

GE-Hitachi Nuclear Energy Americas LLC

James C. Kinsey
Project Manager, ESBWR Licensing

PO Box 780 M/C A-55
Wilmington, NC 28402-0780
USA

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

MFN 06-309
Supplement 3

Docket No. 52-010

July 16, 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. 54 –Auxiliary Systems– RAI Numbers 9.1-2 S01 and
9.1-25 S01**

Enclosure 1 contains GEH's response to the subject NRC RAI transmitted via Reference 1 which is a supplemental request to the RAIs transmitted via Reference 2. The original RAI response was submitted to the NRC via Reference 3.

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

Sincerely,

James C. Kinsey for

James C. Kinsey
Project Manager, ESBWR Licensing

DKB

MLD

Reference:

1. E-mail dated May 3, 2007, from L. Quinones (NRC) to P. Jordan (GEH).
2. MFN 06-302, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 54 Related to the ESBWR Design Certification Application*, August 23, 2006.
3. MFN 06-309, Letter from GE to U.S. Nuclear Regulatory Commission, *Response to Portion of NRC Request for Additional Information Letter 54 Related to ESBWR Design Certification Application – Auxiliary Systems – RAI Numbers 9.1-1 through 9.1-26 and Amended Response to RAI Number 2.4-23 from NRC RAI Letter 32*

Enclosure:

1. MFN 06-309, Supplement 3 – Response to Portion of NRC Request for Additional Information Letter No. 54 – RAI Numbers 9.1-2 S01 and 9.1-25 S01.

cc: AE Cabbage USNRC (with enclosure)
BE Brown GEH/Wilmington (with enclosure)
LE Fennern GEH/San Jose (with enclosure)
GB Stramback GEH/San Jose (with enclosure)
eDRF: 0000-0070-0894

Enclosure 1

**MFN 06-309
Supplement 3**

**Response to Portion of NRC Request for
Additional Information Letter No. 54
Related to ESBWR Design Certification Application**

Auxiliary Systems

RAI Numbers 9.1-2 S01 and 9.1-25 S01

For historical purposes, the original text and GE responses to RAIs 9.1-2 and 9.1-25 are included.

NRC RAI 9.1-2

DCD Tier 2, Section 9.1.5.5 states that the reactor building (RB) crane is interlocked to prevent movement of heavy loads over the fuel pools. However, Section 9.1.1 states that, should it become necessary to move major loads along or over the pools, administrative controls require that the load be moved over the empty portion of the buffer pool and avoid the area of the new fuel racks. Describe the administrative controls governing bypassing of the RB crane interlocks and handling of heavy loads over the buffer pool.

GE Response

This will remain as a COL Holder item. Heavy load handling safe load paths and routing plans, including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance, will be provided as part of the COL Holder response.

DCD Impact

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

Supplement received via e-mail dated 5/3/07 from L. Quinones (NRC) to P. Jordan GEH):

NRC RAI 9.1-2 S01

The response is not adequate. The information of COL Holder items will be available for review only after the license is issued. This is not acceptable because the staff will not be able to conclude whether safe load paths, routing plans, and administrative controls satisfy the regulatory requirements at the time when the license is issued. The staff has determined that the referenced COL Holder item should be revised to a COL applicant item.

GEH Response

As discussed in the June 13, 2007 DCWG meeting with the NRC staff, the COL applicant should provide an approach regarding compliance with safe load paths guidance recommended in section 5.1.1 of NUREG-0612. Safe load paths should be defined for movement of heavy loads to minimize the potential for a load drop on irradiated fuel in the reactor vessel or spent fuel pool or on safe shutdown equipment. Paths should be defined clearly in procedures and equipment layout drawings but neither procedures nor drawings should be provided in the COLA. The COL applicant should provide a description of the program governing heavy loads handling and the schedule for implementation.

DCD Impact

DCD Tier 2, Section 9.1.6 is to be revised as noted in the attached markup.

NRC RAI 9.1-25

DCD Tier 2, Section 9.1.6 states that the COL Holder shall develop fuel handling procedures and administrative controls. In order to address review guidance contained in paragraphs III.1 and II.6 of SRP Section 9.1.4, Revision 2, July 1981, describe the necessary scope of the administrative controls with regard to restrictions on loads handled over stored fuel and monitoring light load handling system components for degradation.

GE Response

Administrative controls are applied to the tabulated listing of the cranes and refueling equipment provided in Table 9.1-6.

The development of the site specific procedures to govern these administrative controls is a COL Holder action item. At this stage of design the documentation [specifications, drawings, manuals, procedures, etc] is not available until completion of the procurement activities for the respective equipment. Additionally, the QA program as well as the training and control programs can be unique to a COL Holder. As a result, the COL Holder shall provide the following information:

- 1) Load handling system operating and equipment maintenance procedures;
- 2) Load handling system and equipment maintenance procedures and/or manuals;
- 3) Load handling system and equipment inspection and test plans, NDE, visual, etc.;
- 4) Load handling safe load paths and routing plans;
- 5) QA program to monitor and assure implementation and compliance of load handling operations and controls; and
- 6) Operator qualifications, training and control program.

DCD Impact

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

Supplement received via e-mail dated 5/3/07 from L. Quinones (NRC) to P. Jordan GEH):

NRC RAI 9.1-25 S01

The response is not adequate. The information of COL Holder items will be available for review only after the license is issued. This is not acceptable because the staff will not be able to conclude whether safe load paths, routing plans, and administrative controls satisfy the regulatory requirements at the time when the license is issued. The staff has determined that the referenced COL Holder item should be revised to a COL applicant item.

GEH Response

See response to RAI 9.1-2 S01.

DCD Impact

DCD Tier 2, Section 9.1.6 is to be revised as noted in the attached markup.

9.1.6 COL Information

9.1.6.1 Dynamic and Impact Analyses of Fuel Storage Racks

The COL Holder shall provide the NRC confirmatory dynamic and impact analyses of the fuel storage racks. Refer to Subsections 9.1.1.1, and 9.1.2.4, under subheading Dynamic and Impact Analysis.

The COL Holder shall confirm the fuel storage racks are designed to provide sufficient natural convection coolant flow through the rack and fuel to remove decay heat without reaching excessive water temperatures (100°C; 212°F), refer to Subsections 9.1.1.1 and 9.1.2.5.

9.1.6.2 Fuel Storage Racks Criticality Analysis

The COL Holder shall provide the NRC confirmatory criticality analysis as required by *Criticality Control* refer to Subsections 9.1.1.1 and 9.1.1.2).

9.1.6.3 Fuel Racks Load Drop Analysis

The COL Holder shall provide the NRC confirmatory load drop analysis as required by Subsection 9.1.2.4.

9.1.6.4 Fuel Handling Operations ~~Handling of Light Loads (Fuel Handling)~~

The COL applicant will describe the programs that address the following: ~~Holder shall provide the NRC the following for confirmatory review:~~

- Fuel handling procedures.
- Maintenance manuals and procedures for equipment used to move fuel.
- Equipment inspection and test plans for equipment used to move fuel.
- Personnel qualifications, training, and control programs for fuel handling personnel.
- QA programs to monitor, implement, and assure compliance to fuel handling operations.

9.1.6.5 Handling of Heavy Loads

The COL applicant will provide a description of the program governing heavy loads handling, and the schedule for implementation, that addresses the following: ~~Holder shall provide the NRC the following for confirmatory review:~~

- Heavy loads and heavy load handling equipment outside the scope of loads described in the referenced certified design, and the associated heavy load attributes (load weight and typical load path) ~~A listing of all heavy loads, heavy load handling equipment, and their associated heavy load attributes;~~
- Requirements for heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks not described in the referenced certified design and safety devices and procedures to assure safe load path compliance ~~Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance;~~

- Summary description of requirements to develop heavy load handling equipment maintenance manuals and procedures ~~Heavy load handling equipment maintenance manuals and procedures;~~
- Requirements for heavy ~~Heavy~~ load handling equipment inspection and test plans;
- Requirements for heavy ~~Heavy~~ load personnel qualifications, training, and control programs; ~~and~~
- Quality Assurance (QA) programs requirements to monitor, implement, and ensure ~~assure~~ compliance with ~~to~~ the heavy load handling program ~~operations.~~

9.1.7 References

None.