

From: Wang, Alan
Sent: Friday, May 20, 2011 10:11 AM
To: 'MILLAR, DANA'; Jerry Burford
Cc: Lent, Susan; Burkhardt, Janet
Subject: Grand Gulf Extended Power Uprate Mechanical and Civil Engineering Branch Second Round Request for Information (ME4679)

Dana and Jerry,

By letter dated September 8, 2010 (Agencywide Documents Access and Management System, Accession No. ML102660403), Entergy Operations, Inc. (Entergy, the licensee), submitted a request to amend the Facility Operating License No. NPF-29 for Grand Gulf Nuclear Station, Unit 1 (GGNS). The licensee proposed a license amendment request (LAR) for an extended power uprate (EPU) to increase the maximum reactor core power operating limit from 3898 megawatts thermal (MWt) to 4408 MWt. The U.S. Nuclear Regulatory Commission (NRC) staff has determined that the following additional information is needed for the NRC staff to complete our review of this amendment. This request for additional information (RAI) was discussed with Mr. Jerry Burford of your staff on April 19, 2011, and it was agreed that a response would be provided within 30 days of receipt of this E-mail. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1445 or via e-mail at Alan.Wang@nrc.gov.

The following are second round RAIs related to your February 23, 2011, response to the Mechanical and Civil Engineering Branch review:

RAI 1

In response to request for additional information (RAI) 1, Reference 1 indicates that the turbine stop valve closure (TSVC) fluid transient loads, used in support of the pipe stress analyses performed for the GGNS EPU, were generated using the STEHAM computer code. Section 3.9.1.2.1.3.3 of the GGNS Updated Final Safety Analysis Report (UFSAR) indicates that the TSVC loads were generated using the TSFOR code, for the current licensed thermal power (CLTP) level. Please provide justification for the use of the STEHAM code in lieu of the TSFOR code, given that the latter is part of the current licensing basis for GGNS. This justification should include results of benchmarking performed to compare the results of the STEHAM code against the TSFOR code, to support the use of the former at GGNS. Additionally, provide any bases for the regulatory acceptance of the STEHAM code, if the STEHAM code has previously been utilized in support of licensing actions which required NRC staff approval.

RAI 2

In response to RAI 3.c, it was stated in Reference 1 that the GGNS feedwater (FW) piping experiences no percent-increase in stresses as a result of the proposed EPU implementation at GGNS. With respect to the response to RAI 3.c, please address the following:

- a) Please confirm that the piping stress analyses performed in support of the proposed EPU implementation at GGNS were carried out at the limiting conditions for operation of these piping systems. This should include a confirmation that the FW system has been evaluated at the highest temperature at which it is expected to operate under EPU conditions (i.e., confirm that the proposed EPU at GGNS will be accomplished with no change in the maximum operating temperature).

- b) The response to RAI 3.c states that the FW flow at GGNS will increase by approximately 13.1% following EPU implementation. Please provide a quantitative summary of the effects which the higher FW flow has on the occasional loads considered in the FW pipe stress analyses, including water hammer and other transients associated with higher FW flow. As part of this response, please specify which American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code load combinations, for FW pipe stresses and pipe supports, are affected by FW flow transients.
- c) Please confirm that these increased occasional loads, discussed in RAI 2.b, above, were considered in the pipe stress re-analyses, including affected pipe supports, in accordance with the provisions of the design code of record applicable to the GGNS FW piping and supports.
- d) Please confirm that the increased loading resulting from FW flow transients at EPU conditions were developed in accordance with the methodologies outlined in Section 3.5 of the constant pressure power uprate licensing topical report (CLTR or Reference 2). If these loads were not developed in accordance with the NRC-approved methodologies discussed in the CLTR, please discuss the methodologies used to evaluate the FW flow transients and provide the regulatory bases for the acceptance of a methodology which is not described in the CLTR.

References

- 1) Letter from M. A. Krupa, Entergy Operations, Inc., to NRC Document Control Desk, "Request for Additional Information Regarding Extended Power Uprate – Grand Gulf Nuclear Station, Unit 1 – Docket No. 50-416 – License No. NPF-29," dated February 23, 2011. (ADAMS Accession No.: ML110540545)
- 2) GE Nuclear Energy, "Constant Pressure Power Uprate," Licensing Topical Report NEDC-33004P-A, Revision 4, Class III (Proprietary), July 2003; and NEDO-33004, Class I (Non-proprietary), July 2003.

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