UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

May 19, 1999

Dr. William D. Travers
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Dr. Travers:

SUBJECT: INTERIM LETTER ON THE SAFETY ASPECTS OF THE BALTIMORE GAS AND ELECTRIC COMPANY'S LICENSE RENEWAL APPLICATION FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2

During the 462nd meeting of the Advisory Committee on Reactor Safeguards, May 5-8, 1999, we reviewed the NRC Staff's Safety Evaluation Report (SER) related to the license renewal application for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2. Our Subcommittee on Plant License Renewal also reviewed this matter on April 28-29, 1999. During our review, we had the benefit of discussions with representatives of the NRC staff and the Baltimore Gas and Electric Company (BGE), and of the documents referenced.

Conclusions and Recommendations

1. The staff performed an extensive and thorough review of the Calvert Cliffs license renewal application. Although there are a number of open issues and confirmatory items that must be resolved, it appears that BGE has developed and implemented adequate processes to identify the structures, systems, and components that are subject to an aging management review and will be able to demonstrate that aging-induced degradation will be adequately managed during the period of extended operation.

2. Current regulatory requirements and existing BGE programs appear to be providing adequate management of aging-induced degradation for those components in the scope of the license renewal rule. BGE identified 446 programs that were needed to manage aging-induced degradation of which only 10 were new programs.

3. Although no new aging mechanisms have been identified, we believe that effective inspections are important to manage aging-induced degradation in order to avoid surprises. It is prudent, for example, to conduct periodic, enhanced visual inspections of reactor internals until data are available to indicate that stress corrosion cracking is not a

plausible degradation mechanism in pressurized wate. reactors. To date, no cracking has been observed in these components at the Calvert Cliffs units.

4. The issue of thermal aging of cast stainless steels has been resolved for the Calvert Cliffs license renewal application. We believe that the resolution proposed in the application is technically satisfactory and could be used by future applicants.

Discussion

By letter dated April 8, 1998, BGE submitted the license renewal application for Calvert Cliffs in accordance with 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." BGE requested renewal of the operating licenses for the Calvert Cliffs units for a period of 20 years beyond the current license expiration dates of July 31, 2014 for Unit 1, and August 13, 2016 for Unit 2.

The SER documents the results of the NRC staff's review of information submitted by BGE through March 5, 1999. The staff's review included the verification of the completeness of the identification and categorization of the structures, systems, and components considered in the application; the validation of the integrated plant assessment process; the identification of the possible aging mechanisms associated with each passive long-lived component; and the adequacy of the aging management programs. The staff also conducted on-site inspections to verify the implementation of the programs described in the application. The staff's review of the license renewal application for Calvert Cliffs was extensive and thorough.

Current regulatory requirements and licensee programs appear to be providing adequate management of aging-induced degradation for those components in the scope of the license renewal rule. BGE identified 446 activities that were needed to manage aging-induced degradation. Of these, 329 were existing programs, 107 were modifications or extensions of existing programs or analyses, and only 10 were new programs. BGE has the advantage that, even under the current pressurized thermal shock (PTS) screening criteria, the Calvert Cliffs reactor pressure vessels are not projected to reach the PTS screening limit until after 60 years of operation. BGE also has a robust reactor vessel surveillance program with sufficient surveillance materials for 60 years of operation and, thus, is well prepared to manage vessel embrittlement.

Among the new aging management programs are a number of one-time inspection programs. These are intended to verify the absence of aging-induced degradation that is currently thought unlikely to occur, but cannot be ruled out categorically. The staff stated that in some of these cases one-time inspections are not sufficient to provide assurance that degradation will not develop and that regular, periodic inspections are needed. This is one of the open items to be resolved. Although we have not reviewed the need for the particular inspections still being discussed by the staff and BGE, we believe that effective inspections are important to aging management in order to avoid surprises.

The determination of an aging management program for the embrittlement of cast stainless steels by thermal aging has been identified by both the staff and industry as an open technical issue for license renewal. Although the staff and industry have not yet defined an acceptable

generic aging management program for the thermal aging of cast stainless steels, the issue has been resolved for the Calvert Cliffs license renewal application. The staff and BGE have agreed on metal compositions not susceptible to embrittlement. BGE has agreed to conduct inspections of components with metal compositions that could be susceptible to embrittlement. We believe that this resolution is technically satisfactory and could be used by future license renewal applicants.

Considerations for Future Reviews

The staff is exploring ways to improve the efficiency of the license renewal application and review processes. The Nuclear Energy Institute has submitted proposals concerning credit for existing programs. Because the review of the BGE application has confirmed that existing programs incorporate most of the aging management activities required for compliance with the license renewal rule, such credit does seem to offer the potential for greater efficiency. The staff is preparing a Commission paper concerning credit for existing programs. We plan to review this paper.

Dr. William J. Shack did not participate in the Committee's deliberations on aging-induced degradation.

Sincerely,

Dana A. Powers
Chairman

References

1. Letter dated March 21, 1999, from David B. Matthews, Office of Nuclear Reactor Regulation, to Charles H. Cruse, Baltimore Gas and Electric Company, Subject: Calvert Cliffs Nuclear Power Plant, Units 1 and 2, License Renewal Safety Evaluation Report.
2. Letter dated April 8, 1998, from Charles H. Cruse, Baltimore Gas and Electric Company, to U. S. Nuclear Regulatory Commission Document Control Desk, Subject: Calvert Cliffs Nuclear Power Plant Unit Nos. 1 & 2, Application for License Renewal.