



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

September 16, 2016

The Honorable Stephen G. Burns
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL
 APPLICATION OF THE FERMI 2 NUCLEAR POWER PLANT**

Dear Chairman Burns:

During the 636th meeting of the Advisory Committee on Reactor Safeguards (ACRS), September 8-10, 2016, we completed our review of the license renewal application for the Fermi 2 nuclear power plant 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 March 2, 2016. During these reviews, we had the benefit of discussions with representatives of the staff and the DTE Electric Company (DTE or the applicant). 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 DTE to manage age-related degradation provide reasonable assurance that Fermi 2 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. DTE's application for renewal of the operating license for Fermi 2 should be approved.

BACKGROUND

Fermi 2, a boiling water reactor (BWR), is located on the western shore of Lake Erie at Lagoona Beach, Frenchtown Township in Monroe County, Michigan. The NRC issued the Fermi 2 construction permit on September 26, 1972, and the operating license on March 20, 1985. Fermi 2 is a GE-BWR 4 with a Mark I containment. Its licensed power output is 3,486 megawatts thermal with a turbine-generator net output of approximately 1,170 megawatts electric.

In this application, DTE requests renewal of their operating license for a period of 20 years beyond the current expiration date of midnight, March 20, 2025.

DISCUSSION

In the final SER, dated July 2016, the staff documented its review of the license renewal application 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 (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 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. DTE will implement 44 AMPs for license renewal, comprised of 32 existing programs and 12 new programs. Sixteen of the 44 AMPs are consistent with the GALL Report without enhancements or exceptions. Sixteen AMPs are consistent with enhancements. Five AMPs are consistent with exceptions. Six AMPs are consistent with enhancements and exceptions. One AMP, "Periodic Surveillance and Preventive Maintenance," is plant-specific.

The license renewal application includes eleven programs with exceptions to the GALL Report. We reviewed these exceptions (Bolting Integrity, Buried and Underground Piping, BWR Feedwater Nozzle, BWR Stress Corrosion Cracking, Compressed Air Monitoring, Fatigue Monitoring, Fire Water System, Reactor Head Closure Studs, Water Chemistry Control-BWR, Water Chemistry Control-Closed Treated Water Systems, and Coating Integrity). We conclude that the eleven programs with GALL exceptions are acceptable.

The staff conducted license renewal audits and performed a license renewal inspection at Fermi 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 reviews related to this license renewal application, the staff concluded in the final SER that the proposed activities will manage the effects of aging of SSCs identified in the application and that the intended functions of these SSCs 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 SER includes a license condition whereby DTE will fully implement the Boraflex spent fuel pool rack replacement before the period of extended operation (i.e., March 20, 2025). DTE will confirm to the NRC the removal of the Boraflex material and replacement with Boral. We agree with the imposition of this license condition.

One open item remaining in the SER was resolved between our Subcommittee meeting on March 2, 2016, and our final review on September 8, 2016. This open item dealt with the methods used to determine the environmental effects on cumulative usage factors (CUF_{en})

derived from the fatigue analysis. The average transient temperatures used to calculate environmental factors were not consistent with the guidance in NUREG/CR-6909. DTE stated that average transient temperatures were used in six locations and that multiple methods were used to determine average temperature for the six locations. Environmentally Assisted Fatigue calculations were revised in January 2016, to address this open item. Four locations were revised to use conservative maximum design temperature instead of average temperature. Two locations now use average temperature for a transient. The temperature is determined by the average of maximum and threshold temperature for environmental effects. The updated CUF_{en} values have been determined in a manner consistent with NUREG/CR-6909. There were no changes in the sentinel locations for fatigue monitoring. We concur with the staff's acceptance of the resolution for this item.

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 Fermi 2. The programs established and committed to by DTE provide reasonable assurance that Fermi 2 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 DTE application for renewal of the operating license for Fermi 2 should be approved.

Dr. Peter Riccardella did not participate in the Committee's deliberations regarding this matter.

Sincerely,

/RA/

Dennis C. Bley
Chairman

REFERENCES

1. DTE Energy Company, "Fermi 2 License Renewal Application," April 24, 2014 (ML14121A554).
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of Fermi 2," July 2016 (ML16190A241).
3. U.S. Nuclear Regulatory Commission, NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," Revision 2, December 2010 (ML1034090041).
4. U.S. Nuclear Regulatory Commission, "Aging Management Programs Audit Report Regarding the Fermi 2 Nuclear power Plant License Renewal Application (TAC No. MF4222)," February 11, 2015 (ML15030A219).
5. U.S. Nuclear Regulatory Commission, "Scoping and Screening Methodology Audit Report Regarding the Fermi 2 License Renewal Application (TAC No. MF4222)," October 21, 2014 (ML14267A267).

6. U.S. Nuclear Regulatory Commission, "Fermi Power Plant, Unit 2, License Renewal Scoping, Screening, and Aging Management Inspection Report 05000341/2015009," June 10, 2015 (ML15162B041).
7. U.S. Nuclear Regulatory Commission, NUREG/CR-6909, "Effect of LWR Coolant Environments on the Fatigue Life of Reactor Materials," February 2007 (ML070660620).
8. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report with Open items Related to the License Renewal of Fermi 2," January 2016 (ML16027A270).
9. U.S. Nuclear Regulatory Commission, NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2, December 2010 (ML1034090036).
10. 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).

1. U.S. Nuclear Regulatory Commission, "Fermi Power Plant, Unit 2, License Renewal Scoping, Screening, and Aging Management Inspection Report 05000341/2015009," June 10, 2015 (ML15162B041).
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