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MFN 06-431 Supplement 8

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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 107 Related to ESBWR Design Certification Application - Technical Specifications - RAI Number 16.2-62 S02**

Enclosures 1 and 2 contain the subject supplemental RAI response resulting from NRC RAI Letter No. 107. GE Hitachi Nuclear Energy (GEH) responses to the original and S01 RAIs were provided in the Reference 1 letter.

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

Kathy Sedney for

James C. Kinsey
Vice President, ESBWR Licensing

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NRO

Reference:

1. MFN 06-431 Supplement 2, Letter from James C. Kinsey to U.S. Nuclear Regulatory Commission, *Response to Portion of NRC Request for Additional Information Letter No. 63 Related to ESBWR Design Certification Application – Technical Specifications – RAI Numbers 16.2-22 S01, 16.2-62 S01, and 16.2-63 S01,* May 14, 2007

Enclosures:

1. MFN 06-431, Supplement 8 – Response to Portion of NRC Request for Additional Information Letter No. 107 Related to ESBWR Design Certification Application – Technical Specifications – RAI Number 16.2-62 S02
2. MFN 06-431, Supplement 8 – DCD Chapter 19, Appendix 19ACM Revisions for RAI Number 16.2-62 S02

cc:	AE Cubbage	USNRC (with enclosures)
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Enclosure 1

MFN 06-431, Supplement 8

Response to Portion of NRC Request for

Additional Information Letter No. 107

Related to ESBWR Design Certification Application

- Technical Specifications -

RAI Number 16.2-62 S02

NRC RAI 16.2-62

DCD, Tier 2, Rev. 1, Section 8.2.1.2, states that two electrically independent and physically separate off-site AC power sources are provided. These AC power sources are designated as the normal and alternate preferred power sources and are use to power the Plant Investment Protection (PIP) buses. The PIP buses are used to power the Isolation Power Center Buses, which powers the Class 1E battery chargers and the Vital AC buses through a regulating transformer should an inverter failure were to occur. Although these AC sources are not Class 1E, they are or should be considered qualified circuits. Given that these qualified circuits are the preferred source of power for the battery chargers and backup supply for the Vital AC buses, provide justification for not including TS requirements (LCO, Applicability, Actions and Surveillance) for these circuits in the proposed ESBWR TS Section 3.8.

GE Response

In response to NRC RAI 16.0-1, GE completed a systematic and comprehensive evaluation of Revision 1 of the ESBWR Design Control Document (DCD) to determine the ESBWR process variables, design features, operating restrictions, and structures, systems, or components (SSCs) that meet one or more of the four criteria in 10 CFR 50.36(c)(2)(ii). This evaluation was used to verify that Revision 1 of DCD Chapter 16, TS, includes the LCOs required to maintain the validity of the safety analysis and risk analysis described in Revision 1 of the ESBWR DCD. This evaluation determined that the offsite circuits did not meet the criteria for inclusion in the TS because the ESBWR does not credit offsite or onsite AC backup power sources for the first 72 hours following a design basis accident. The Criterion 3 matrix specifies that the batteries support all safety-related DC power and safety-related vital AC power (via inverters). The results of this evaluation were provided in GE letter MFN 06-263, dated August 8, 2006.

DCD Impact

No changes will be made to DCD Tier 2, Chapter 16 as a result of this RAI.

NRC RAI 16.2-62, Supplement 1

Justify not including TS requirements (LCO, Applicability, Actions, and Surveillance) for these circuits in the Regulatory Treatment of Non-Safety Systems (RTNSS) program.

GE Response

Design Control Document (DCD), Tier 2, Revision 2, Appendix 19A, "Regulatory Treatment of Non-Safety Systems (RTNSS)," describes the selection criteria, evaluation process, and the results of the evaluation that identified the ESBWR non-safety systems that will be subject to RTNSS. The ESBWR RTNSS evaluation determined that the two offsite electrical power circuits, which are included in the ESBWR design to satisfy General design Criteria 17, Electrical Power Systems, do not meet the criteria for RTNSS. The two offsite electrical power circuits included in the ESBWR design will be maintained in accordance with licensee controlled programs.

DCD Impact

No DCD changes will be made in response to this RAI supplement.

RAI 16.2-62, Supplement 2

Justify not including TS requirements (LCO, Applicability, Actions, and Surveillance) for ac circuits in the Regulatory Treatment of Non-Safety Systems (RTNSS) program.

GEH Response

In response to Supplement 1 of this RAI, justification was provided for not including two offsite electrical power circuits in the Regulatory Treatment of Non-Safety Systems (RTNSS) program; i.e., the Availability Controls Manual (ACM) in DCD Chapter 19, Appendix 19ACM. Supplement 2 will address the role of the Plant Investment Protection (PIP) buses (i.e., nonsafety-related "ac circuits") in the standby diesel generator support of the Fuel and Auxiliary Pools Cooling System (FAPCS) availability in the ACM.

The PIP nonsafety-related buses feed nonsafety-related loads generally required to remain operational at all times, including when the unit is shut down. In addition, the PIP nonsafety-related buses supply AC power to the safety-related buses. The PIP nonsafety-related buses are backed up by a separate standby onsite AC power supply system connected to each PIP bus. These buses are also capable of being powered from the alternate preferred power source (i.e., reserve auxiliary transformer [RAT]), through an auto-bus transfer, in the event that the normal preferred power source is unavailable.

The PIP buses provide a support function for FAPCS, as shown in DCD Table 19A-2. As discussed in DCD Chapter 19, Appendix 19A, RTNSS support systems are not provided with availability controls. The ACM definition of "Available" mirrors the Technical Specification definition of "Operable" which requires (in part) the necessary support systems be capable of supporting the component availability. As such, discovery of degradations in the "ac circuits" (e.g., PIP bus) supporting the availability of the FAPCS function is evaluated for impact on compliance with the ACM required availability.

Additionally, the ACM definition of "Available" includes the provision for either "normal or emergency electrical power." In the event that one standby diesel generator required by ACLCO 3.8.2, "Standby Diesel Generators - Shutdown," is unavailable, Action A requires restoration within 14 days. However, if the PIP bus remains energized from offsite power, the "normal" power provision of the definition would allow the associated FAPCS train to remain "Available." Recognizing that the redundant FAPCS train could be unavailable in this condition, a new Required Action is being included in ACLCO 3.8.2 to verify the redundant FAPCS remains available when one standby diesel generator is inoperable. This action mirrors similar action in the Standard Technical Specifications for inoperable diesel generators. The Completion Time of "24 hours" is consistent with the time provided for both trains of FAPCS unavailable.

Only one standby diesel generator and FAPCS train is required in MODES 1, 2, 3, and 4 (refer to ACLCOs 3.7.2 and 3.8.1). Therefore, the Required Action added to ACLCO 3.8.2 is not applicable to ACLCO 3.8.1. However, ACLCO 3.8.1 will be clarified to require the one standby diesel generator to be associated with the FAPCS train required by ACLCO 3.7.2. Concurrent with this change the Completion Time for ACLCO 3.7.2, Action A (One FAPCS train unavailable) is revised to "14 days" consistent with the time provided for the standby diesel generator unavailability.

As a final note, ACLCO 3.0.6 is a generic provision (mirroring Technical Specification LCO 3.0.6) for the situation where a supported system ACLCO is not met solely due to a support

system ACLCO not being met. This provision is included in the ACM for consistency in approach and philosophy with Technical Specifications; however, there are no explicit support systems beyond the case discussed above for the standby diesel generator. The standby diesel generator is a special case in that the definition of "Available" allows an alternate support system ("normal electrical power"); thereby necessitating the above discussed changes. ACLCO 3.0.6 is proposed to remain included as a guiding philosophy.

DCD Impact

DCD Chapter 19, Appendix 19ACM will be revised as shown in Enclosure 2.

Enclosure 2

MFN 06-431, Supplement 8

DCD Chapter 19, Appendix 19ACM Revisions

For RAI Number 16.2-62 S02

ACM 3.7 PLANT SYSTEMS

AC 3.7.2 Fuel and Auxiliary Pools Cooling System (FAPCS) - Operating

ACLCO 3.7.2 One Fuel and Auxiliary Pools Cooling System (FAPCS) train shall be AVAILABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required FAPCS train unavailable.	A.1 Restore required FAPCS train to AVAILABLE status.	~~7~~ 14 days
B. Required Action and associated Completion Time not met.	B.1 Enter ACLCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
ACSR 3.7.2.1	Verify that each manual, power-operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in its correct position is in the correct position or can be aligned to the correct position.	31 days

ACM 3.8 ELECTRICAL POWER SYSTEMS

AC 3.8.1 Standby Diesel Generators - Operating

ACLCO 3.8.1 One standby diesel generator associated with the FAPCS train required by ACLCO 3.7.2, "Fuel and Auxiliary Pools Cooling System (FAPCS) - Operating," shall be AVAILABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required standby diesel generator unavailable.	A.1 Restore required standby diesel generator to AVAILABLE status.	14 days
B. Required Action and associated Completion Time not met.	B.1 Enter ACLCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
ACSR 3.8.1.1	Verify that the fuel oil volume in the required standby diesel generator fuel tank is ≥ {[ ] I ([ ] gal}.	31 days
ACSR 3.8.1.2	Verify that the required standby diesel generator starts and operates at ≥ [4000] kw for ≥ 1 hour.	92 days

ACM 3.8 ELECTRICAL POWER SYSTEMS

AC 3.8.2 Standby Diesel Generators - Shutdown

ACLCO 3.8.2 Two standby diesel generators shall be AVAILABLE.

APPLICABILITY: MODES 5 and 6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One standby diesel generator unavailable.	A.1 Verify redundant Fuel and Auxiliary Pools Cooling System (FAPCS) train is AVAILABLE	24 hours
	AND	
	A.2 Restore standby diesel generator to AVAILABLE status.	14 days
B. Two standby diesel generators unavailable.	B.1 Restore one standby diesel generator to AVAILABLE status.	24 hours