UNITED STATES
NUCLEAR REGULATORY COMMISSION
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November 10, 2016

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

SUBJECT: SCOPING AND SCREENING METHODOLOGY AUDIT REPORT REGARDING WATERFORD STEAM ELECTRIC STATION, UNIT 3 LICENSE RENEWAL APPLICATION REVIEW (CAC NO. MF7492)

Dear Mr. Chisum:

By letter dated March 23, 2016, Entergy Operations, Inc. submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew operating license NPF-38 for Waterford Steam Electric Station, Unit 3, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff completed the on-site audit of the license renewal scoping and screening methodology from June 13 through 16, 2016, at the Waterford 3 facility located in Killona, Louisiana.

If you have any questions, please contact me at 301-415-6447 or by e-mail at Phyllis.Clark@nrc.gov.

Sincerely,

/RA/

Phyllis Clark, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-382

Enclosure:
Audit Report

cc: Listserv

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Letter to Michael R. Chisum from Phyllis Clark dated November 10, 2016

SUBJECT: SCOPING AND SCREENING METHODOLOGY AUDIT REPORT REGARDING WATERFORD STEAM ELECTRIC STATION, UNIT 3 LICENSE RENEWAL APPLICATION REVIEW (CAC NO. MF7492)

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SCOPING AND SCREENING METHODOLOGY AUDIT REPORT FOR THE WATERFORD STEAM ELECTRIC STATION, UNIT 3 LICENSE RENEWAL APPLICATION

I. Introduction

The Division of License Renewal performed an audit of the Entergy Operations, Inc., and Entergy Louisiana, LLC, (Entergy, the applicant) Waterford Steam Electric Station, Unit 3 (Waterford 3), license renewal scoping and screening methodology, developed to support the Waterford 3 license renewal application (LRA). The audit was performed during the week of June 13 through 16, 2016, at the applicant's Waterford 3 station located in St. Charles Parish, Louisiana. The purpose of the audit was to review the applicant's administrative controls governing implementation of the scoping and screening methodology and the technical basis for selected scoping and screening results for various plant systems, structures, and components (SSCs). The audit team also reviewed selected examples of component material types, information contained in the applicant's corrective action database relevant to plant-specific age related degradation, quality practices applied during development of the LRA and the training of personnel that participated in the development of the LRA.

The regulatory bases for the audit were Title 10 of the *Code of Federal Regulations*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (10 CFR Part 54) and NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2 (SRP-LR). In addition, the applicant developed the LRA in accordance with the guidance contained in Nuclear Energy Institute (NEI) 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6 (NEI 95-10), which the NRC has endorsed via Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses" (RG 1.188).

II. Background

The requirements of 10 CFR 54.21, "Contents of Application – Technical Information," state that each application for license renewal contain an integrated plant assessment (IPA). The IPA must list, for SSCs within the scope of license renewal, the structures and components (SCs) that are subject to an aging management review (AMR). 10 CFR 54.4(a), "Scope," provides the criteria for inclusion of SSCs within the scope of license renewal and 10 CFR 54.21(a)(1) requires that SCs within the scope of license renewal that are determined to be passive and not periodically replaced (long-lived) are subject to an AMR.

III. Scoping Methodology

Staff Review of Information Sources, Implementing Documents and Scoping Methodology

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical SSCs are included within the scope of license renewal (scoping). The

applicant provided the audit team with a detailed discussion of the processes used for each discipline. In addition, the audit team reviewed documentation pertinent to the scoping process. The audit team assessed whether the scoping methodology outlined in the LRA and implementing procedures was appropriately implemented and consistent with 10 CFR Part 54.

The staff confirmed that the applicant's detailed license renewal program guidelines specified the use of the current licensing basis (CLB) source information in developing scoping evaluations. The staff reviewed pertinent information sources used by the applicant including the component database, the Final Safety Analysis Report (FSAR), maintenance rule basis documents, design basis documents, license renewal drawings and station drawings.

The staff discussed the applicant's administrative controls for the component database and the other information sources used to verify system information. These controls are described and implemented by plant procedures. Based on a review of the administrative controls and on a sample of the system classification information contained in the applicable documentation, the staff determined that the applicant has established adequate measures to control the integrity and reliability of system identification and safety classification data; therefore, the staff determined that the information sources used by the applicant during the scoping and screening process provided a controlled source of system and component data to support scoping and screening evaluations.

The staff reviewed the implementing procedures and results reports used to support identification of SSCs that the applicant relied on to demonstrate compliance with the requirements of 10 CFR 54.4(a). The applicant's license renewal program guidelines provided a listing of documents used to support scoping evaluations. The staff determined that the design documentation sources, required to be used by the applicant's implementing procedures, provided sufficient information to ensure that the applicant identified SSCs to be included within the scope of license renewal consistent with the plant's CLB.

During the audit, the applicant stated that it evaluated the types of events listed in NEI 95-10 (anticipated operational occurrences, design basis accidents (DBAs), external events, and natural phenomena) that were applicable to Waterford 3. The staff reviewed the applicant's basis documents, which described design basis conditions in the CLB, and addressed events defined by 10 CFR 50.49(b)(1) and 10 CFR 54.4(a)(1). The FSAR and basis documents discussed events, such as internal and external flooding, tornados, and missiles. The staff determined that the applicant's evaluation of DBAs was consistent with the SRP-LR.

The staff determined that the applicant's license renewal project personnel performed the scoping activities, in accordance with the applicable implementing documents, as follows:

- Mechanical scoping: The applicant used information contained in the plant component database to develop a list of plant systems and used CLB information, design basis documents, and station drawings to identify system intended functions. The intended functions were evaluated using the criteria of 10 CFR 54.4(a) to identify those systems to be included within the scope of license renewal.

- Structural scoping: The applicant used CLB information, design basis documents, and maintenance rule basis documents to develop a structures list and to identify structural intended functions. The intended functions were evaluated using the criteria of 10 CFR 54.4(a) to identify those systems to be included within the scope of license renewal.

- Electrical scoping: The applicant used a bounding approach for plant electrical and instrumentation and control (EI&C) systems and included all EI&C systems, and EI&C components contained in mechanical systems, within the scope of license renewal by default.

Staff Verification of Scoping and Screening Results for Sampled Systems and Components

The staff performed a sampling review of the results of the applicant's implementation of the scoping and screening methodology to confirm that the results were in conformance with the applicable implementing documents and the requirements of 10 CFR Part 54.

- The staff conducted a review of 85 independently selected components from the 89,583 components in the component database, which included mechanical, electrical and structural components, to confirm the results of the applicant's determination of whether the components were within the scope of license renewal and subject to an AMR. The controlled station component database was a primary source of information used during the license renewal scoping and screening process, including scoping and screening reviews, aging management reviews, and assignment of aging management programs (AMP). The audit team reviewed the selected components using the FSAR; design basis documents; and station drawings to perform its review. The staff reviewed the component information including the component name, system, function, tag number, location and other documentation. The applicant had included 73 of the 85 components within the scope of license renewal and determined the components to be subject to an AMR. The applicant had determined 12 components were either not within the scope of license renewal or not subject to an AMR (because the component was active or replaced on a periodic basis). The NRC staff reviewed the 12 components and confirmed the applicant's conclusion that the 12 components were not required to be within the scope of license renewal or subject to an AMR, as applicable.

- The staff reviewed a sample of the scoping and screening implementation for portions of the essential cooling water system and nuclear plant island structure. The staff reviewed applicable portions of the FSAR, scoping and screening reports, and license renewal drawings and performed walkdowns to confirm information contained in the LRA.

Areas Requiring Additional Information

The audit team determined that the applicant's scoping methodology was generally consistent with the requirements of 10 CFR Part 54 for the identification of SSCs that meet the scoping criteria of 10 CFR 54.4(a). However, the audit team determined that additional information was required in order for the staff to complete its review. RAI 2.1-1, dated October 12, 2016, states, in part:

- The staff determined that the nonsafety-related west side access facility building, immediately adjacent to, and in contact with, the safety-related reactor building, was not included within the scope of license renewal. The staff requests additional information to clarify the basis for not including the west side access facility building within the scope of license renewal in accordance with 10 CFR 54.4(a)(2), to complete its review.

IV. Screening Methodology

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of license renewal would be subject to an AMR (screening). The applicant provided the audit team with a detailed discussion of the processes used for each discipline.

The staff determined that the applicant's license renewal project personnel performed the screening activities, in accordance with the applicable implementing documents, as follows:

- Mechanical components were subject to AMR if they met the criteria of being passive and long-lived and the components supported a system intended function, which required the system to be included within the scope of license renewal. The applicant had identified the component level intended functions (e.g., pressure boundary, heat transfer), which supported a system intended function and highlighted the in-scope components that were subject to AMR on the license renewal drawings. Mechanical components that were included within the scope in accordance with 10 CFR 54.4(a)(2) and subject to AMR were also identified on the license renewal drawings.

- Structural components had been determined by the applicant to be inherently passive and long-lived and were grouped by common structural intended functions (e.g., support, enclosure protection, fire barrier, flood barrier, pressure boundary). The components were treated as bulk commodities based on material of construction for the purposes of the aging management review.

- Electrical and instrumentation and control components, which were included within the scope of renewal in accordance with the bounding method used for EI&C, were evaluated in accordance with the guidance contained in NEI 95-10 to identify the passive and long-lived components subject to AMR.

The audit team reviewed the applicable implementing procedures and reports and focused on a sample of the documentation for the essential cooling water system and the nuclear plant island structure. The audit team noted that the applicant's screening process was performed in accordance with its written requirements and was consistent with the guidance provided in the SRP-LR and NEI 95-10. The audit team determined that the screening methodology was consistent with the requirements of 10 CFR Part 54 for the identification of SSCs that meet the screening criteria of 10 CFR 54.21(a)(1).

V. Component Material

The staff performed a review to confirm a sample of the component material information contained in the LRA. The staff reviewed the applicant's documentation and performed

walkdowns. The NRC staff independently selected a random sample of 35 components from the "Summary of Aging Management Evaluation" tables contained in Section 3 of the LRA. The staff verified the information either during a walkdown or through review of the applicant's reference documents. These reference documents included the FSAR; plant system and design drawings; and component vendor manuals. The staff was able to visually inspect 23 of the 35 selected components. The staff confirmed that the material type of the 35 components was consistent with information contained in the LRA.

VI. Site-Specific Operating Experience

The SRP-LR provides guidance to the staff on the process to be followed when assessing the ten program elements for each AMP submitted in an LRA, which include operating experience (OE) as one of the ten elements as defined in the SRP-LR and the GALL Report. The site-specific and industry OE also relates to two other AMP elements: detection of aging effects and monitoring and trending. The SRP-LR addresses the importance of the applicant's specific OE in relation to AMRs and time-limited aging analysis (TLAA) activities.

The staff performed an independent search of the applicant's corrective action report database, using staff selected keywords, to identify occurrences of age related degradation. The staff identified corrective action reports that contained information concerning age related degradation that would be used by the staff during the performance of the AMP audit.

VII. Aging Management Program Quality Assurance Attributes

The audit team reviewed the AMP quality assurance elements to verify consistency with the staff's guidance described in SRP-LR, Appendix A, "Branch Technical Positions," Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)." The AMP quality assurance elements are corrective action, confirmation process, and administrative controls.

The applicant described the AMP quality assurance elements in LRA Appendix B, Section B.0.3, "Corrective Actions, Confirmation Process and Administrative Controls," and the individual AMPs. LRA Appendix B stated that the applicant's existing 10 CFR Part 50, Appendix B, Quality Assurance Program corrective action, confirmation process, and administrative controls requirements are applicable to all SSCs subject to AMPs and activities required during the period of extended operation for both safety-related and nonsafety-related SCs. The applicant's AMPs incorporate various Waterford 3 procedures required to ensure the elements of corrective action, confirmation process, and administrative controls are compliant with 10 CFR Part 50, Appendix B. The audit team reviewed the AMPs and confirmed that the AMPs incorporate corrective action, confirmation processes, and administrative controls. The applicant has identified no exceptions to these program elements and has specified a variety of enhancements to them for specific AMPs.

Based on the audit team's evaluation, review of the AMPs and information contained in LRA Appendix B, the staff determined the AMP quality assurance elements to be consistent with the staff's position regarding QA for aging management.

VIII. Quality Assurance Controls Applied to LRA Development

The staff reviewed the quality controls used by the applicant during development of the LRA, which included:

- Industry peers review of the draft LRA
- License renewal team coordinated and reviewed all license renewal activities
- LRA development was controlled by procedure
- Subject matter experts, supervisors and managers prepared and reviewed basis documents, reports and the LRA

The audit team performed a review of implementing procedures and guides, examined the applicant's documentation of activities in reports, reviewed the applicant's activities performed to assess the quality of the LRA, and held discussions with the applicant's license renewal management and staff. The audit team determined that the applicant's activities provide assurance that the LRA was developed consistent with the applicant's license renewal program requirements.

IX. Training for License Renewal Project Personnel

The staff reviewed the applicant's training processes to ensure the guidelines and methodology for the scoping and screening activities were applied in a consistent and appropriate manner. As outlined in procedures, the applicant required training for personnel participating in the development of the LRA and used trained and qualified personnel to prepare the scoping and screening implementing procedures. The training included the following areas of review:

- License renewal overview
- Waterford 3 License Renewal Project Plan
- System and structure scoping
- Mechanical system screening and aging management review
- Structural screening and aging management review
- Electrical system screening and aging management review
- Evaluation of aging management programs
- TLAA and exemptions evaluation
- License renewal application development
- Operating experience review for license renewal
- Industry Guidelines for implementation of 10 CFR Part 54
- Regulatory Guide 1.188, Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses

- NUREG-1800 - NRC Standard Review Plan – License Renewal
- NUREG-1801 - NRC Generic Aging Lessons Learned (GALL) Report

The staff discussed training activities with applicant management and staff and reviewed applicable documentation. The audit team determined that the applicant had developed and implemented adequate controls for the training of personnel performing LRA activities.

X. Exit Briefing

An exit briefing was held with the applicant on June 16, 2016, to discuss the results of the scoping and screening methodology audit. The audit team identified preliminary areas where additional information would be required to support completion of the staff's LRA review.

XI. Documents Reviewed

1. NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2
2. NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 The License Renewal Rule," Revision 6
3. Waterford Steam Electric Station, Unit 3, License Renewal Application
4. EN-FAP-LR-001, "License Renewal Project Overview"
5. EN-FAP-LR-003, "System and Structure Scoping for License Renewal"
6. EN-FAP-LR-004, "Mechanical System Screening and Aging Management Review"
7. EN-FAP-LR-005, "Electrical System Scoping, Screening and Aging Management Review"
8. EN-FAP-LR-006, "Structural Screening and Aging Management Review"
9. EN-FAP-LR-009, "License Renewal Information System Use and Maintenance"
10. EN-FAP-LR-0 10, "License Renewal Application Development"
11. EN-FAP-LR-012, "Operating Experience Review for License Renewal"
12. Entergy Engineering Report No. WF3-EP-14-00001, "System and Structure Scoping Results"
13. Entergy Engineering Report No. WF3-EE-14-00001, "Electrical Screening and Aging Management Review"
14. Entergy Engineering Report No. WF3-CS-14-00002, "Aging Management Review of the Nuclear Plant Island Structure"
15. Entergy Engineering Report No. WF3-ME-14-00026, "Aging Management Review of Nonsafety-Related Systems and Components Affecting Safety-Related Systems"

XII. NRC Audit Team Members

Phyllis Clark	NRC	Donald Brittner	NRC
Bill Rogers	NRC	Angela Buford	NRC
Tarico Sweat	NRC		

XIII. Applicant Personnel Contacted During Audit

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Ran Gilmore	Entergy	Maria Zamber	Entergy
Daniel Frey	Entergy	Cooper	Entergy
Julie Robinson	Entergy	John Jarrell	Entergy
Leia Milster	Entergy	Brian Lindsey	Entergy
Brian Lanka	Entergy	Stacie Fontend	Entergy
Mike Haydel	Entergy	Mark Spinelli	Entergy
Herbert Rideout	Entergy	Alan Harris	Entergy
Stephen Clair	Entergy	Laurie Murray	Entergy
Greg Feruson	Entergy	Garry Young	Entergy
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