



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

July 21, 2015

Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – REQUEST FOR
ADDITIONAL INFORMATION REGARDING NATIONAL FIRE PROTECTION
ASSOCIATION STANDARD 805 (TAC NO. ME7602)

Dear Sir or Madam:

By letter dated November 17, 2011, as supplemented by letters dated January 26, September 27, and October 16, 2012; May 16 and December 18, 2013; June 11, 2014; and March 12, April 10, and May 14, 2015, Entergy Operations, Inc. (the licensee), submitted a license amendment request for Waterford Steam Electric Station, Unit 3 (Waterford). The proposed amendment would transition Waterford's fire protection licensing basis from Section 50.48(b) of Title 10 of the *Code of Federal Regulations* (10 CFR) to 10 CFR 50.48(c), National Fire Protection Association Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants."

The U.S. Nuclear Regulatory Commission staff has reviewed the information provided by the licensee in the March 12, April 10, and May 14, 2015, supplements and determined that additional information is needed to complete the review of the proposed amendment. Please provide the additional information requested in the enclosure by August 31, 2015.

If you have any questions, please contact me at 301-415-3229 or by e-mail at Michael.Orenak@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Michael D. Orenak".

Michael D. Orenak, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
REGARDING LICENSE AMENDMENT REQUEST TO ADOPT
NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805
ENTERGY OPERATIONS, INC.
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

By letter dated November 17, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML113220230), as supplemented by letters dated January 26, September 27, and October 16, 2012 (ADAMS Accession Nos. ML12027A049, ML12272A099, and ML12290A215, respectively); May 16 and December 18, 2013 (ADAMS Accession Nos. ML13137A128 and ML13365A325, respectively); June 11, 2014 (ADAMS Accession No. ML14162A506); and March 12,* April 10,* and May 14, 2015,* Entergy Operations, Inc. (the licensee), submitted a license amendment request (LAR) for Waterford Steam Electric Station, Unit 3 (Waterford). The proposed LAR would transition Waterford's fire protection licensing basis from Section 50.48(b) of Title 10 of the *Code of Federal Regulations* (10 CFR) to 10 CFR 50.48(c), National Fire Protection Association Standard (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants."

The U.S. Nuclear Regulatory Commission staff is reviewing the information provided by the licensee in the March 12, April 10, and May 14, 2015, supplements and requests the following additional information.

Probabilistic Risk Assessment (PRA) Request for Additional Information (RAI) S04.01

In the supplement dated May 14, 2015, the response to RAI S04 did not provide complete information. For example, the response to RAI S04 only explains when, not how (as requested in the RAI), loss of control is modeled.

To ensure clarity in the final method description, please provide the detailed information requested below.

- a) Summarize the modeling of scenarios in which the main control room (MCR) is abandoned due to loss of habitability. If there is a difference between the post-transition plant modeling versus the compliant plant modeling, then describe both variations.

*The March 12, April 10, and May 14, 2015, submittals are currently not publicly available, and are pending NRC staff review for document release.

Enclosure

- i. Provide the different conditional core damage probability (CCDP) and conditional large early release probability (CLERP) values for all scenarios, or the number of scenarios and highest and lowest values if there are more than three different scenarios.
 - ii. Describe how human actions are modeled to estimate the CCDP and CLERP values. If any actions that will be taken from the Primary Control Station (PCS) (i.e., Remote Shutdown Panel) for alternate shutdown are excluded from the Fire PRA, then justify this exclusion.
 - iii. Describe how equipment failures are addressed in these scenarios. If the modeling of equipment not impacted by fire (nominally available) is excluded, justify the exclusion.
- b) Summarize modeling of scenarios in which the MCR is abandoned due to loss of control caused by fire in the cable spreading room (CSR). If there is a difference between the post-transition plant modeling versus the compliant plant modeling, then describe both variations.
- i. Provide the different CCDP and CLERP values for all scenarios, or the number of scenarios and highest and lowest values if there are more than three different scenarios.
 - ii. Describe how variances from deterministic requirements are identified (e.g., against all success paths using equipment with cables that go through the CSR or only against the alternate shutdown success path available at the PCS).
 - iii. Confirm that the CSR is in an approved Appendix R, III.G.3 fire area and identify the steps in the procedures that call for MCR abandonment due to loss of control.
 - iv. Describe how human actions are modeled to estimate the CCDP and CLERP values, including the bases for the timing assumed in the modeling. If any actions that will be taken from the PCS (i.e., Remote Shutdown Panel) for alternate shutdown, are excluded from the Fire PRA, then justify this exclusion.
 - v. Describe how equipment failures are addressed in these scenarios. If the modeling of equipment not impacted by fire (i.e., nominally available) is excluded, justify the exclusion.

PRA RAI S17.f.01

In the supplement dated April 10, 2015, the response to PRA RAI S17 indicates that circuit failure probabilities were assigned to only six valves. Please provide the number of identified potential circuit failures and a justification as to why only six valves were assigned failure probabilities.

PRA RAI S17.f.02

In the supplement dated April 10, 2015, the response to PRA RAI S17 added Implementation Item S2-22. Implementation Item S2-22 stated that the validity check of the anticipated change-in-risk results at the end of the implementation period will use fire-induced electrical circuit failure methods and probability values as described in NUREG/CR-7150, Joint Assessment of Cable Damage and Quantification of Effects from Fire (JACQUE-FIRE),” Volume 2: “Expert Elicitation Exercise for Nuclear Power Plant Fire-Induced Electrical Circuit Failure,” dated May 2014 (ADAMS Accession No. ML14141A129). It is unclear if the integrated aggregate analysis provided in the response to PRA RAI S18 includes these methods and values, and whether the licensee’s current method will be expanded to include all cable configurations.

- a) Confirm that the electric circuit failure evaluations will include all cable configurations such as:
 - i. Panel wiring
 - ii. Trunk cables
 - iii. Instrument cables
- b) If the integrated aggregate analysis provided in the response to PRA RAI S18 is not consistent with the NUREG/CR-7150 guidance, evaluate and summarize the expected impact of using the guidance and suggested values in NUREG/CR-7150 in the integrated aggregate analysis.

PRA RAI S18.b.01

In the supplement dated May 14, 2015, the response to PRA RAI S18.d indicates that no further method “alignments” will be performed for the post-transition change evaluation. The response to PRA RAI S18.a and the response to PRA RAI S15 in the supplement dated March 12, 2015, explain that the impact of state of knowledge correlation was evaluated as minor and not included in the integrated analysis provided in the response to PRA RAI S18. Given that a change of this magnitude may have more significant impact on risk acceptance guidelines for the post-transition change evaluation, provide assurance that the post-transition self-evaluations will use the mean value as described in Regulatory Guide 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant – Specific Changes to the Licensing Basis, Revision 2, dated May 2011 (ADAMS Accession No. ML100910006). If the mean value is not used, provide assurance that the difference between the mean value and the point estimate for core damage frequency and large early release frequency will continue to be evaluated to confirm that the point estimate is a reasonable estimate of the mean value.

July 21, 2015

Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – REQUEST FOR
ADDITIONAL INFORMATION REGARDING NATIONAL FIRE PROTECTION
ASSOCIATION STANDARD 805 (TAC NO. ME7602)

Dear Sir or Madam:

By letter dated November 17, 2011, as supplemented by letters dated January 26, September 27, and October 16, 2012; May 16 and December 18, 2013; June 11, 2014; and March 12, April 10, and May 14, 2015, Entergy Operations, Inc. (the licensee), submitted a license amendment request for Waterford Steam Electric Station, Unit 3 (Waterford). The proposed amendment would transition Waterford's fire protection licensing basis from Section 50.48(b) of Title 10 of the *Code of Federal Regulations* (10 CFR) to 10 CFR 50.48(c), National Fire Protection Association Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants."

The U.S. Nuclear Regulatory Commission staff has reviewed the information provided by the licensee in the March 12, April 10, and May 14, 2015, supplements and determined that additional information is needed to complete the review of the proposed amendment. Please provide the additional information requested in the enclosure by August 31, 2015.

If you have any questions, please contact me at 301-415-3229 or by e-mail at Michael.Orenak@nrc.gov.

Sincerely,
/RA Alan Wang for/

Michael D. Orenak, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

DISTRIBUTION:

PUBLIC LPL4-2 R/F
RidsAcraAcnw_MailCTR Resource
RidsRgn4MailCenter Resource
RidsNrrLAPBlechman Resource
KGreen, NRR

RidsNrrDraApla Resource
RidsNrrLic109 Resource
RidsNrrDorLpl4-2 Resource
RidsNrrPMWaterford Resource

BMiller, NRR
SDinsmore, NRR
DGennardo, NRR
LFields, NRR

ADAMS Accession No.: ML15197A229

*via email

OFFICE	NRR/DORL/LPL4-2/PM	NRR/DORL/LPL4-2/LA	NRR/DRA/APLA/BC*	NRR/DORL/LPL4-2/BC	NRR/DORL/LPL4-2/PM
NAME	MOrenak	PBlechman	SRosenberg	MKhanna	MOrenak (AWang for)
DATE	7/17/15	7/17/15	6/30/15	7/21/15	7/21/15

OFFICIAL RECORD COPY