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GNRO-2015/00038

June 11, 2015

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

SUBJECT: Response to Request for Additional Information Regarding Fluence License
Amendment Request, Request for Commitment
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

- REFERENCES:
1. U.S. Nuclear Regulatory Commission Letter, "Requests for Additional Information for the Review of the Grand Gulf Nuclear Station, License Renewal Application," dated August 28, 2013 (Accession No. ML13227A394)
 2. Grand Gulf Nuclear Station Letter, "Response to Requests for Additional Information (RAI) set 47," dated September 23, 2013 in letter GNRO-2013/00069 (Accession No. ML13266A368)
 3. U.S. Nuclear Regulatory Commission Regulatory Guide, Regulatory Guide 1.190, dated March 2001 (Accession No. ML010890301)
 4. Grand Gulf Nuclear Station Letter GNRO-2014/00080, "Application to Revise Grand Gulf Nuclear Station Unit 1's Current Fluence Methodology from 0 EFY Through the End of Extended Operations to a Single Fluence Method," dated November 21, 2014.
 5. Response to Request for Supplemental Information dated February 18, 2015 in letter GNRO-2015/00011 (ADAMS Accession No. ML15049A536).
 6. Request for Additional Information Regarding Fluence License Amendment Request dated April 3, 2015 (GNRI-2015/00041).
 7. Grand Gulf Nuclear Station Letter GNRO-2015/00031, "Response to Request for Additional Information Regarding Fluence License Amendment Request" dated May 8, 2015.

Dear Sir or Madam:

In accordance with the provisions of Section 50.90 of Title 10 Code of Federal Regulations (10 CFR), Entergy Operations, Inc. (Entergy) is submitting response to a Request for Additional Information (RAI) regarding an amendment request to revise the existing license basis for Grand Gulf Nuclear Station (GGNS), Unit 1.

In letter GNRO-2015/00031 dated May 8, 2015, Entergy stated they were currently in discussions with GEH regarding feasibility of taking scrapings and/or installing dosimetry capsules and would provide a response to RAI question 4 in a separate letter within 60 days from the date of the May 8 letter.

RAI question 4 is for the proposed amendment to revise Grand Gulf Nuclear Station, Unit 1's license basis to adopt a single fluence calculation methodology. Response to the RAI is needed to address the Staff's request that GGNS make a Regulatory Commitment to install dosimetry capsules and/or scrapings in order to qualify the 3D fluence method for fluence calculations outside of the beltline region and a second Regulatory Commitment to confirm that future calculated-to-measured (C/M) fluence values at the dosimetry location(s) are reasonably close to one including explicit definition of "reasonably close to one" (e.g. C/M greater than 0.8) and plans to address any substantial disagreements.

Attachment 1 provides responses to Request for Additional Information (RAI) question 4.

This letter contains new commitments which are identified in Attachment 2. If you have any questions or require additional information, please contact Mr. James Nadeau at (601) 437-2103.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 11, 2015.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke.

Sincerely,

KJM/ras

cc: with Attachments

U.S. Nuclear Regulatory Commission
ATTN: Ms. Rebecca Richardson, Project Manager
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cc: without Attachments

U.S. Nuclear Regulatory Commission
ATTN: Mr. Mark Dapas, (w/2)
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Attachment 1

Grand Gulf Nuclear Station

GNRO-2015/00038

**Response to Request for Additional Information
RAI 4**

RAI 4 from April 3, 2015 (reference 6):

In GNRO-2015/00011, Attachment 1, it is stated that "this letter contains no new commitments." However, the response to RAI 1a in the same document states:

Installing dosimetry capsules and/or taking scrapings in specified areas outside of the beltline region would provide dosimetry data for a future benchmark analysis outside of the beltline region. The uncertainty in the fluence calculations at locations above the top of the core is dominated by uncertainty in the water density. Taking scrapings and/or inserting dosimetry in these locations (during future refueling outages) would not only provide benchmarking data, but it would also provide the data needed to check the output from thermal hydraulics codes that can be used in future improvements of the upper region water density modeling.

The NRC staff request that Entergy provide a regulatory commitment to install dosimetry capsules and/or scrapings, to qualify the 3D fluence method for fluence calculations outside of the beltline region. Provide details regarding the plans and schedule for installing dosimetry capsules and/or scrapings including the proposed locations for dosimetry capsule installation.

Also, provide a regulatory commitment to confirm that future calculated-to-measured (C/M) fluence values at the dosimetry location(s) are reasonably close to one including explicit definition of "reasonably close to one" (e.g. C/M greater than 0.8) and plans to address any substantial disagreements.

RAI 4 Response:

Activities are being scheduled to sample the GGNS shroud, top guide, and possibly other internal components such as fuel bundle bail handles in order to obtain a better water density distribution for the 3D TORT model and to benchmark it with dosimetry materials taken from the shroud and top guide. These activities will provide dosimetry data to qualify the MPM 3D Fluence Calculation Method for fluence calculations outside the beltline region. MPM has provided a proposal to identify the locations and material volume for the recommended approximately 15 samples and will detail the exact cut locations and provide details concerning how the samples are to be taken from the GGNS structures. Entergy reserves the right to re-evaluate the area above the active fuel in more detail at a later date.

It has been verified that there is no need to sample the vessel since removal of the clad would lead to corrosion problems, and it is not needed since it is known that there is solid water between the shroud and vessel and this can be accurately modeled in TORT. Since the objective of the work is to benchmark an advanced model of the water density distribution in the steam dome region, samples are needed at locations where spatial variation is not a significant factor and at various transport distances through the steam. If technical evaluation of collecting samples (i.e. drilling holes) from the shroud and/or top guide prohibits sample collection or determines additional actions are required which cannot be performed prior to the 2016 refueling outage, plans will continue to perform those additional actions in order to prepare for sample collection during the 2018 refueling outage.

It is expected that not only will the revised TORT model be substantially improved, but it is also anticipated that it will give calculated-to-measured (C/M) ratios within 20%, as has been achieved in the beltline region.

Entergy commits to identify the sample locations and to schedule collection of samples from outside the beltline region.

Entergy's objective is to have the C/M ratio within 20% for the structures located above the core. This should be achievable with the improved water density data that will be obtained for the steam dome region. Therefore, Entergy commits to the objective, with the expectation that a +/- 20% C/M should be achievable with additional analysis.

Attachment 2

Grand Gulf Nuclear Station

GNRO-2015/00038

List of Regulatory Commitments

LIST OF REGULATORY COMMITMENTS

This table identifies actions discussed in this letter for which Entergy commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are **not** commitments.

COMMITMENT	ONE-TIME ACTION	CONTINUING COMPLIANCE	SCHEDULED COMPLETION DATE (if required)
Entergy will identify the outside of the beltline region dosimetry sample locations	✓		October 30, 2015
Entergy will schedule collection of samples from outside the beltline region	✓		December 30, 2015
Entergy will confirm that future C/M fluence values at the dosimetry sample locations are reasonably close to one	✓		November 30, 2016
Entergy will include the definition of "reasonably close to one" regarding C/M fluence values at the dosimetry sample locations	✓		November 30, 2016
Entergy will provide plans to address if future C/M fluence values at the dosimetry sample locations are not reasonably close to one	✓		December 30, 2016