Entergy

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GNRO-2015/00095

December 14, 2015

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Amended Response to Request for Additional Information (RAI) 4.2.3-2, dated October 28, 2015
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCES:
1. Entergy Letter GNRO-2014/00076, "Response to Request for Additional Information (RAI) Set 51" dated November 6, 2014
2. U.S. NRC Letter, "Request for Additional Information for the Review of Grand Gulf Nuclear Station, License Renewal Application, Set 52" dated April 6, 2015 (GNRI-2015/00020)
3. Entergy Letter GNRO-2015/00034, "Response to Request for Additional Information (RAI) Set 52" dated May 20, 2015
4. U.S. NRC Letter, "Summary of Telephone Conference Call Held On June 18, 2015, Between The U.S. NRC And Entergy Concerning Request For Additional Information Responses, Pertaining To The Grand Gulf Nuclear Station License Renewal Application (TAC NO. ME7493)
5. Entergy Letter GNRO-2015/00048, "Response to License Renewal Amendment Request for Additional Information (RAI) Set 47, Question 4.2.1-2c (5) (b)", dated July 29, 2015
6. Entergy Letter GNRO-2015/00055, "Responses to Request for Additional Information (RAI) Set 52, RAIs 3.0.3-1-FWS-2a and 3.0.3-2b", dated August 19, 2015
7. U.S. NRC Letter, "Requests for Additional Information for the Review of the Grand Gulf Nuclear Station License Renewal Application (TAC NO. ME7493) - SET 53", dated October 28, 2015 (GNRI-2015/00125)
8. Entergy Letter GNRO-2015/00079, "Responses to Request for Additional Information (RAI) Set 53", dated November 23, 2015

Dear Sir or Madam:

Entergy Operations, Inc. is providing, in the Attachment, an amended response to the Request for Additional Information 4.2.3-2 response provided in letter GNRO-2015/00079 dated November 23, 2015.

This letter contains no new commitments.

If you have any questions or require additional information, please contact James Nadeau at 601-437-2103.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 14th day of December, 2015.

Sincerely,

KJM/ras

Attachment: Amended Response to Requests for Additional Information (RAI) 4.2.3-2

cc: with Attachment

U.S. Nuclear Regulatory Commission
ATTN: Ms. Rebecca Richardson, NRR/DLR
Project Manager
Office of License Renewal
Mail Stop O-11 F1
Washington, DC 20555

cc: without Attachment

U.S. Nuclear Regulatory Commission
ATTN: Mr. Mark Dapas
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
1600 East Lamar Boulevard
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U.S. Nuclear Regulatory Commission
ATTN: Mr. A. Wang, NRR/DORL
Mail Stop OWFN/8 G14
11555 Rockville Pike
Rockville, MD 20852-2378

NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

Attachment to

GNRO-2015/00095

Amended Response to Requests for Additional Information (RAI) 4.2.3-2

RAI 4.2.3-2

Background

By letter dated July 29, 2015 (ADAMS Accession No. ML15212A747), the applicant updated the upper shelf energy (USE) analysis for GGNS, which has been identified as a TLAA for the LRA. The updated USE analysis (i.e., LRA Table 4.2-2 and Note 10 of this table) identifies that the applicant performed an equivalent margins analysis (EMA) for a specific plate component (made from Heat No. C2779-1) in the third shell ring of the reactor pressure vessel (RPV). The applicant identifies that the EMA was needed because the applicant could not sufficiently demonstrate that the USE value of the component would remain above or equal to 50 ft-lb (68 J) at the end of the period of extended operation.

Issue

The letter of July 29, 2015, did not include the EMA as an enclosure or reference the plant records containing the EMA and the NRC safety evaluation issued in approval of the EMA. Therefore, the staff cannot tell whether the referenced EMA was previously approved by the staff. Additionally, the submittal did not provide the USE value for the plate made from Heat No. C2779-1 at 54 effective full power years (EFPY) in the revision of LRA Table 4.2-2.

Request

(1) Clarify whether the EMA for the referenced RPV shell plate (as referenced in Note 10 of LRA Table 4.2-2) was submitted and approved by the NRC. If so, identify the date of the staff's safety evaluation (and if available, the ADAMS Accession No. or NRC microfiche Accession No. associated with the safety evaluation) that approved the EMA for incorporation into the licensing basis. Identify the lower bound end-of-life USE value that was approved in the EMA for BWR RPV plate materials. (2) Identify the USE value for the shell plate made from Heat No. C2779-1 at 54 EFPY.

RAI 4.2.3-2 Response

(1) The reference to an equivalent margin analysis (EMA) in Note 10 of LRA Table 4.2-2 refers to a verification performed to show that the referenced RPV shell plate remains qualified for use through the PEO in accordance with BWRVIP-74-A Table B-4, Equivalent Margin Analysis Plant Applicability Verification Form for BWR/3-6 Plate. BWRVIP-74-A Appendix B presents an EMA for the upper shelf energy that can be used generically for all types of RPV plate materials and welds in all BWR plants to bound the license renewal period of 54 effective full power years (EFPY).

The transverse USE value for the shell plate made from Heat No. C2779-1 at 54 EFPY is 47 ft-lbs. BWRVIP-74-A provides a bounding Charpy USE in the transverse direction for Grand Gulf-type plants (BWR/6) of 35 ft-lbs. Since the GGNS plate projected USE of 47 ft-lbs is greater than the bounding value of 35 ft-lbs, this material remains qualified.

No other analyses were performed related to the referenced RPV shell plate; therefore no EMA was submitted and approved by the NRC apart from NRC approval of BWRVIP-74-A. The phrase "a USE EMA was performed" in Note 10 of LRA Table 4.2-2 is revised. This approach complies with Applicant Action Item 10 of the staff's safety evaluation for BWRVIP-74-A dated October 18, 2001, included as Appendix C of BWRVIP-74-A.

(2) The USE value for the shell plate made from Heat No. C2779-1 at 54 EFPY is 47 ft-lbs

Note 10 of LRA Table 4.2-2 is revised as follows. Deletions are lined through. Additions are underlined.

Table 4.2-2

GGNS Upper Shelf Energy Data for 54 Effective Full-Power Years

Notes to Table 4.2-2:

[10] Due to the lack of sufficient unirradiated data, the unirradiated USE is based on 50% shear results equal to 52 ft-lbs. Reducing this value by 9.5% results in a 54 EFPY USE less than 50 ft-lbs. ~~Therefore, a USE EMA was performed. Considering the necessary adjustment resulting from the A1224-1 ISP results, the reduction remains at 9.5%. As this is less than the maximum permitted reduction of 23.5% from BWRVIP-74-A, this material remains qualified~~.

USE is projected to be reduced by 9.5% over the license period of 0 EFPY to 54 EFPY. Considering the necessary adjustment resulting from the A1224-1 ISP results, the reduction remains at 9.5% resulting in a 54 EFPY USE of 47 ft-lbs. Therefore, EMA methods described in BWRVIP-74-A were applied. Since projected USE at 54 EFPY is greater than the minimum allowable USE of 35 ft-lbs from BWRVIP-74-A, this material remains qualified.