

Enclosure 1

MFN 13-046

Response to RAI 3.9-292 S01

Public

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NRC RAI 3.9-292 S01

Question Summary:

The staff's question is in regard to GEH's response to RAI 3.9-292.

Full Text:

In its draft response to RAI 3.9-292 (MFN 13-007, February 19, 2013), GEH described the approach for the ESBWR steam dryer structural evaluation in NEDE-33313P (Revision 3, February 2013), "ESBWR Steam Dryer Structural Evaluation." In Section 1.0, "Introduction," of NEDE-33313P, GEH provides an outline of the approach that does not include a demonstration of the adequacy of the fatigue analysis for the ESBWR steam dryer. The NRC staff requests that GEH revise NEDE-33313P to include a description of the successful application of the steam dryer structural evaluation, such as performed for the steam dryer in the Grand Gulf Nuclear Station.

GEH Response:

GEH provided an example of the implementation of the ESBWR steam dryer methodology using PBLE01 Method 1 as applied to the Grand Gulf Nuclear Station (GGNS) replacement steam dryer at extended power uprate (EPU) conditions in revisions to NEDE-33408P. The example implementation includes the fatigue analysis to develop the end-to-end bias and uncertainties as well as consideration of lessons learned from issues identified during analysis of steam dryer data.

Revised NEDE-33313P, Section 1.0, "Introduction," refers to the NEDE-33408P example implementation of the flow-induced vibration methodology. In addition, Section 10 of revised NEDE-33313P explains that a COLA applicant could refer to the GGNS example in NEDE-33408P or to an ESBWR steam dryer that has been subject to the predictive analysis process and successful startup/power ascension testing.

Refer to the following sections of the engineering reports for the statements regarding the methodology implementation example:

- NEDE-33408P – Section 4.5 (including subsections), "Example Implementation of Methodology" [Reference 1].
- NEDE-33408P – Section 5.0, "Conclusions" [Reference 1].
- NEDE-33313P – Section 1.0, "Introduction" [Reference 2].
- NEDE-33313P – Section 10, "Comprehensive Vibration Assessment Program for the ESBWR Steam Dryer" (see Section 10.2, Item (b)) [Reference 2].

In addition, NEDE-33312P, "ESBWR Steam Dryer Acoustic Load Definition," provides information on developing the flow-induced vibration loads for the ESBWR steam dryer. NEDE-33312P is revised and attached to this response.

Licensing Basis Changes

See the referenced Engineering Reports for the licensing basis changes to those reports that relate to actions addressing the NRC request in RAI 3.9-292 S01.

Attached to this response is NEDE-33312P, ESBWR Steam Dryer Acoustic Load Definition," Revision 4, September 2013. See the change list in NEDE-33312P for specific changes and related RAI responses.

References

1. MFN 12-043, Revision 2, Letter from GEH to USNRC, Subject: NRC Requests for Additional Information Related to the Audit of the Economic Simplified Boiling Water Reactor (ESBWR) Steam Dryer Design methodology Supporting Chapter 3 of the ESBWR Design Control Document – Response for RAI 3.9-269, Supplement 1, dated August 9, 2013.
2. MFN 13-007, Revision 1, Letter from GEH to USNRC, Subject: NRC Requests for Additional Information Related to the Audit of the Economic Simplified Boiling Water Reactor (ESBWR) Steam Dryer Design Methodology Supporting Chapter 3 of the ESBWR Design Control Document – GEH Response to RAI 3.9-292 S02 and Revised Engineering Report - NEDE-33313P, ESBWR Steam Dryer Structural Evaluation, Revision 4, dated September 26, 2013.