



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

ACRSR-2211

September 19, 2006

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 2005-0001

SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL  
APPLICATION FOR THE MONTICELLO NUCLEAR GENERATING  
PLANT

Dear Chairman Klein:

During the 535<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, September 7-8, 2006, we completed our review of the license renewal application for the Monticello Nuclear Generating Plant (MNGP) 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 May 30, 2006. During our review, we had the benefit of discussions with representatives of the NRC staff and the applicant, Nuclear Management Company, LLC (NMC). 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

The programs established and committed to by the applicant to manage age-related degradation provide reasonable assurance that MNGP 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 NMC application for renewal of the operating license for MNGP should be approved.

#### BACKGROUND AND DISCUSSION

MNGP is a General Electric Boiling Water Reactor-3 (BWR-3) within a Mark-I containment. The current power rating of 1775 MWt includes a 6.3% power uprate that was implemented in 1998. NMC requested renewal of the MNGP operating license for 20 years beyond the current license term, which expires on September 8, 2010.

In the final SER, the staff documented its review of the license renewal application and other information submitted by NMC and obtained during the audits and inspections conducted 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 the plausible aging mechanisms associated with passive, long-lived components; the adequacy of the applicant's Aging Management Programs (AMPs); and the identification and assessment of time-limited aging analyses (TLAAs) requiring review.

The NMC application is largely consistent with the Generic Aging Lessons Learned (GALL) Report. All deviations from the approaches specified in the GALL Report are documented in the application. The applicant identified the SSCs that fall within the scope of license renewal and performed a comprehensive aging management review for these SSCs. Based on the results of this review, the applicant will implement 36 AMPs for license renewal including existing, enhanced, and new programs. In the SER, the staff concluded that the applicant has appropriately identified the SSCs within the scope of license renewal and that the AMPs described by the applicant are appropriate and sufficient to manage aging of long-lived passive components that are within the scope of license renewal. We concur with this conclusion.

The staff conducted an inspection and an audit. The inspection verified that the scoping and screening methodologies are consistent with the regulations and are adequately reflected in the application. The audit verified the appropriateness of the AMPs and the aging management reviews. Based on the inspection and audit, the staff concluded that these programs are consistent with the descriptions contained in the NMC license renewal application. The staff also concluded that the existing programs, to be credited as AMPs for license renewal, are generally functioning well and that an implementation plan has been established in the applicant's commitment tracking system to ensure timely completion of the license renewal commitments.

During our meetings with the staff and the applicant, we discussed the adequacy of programs proposed by NMC to manage aging of certain components that are a current focus of the staff and the industry, as described below.

Aging of the drywell shell of MNGP will be managed through the use of the ASME Section XI, Subsection IWE Program. We agree with this approach. Even though this Program does not include ultrasonic testing, this approach was chosen by NMC and accepted by the staff because the plant has several design features that prevent water accumulation behind the shell. During each refueling outage, water leakage is monitored from the refueling seal bellows, the drywell air gap drains, and the sand-pocket drains. The refueling seal is within the scope of license renewal. Ultrasonic inspections performed in the past did not identify any degradation.

MNGP has experienced shroud cracking. This cracking was identified through the required licensee inspection process. Periodic inspections of up to 75% of the shroud welds are performed according to the guidelines of the Boiling Water Reactor Vessel and Internals Project (BWRVIP). Previously identified flaws have exhibited no significant crack growth since the introduction of hydrogen water chemistry at MNGP. Aging of the shroud will continue to be managed by using the guidelines in the BWRVIP-76. We find this AMP appropriate.

The MNGP steam dryers are within the scope of license renewal. A 1998 inspection identified an indication that was not structurally significant. A 2001 inspection revealed no change in this indication and no additional indications were identified. A comprehensive inspection conducted in 2005 to examine areas where steam dryer failures had occurred at other plants found new indications on the dryer shell. These indications were evaluated and determined to be acceptable by the applicant. Another inspection is planned for 2007. Aging of the steam dryers will continue to be managed in accordance with the guidelines in the BWRVIP-139 program. We find this AMP appropriate.

The applicant identified the systems and components requiring TLAAAs and reevaluated them for 20 more years of operation. Affected TLAAAs included those associated with neutron embrittlement, metal fatigue, irradiation-assisted stress corrosion cracking, environmental qualification of electrical equipment, and stress relaxation of hold-down bolts. The staff concluded that the applicant has provided an adequate list of TLAAAs. Further, the staff concluded that in all cases the applicant has met the requirements of the license renewal rule by demonstrating that the TLAAAs will remain valid for the period of extended operation, or that the TLAAAs have been projected to the end of the period of extended operation, or that the aging effects will be adequately managed for the period of extended operation. We concur with the staff that MNGP TLAAAs have been properly identified and that criteria supporting 20 more years of operation have been met.

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

Sincerely,

/RA/

Graham B. Wallis  
Chairman

References:

- 1) Safety Evaluation Report Related to the License Renewal of the Monticello Nuclear Generating Plant, dated August 2, 2006.
- 2) Monticello Nuclear Generating Plant- Application for Renewed Operating License, dated March 16, 2005.
- 3) Audit and Review Report for Plant Aging Management Programs (AMPs) and Aging Management Reviews (AMRs) - Monticello Nuclear Generating Plant, dated October 12, 2005.
- 4) Monticello Nuclear Generating Plant, Inspection Report 05000263/2006006, dated March 30, 2006.
- 5) BWR Vessel and Internals Project, BWR Core Shroud Inspection and Flaw Evaluation Guidelines (BWRVIP-76), EPRI Report TR-114232, November 1999.
- 6) BWR Vessel and Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines (BWRVIP-139), EPRI Report TR-1011463, April 2005.