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**Subject: Response to Portion of NRC Request for Additional Information
Letter No. 231 - Related To ESBWR Design Certification
Application – RAI Number 14.2-24 Supplement 1**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by the Reference 1 NRC letter. GEH response to RAI Number 14.2-24 Supplement 1 is addressed in Enclosure 1.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

DO68
NRO

Reference:

1. MFN 08-628, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request For Additional Information Letter No. 231 Related To ESBWR Design Certification Application*, dated August 5, 2008.

Enclosure:

1. MFN 08-826 – Response to Portion of NRC Request for Additional Information Letter No. 231 - Related To ESBWR Design Certification Application – RAI Number 14.2-24 S01

cc: AE Cabbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0091-8852

Enclosure 1

MFN 08-826

**Response to Portion of NRC Request for
Additional Information Letter No. 231
Related to ESBWR Design Certification Application
RAI Number 14.2-24 S01**

NRC RAI 14.2-24 S01

In ESBWR DCD Revision 5 Subsection 14.2.8.2.10, the applicant is requested to discuss the development of the test criteria with consideration of the potential adverse flow effects on piping systems recommended in RG 1.20 as per commitment provided in response to RAI 14.2-24.

In RAI 14.2-24, the staff requested the DC applicant to discuss the expansion, vibration and dynamic effects test programs for conformance with applicable RGs including RG 1.20. In response to this RAI, dated March 26, 2007, the DC applicant stated that the development of the test criteria will require consideration of the potential adverse flow effects on piping systems recommended in RG 1.20 and in SRP 3.9.2 and SRP 3.9.5. The applicant did not request any exceptions to the regulatory positions recommended in the applicable RGs. In addition, nuclear power plant operating experience has revealed the potential for adverse flow effects from vibration caused by hydrodynamic loads and acoustic resonance within reactor coolant, steam, and feedwater systems as well as reactor internal components such as steam dryers. However, the system vibration test for the piping systems discussed in ESBWR DCD Revision 5 Subsection 14.2.8.2.10 does not address these potential adverse flow effects. Therefore, the DC applicant is requested to describe the elements of the program that are designed to address potential adverse flow effects on safety-related piping and components in these systems.

GEH Response

The following startup measurements, instrumentations and analyses address the potential adverse flow effects on safety-related piping and components in these systems applicable to Regulatory Guide 1.20 requirements:

The details of main steam line acoustic monitoring testing were provided in the response to RAI 3.9-134 (MFN 08-322 April 7, 2008).

Vibration sensors on susceptible valve operators provide on-line condition monitoring to alert potential valve operator failure due to acoustic resonance. Normally sensors are installed at locations where higher acceleration responses due to dynamic loads, such as seismic and other building filtered loads are expected. The measured values will be compared with manufacturer's or IEEE allowable limits.

Instrumentation inside the safety-related flow systems are evaluated for responses due to vortex shedding and other potential acoustic effect. The thermal well, velocity and pressure sensors in the feedwater and main steam pipes are examples. Similarly, for components in nonsafety-related systems where damage of such instrumentations might be carried into safety-related systems, and impact the performance of components such as isolation or check valves, an evaluation will also be performed. The analysis will be performed in accordance with ASME Appendix N. The calculated stresses will meet American National Standard, ANSI/ASME OM-S/G criteria.

The pre-operation and startup test requirements have been provided in the response to RAI 3.9-70 (MFN 07-234 April 24, 2007). The test hold points are described in the response to RAI 3.9-68 (MFN 07-234 April 24, 2007).

DCD Impact

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