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2CAN091402

September 24, 2014

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

SUBJECT: License Amendment Request Supplemental
Adoption of National Fire Protection Association Standard NFPA-805
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

Dear Sir or Madam:

By letter dated December 17, 2012 (Reference 1), Entergy Operations, Inc. (Entergy) submitted a request to amend the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TS) and licensing bases to comply with the requirements in 10 CFR 50.48(a), 10 CFR 50.48(c), and the guidance in Regulatory Guide (RG) 1.205, "Risk-Informed Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants." The amendment request followed Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)." The submittal (Reference 1) described the methodology used to demonstrate compliance with, and transition to, National Fire Protection Association (NFPA)-805, and included regulatory evaluations, probabilistic risk assessment (PRA), change evaluations, proposed modifications for non-compliances, and supporting attachments.

On September 4, 2014, members of the NRC staff and ANO-2 NFPA 805 project personnel completed a conference call intended to provide clarifying information related to previous Entergy responses to NRC requests for additional information (RAI). Three NFPA 805 subject matter areas were discussed. The first of these, related to Control Room abandonment RAI responses, was sufficiently clarified and this item was closed. With regard to the second item for discussion, ANO personnel clarified that no joint human error probability (HEP) values of less than 1×10^{-5} were used in the NFPA 805 fire risk analysis. However, the aforementioned RAI responses were unclear in this regard; therefore, this supplemental letter confirms that no joint HEP values below 1×10^{-5} were utilized.

The final item of discussion involved ANO assumptions for fire propagation outside well-sealed motor control center (MCC) cabinets (panels of > 440 V which are not switchgear or load center power supplies). The current ANO-2 NFPA 805 analysis does not assume components outside a well-sealed MCC cabinet are damaged by a fire initiated within the well-sealed MCC cabinet.

The NRC referenced frequently asked question (FAQ) 14-0009, Revision F, which is intended to address generically what probability for fire propagation beyond such electrical cabinets should be utilized in plant fire risk models. The FAQ is currently open (unresolved); however, the NRC has determined that a 10% probability of fire propagation is reasonably conservative and can be utilized in fire risk analyses pending FAQ resolution. A value less than 10% probability of propagation beyond the well-sealed MCC cabinet is expected for ANO-2 given the use of IEEE-383 qualified/thermoset cables at ANO-2 versus the bounding analysis provided in the draft FAQ, which is based on non-IEEE-383 qualified/thermoplastic cables.

As a result of the electrical cabinet fire discussion, Entergy committed to perform a sensitivity study using the 10% probability factor to bound the NFPA 805 risk results. The sensitivity analysis conservatively applies 10% of the ignition frequency of the well-sealed MCC to a bounding fire scenario for the associated zone, typically the hot gas layer (HGL) scenario. This approach provides a bounding analysis which assumes that the fires propagating beyond the well-sealed MCC impact all targets in the fire zone for zones where a HGL scenario has already been developed, or applied to a similarly bounding scenario, if a HGL scenario is not applicable.

As reported on replacement License Amendment Request (LAR) page W-6 (Reference 10), the total Core Damage Frequency (CDF) including Fire and Internal events has a value of $7.7E-05/\text{yr}$ (Internal Events CDF ($9.5E-7/\text{year}$) + Internal Floods ($8.0E-07/\text{yr}$) + Fire CDF ($7.5E-05$)), and the total Large Early Release Frequency (LERF) has a value of $1.9E-06/\text{yr}$ (Internal Events LERF ($1.1E-07/\text{year}$) + Internal Floods ($5.6E-08/\text{yr}$) + Fire LERF ($1.7E-06/\text{yr}$)). When the increase in risk from this sensitivity is added to these values, it results in a total CDF of $8.7E-05/\text{yr}$ and a total LERF of $2.2E-06/\text{yr}$.

Also, as reported on replacement LAR page W-24 (Reference 10), the total changes in CDF and LERF from the transition to NFPA 805 are $-1.29E-04/\text{yr}$ and $-4.72E-6/\text{yr}$, respectively. When the increase in risk from this sensitivity is added to these values, it results in a total change in CDF of $-1.19E-04/\text{yr}$ and a total change in LERF of $-4.47E-06/\text{yr}$.

Finally, as reported on replacement LAR page W-7 (Reference 10), a bounding estimate of the overall CDF risk due to external events (including seismic, external flooding, and off-site industry facility accidents) is estimated to be less than $1E-5/\text{yr}$. A total bounding estimate for LERF external events is assumed to be 0.1 of the total CDF, which is less than $1E-6/\text{yr}$.

Thus, with respect to the above sensitivity study, ANO-2 continues to meet the acceptance criteria.

In addition to the above, Entergy committed to monitor resolution of FAQ 14-0009 (current Revision F) and revise the ANO-2 fire risk model to be consistent with that found acceptable through the FAQ process. Therefore, Entergy has added a new line item (S2-10) to Attachment S, Table S-2, of the original NFPA 805 submittal (Reference 1). The revised table incorporates any previous changes made as a result of previous responses to RAIs; specifically, a revision of Item S2-3 by letter dated November 7, 2013, FPE RAI 01 response (Reference 3). For completeness, a revised Table S-2, in its entirety, is included in Attachment 1 of this submittal.

Changes or additional information, as detailed in this letter, with respect to the original Entergy request (Reference 1) have been reviewed and Entergy has determined that the changes do not invalidate the no significant hazards consideration included in the Reference 1 letter.

In accordance with 10 CFR 50.91(b)(1), a copy of this application and the reasoned analysis about no significant hazards consideration is being provided to the designated Arkansas state official.

If you have any questions or require additional information, please contact Stephenie Pyle at 479-858-4704.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on September 24, 2014.

Sincerely,

ORIGINAL SIGNED BY JEREMY G. BROWNING

JGB/dbb

Attachment: Updated Attachment S, Table S-2 – Implementation Items

- REFERENCES:
1. Entergy letter dated December 17, 2012, *License Amendment Request to Adopt NFPA-805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants (2001 Edition)* (2CAN121202) (ML12353A041)
 2. NRC letter dated September 11, 2013, *Arkansas Nuclear One, Unit 2 – Request for Additional Information Regarding Adoption of National Fire Protection Association Standard NFPA-805* (TAC No. MF0404) (2CNA091301) (ML13235A005)
 3. Entergy letter dated November 7, 2013, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN111301) (ML13312A877)
 4. Entergy letter dated December 4, 2013, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN121302) (ML13338A432)
 5. Entergy letter dated January 6, 2014, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN011401) (ML14006A315)
 6. NRC letter dated March 28, 2014, *Arkansas Nuclear One, Unit 2 – Request for Additional Information Regarding Adoption of National Fire Protection Association Standard NFPA-805* (2CNA031401) (ML14085A225)
 7. Entergy letter dated May 22, 2014, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN051404) (ML14142A410)
 8. NRC letter dated June 9, 2014, *Arkansas Nuclear One, Unit 2 – Request for Additional Information Regarding Adoption of National Fire Protection Association Standard NFPA-805* (2CNA061402) (ML14155A133)

(REFERENCES continued)

9. Entergy letter dated June 30, 2014, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN061406)
10. Entergy letter dated August 7, 2014, *Response to Request for Additional Information – Adoption of National Fire Protection Association Standard NFPA-805* (2CAN081401)

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Attachment to

2CAN091402

Updated Attachment S, Table S-2

Implementation Items

Table S-2 items provided below are those items (procedure changes, process updates, and training to affected plant personnel) that will be completed prior to the implementation of new NFPA 805 fire protection program.

| Table S-2 Implementation Items | | | |
|---------------------------------------|-------------|--|--|
| Item | Unit | Description | LAR Section / Source |
| S2-1 | C | Develop a monitoring program required by NFPA 805 that will include a process to monitor and trend the fire protection program based on specific goals established to measure effectiveness. | LAR Section 4.6 and Attachment A (NEI-04-02 B-1 Table) Section 3.2.3 (3) |
| S2-2 | 2 | Revise or develop fire protection flushing activity to perform fixed water spray system flushing and drainage of underground lead-in connections in accordance with NFPA 15, 1977 Edition Code. | Attachment A (NEI-04-02 B-1 Table) Section 3.9.1 (2) |
| S2-3 | 2 | Perform an evaluation for NFPA 14, 1983 Edition Code non-compliance for standpipe manual hose station 2HR-75 horizontal water header to determine if additional hangers are required, since hose station water header wall hangers were found not secured. | Attachment A (NEI-04-02 B-1 Table) Section 3.6.1 |
| S2-4 | C | Revise fire protection administrative procedure EN-DC-161, Control of Combustible, to include the following: <ul style="list-style-type: none"> • In accordance with FAQ 06-0020, the term “applicable NFPA Standards” is considered to be equivalent to those NFPA Standards identified in the current licensing basis (CLB) for existing procedures and systems in the fire protection program that are transitioning to NFPA-805. New Fire Protection Systems would be subject to the most current code or standard.” • Terminology for zero transient combustibles and changes needed to support FPRA assumptions. | Attachment A (NEI-04-02 B-1 Table) Sections 3.3.1.2 (5) |
| S2-5 | 2 | Revise existing procedure(s) or develop a new procedure(s) for NPO required to transition to NFPA 805 based upon insights gained from ANO-2 NPO calculation. | Attachment D (NEI-04-02 Non-Power Operational Modes) VFDR NPO-Procedure |
| S2-6 | 2 | Revise OMA procedures/documents to include feasibility criteria in FAQ 07-0030 for the recovery actions listed in Table G-1 of Attachment G, Recovery Action Transition. | Attachment G (NEI-04-02 OMA) Step 4 |
| S2-7 | C | Develop or revise technical documents and procedures that relate to new FP design and licensing basis (e.g., ANO Fire Protection Program, OP-1003.014, Technical Requirements Manual, Design Basis Document, Pre-Fire Plans, Maintenance and Surveillance Procedures, Configuration Control Program, Training and Qualification Guidelines, etc.) as required for implementation of NFPA 805. | LAR Sections 4.7.1, 4.7.2, and 4.7.3 |

Table S-2 Implementation Items

| Item | Unit | Description | LAR Section / Source |
|-------|------|---|---|
| S2-8 | 2 | Revise technical documents for NFPA 13 for acceptance of the partial area sprinkler system in Fire Area G for NFPA 805. The existing partial area sprinkler system for Fire Area G has been previously approved by the NRC in an exemption under Appendix R. As transitioned to NFPA 805, the previously approved exemption is being withdrawn, so documentation updates will be needed to remove the reference to an exemption and provide an independent basis. | Attachment A (NEI-04-02 B-1 Table) Section 3.9.1 (1) |
| S2-9 | C | Develop or create a PRA review plan of action to revise the PRA model for each modification or implementation item completed that is credited either directly or indirectly by PRA. The PRA review plan will ensure the as-built change-in-risk from each modification or implementation item does not exceed the PRA model change-in-risk estimates reported in the LAR. | LAR Section 4.8.2 |
| S2-10 | C | Following resolution of FAQ 14-0009 related to the potential for fire propagation outside well-sealed motor control center (MCC) cabinets, the fire risk model will be revised, as necessary, in accordance with the FAQ conclusions. Should resolution of FAQ 14-0009 not occur until after NFPA 805 implementation at the site, revisions, if any, to the fire risk model associated with FAQ 14-0009 will be completed prior to self-approval. | Not Applicable |