GE Energy

James C. Kinsey
Project Manager, ESBWR Licensing

PO Box 780 M/C J-70
Wilmington, NC 28402-0780
USA

T 910 675 5057
F 910 362 5057
jim.kinsey@ge.com

MFN 07-309

Docket No. 52-010

June 13, 2007

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 65 Related to ESBWR Design Certification Application – Electrical Power - RAI Number 8.3-47**

Enclosure 1 contains GE's response to the subject NRC RAI 8.3-47 transmitted via the Reference 1 letter.

If you have any questions or require additional information, please contact me.

Sincerely,

Kathy Sedney for

James C. Kinsey
Project Manager, ESBWR Licensing

D068

NRO

Reference:

1. MFN 06-353, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 65 Related to ESBWR Design Certification Application,* September 26, 2006

Enclosure:

1. MFN 07-309, Response to Portion of NRC Request for Additional Information Letter No. 65 Related to ESBWR Design Certification Application – Electrical Power - RAI Numbers 8.3-47

cc: AE Cubbage USNRC (with enclosures)
RE Brown GE/Wilmington (with enclosures)
GB Stramback GE/San Jose (with enclosures)
eDRF 0000-0068-5887

Enclosure 1

MFN 07-309

Response to Portion of NRC Request for

Additional Information Letter No. 65

Related to ESBWR Design Certification Application

RAI Number 8.3-47

NRC RAI 8.3-47

"Battery room environment Class 1E Battery Rooms.

Reviewer Summary: Describe the environment of the Class 1E battery rooms during and following a design basis event."

GE Response

The safety-related (Class 1E) battery rooms were evaluated for all applicable design base accident events. The design base accident that is described in this RAI represents the most unfavorable conditions to the battery rooms. The event is a High Energy Line Break (HELB) with simultaneous loss of off-site and on-site AC, with no credit for the non-safety diesel generators.

Only one battery room is presented in this RAI response. Of the four battery rooms, the room with the most unfavorable conditions, due to HELB boundary conditions that are adopted for those rooms bordering rooms affected by HELB, the maximum heat load with a 10% margin during a HELB with loss of AC power is presented in this RAI. Therefore the conditions of the room presented in this RAI ensures that no room temperature of the other rooms exceed the room presented.

The computer code that was used to evaluate the battery room is CONTAIN 2.0, which was sponsored by the USNRC.

The initial temperature for the battery rooms was analyzed at 30°C (86°F), which is 8°C (14°F) higher than the expected normal operating temperature.

For analysis purposes the following assumptions were made for battery heat loads. During the first 2 hours of a DBA event the heat load was conservatively analyzed at 7200W (24567Btu/h) above the expected operating heat load even though there are no nonsafety-related loads on the safety-related batteries. From 2 hours to 72 hours the heat load was conservatively analyzed at 6000W (20473Btu/h) above the expected operating heat loads. The assumptions that were made are conservative and therefore the analysis is conservative.

The analysis shows that the change in temperature over the 72 hour period during and after a DBA event is 13.5°C (24°F). The maximum temperature in the battery rooms during a HELB and loss of AC power during the first 72-hour period, when no HVAC cooling is available, is 43.5°C (110°F). It is assumed that after 72 hours normal HVAC cooling is available and the temperature decreases.

With the conservative assumptions used in the analysis the environmental conditions of the battery rooms do not exceed the maximum allowable equipment qualification temperature

presented in DCD Table 3H-9. The radiation environmental qualification conditions are presented in DCD Table 3H-6.

DCD Impact

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