



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

ACRSR-2140

July 18, 2005

The Honorable Nils J. Diaz  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 2005-0001

**SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL  
APPLICATION FOR THE DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2**

Dear Chairman Diaz:

During the 524<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, July 6-8, 2005, we completed our review of the license renewal application for the Donald C. Cook Nuclear Plant (CNP), Units 1 and 2, and the final Safety Evaluation Report (SER) prepared by the NRC staff. Our Plant License Renewal Subcommittee also reviewed this matter during a meeting on February 9, 2005. During these reviews, we had the benefit of discussions with representatives of the NRC staff and Indiana Michigan Power Company, the applicant. We also had the benefit of the documents referenced. This report fulfills the requirements of 10 CFR 54.25 that the ACRS review and report on all license renewal applications.

**CONCLUSION AND RECOMMENDATION**

1. The programs committed to and established by the applicant to manage age-related degradation provide reasonable assurance that CNP Units 1 and 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.
2. The Indiana Michigan Power Company's application for renewal of the operating licenses for CNP Units 1 and 2 should be approved.

**BACKGROUND AND DISCUSSION**

CNP Units 1 and 2 are Westinghouse pressurized water reactors with ice condenser containment buildings. Licensed power output is 3304 MWt for Unit 1 and 3468 MWt for Unit 2. The Indiana Michigan Power Company requested renewal of the operating licenses of Units 1 and 2 for 20 years beyond their current license terms, which expire on October 25, 2014 and December 23, 2017, respectively.

In the final SER, the staff documented its review of the license renewal application and other information submitted by the applicant and obtained during the staff's audits and inspections at the plant site. The staff reviewed the completeness of the applicant's identification of structures,

systems, and components (SSCs) that are within the scope of license renewal; the integrated plant assessment process; the applicant's identification of plausible aging mechanisms associated with passive, long-lived components; the adequacy of the applicant's aging management programs; and the identification and assessment of time-limited aging analyses (TLAAs).

The CNP application demonstrates consistency with, or justifies deviations from, the approaches specified in the Generic Aging Lessons Learned Report.

During its review, the staff identified several components that should have been included in the scope of license renewal. The applicant brought them into scope. With these inclusions, the staff concluded that the applicant's scoping and screening processes have successfully identified the SSCs within the scope of license renewal and subject to an aging management review. We agree.

The applicant performed a comprehensive aging management review of all SSCs within the scope of license renewal. The application contains descriptions of 46 aging management programs for license renewal, including existing, enhanced, and new programs. We agree with the staff's conclusion that these programs are adequate and consistent with accepted practices for aging management.

To be effective, the aging management programs need to be appropriately implemented. During the aging management program inspections, the staff found that walkdowns performed as part of the System Walkdown Program were not conducted quarterly as stated in the license renewal application. Also, the applicant noted that it had not evaluated two coupons from the Boral Surveillance Program. This program monitors the performance of absorber materials in the spent fuel pool by periodically measuring the physical and chemical properties of coupon samples that receive a higher radiation dose than the functional boral panels. The applicant has implemented corrective actions to ensure that the commitments will not be missed in the future.

The applicant identified and reevaluated systems and components requiring TLAAs for 20 more years of operation. Analyses of reactor vessel neutron embrittlement (upper shelf energy, pressurized thermal shock screening criteria, and pressure-temperature limits) performed by the applicant and independently verified by the staff demonstrate that the limiting reactor vessel beltline materials will satisfy the acceptance criteria for the period of extended operation.

The applicant showed that the current fatigue analysis of the ice condenser lattice frame, which conservatively assumes 400 operating basis earthquakes, bounds 60 years of operation. This analysis also bounds the effects of loads due to temperature fluctuations. The Structures Monitoring Program manages aging of this structure. Operating experience indicates that the lattice frame is not subject to significant age-related degradation.

The final SER documents the closure of confirmatory items addressing fatigue of Class 1 components. These confirmatory items were closed by the applicant's commitments to perform additional actions to address fatigue of the auxiliary spray line piping and environmentally assisted fatigue of the pressurizer surge line, safety injection nozzles, charging nozzles, and residual heat removal line. These commitments will ensure that the effects of fatigue are appropriately managed.

Reactor vessel head inspections identified flaw indications in two nozzle penetrations of Unit 2. Weld repairs were performed. No leakage was identified in the reactor vessel head penetrations of Unit 1. Both reactor vessel heads are scheduled for replacement by 2007. Inspections of bottom-mounted instrumentation nozzles in both units have not identified any leakage, and the applicant has committed to follow the recommendations the industry is developing for aging management of Alloy 600 components.

No issues related to the matters described in 10 CFR 54.29(a)(1) and (a)(2) preclude renewal of the operating licenses for CNP Units 1 and 2. The programs committed to and established by the applicant provide reasonable assurance that CNP Units 1 and 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 application for renewal of the operating licenses for CNP Units 1 and 2 should be approved.

Sincerely

/RA/

Graham B. Wallis  
Chairman

#### References

1. Indiana Michigan Power Company, "Donald C. Cook Nuclear Plant License Renewal Application," October 2003
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Donald C. Cook Nuclear Plant, Units 1 and 2," May 2005
3. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report with Open Items Related to the License Renewal of the Donald C. Cook Nuclear Plant, Units 1 and 2," December 2004
4. U.S. Nuclear Regulatory Commission, "Donald C. Cook Nuclear Power Plant, Units 1 and 2 NRC License Renewal Scoping/Screening Inspection Report 05000315/2004003 (DRS); 05000316/2004003 (DRS)," June 22, 2004
5. U.S. Nuclear Regulatory Commission, "D.C. Cook Nuclear Power Plant, Units 1 and 2 NRC Aging Management Program Inspection Report No. 05000315/2004013 (DRS); 05000316/2004013 (DRS)," January 10, 2005
6. Information Systems Laboratories, Inc., "Audit and Review Report for Plant Aging Management Reviews and Programs, Donald C. Cook Nuclear Plant, Units 1 & 2," September 22, 2004