



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

September 13, 2016

Mr. John F. McCann
Vice President, Regulatory Assurance
Entergy Services, Inc.
1340 Echelon Parkway
Jackson, MS 39213

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2; GRAND GULF NUCLEAR STATION, UNIT 1; JAMES A. FITZPATRICK NUCLEAR POWER PLANT; INDIAN POINT ENERGY CENTER, UNITS 1, 2 AND 3; PALISADES NUCLEAR PLANT; PILGRIM NUCLEAR POWER STATION; RIVER BEND STATION, UNIT 1; WATERFORD 3 STEAM ELECTRIC STATION, AND BIG ROCK POINT NUCLEAR PLANT-ISFSI – REQUEST FOR APPROVAL OF CHANGE TO THE ENTERGY QUALITY ASSURANCE PROGRAM MANUAL (CAC NOS. MF7086, MF7087, MF7088, MF7089, MF7090, MF7091, MF7092, MF7093, MF7094, MF7095, MF7096, AND MF7097)

Dear Mr. McCann:

By letter dated November 6, 2015, as supplemented by letters dated February 25 and July 19, 2016, Entergy Operations, Inc. and Entergy Nuclear Operations, Inc. (collectively referred to as Entergy), submitted for the U.S Nuclear Regulatory Commission (NRC) approval, a revision to the Entergy Quality Assurance Program Manual (QAPM), in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(a)(4). Specifically, Entergy proposed a revision to Section K.3 from Table 1 of the QAPM which represents a reduction in commitment pursuant to 10 CFR 50.54(a)(4).

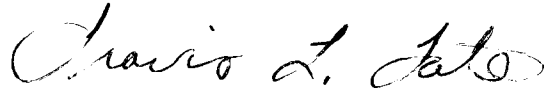
The Nuclear Regulatory Commission (NRC) staff has reviewed Entergy's letter as supplemented and determined the proposed change to the Entergy QAPM, Revision 29 complies with the applicable industry standards and continues to satisfy the requirements of 10 CFR 50 Appendix B and the Regulatory Guides and ANSI Standards referenced in the QAPM Table of Contents and QAPM Attachment, Table 1.

J. McCann

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If you have any questions, please contact Richard V. Guzman, Senior Project Manager, at (301) 415-1030 or Richard.Guzman@nrc.gov.

Sincerely,

A handwritten signature in black ink, reading "Travis L. Tate". The signature is written in a cursive style with a large, stylized initial 'T'.

Travis L. Tate, Chief
Plant Licensing Branch 1-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-313, 50-368, 50-416, 50-333,
50-003, 50-247, 50-286, 50-255,
50-293, 50-458, 50-382, 50-155,
72-13, 72-50, 72-12, 72-51,
72-07, 72-1044, 72-49, 72-75, 72-43

Enclosure:
Safety Evaluation

cc w/enclosure: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
PROPOSED REVISION TO THE ENTERGY QUALITY ASSURANCE PROGRAM MANUAL
ENTERGY OPERATIONS, INC AND ENTERGY NUCLEAR OPERATIONS, INC
ARKANSAS NUCLEAR ONE, UNITS 1 AND 2; GRAND GULF NUCLEAR STATION, UNIT 1;
JAMES A. FITZPATRICK NUCLEAR POWER PLANT; INDIAN POINT NUCLEAR POWER
PLANT, UNITS 1, 2 AND 3; PALISADES NUCLEAR PLANT; PILGRIM NUCLEAR POWER
STATION; RIVER BEND STATION, UNIT 1; WATERFORD STEAM ELECTRIC STATION,
UNIT 3, AND BIG ROCK POINT NUCLEAR PLANT
DOCKET NOS. 50-313, 50-368, 50-416, 50-333, 50-003,
50-247, 50-286, 50-255, 50-293, 50-458, 50-382, 50-155
72-13, 72-50, 72-12, 72-51, 72-07, 72-1044, 72-49, 72-75, 72-43

1.0 INTRODUCTION

By letter dated November 6, 2015 (Reference 1), as supplemented by letters dated February 25 and July 19, 2016 (Reference 2 and 3, respectively), Entergy Operations, Inc. and Entergy Nuclear Operations, Inc. (collectively referred to as Entergy or the licensee), submitted for the U.S. Nuclear Regulatory Commission (NRC) staff's review, a revision to the Quality Assurance Program Manual (QAPM), in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(a)(4).

The QAPM provides an overview of the quality program controls applied to quality related items and activities at Entergy nuclear plants. The QAPM is based on Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

Enclosure

2.0 REGULATORY EVALUATION

The Commission's regulatory requirements related to Quality Assurance (QA) programs are set forth in Appendix B to 10 CFR Part 50 (Appendix B), 10 CFR 50.34(b)(6)(ii), and 10 CFR 50.54(a).

Appendix B establishes the QA requirements for the design, fabrication, construction, and testing of structures, systems, and components (SSCs) for the facility. The pertinent requirements of Appendix B apply to all activities affecting the safety-related functions of those SSCs and include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying SSCs.

The regulations in 10 CFR 50.34, "Content of applications; technical information," require that every applicant for an operating license include information in its Final Safety Analysis Report (FSAR) on the managerial and administrative controls to be used to ensure safe operation. The information on the controls shall also include a discussion on how the applicable requirements of Appendix B will be satisfied.

The regulations in 10 CFR 50.54 require each power plant subject to the requirements of Appendix B to implement a QA program. Additionally, 10 CFR 50.54(a)(4) requires licensees to submit to the NRC, changes to their QA Program that reduce commitments.

3.0 TECHNICAL EVALUATION

In its letter dated November 6, 2015, Entergy submitted a request for review and approval of its QAPM, a proposed change considered a reduction in commitment in accordance with the provisions of 10 CFR 50.54(a)(4). The letter included a proposed change to Revision 29 of the QAPM, provided in Enclosure 2 thereto.

In evaluating the adequacy of the revision to the QAPM, the NRC staff used the guidance contained in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 17.3, "Quality Assurance Program Description," (Reference 4), hereafter referred to as Section 17.3, which provides acceptance criteria for quality assurance program descriptions.

The licensee's initial proposed change to Revision 29 was to eliminate Section K.3 from Table 1 of the QAPM, which stated the following:

As an alternate to daily testing grout for comprehensive strength, for prepackaged shelf item, non-shrink grout, the grout compressive strength test may be performed once on each batch of non-shrink grout received, rather than each day grout is placed.

Table 1 of the Entergy QAPM is based on the guidance of ANSI N45.2.5-1974, "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete, Structural Steel, Soils, and Foundations during the Construction Phase of Nuclear Power Plants," (Reference 5) which requires the performance of in-process testing during the course of

construction to maintain control of structural concrete. Regulatory Guide (RG) 1.94, Revision 1, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants," (Reference 6) conditionally found ANSI N45.2.5-1974 as an acceptable method of complying with Appendix B to 10 CFR Part 50. In its submittal, Entergy stated that the basis of the proposed QAPM change was the ASME technical inquiry response, QA92-003, on testing requirements of prepackaged non-shrink grout.

During the NRC staff's review of Entergy's proposed QAPM change, the NRC staff determined that additional information was required to complete its review. The staff issued requests for additional information (RAIs) by e-mail dated January 13, 2016 (Reference 7). The staff requested clarification on whether Entergy considered ASME Boiler and Pressure Vessel Code Case N-384-1, "Use of Prepackage General Cement Grouts, Epoxy Grouts, and Epoxy Bonding Materials," (Reference 8) in making the proposed change. Additionally, the staff requested clarification on how the applicable RGs, codes and standards referenced in NUREG-0800 Chapter 3, "Design of Structures, Components, Equipment, and Systems," and Chapter 17, "Quality Assurance," were incorporated in the QAPM. Entergy responded to the staff's RAIs by letter dated February 25, 2016 (Reference 2), and provided the major codes of record for concrete and grout referenced in the respective FSARs for each of the nuclear plants in Entergy's fleet. The list included American Concrete Institute (ACI) 318-71, "Building Code Requirements for Reinforced Concrete," (Reference 9) which is endorsed by RG 1.55, "Concrete Placement in Category I Structures," dated June 1973 (Reference 10).

Section 4.3.2 of ACI 318-71 states that, "when the total quantity of a given class of concrete is less than 50 [cubic yards], the strength test may be waived by the Building Official, if in his judgment, adequate evidence of satisfactory strength is provided."

During an RAI clarification phone conference on June 20, 2016, the NRC staff asked for clarification regarding the implementation of requirements for testing prepackaged non-shrink grout per the codes and standards referenced in the respective FSARs for the nuclear power plants in Entergy's fleet. In response, Entergy submitted a revision (Reference 3) to the proposed change to Section K.3 from Table 1 of the QAPM. Rather than deleting the entry for Section K.3 as previously proposed, the licensee proposed to revise Section K.3 to state:

In accordance with ASME QA92-003 (ASME NQA-1 Interpretations), testing of non-shrink grout does not fall under the jurisdiction of N45.2.5 Table B; but the designer is responsible for identifying necessary testing and frequency requirements.

The NRC staff determined that Entergy continued to meet the intent of "in-process testing" as required by ANSI 45.2.5-1974, for maintaining control of structural materials during the course of construction. Entergy indicated that non-shrink prepackaged grout will be procured from suppliers with audited Appendix B programs and that safety-related grout will be tested by the manufacturer with certified results provided to the licensee. Thus, it can be concluded that adequate evidence of the satisfactory strength of the grout and control of the materials used to achieve the final composition of the grout is maintained.

4.0 CONCLUSION

The NRC staff has concluded that prepackaged non-shrink grout does not fall under the jurisdiction of Table B of ANSI N45.2.5. However, compliance with other codes and standards for testing pre-packaged grout, committed to by Entergy in the FSAR of each of the nuclear plants in its fleet, is still required. Accordingly, for Entergy nuclear power plants that are committed to ACI 318-71, strength tests may only be waived for prepackaged non-shrink grout used in quantities of less than 50 cubic yards. The staff concludes that the proposed change to the Entergy QAPM, Revision 29 complies with the applicable industry standards and continues to satisfy the requirements of 10 CFR 50 Appendix B and the RGs and ANSI Standards referenced in the QAPM Table of Contents and QAPM Attachment, Table 1, and is therefore, acceptable.

5.0 REFERENCES

1. Michael Perito (Entergy) to NRC, "Request for Approval of Change to the Entergy Quality Assurance Program Manual (QAPM)," November 6, 2015 (ADAMS Accession No. ML15310A388).
2. Michael Perito (Entergy) to NRC, "Response to Request for Additional Information Pertaining to a Change to the Entergy Quality Assurance Program Manual (QAPM)," February 25, 2016 (ADAMS Accession No. ML16056A469).
3. Michael Perito (Entergy) to NRC, "Request for Approval of Change to the Entergy Quality Assurance Program Manual (QAPM)," July 19, 2016 (ADAMS Accession No. ML16201A407).
4. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 17.3, "Quality Assurance Program Description," August 1990 (ADAMS Accession No. ML052350376).
5. ANSI N45.2.5, "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete, Structural Steel, Soils, and Foundations During the Construction Phase of Nuclear Power Plants," New York, New York, 1974.
6. Regulatory Guide 1.94, "Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants," Revision 1, April 1976 (ADAMS Accession No. ML003740305).
7. E-mail from Richard Guzman (NRC) to Edward Harris (Entergy), "Entergy CNRO-2015-00023 - Revision to Entergy Quality Assurance Program Manual (Fleet Submittal CAC Nos. MF7086-MF7087) - REQUEST FOR ADDITIONAL INFORMATION," January 13, 2016 (ADAMS Accession No. ML16013A064).
8. ASME Boiler and Pressure Vessel Code Case N-384-1, "Use of Prepackage General Cement Grouts, Epoxy Grouts, and Epoxy Bonding Materials," ASME Section II, Division 2, Class CC dated July 27, 1991.

9. American Concrete Institute (ACI) Committee 318, "Building Code Requirements for Reinforced Concrete (ACI-71)," Detroit, Michigan, 1971.
10. Regulatory Guide 1.55, "Concrete Placement in Category I Structures," June 1973 (ADAMS Accession No. ML13064A106).

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Ashley Ferguson

Date: September 13, 2016

J. McCann

- 2 -

If you have any questions, please contact Richard V. Guzman, Senior Project Manager, at (301) 415-1030 or Richard.Guzman@nrc.gov.

Sincerely,

/RA/

Travis L. Tate, Chief
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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ADAMS Accession No.: ML16251A620

* Memo dated 7/28/16

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DATE	9/13/16	9/13/16	

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