GE Nuclear Energy

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

April 10, 1991

MFN No. 037-91
Docket No. STN 50-605
EEN-9123

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

Attention: Charles L. Miller, Director
Standardization and Non-Power Reactor Project Directorate

Subject: GE Responses (Proprietary Information) to Discussion Items of April 3, 1991, GE/NRC Reactor Systems Branch Conference Call

Reference: Submittal of Amendment 13, Proprietary Information, to GE's ABWR SSAR, MFN No. 077-90, dated July 3, 1990

Enclosed are thirty four (34) copies of the GE responses to the subject discussion items.

Responses to the discussion items contain information that is designated as General Electric Company proprietary information. This material relates to the Chapter 18 proprietary information that was previously sent to the NRC (Reference) and its corresponding proprietary affidavit.

It is intended that GE will amend the SSAR, as appropriate, with these responses in a future amendment.

Sincerely,

D. J. Robare

D. J. Robare, Acting Manager
Regulatory and Analysis Services
M/C 382, (408) 925-6948

cc: F. A. Ross (DOE)
D. C. Scaletti (NRC)
G. Thomas (NRC)
D. R. Wilkins (GE)
J. F. Quirk (GE)

A028
1/34

Change Ltr Encl 1 Non Prop NRC POR

RESPONSES TO DISCUSSION ITEMS

OF APRIL 3, 1991 GE/NRC CONFERENCE CALL

NO. 1 In the Introduction section p.1-1 - The following sentence in Rev. 4, EPG is deleted in the ABWR EPG. "Suppression pool, drywell and containment temperature are determined by plant-specific procedures for determining bulk suppression pool water temperature, drywell atmospheric average temperature, and Mark III containment atmospheric average temperature, respectively."

The above sentence should be kept since it is applicable for ABWR except for the reference to Mark III containment atmospheric average temperature.

RESPONSE:

In the ABWR design, the average bulk suppression pool temperature is calculated by the individual system microprocessor an displayed to the operator. Individual temperature signals from different locations can be also be displayed. [Same displays are also available at the Remote Shutdown Panel.] The temperature processing algorithm will include sensor failure detection and uncovery of sensor due to changes in suppression pool water level. All signals to the main control room are multiplexed, and hence performing calculations is simple. Refer to SSAR Subsection 7.6.1.7 for a description of the suppression pool temperature monitoring system.

The drywell atmospheric average temperature will be treated in the same manner as the suppression pool average bulk temperature. [See Subsection 7.5.2.1(2)(j)].

NO. 2 On Page 1-2, it is stated that "Conformance with the guidelines does not ensure strict conformance with a plant technical specifications or other licensing basis." This statement is misleading and confusing. The staff is developing a position on the issue of EPG versus licensing basis. We are working with the BWR Owner's Group on this issue. The quoted statement will need to be revised to reflect our position as it is finalized.

RESPONSE:

We are aware of this issue. We will revise this statement when your position on it is finalized.

MISC9104091:tjm

NO. 3 Add the following abbreviations to Table 1 (18A): HSBW - Hot Shutdown Boron Weight, MSCWL - Minimum Steam Cooling Water Level. In Chapter 6.3, the abbreviation "LPFL" is used to describe the LPCI mode of RHR In Table 1, "LPCF" is used. Which is correct?

RESPONSE:

MSCWL, Minimum Steam Cooling Water Level, and HSBW, Hot Shutdown Boron Weight were added to Table 1. LPFL will be used throughout the EPG. (During the conference call LPCF was indicated rather than LPCF). LPCF will be changed to LPFL, all places, in the next amendment.

NO. 4 In Caution #5, HPCF pump and in RHR pump (Page RC-5) NPSH values are given for suppression chamber overpressure (SCO). SCO is equal to suppression chamber (SC) airspace pressure + water head over suction strainer. Regulatory Guide 1.1 does not allow credit for SC airspace pressure. Describe in detail the advantage of SCO on the required HPCF and RHR pump NPSH values given in Caution #5 and on Page RC-5. Provide corrected NPSH values.

RESPONSE:

The method for using the SCO is already established in EPG Rev. 4. This approach is consistent with the philosophy of using realistic analysis as opposed to licensing type analysis methods. No changes are required.

NO. 5 In the RPV control guidelines entry conditions, the following condition "or RPV water level cannot be determined" should be added to "The RPV water level below level scram setpoint".

RESPONSE:

The proposed statement is not currently in EPG Rev. 4. We are aware that the BWROG is working on this issue. We will change the ABWR EPG when its position is finalized.

NO. 6 The suppression pool temperature versus reactor power curve for step RC/Q-6 is missing. Include the curve as given in the EPG, Rev. 4.

RESPONSE:

With the FMCRD Run-In functional, the control rods are fully inserted in approximately two minutes with the motor drives. During the rod insertion, analysis results show that with a failure to scram with the hydraulic accumulators and with the FMCRD Run-In function operational, suppression pool temperature can be as high as 135°F (57.2°C). We have included the boron injection initiation temperature curve and revised step RC/Q-6 as shown on page 18A.4-14.

MISC9104091:tjm

NO. 7 Step RC/Q. 7.1 - Resetting the ARI logic is not included in the ABWR EPG. ARI is in the ABWR design. Table 1.8B-1 does not explain why this step is deleted.

RESPONSE:

The ABWR EPG was revised to retain step RC/Q-7.1 (page 18A.4-15), resetting of ARI logic as follows:

"Reset ARI, bypassing ARI logic trips is necessary."

NO. 8 STEP RC/Q-72, "Reset the scram defeating RPS logic trips if necessary" is deleted. Table 18B-1 provides the explanation that it is not applicable for ABWR. Since there is a RPS for ABWR, a more detailed justification for the deletion is necessary.

RESPONSE:

Step RC/Q-7.2 has been retained as follows:

"Reset the scram, bypassing RPS logic trips if necessary, and initiate a manual scram."

The phrase "drain the scram discharge volume" in EPG Rev. 4 is not applicable to the ABWR because it does not have a scram discharge volume.

Table 18B-1 (page 18B-6) has been revised accordingly.

NO. 9 The Step C2-2 directs the operator to enter contingency #3 steam cooling rather than step RC/P-4 specified in the EPG, Rev. 4. The Table 18B-1 does not explain why this deviation is taken.

RESPONSE:

This was a word processing error. The reference to RC/P-4 in Step C2-2, has been changed.

NO. 10 The suppression pool temperature versus reactor power curve for step C5-2 is missing. Include the curve as given in EPG, Rev. 4.

RESPONSE:

The boron injection initiation temperature curve has been added (page 18A.12-2).

MISC9104091:tjm

NO. 11 In the EPG Rev. 4, Step C6-3, RPV venting is performed irrespective of the radioactivity release rate. But in the ABWR EPG, RPV venting is performed if containment radiation is below the core damage radiation level. What is the difference in the RPV venting philosophy? Table 18B-1 does not adequately explain the basis for RPV venting. Explain in detail the ABWR RPV venting philosophy and revise Table 18B-1 accordingly (Ref: Step C6-3).

RESPONSE:

In the ABWR EPG, RPV venting is performed if containment radiation level is below the core damage radiation level. This is to preclude releasing radioactivity outside of the primary containment and is believed to be a more conservative approach than that adapted in EPG Rev. 4.

Furthermore, if containment radiation is high indicative of core damage, the containment will be flooded only to the bottom of the RPV as indicated by the override statement for Step C6-2. Flooding to the bottom of RPV in the presence of core damage will avoid covering the vent pipes leading to the containment overpressure protection rupture disks. This strategy is designed to avoid discharing water into the vent path (should containment pressure exceed rupture disk pressure) which could result in damage to the equipment in the vent path.

Table 18B-1 has been revised (for Step C6-3) accordingly (page 18B-23).