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

September 17, 2008

The Honorable Dale E. Klein
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL APPLICATION FOR THE WOLF CREEK GENERATING STATION, UNIT 1

Dear Chairman Klein:

During the 555th meeting of the Advisory Committee on Reactor Safeguards (ACRS), September 4-5, 2008, we completed our review of the license renewal application for the Wolf Creek Generating Station (WCGS), Unit 1, and the final Safety Evaluation Report (SER) prepared by the NRC staff. Our Plant License Renewal Subcommittee also reviewed this matter during its meeting on March 5, 2008. During these reviews, we had the benefit of discussions with the NRC staff and the applicant, Wolf Creek Nuclear Operating Corporation (WCNOC). We also had the benefit of the documents referenced. This report fulfills the requirement 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 WCGS 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 WCNOC application for renewal of the operating license for WCGS should be approved.

BACKGROUND AND DISCUSSION

WCGS is a Westinghouse 4-loop pressurized water reactor with a large dry containment located approximately 3.5 miles northeast of Burlington, Kansas. The current licensed power rating of WCGS is 3565 megawatts thermal with a gross electrical output of approximately 1228 megawatts. WCNOC requested renewal of the WCGS operating license for 20 years beyond the current license term, which expires on March 11, 2025.

In the final SER, the staff documented its review of the license renewal application and other information submitted by the applicant or obtained from the staff audits and an inspection at the plant site. The staff reviewed the completeness of the applicant's identification of the 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 identification and assessment of Time-Limited Aging Analyses (TLAAs) requiring review.

In the WCGS license renewal application, WCNOC identified the SSCs that fall within the scope of license renewal. Based on this review, the applicant will implement 39 AMPs for license renewal comprised of 32 existing programs, 13 of which have been enhanced, and 7 new programs.

The WCGS application either demonstrates consistency with the Generic Aging Lessons Learned (GALL) Report or documents deviations to the specified approaches in this Report. The WCGS application includes 15 exceptions to the GALL Report. We reviewed these exceptions and agree with the staff that they are acceptable. Other recent license renewal applications have contained a number of exceptions to the GALL Report, which, upon review, have been found acceptable. The staff agrees that future updates of the GALL Report should incorporate alternative approaches which are used by the industry and have been previously approved by the staff. These proposed efforts will reduce the number of exceptions to the GALL Report in future applications and will facilitate the staff's review.

The staff conducted license renewal audits and an inspection at WCGS. The audits verified the appropriateness of the scoping and screening methodology, AMPs, aging management review, and TLAAs. The site inspection verified that the license renewal requirements are appropriately implemented. Based on the audits and inspection, the staff concludes in the 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 during the period of extended operation. We agree with this conclusion.

As a result of the staff's review of the WCGS and other recent license renewal applications, the staff issued draft Regulatory Information Summary (RIS), 2008-xx, "Fatigue Analysis of Nuclear Power Plant Components," for public comment. This draft RIS identifies instances where a simplified fatigue analysis methodology can lead to a non-conservative result. This simplified methodology is not consistent with the methodology described in the American Society of Mechanical Engineers (ASME) Code, Section III, Subarticle NB-3200. In response to the staff's Requests for Additional Information (RAIs), the applicant performed confirmatory analyses for the hot leg surge line nozzle and charging nozzles.

The results of the confirmatory analyses indicated that the calculated Cumulative Usage Factors (CUFs) for these components, based on the simplified methodology, are conservative as compared to results based on the ASME NB-3200 methodology. However, there are two issues not currently fully analyzed, both relate to thermally induced cyclic metal fatigue. To resolve the first metal fatigue issue, the applicant has committed to update the count of thermal cycles for

the early years of plant operation, during which thermal cycle counts were not collected in a systematic and rigorous manner. Regarding the second issue, the applicant has recently determined that a thermal sleeve is not present in the charging nozzle as assumed in a previously submitted analysis. The applicant is in the process of performing a reanalysis, which is consistent with the commitment documented in the final SER. Through these license renewal commitments, the applicant will perform the required fatigue analyses in a conservative manner and in sufficient time to permit thorough staff review and approval of these analyses prior to the start of the extended period of operation.

The applicant identified the systems and components requiring TLAAs and reevaluated them for the period of extended operation. The staff concluded that the applicant has provided an adequate list of TLAAs. Further, the staff has concluded that, in all cases, the applicant has met the requirements of the License Renewal Rule by demonstrating that the TLAAs will remain valid for the period of extended operation, or that the TLAAs 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's conclusion that WCGS TLAAs have been properly identified and that the required criteria will be met for the period of extended operation.

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

Sincerely,

/RA/

William J. Shack
Chairman

References

1. Letter dated September 27, 2006, from Terry J. Garrett, WCNOC to U.S. Nuclear Regulatory Commission, transmitting the Application to Renew the Operating License of Wolf Creek Generating Station, Unit 1, (ML062770308).

2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report, Related to the License Renewal of Wolf Creek Generating Station," dated July 31, 2008, (ML082180210).

3. NRC Staff Audit Summary Report, dated February 14, 2008, (ML073310013).

4. NRC License Renewal Inspection Report 05000482/2007007, Wolf Creek Generating Station, dated December 5, 2007, (ML073390687).

5. NRC Draft Regulatory Issue Summary, 2008-xx, “Fatigue Analysis of Nuclear Power Plant Components,” dated April 11, 2008, (ML080950235).

6. U.S. Nuclear Regulatory Commission, NUREG-1801, Volumes 1 & 2, Rev 1, “Generic Aging Lessons Learned Report,” September 2005.

5. NRC Draft Regulatory Issue Summary, 2008-xx, “Fatigue Analysis of Nuclear Power Plant Components,” dated April 11, 2008, (ML080950235).

6. U.S. Nuclear Regulatory Commission, NUREG-1801, Volumes 1 & 2, Rev 1, “Generic Aging Lessons Learned Report,” September 2005.

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