ACRSR-2027

March 14, 2003

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE LICENSE RENEWAL APPLICATION FOR THE PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3

Dear Chairman Meserve:

During the 500th meeting of the Advisory Committee on Reactor Safeguards, March 6-8, 2003, we completed our review of the license renewal application for the Peach Bottom Atomic Power Station Units 2 and 3 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 October 30, 2002. During our review, we had the benefit of discussions with representatives of the NRC staff and Exelon Generation Company, LLC (Exelon). We also had the benefit of the documents referenced.

RECOMMENDATIONS AND CONCLUSIONS

1. The Exelon application for renewal of the operating licenses for Peach Bottom Atomic Power Station Units 2 and 3 should be approved.

2. The programs instituted by the applicant to manage age-related degradation are appropriate and provide reasonable assurance that Peach Bottom Atomic Power Station Units 2 and 3 can be operated in accordance with their current licensing bases for the period of extended life without undue risk to the health and safety of the public.

3. The scram at Peach Bottom Unit 2 that occurred on December 21, 2002, highlighted a number of weaknesses in the current corrective action and preventive maintenance programs. We expect that ongoing corrective actions committed by the licensee will resolve these weaknesses.

BACKGROUND AND DISCUSSION

This report fulfills the requirement of 10 CFR 54.25 which states that the ACRS review and report on license renewal applications. Peach Bottom Units 2 and 3 are General Electric boiling water reactors (BWRs) Type 4, with Mark I containments. Exelon requested renewal of their operating licenses for 20 years beyond the current license terms, which expire on August 8,

2013 for Unit 2 and July 2, 2014 for Unit 3. Peach Bottom Unit 1 is on the same site as Units 2 and 3. It is permanently shutdown and in SAFSTOR condition. There are no systems shared between Unit 1 and Units 2 and 3.

The final SER documents the staff's review of the information submitted by Exelon, including commitments that were necessary to resolve open items identified by the staff in the initial SER. Peach Bottom is the second BWR plant to seek license renewal and the first to use a system-based approach to identify structures, systems, and components (SSCs) that should be included in the scope of license renewal. The staff reviewed the completeness of the applicant's identification of SSCs that are subject to aging management; the integrated plant assessment process; the identification of the possible aging mechanisms associated with passive, long-lived components; and the adequacy of the aging management programs. The staff also conducted several inspections at Exelon's engineering offices and the Peach Bottom site to verify the adequacy of the methodology described in the application and its implementation.

During our Plant License Renewal Subcommittee meeting on October 30, 2002, the staff presented a well-structured and effective overview of its inspections. As in other applications, the review of the Peach Bottom license renewal application required a substantial number of requests for additional information (RAIs) and depended heavily on review of plant drawings at the site.

On the basis of our review of the final SER, we agree with the staff's conclusion that all open items and confirmatory items have been appropriately closed, and there are no issues that would preclude renewal of the operating licenses for Peach Bottom Units 2 and 3. We also concur with all four license conditions requiring the applicant to take certain actions before beginning the period of extended operation.

The process implemented by the applicant to identify SCCs that are within the scope of license renewal has been effective. The applicant included portions of nonsafety-related systems in the scope of license renewal if their failure could impact in-scope safety-related systems. When a system met this criterion, the entire system, passing through seismic Class I structures, was considered in scope. Portions of these systems that run through non-seismic structures were evaluated by walkdowns and were added to the scope as appropriate. An example of such a system is the service water system that could spray liquid on the safety systems.

Certain nonsafety systems have portions that perform a safety function, and the applicant realigned these portions to be included as part of the in-scope safety system. For example, a nonsafety-related system such as chilled water or instrument air that penetrates the containment has been realigned to be considered in scope as a part of the containment pressure retaining function. The in-scope portions of the realigned system typically include the first valve outside and inside containment and all of the piping in between.

Peach Bottom is located on the Susquehanna River on a large pond created by the Conowingo Dam (also owned by Exelon). Peach Bottom relies on the pond for operation of the units, but does not depend on the pond for emergency service water. It does depend, however, on power from Conowingo for station blackout (SBO) via a submerged electrical cable. Consequently, Conowingo is in scope for SBO considerations. The license for the Conowingo Dam will expire

before the extended license period for the Peach Bottom Plant and is expected to be renewed. Should this not occur, other provisions for SBO will be required.

Open items have been closed by bringing all identified SSCs into scope. During our review, we questioned why certain other SSCs were not included in scope and, in all cases, the applicant provided appropriate justification for their exclusion. We conclude that the applicant and the staff have appropriately identified all SSCs that are within the scope of license renewal.

The applicant also performed a comprehensive aging management review of all SSCs that are within the scope of license renewal. The application describes 34 aging management programs for license renewal, which include existing, augmented, and new programs.

The applicant has proposed to inspect only the refueling water storage tank and infer from that inspection the condition of the condensate storage tank. Since these storage tanks are similar in construction, are exposed to similar water chemistry, and are located in similar environments, we agree with the staff that this is an acceptable approach.

Peach Bottom Units 2 and 3 have toroidal suppression pools and there was discussion regarding the material condition of the coating and steel. The applicant satisfactorily described inspections conducted to date to ensure the quality of material condition of the coating and steel and also described plans for future inspections.

There was a concern that the applicant did not appear to have an aging management program for the buried portions of the standby gas treatment system (SGTS) ductwork. The applicant stated that the ductwork was either hot and/or insulated and no aging management program was required. During the third license renewal inspection at Peach Bottom, the inspectors visually examined accessible exterior and interior surfaces of the SGTS and found no age-related degradation. Based on the results of this inspection, the staff agreed with the applicant.

Peach Bottom has had a history of cable failure due to moisture intrusion in 4Kv and 13Kv service. Many cables have been replaced with moisture-resistant cables. In recent NRC inspections, water intrusion was evident in certain manholes and seems to be an ongoing problem. Consequently, the applicant committed to a program to manage the aging of inaccessible medium-voltage cables. This aging management program provides reasonable assurance that the intended functions of the systems and components will be maintained consistent with the current licensing basis during the period of extended operation.

With regard to the inspection of reactor vessel internals, the applicant has committed to the programs prescribed in 15 BWR Vessel and Internals Project (BWRVIP) reports. These programs have all been approved by the NRC staff for 60 year plant life except those described in BWRVIP-78, BWR Integrated Surveillance Program, and BWRVIP-86, BWR Integrated Surveillance Program Implementation Plan, which are approved only for 40 year plant life. The staff is currently reviewing these BWRVIP reports for 60 years. The applicant has agreed to a license condition to notify the NRC, before entering the period of extended operation, of its decision to implement either the staff-approved integrated surveillance program (ISP) or a staff-approved plant-specific ISP. Also, the staff has not yet approved BWRVIP-76, “BWR Core Shroud Inspection and Flaw Evaluation Guidelines.” Because the staff’s review is not complete, the applicant has agreed to another license condition to notify the NRC of its decision

to implement either the staff-approved core shroud inspection and evaluation guidelines program, or a staff-approved plant-specific program.

Exelon has also identified those components at Peach Bottom that are supported by time-limited aging analyses (TLAAs). These TLAAs show that the components analyzed have sufficient margin to operate for the period of extended life.

Peach Bottom Unit 2 experienced a scram on December 21, 2002. This event highlighted a number of weaknesses in the current corrective action and preventive maintenance programs. We expect that ongoing corrective actions committed by the licensee will resolve these weaknesses. During inspections, the staff should assess the effectiveness as well as the adequacy of implementation of these programs.

The applicant and the staff have identified plausible aging effects associated with passive, long-lived components. Adequate programs have been established to manage the effects of aging so that Peach Bottom Units 2 and 3 can be operated in accordance with their current licensing bases for the period of extended life without undue risk to the health and safety of the public.

Sincerely,

/RA/

Mario V. Bonaca
Chairman

References:

1. Letter dated July 2, 2001, from J. A. Benjamin, Exelon Generation Company, LLC, to U. S. Nuclear Regulatory Commission, transmitting Application to Renew the Operating Licenses of Peach Bottom Atomic Power Station Units 2 and 3
2. U.S. Nuclear Regulatory Commission, NUREG-XXX, "Safety Evaluation Report Related to the License Renewal of Peach Bottom Atomic Power Station, Units 2 and 3" February, 2003.