design Base," and Appendix B to 10 CFR 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (Section III, "Design Control," and XVII, "Quality Assurance Records"), contain the following requirements related to equipment qualification:

- Components shall be designed to be compatible with the postulated environmental conditions, including those associated with LOCAs.
- Measures shall be established for the selection and review for suitability of application of materials, parts, and equipment that are essential to safety-related functions.
- Design control measures shall be established for verifying the adequacy of design.
- Equipment qualification records shall be maintained and shall include the results of tests and materials analyses.

For mechanical equipment, the staff review will concentrate on materials which are sensitive to environmental effects, for example, seals, gaskets, lubricants, fluids for hydraulic systems, diaphragms, etc. A review and evaluation should be performed by the applicant that includes the following :

- (1) Identification of safety-related mechanical equipment located in harsh environment areas, including required operating time.
- (2) Identification of non-metallic subcomponents of this equipment.
- (3) Identification of the environmental conditions this equipment must be qualified for. The environments defined in the electrical equipment program are also applicable to mechanical equipment.
- (4) Identification of non-metallic material capabilities.
- (5) Evaluation of environmental effects.

The list of equipment identified should be submitted. From this list the staff will select approximately three items of mechanical equipment for which documentation of their environmental qualification should be provided for review. Also, the results of the review should be provided for all mechanical equipment in harsh environment areas and corrective actions identified.