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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 97 Related to ESBWR Design Certification Application – Technical Specifications – RAI Number 16.2-124**

Enclosure 1 contains GE's response to the subject NRC RAI transmitted via 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
Project Manager, ESBWR Licensing

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NRO

References:

1. MFN 07-292, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 97 Related to ESBWR Design Certification Application,* May 10, 2007

Enclosures:

1. MFN 07-306 – Response to Portion of NRC Request for Additional Information Letter No. 97 Related to ESBWR Design Certification Application – Technical Specifications – RAI Number 16.2-124

cc:	AE Cubbage	USNRC (with enclosures)
	DH Hinds	GE (with enclosures)
	RE Brown	GE (w/o enclosures)
	eDRFs	0067-6418

Enclosure 1

MFN 07-306

Response to Portion of NRC Request for

Additional Information Letter No. 97

Related to ESBWR Design Certification Application

- Technical Specifications -

RAI Number 16.2-124

NRC RAI 16.2-124

SR 3.8.3.6 requires battery capacity verification every 60 months and 12 months when battery shows degradation or has reached 85% of expected life. IEEE Std. 1188- 2005, recommends that the performance test interval should not be greater than 25% of the expected service life or two years, whichever is less. Provide basis for not following IEEE Std 1188- 2005.

GE Response

GE will revise the frequency for Surveillance Requirement (SR) 3.8.3.6 to require verification of battery capacity every "24 months AND 12 months when the battery shows degradation or has reached 85% of the expected life." This frequency is consistent with the recommendations for performance testing in Section 6.3 of IEEE Standard 1188-2005, "Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid Batteries for Stationary Applications," for a battery with an expected service life of 20 years, as specified for the ESBWR in DCD 3.8.2.1.1.

DCD Impact

DCD Tier 2, Chapters 16 and 16B, Revision 4, will include the following changes:

Chapter 16, Specification 3.8.3 Changes:

SURVEILLANCE		FREQUENCY
SR 3.8.3.6	Verify each required battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test {or a modified performance discharge test}.	24~~60~~ months AND 12 months when battery shows degradation or has reached 85% of the expected life

Chapter 16B, Specification 3.8.3 Bases Changes:

SR 3.8.3.6

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.3.6{; however, only the modified performance

discharge test may be used to satisfy the battery service test requirements of SR 3.8.1.3}.

{A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will ~~often~~ confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

It may consist of just two rates; for instance, the one minute rate for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test must remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.}

{The acceptance criteria for this Surveillance are consistent with IEEE-1188 (Ref. 1) {and IEEE-485 (Ref. 5)}. Acceptance criteria involve demonstrating the capacity of each cell exceeds 90%, and the capacity of all cells are within 10% of the average cell performance.

The Surveillance Frequency for this test is normally 24~~60~~ months. If the battery shows degradation, or if the battery has reached 85% of its expected life Surveillance Frequency is reduced to 12 months. Degradation is indicated, according to IEEE-1188 (Ref. 1), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is 90% of the manufacturer's rating. All these Frequencies are consistent with the recommendations in IEEE-1188 (Ref. 1).