



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

July 26, 2017

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 SOUTH TEXAS PROJECT, UNITS 1 AND 2**

Dear Chairman:

During the 645<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS), July 12 - 14, 2017, we completed our review of the license renewal application for South Texas Project, Units 1 and 2 (STP 1 & 2) and the final safety evaluation report (SER) prepared by the NRC staff. Our subcommittee on Plant License Renewal reviewed this matter during a meeting on November 17, 2016. During these reviews, we had the benefit of discussions with representatives of the staff and the South Texas Project Nuclear Operating Company (STPNOC, or the applicant). We also had the benefit of the referenced documents. This report fulfills the requirement of 10 CFR Part 54.25 that the ACRS review and report on all license renewal applications.

### **CONCLUSION AND RECOMMENDATION**

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

### **BACKGROUND**

STP is located near the town of Matagorda in Matagorda County, Texas. The construction permits for STP 1 & 2 were issued on December 22, 1975 and the operating licenses were issued on August 20, 1987 (Unit 1) and December 15, 1988 (Unit 2). Each unit's nuclear steam supply system consists of a 4-loop pressurized water reactor (PWR) designed by Westinghouse Electric Corporation. The primary containment for each unit is a large dry design. The balance of plant was designed and constructed by Bechtel Corporation. Each unit operates at a licensed thermal power of 3,853 MWt, with an electrical output of approximately 1,250 MWe.

In this application, STPNOC requests renewal of Facility Operating Licenses DPR-76 and DPR-80 for a period of 20 years beyond the current expiration dates of August 20, 2027 (Unit 1) and December 15, 2028 (Unit 2).

## **DISCUSSION**

In its final SER dated June 2017, the staff documented its review of the license renewal application and other information consisting of staff audits and inspections at the plant site. The staff reviewed the completeness of the identification of structures, systems, and components (SSCs) 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 license renewal application identified the SSCs that fall within the scope of license renewal. The application demonstrates consistency with the Generic Aging Lessons Learned (GALL) Report (NUREG-1801, Revision 2) and documents and justifies deviations to the specified approaches in that report. STPNOC will implement 41 AMPs for license renewal, comprised of 33 existing programs and 8 new programs. Seven of the 41 AMPs are consistent with the GALL Report without enhancements or exceptions. Thirteen AMPs have been enhanced so they are consistent with GALL. Four AMPs take allowed exceptions to GALL. Thirteen AMPs are consistent with enhancements and allowed exceptions. Four AMPs, Protective Coating Monitoring and Maintenance Program, Nickel-Alloy Aging Management Program, PWR Reactor Internals, and Selective Leaching of Aluminum Bronze, are plant-specific.

The license renewal application includes seventeen programs with allowed exceptions to the GALL Report. We conclude that the exceptions are acceptable.

The staff conducted license renewal audits and performed a license renewal inspection at STP 1 & 2. 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 license renewal inspection verified that the license renewal requirements are implemented appropriately. Both the inspection and the report of that inspection are thorough.

Based on the audits, the inspection, and the staff reviews related to this license renewal application, the staff concluded that STPNOC has demonstrated that the effects of aging at STP 1 & 2 will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR Part 54.21(a)(3).

The single open item that remained in the SER was resolved between our subcommittee meeting on November 17, 2016 and our final review on July 12, 2017. Resolution of this item is as follows:

### **Selective Leaching of Aluminum Bronze Aging Management Program**

STP has experienced degradation of its service water and other piping systems due to selective leaching of aluminum bronze components and welds in those systems. The Selective Leaching of Aluminum Bronze Program is intended to manage this issue. This program manages loss of material due to selective leaching for aluminum bronze components and welds exposed to raw

water within the scope of license renewal. The open item identified and addressed issues that were identified in the staff's evaluation of the program for selective leaching of aluminum bronze.

Based on the staff's interaction with the applicant during public meetings and supplemental audits, and the final revised plant-specific AMP and its associated updated final safety analysis report supplement, the open issues have been resolved through the applicant's commitment to replace susceptible castings and by improvements to the aging management program for welds.

All aluminum bronze castings susceptible to selective leaching, including attachment welds related to the castings and aluminum bronze root valve adapter socket welds, will be replaced prior to the period of extended operation with material that is not susceptible to selective leaching. Samples of susceptible welds in wrought copper alloy piping will be inspected and other samples will be subjected to destructive examinations. In the event that unacceptable indications are detected, additional examinations will be conducted. All defective welds will be replaced. We concur with the staff's acceptance of the resolution for this open item.

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

Sincerely,

**/RA/**

Dennis C. Bley  
Chairman

## **REFERENCES**

1. South Texas Nuclear Operating Company, South Texas Project, Units 1 and 2, "License Renewal Application," October 25, 2010 (ML103010262).
2. South Texas Nuclear Operating Company, South Texas Project, Units 1 and 2, "Supplement to the South Texas Project License Renewal Application (CAC Nos. ME4936 and ME4937)," March 30, 2017 (ML17102B415).
3. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of South Texas Project, Units 1 and 2, June 2017 (ML17146B242 & ML17146B224).
4. U.S. Nuclear Regulatory Commission, "Scoping and Screening Audit Report Regarding the South Texas Project, Units 1 and 2 (TAC NOS. ME4936 AND ME4937)," September 6, 2011 (ML11230A003).

5. U.S. Nuclear Regulatory Commission, "Aging Management Programs Audit Report Regarding the South Texas Project, Units 1 and 2 (TAC NOS. ME4936 AND ME4937)," September 22, 2011 (ML11224A265).
6. U.S. Nuclear Regulatory Commission, "South Texas Project Electric Generating Station, Units 1 and 2 NRC License Renewal Inspection Report 05000498/2011007 and 05000499/2011007," October 7, 2011 (ML112800109).
7. 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).
8. U.S. Nuclear Regulatory Commission, NUREG 1801, "Generic Aging Lessons Learned (GALL) Report," Revision 2, December 2010 (ML103490041).
9. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.188, "Standard Format and Content for Application to Renew Nuclear Power Plant Operating Licenses," Revision 1, September 2005 (ML082950585).
10. U.S. Nuclear Regulatory Commission, "Selective Leaching of Aluminum Bronze Aging Management Program Audit Report Regarding the South Texas Project, Units 1 and 2 (CAC NOS. ME4936 AND ME4937)," May 16, 2017 (ML17107A319).

5. U.S. Nuclear Regulatory Commission, "Aging Management Programs Audit Report Regarding the South Texas Project, Units 1 and 2 (TAC NOS. ME4936 AND ME4937)," September 22, 2011 (ML11224A265).
6. U.S. Nuclear Regulatory Commission, "South Texas Project Electric Generating Station, Units 1 and 2 NRC License Renewal Inspection Report 05000498/2011007 and 05000499/2011007," October 7, 2011 (ML112800109).
7. 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).
8. U.S. Nuclear Regulatory Commission, NUREG 1801, "Generic Aging Lessons Learned (GALL) Report," Revision 2, December 2010 (ML103490041).
9. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.188, "Standard Format and Content for Application to Renew Nuclear Power Plant Operating Licenses," Revision 1, September 2005 (ML082950585).
10. U.S. Nuclear Regulatory Commission, "Selective Leaching of Aluminum Bronze Aging Management Program Audit Report Regarding the South Texas Project, Units 1 and 2 (CAC NOS. ME4936 AND ME4937)," May 16, 2017 (ML17107A319).

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