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Subject: REQUEST FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL REVIEW OF WATERFORD STEAM ELECTRIC STATION, UNIT 3
Date: Tuesday, March 28, 2017 4:11:00 PM
Attachments: [image001.png](#)
[Final_WF3_SAMA_Second_Round_RAI_-_3_28_2017.pdf](#)
[image002.png](#)

**UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001**

Mr. Michael R. Chisum
Site Vice President
Entergy Operations, Inc.
Waterford 3
17265 River Road
Killona, LA 70057-3093

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL REVIEW OF WATERFORD STEAM ELECTRIC STATION, UNIT 3 (CAC NO. MF7493)

Dear Mr. Chisum:

The U.S. Nuclear Regulatory Commission (NRC) is conducting an environmental review of Entergy Operations, Inc. (Entergy) application for renewal of the operating license for Waterford Steam Electric Station, Unit 3 (WF3). On November 22, 2016, the NRC staff sent a request for additional information (RAI) (ADAMS Accession No. ML16309A580) based on the staff's review of the severe accident mitigation analysis (SAMA) in Entergy's environmental report. After reviewing Entergy's RAI response (ADAMS Accession No. ML17038A436, dated February 7, 2017), the NRC staff has identified several areas where further clarification is needed to complete the environmental review. The enclosure lists the SAMA request for additional information (RAI).

The enclosed requests for additional information were discussed with Mr. Alan Harris. A mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me by telephone at 301-415-8517 or by e-mail at Elaine.Keegan@nrc.gov.

Sincerely,

Elaine M. Keegan

Elaine M. Keegan, Sr. Project Manager
Environmental Review and Projects Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
As stated

cc: Listserv

ADAMS Accession no.: ML17086A585

OFFICE	PM:RERP:DLR	BC:RERP:DLR	PM:RERP:DLR
NAME	EKeegan	JRikhoff	EKeegan
DATE	03/24/2017	03/28/2017	03/28/2017

ELAINE M KEEGAN
SR. PROJECT MANAGER
DIVISION OF LICENSE RENEWAL, NRR
U.S. NUCLEAR REGULATORY COMMISSION
301-415-8517

OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION FOR A REQUEST TO RENEW THE
OPERATING LICENSE
ENTERGY OPERATIONS, INC
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NUMBER 50-382
TAC NUMBER MF7493

Entergy Louisiana, LLC and Entergy Operations, Inc. (Entergy or the applicant) submitted an assessment of severe accident mitigation alternatives (SAMAs) for Waterford Steam Electric Station (WF3), in Section 4.15 and Attachment D of the Applicants License Renewal Environmental Report (ER) (ADAMS Accession No. ML16088A324). Based on its review of the submittal, the NRC staff issued a Request for Additional Information (RAI) dated November 22, 2016 (ADAMS Accession No. ML16309A580). Entergy's responses to the RAIs was submitted by letter dated February 7, 2017 (ADAMS Accession No. ML17038A436).

General Regulatory Basis for all 3 RAIs

Applicants for license renewal are required by 10 CFR 51.53(c)(3)(ii)(L) to consider SAMAs if not previously considered in an environmental impact assessment, related supplement, or environmental assessment for the plant. Guidance for the SAMA analysis submittal is provided in NEI 05-01 (Rev. A), "Severe Accident Mitigation Alternatives (SAMA) Guidance Document" which is endorsed in Regulatory Guide 4.2, supplement 1.

Regulatory Basis for RAI 1

NEI 05-01 provides the following guidance on the Level 2 model information to be provided in the SAMA submittal:

Provide a table or matrix describing the mapping of Level 1 accident sequences into Level 2 release categories and a description of the representative release sequences.

The ER did not provide a table or matrix describing the mapping of specific Level 1 accident sequences into the Level 2 release categories or a description of the representative release sequences. Entergy was therefore asked in RAI 2.e to provide a description of the sequences used to characterize the source terms for each of the significant release categories, the basis for this selection and its appropriateness for use in determining the benefit for the Phase II SAMAs evaluated. While the Entergy RAI response 2.e provided an expanded general discussion of the reviews made to select the representative sequence, no specific sequences were provided or a description of the representative release sequences provided.

RAI 1

Provide a description of the specific Level 1 and Level 2 accident sequences used to characterize the significant release categories (H-E, H-I and M-I) and why the particular Level 1 and Level 2 accident sequences were chosen to be representative for those release categories used in determining the benefit of the Phase II SAMAs.

Regulatory Basis for RAI 2

NEI 05-01 provides the following guidance for the identification of SAMAs:

SAMAs may be hardware changes, procedure changes, or enhancements to programs, including training and surveillance programs. Hardware changes should not be limited to permanent changes involving addition of new, safety-grade equipment, but should also include lower cost alternatives, such as temporary connections using commercial grade equipment (e.g., portable generators and temporary cross-ties).

NEI 05-01 further states:

If a SAMA was not evaluated for a dominant risk contributor, justify why SAMAs to further reduce the contributor would not be cost-beneficial.

The dominant contributor to internal flooding risk is water propagation in the electric board room and was evaluated in SAMA 68. In SAMA 68, Entergy proposed to install permanent flood doors to prevent water propagation to the electric board room. The WF3 plant specific cost estimate for the flood doors was determined to be approximately 1.3 million dollar. In comparison, the benefit for removing this internal flooding risk is approximately three hundred thousand dollars. Therefore, Entergy found SAMA 68 to not be cost-beneficial.

The staff requested in RAI 6.i for Entergy to consider a lower cost alternative than a permanent flood door, such as a flood barrier.

RAI 2

Consider a lower cost alternative to the flood doors, such as a flood barrier, for SAMA 68 or explain why a lower cost alternative was not considered or necessary. Provide a cost-benefit comparison or justify why SAMAs to further reduce the water propagation in the electric board room would not be cost-beneficial.

Regulatory Basis for RAI 3

NEI 05-01 provides the following regarding potentially cost beneficial SAMAs:

This analysis may not estimate all of the benefits or all of the costs of a SAMA. For instance, it may not consider increases or decreases in maintenance or operation costs following SAMA implementation. Also, it may not consider the possible adverse consequences of procedure changes, such as additional personnel dose. Since the SAMA analysis is not a complete engineering project cost-benefit analysis, the SAMAs that are cost-beneficial after the Phase II analysis and sensitivity analyses are only potentially cost-beneficial.

Thus, in the ER, Entergy stated:

Although the above SAMA candidates do not relate to adequately managing the effects of aging during the period of extended operation, they have been submitted for detailed engineering project cost-benefit analysis to further evaluate implementation of these potentially cost beneficial SAMAs.

In the response to several RAIs, Entergy revised the calculated benefits for several of the Phase II SAMAs, performed additional sensitivity analyses, and evaluated potentially lower cost alternatives. As a result of these analyses, 5 new potentially cost-beneficial SAMA candidates were identified.

RAI 3

Will the potential cost beneficial SAMAs added as a result of the RAIs dated 11/22/2016 and 03/28/2017 be submitted for detailed engineering project cost-benefit analysis to further evaluate implementation of these potentially cost beneficial SAMAs?