



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

November 21, 2018

The Honorable Kristine L. Svinicki  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:     REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL  
                  APPLICATION FOR THE WATERFORD STEAM ELECTRIC STATION, UNIT 3**

Dear Chairman Svinicki:

During the 658<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS), November 1-2, 2018, we completed our review of the license renewal application (LRA) for the Waterford Steam Electric Station, Unit 3 (Waterford), and the final safety evaluation report prepared by the NRC staff. Our Plant License Renewal Subcommittee reviewed this matter during a meeting on September 20, 2018. During these reviews, we had the benefit of discussions with representatives of the staff and Entergy. We also had the benefit of the referenced documents. This report fulfills the requirement of 10 CFR 54.25 that the ACRS review and report on all license renewal applications.

**CONCLUSION AND RECOMMENDATION**

1. The programs established and committed to by Entergy to manage age-related degradation provide reasonable assurance that Waterford can be operated in accordance with its current licensing basis for the period of extended operation without undue risk to the health and safety of the public.
  
2. Entergy's application for renewal of the operating license for Waterford should be approved.

**BACKGROUND**

The Waterford site is located near Taft, Louisiana, in the northwest portion of St. Charles Parish. Kenner, the nearest population center, is 13 miles east of the site and New Orleans is about 25 miles east-southeast of the site. Waterford is a pressurized-water reactor with its nuclear steam supply system supplied by Combustion Engineering. The containment structure is comprised of a steel containment vessel surrounded by a reinforced concrete shield building. The licensed core power level is 3716 megawatts thermal with a net power output of approximately 1188 megawatts electric. The NRC issued the original construction permit for Waterford on November 14, 1974, and the operating license on March 16, 1985.

In its application, Entergy requests renewal of the operating license (Facility Operating License NPF-38) for a period of 20 years beyond the current expiration date of midnight December 18, 2024.

## **DISCUSSION**

In preparation for life extension of Waterford, Entergy has completed significant plant modifications. These include replacement of steam generators, the reactor vessel head, and reactor coolant pump motors. Entergy also added emergency diesel generator fuel storage tanks to increase margin for diesel generator run time, and upgraded the static uninterruptible power supplies. Planned upgrades include retubing the main condensers, replacing the core protection calculator, improving the ultimate heat sink, and replacing the ultimate heat sink motor control center.

In its final safety evaluation report, the staff documented its review of the LRA and other information submitted by the applicant and obtained through staff audits and inspections at the plant site. The staff reviewed the completeness of the identification of structures, systems, and components that are within the scope of license renewal. The staff also reviewed the integrated plant assessment process; the identification of plausible aging mechanisms associated with passive, long-lived components; the adequacy of the Aging Management Programs (AMPs); and the identification and assessment of Time-Limited Aging Analyses (TLAAs) requiring review.

The LRA identified the structures, systems, and components that fall within the scope of license renewal. The application demonstrates consistency with the Generic Aging Lessons Learned (GALL) Report and justifies deviations to the specified approaches in that report. The Waterford aging management programs are implemented in accordance with appropriate elements of the requirements of 10 CFR Part 50, Appendix B, specifically corrective actions, confirmation process, and administrative controls. The Waterford Quality Assurance Program applies to safety-related structures and components. Staff review of LRA development guidance and Entergy's documentation concluded that Entergy's quality assurance activities were adequate to ensure that LRA development activities were performed in accordance with the applicant's license renewal program requirements.

Entergy will implement 41 AMPs for license renewal, comprised of 29 existing programs and 12 new programs. Of the 12 new programs, 10 are consistent with the GALL Report, two are consistent with allowed exceptions. Of the 29 existing programs, six are consistent with the GALL Report, 19 are consistent with enhancements, three are consistent with enhancements and allowed exceptions, and one (Periodic Surveillance and Preventive Maintenance) is plant-specific with enhancements. The LRA includes five programs with allowed exceptions to the GALL Report. The programs with exceptions and enhancements are acceptable.

The staff conducted license renewal audits and performed a license renewal inspection at Waterford. The audits verified the appropriateness of the scoping and screening methodology for AMPs, the appropriateness of the aging management review, and the acceptability of the TLAAs. The staff audit report demonstrated the validity of their conclusion that the Waterford Aging Management Program is mature. The Entergy organization is benefitting from their fleet approach which integrates lessons-learned from each facility. The license renewal inspection verified that the license renewal requirements are implemented appropriately. The audits and inspections were comprehensive and the corresponding reports are thorough.

Based on the audits, the inspection, and the staff reviews related to this LRA, the staff concluded that Entergy has demonstrated that the effects of aging at Waterford will be adequately managed so that the intended safety function(s) will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR 54.21(a)(3). The staff's review of the LRA identified no open or confirmatory items.

We agree with the staff that there are no issues related to the matters described in 10 CFR 54.29(a)(1) and (a)(2) that preclude renewal of the operating license for Waterford. The programs established and the commitments made by Entergy provide reasonable assurance that Waterford can be operated in accordance with its current licensing basis for the period of extended operation without undue risk to the health and safety of the public. The Entergy application for renewal of the operating license for Waterford should be approved.

Member Riccardella did not participate in this meeting.

Sincerely,

**/RA/**

Michael Corradini  
Chairman

## REFERENCES

1. Entergy Operations, Inc, "License Renewal Application Waterford Steam Electric Station, Unit 3," March 23, 2016 (ML16088A324).
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of Waterford Steam Electric Station Unit 3," August 2018 (ML18228A668).
3. U.S. Nuclear Regulatory Commission, NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," Revision 2, December 2010 (ML103490041).
4. U.S. Nuclear Regulatory Commission, "Aging Management Programs Audit Report Regarding Waterford Steam Electric Station, Unit 3 License Renewal Application Review (CAC No. MF7492)," May 9, 2017 (ML17054C529).
5. U.S. Nuclear Regulatory Commission, "Waterford Steam Electric Station, Unit 3 – NRC License Renewal Inspection Report 05000382/2017007," March 31, 2017 (ML17094A238).
6. U.S. Nuclear Regulatory Commission, "Scoping and Screening Audit Report Regarding the Waterford Steam Electric Station, Unit 3 License Renewal Application Review (CAC No. MF7492)," November 10, 2016 (ML16299A282).

7. Entergy Operations Inc., "Re-submittal Final Safety Analysis Report – Revision 309 Waterford Steam Electric Station, Unit 3 (Waterford 3)," August 25, 2016 (ML16256A115).
8. U.S. Nuclear Regulatory Commission, NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2, December 2010 (ML103490036).

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