

March 12, 2002

Mr. Michael P. Gallagher
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200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

Dear Mr. Gallagher:

By letter dated July 2, 2001, Exelon Generation Company, LLC (Exelon), submitted for Nuclear Regulatory Commission (NRC) review an application, pursuant to 10 CFR Part 54, to renew the operating licenses for the Peach Bottom Atomic Power Station, Units 2 and 3. The NRC staff is reviewing the information contained in this license renewal application and has identified, in the enclosure, areas where additional information is needed to complete its review. Specifically, the enclosed request for additional information (RAI) is from Appendix B Aging Management Activities.

Please provide a schedule by letter, or electronic mail for the submittal of your response within 30 days of the receipt of this letter. Additionally, the staff would be willing to meet with Exelon prior to the submittal of the response to provide clarification of the staff's request for additional information.

Sincerely,

/RA/

Raj K. Anand, Project Manager
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-277 and 50-278

Enclosure: As stated

cc w/encl: See next page

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**REQUEST FOR ADDITIONAL INFORMATION
PEACH BOTTOM UNITS 2 AND 3**

B.1.8 Inservice Inspection (ISI) Program

- RAI B.1.8-1** The AMP manages the aging effects for the ASME Class 1, 2, and 3 pressure retaining components exposed to various environments that include reactor coolant, borated water, raw water, steam, wetted gas, sheltered, and outdoor environments. The AMP, however, does not cover the ASME Class 1, 2, and 3 pressure retaining components exposed to the condensate storage tank (CST) water or torus water environments. Justify why these components have not been included.
- RAI B.1.8-2** In the LRA, it is stated that the ISI program provides aging management for ASME Class 1 components in the HPCI, core spray, PCIS, RCIC, and RHR systems. Address why all of the ASME Class 2 and 3 components of these systems are not included within the scope of the ISI AMP. ASME Section XI requirements generally apply to Class 1, 2, and 3 components.
- RAI B.1.8-3** In the LRA, it is stated that the ISI program is augmented to address GL 88-01. Describe the aging management program activities related to GL 88-01 in sufficient detail to allow the staff to assess the adequacy of the activities.
- RAI B.1.8-4** Operating experience is one of the 10 attributes of an AMP. The LRA stated that PBAPS has implemented extensive inspection programs through the ISI program to identify IGSCC. The LRA, however, does not describe the operating experience and the effectiveness of the inspection program in the identification of IGSCC. Address the operating experience and the effectiveness of the inspection program in the identification of IGSCC.
- RAI B.1.8-5** The LRA does not specify whether small bore piping is included within the scope of the ISI program. The staff believes that a one-time inspection is appropriate for small bore piping (diameter < 4 inches) because it is exempted from ASME Code Section XI ISI and, thus, does not receive volumetric examination during ISI. State whether small bore piping is included within the scope of the ISI program and identify the AMP that will be used for small bore piping. If not, provide the AMP that is used to manage aging in small bore piping.

B.1.9 Primary Containment Inservice Inspection Program

- RAI B.1.9-1** The LRA is not specific as to whether the examination and testing of the pressure retaining bolting associated with the primary containment structure are included as part of the program. Clarify whether the examination and testing of the pressure retaining bolting associated with the primary containment structure are included as part of the program.
- RAI B.1.9-2** In describing the "Operating Experience," the AMP discusses the degradation of coating in the containment torus. The maintenance of coating can act as the first line of defense against the metal corrosion in the primary containment structure. Explain why the maintenance of coating is not considered as the first line of

defense against the metal corrosion in the primary containment structure. Why isn't maintenance of coating included as part of the "*Preventive Actions?*"

- RAI B.1.9-3** In describing "*Parameters Monitored/Inspected*," the AMP disregards monitoring the condition of protective coating; however, monitoring of the protective coating can act as the first line of observation in determining the potential degradation of metal surfaces of the primary containment. Justify why the protective coating on the primary containment surfaces should not be an element of *Parameters Monitored/Inspected*."
- RAI B.1.9-4** The LRA refers to the ASME Code, Section XI, as guidance. Use of Subsection IWE of ASME Section XI for ISI of the pressure retaining metallic components of Class MC containment structure is mandated by 10 CFR 50.55a. Thus, the ASME Section XI requirements are not guidance. Explain how Subsection IWE has been incorporated into your ISI program (i.e., as a guidance document or as a mandatory document).
- RAI B.1.9-5** Under "*Operating Experience*," the LRA describes torus degradation found at the two PBAPS units in 1991, but does not provide sufficient information to permit the staff to evaluate the operating experience. Provide quantitative information regarding the torus degradation found at the two PBAPS units in 1991. Were these degradations dispositioned by corrective actions or by engineering evaluation? Was water chemistry the root cause of the degradation? In some cases, the staff has found the torus degradation near the strainers due to the stagnant water conditions. Describe the location of the degradation.
- RAI B.1.9-6** In describing the operating experience regarding the torus degradation, the LRA states, "The interior surfaces were recoated and torus grade water chemistry was improved. Subsequent pressure suppression chamber inspections indicate that the rate of degradation has decreased significantly." Provide the rate of metal reduction and, assuming that rate continues in the future, provide the projected thickness of the torus shell in those areas at the end of the extended period of operation. Compare the projected thickness to the thickness required to support the current licensing basis for the affected systems.
- RAI B.1.9-7** In describing the operating experience regarding the drywell degradation, the LRA states, "No failure of containment components due to the loss of material or failure of the moisture barrier inside the drywell due to the loss of sealing has occurred at PBAPS." However, operating experience can include degradation that is found and corrected. Provide additional information regarding the extent of degradation found on the drywell shell at the junction with the moisture barrier. What corrective actions have you taken to prevent the recurrence of this type of degradation in the future? If you disposed of such degradation by engineering evaluation, provide a summary of your engineering evaluation, and its projection for the end of the extended period of operation.

B.1.10 Primary Containment Leakage Rate Testing Program

RAI B.1.10-1 DELETED

RAI B.1.10-2 In "*Administrative Controls*," the LRA states that all aging management activities are subject to administrative controls, which require formal reviews and approvals. The PBAPS Technical Specifications also require administrative controls for the Primary Containment Leakage Rate Testing Program. Provide information regarding which administrative controls will be used for this program during the extended period of operation.

RAI B.1.10-3 The staff has found that in BWR Mark 1 containments, the expansion bellows located in the vents between the drywell and the suppression pool are subjected to transgranular stress corrosion cracking (see NRC Information Notice 92-20: "Inadequate Local Leak Rate Testing"). Moreover, the staff has recognized that some of the bellow construction would require Type A testing for detecting such degradation of the bellows. Please provide the "operating experience" related to the condition of these bellows at PBAPS, and provide information regarding the leak rate testing of these bellows during the extended period of operation.

RAI B.1.10-4 The first sentence of LRA, UFSAR Supplement, Section A.1.10 states, "The primary containment leakage rate testing program is that portion of the PBAPS primary containment leakage rate testing program that is being credited for license renewal." It is not clear what portion of the program is not included and not credited for license renewal. It is the staff's understanding that the program includes all the primary containment leakage testing requirements as stipulated in the PBAPS Technical Specifications. Please clarify.

B.1.14 Crane Inspection Activities

RAI B.1.14-1 DELETED

RAI B.1.14-2 It is stated in LRA Section B.1.14, that the "crane inspection activities comply with the requirements of ASME Code, Sections B32.2, B30.11, B30.16 and B30.17." Describe the specific PBAPS plant procedures that implement these requirements for the overhead and gantry cranes.

B.1.16 Maintenance Rule (MR) Structural Monitoring Program (SMP)

RAI B.1.16-1 The scope of the MR SMP does not discuss the inspection of inaccessible structural components. Structural components in contact with an aggressive soil/water environment may be subjected to aging effects such as cracking and loss of material.

- (a) Provide an analysis of the soil/water environment.
- (b) Describe the provisions of the MR SMP for inspecting normally inaccessible structures and components.
- (c) If the MR SMP does not provide for inspections of inaccessible structural components, then describe the provisions of the program to ensure that the soil/water environment remains nonaggressive (e.g., periodic sampling of groundwater).

RAI B.1.16-2 The acceptance criteria for the AMP states that the inspection results will be documented and evaluated by qualified personnel. Provide a description of the training and qualifications of the personnel that (1) perform the structural monitoring program walkdowns and (2) evaluate the adequacy of the walkdown procedures and findings.

B.2.4 Emergency Diesel Generator Testing and Inspection Activities

RAI B.2.4-1 It is stated in LRA Section B.2.4, Item (10) "*Operating Experience*," that water and sediment have been observed during the fuel oil storage tank inspections at PBAPS. Describe the inspection procedures, including frequency and acceptance criteria for these inspections, in sufficient detail to enable the staff to verify that the aging effects of the potential presence of water in the storage tanks is being adequately managed.

B.2.6 Door Inspection Activities

RAI B.2.6-1 In the door inspection activities, the LRA excluded the inspection of doors in sheltered environments for loss of material. In LRA Section 3.15.4, you have identified carbon steel as the material of construction for these doors. Carbon steel door components could be susceptible to corrosion and wear in moist environments and other environments containing borated water, chlorides, etc. In addition, Appendix A of NUREG-1522, "Assessment of Inservice Conditions of Safety-Related Nuclear Plant Structures," (industry-wide experience) clearly indicates that structural steel is subjected to corrosion under the ranges of temperature and humidity that may occur even in sheltered environments in nuclear power plants. Further, hinges and latches could be susceptible to wear and erosion, even under a sheltered environment. Provide justification for excluding inspection of doors in the sheltered environment from the door inspection activities.

- RAI B.2.6-2** The enhanced door inspection activities do not address the operating attributes of the doors, such as hinges, latches, and the operating mechanism of the door, which are also subjected to aging and fatigue related degradation. Provide justification for excluding these important parameters related to the intended function of the doors.
- RAI B.2.6-3** The change in material properties of seals and gaskets cannot be assessed by visual inspection. It would require testing. Provide information related to detecting changes in material properties of seals and gaskets of the doors.
- RAI B.2.6-4** The LRA states that doors are inspected “periodically.” This description is not sufficient to allow the staff to evaluate the effectiveness of the monitoring of degradation of the doors. Provide information regarding the frequency of performing the door inspections.

B.2.9 Fire Protection Activities

- RAI B.2.9-1** It is stated in LRA Section B.2.9 that functional testing for flow blockage will be conducted for sprinkler heads that have been in service for 50 years. Clarify if this testing would be done for all sprinkler heads that have been in service for 50 years, or on a sampling basis. Will this test be conducted in a laboratory or would it be a field test? This information would enable the staff to verify compliance with NFPA-25 requirements. Also, indicate whether or not the test and replacement of these sprinklers would fully comply with the NFPA requirements.
- RAI B.2.9-2** Deleted.
- RAI B.2.9-3** It is not clear to the staff whether piping supports and hangers in the fire protection piping system are within the scope of the AMPs for component supports. Please verify that all piping supports and hangers in the fire protection piping system are covered by the aging management programs for the component supports. If not, discuss the specific AMPs for the piping supports and hangers in the fire protection system.
- RAI B.2.9-4** Describe the specific acceptance criteria for the timely detection of cracking, delamination, and separation of the fire barrier penetration seals in sufficient detail to allow the staff to evaluate whether the aging effects are adequately managed.

B.2.10 HPCI and RCIC Turbine Inspection Activities

- RAI B.2.10-1** In the review of aging management results for RCIC system (Section 3.2, table 3.2-1, p. 3-32 of the LRA), the HPCI and RCIC turbine inspection activities AMP is listed as the aging management program for lubricating oil tanks with lubricating oil as the applicable environment. Wetted gas environment is also in the program scope of the AMP. Please identify the reference to the AMP being applied to components in a wetted gas environment.

RAI B.2.10-2 In the LRA, it is stated that the HPCI and RCIC turbine inspection activities consist of visual inspections of the turbine casings and the HPCI lubricating oil tank internals for evidence of loss of material. The LRA did not provide sufficient information to permit the staff to evaluate the effectiveness of the inspection activities. At what level is the visual inspection (e.g., VT-1, etc.) conducted?

RAI B.2.10-3 The LRA did not provide sufficient information to permit the staff to evaluate the effectiveness of the inspection activities related to the lubricating oil tank internals. How will the inspection of the lubricating oil tank internals be conducted? Is UT methodology also used as part of the inspection procedures?

RAI B.2.10-4 It is stated in the LRA that visual examinations of the turbine casings, lubricating oil tank, and flexible hoses are conducted on a periodic basis. What is the frequency of the examinations?

B.2.11 Susquehanna Substation Wooden Pole Inspection Activity

RAI B.2.11-1 The LRA states that the wooden pole is inspected for loss of material due to ant, insect, and moisture damage, and for change in material properties due to moisture damage. Section A.1.2.3.3, "Parameters Monitored or Inspection," of NUREG 1800 states that the parameters to be monitored or inspected should be identified and linked to degradation of particular structures and component intended function(s) (Branch Technical Position on Aging Management Program Elements). Identify what kind of parameters and material properties are monitored or inspected. Also, explain how the buried part of the wooden pole is monitored/inspected.

RAI B.2.11-2 Section A.1.2.3.5 of NUREG 1800 states that it is necessary to confirm that timing of the next scheduled inspection will occur before a loss of structure or component intended functions (Branch Technical Position on Aging Management Program Elements). Provide a justification for the ten-year inspection interval of the wooden pole.

RAI B.2.11-3 Section A.1.2.3.6, "Acceptance Criteria," of NUREG 1800 states that the acceptance criteria and its basis should be described (Branch Technical Position on Aging Management Program Elements). Provide a brief description of the acceptance criteria in terms of (1) assessing the severity of the observed degradations and (2) determining whether corrective action is necessary.

RAI B.2.11-4 The LRA stated that the AMP will be enhanced, but the LRA did not provide sufficient detail to allow the reviewer to assess the adequacy of the activities. Provide a description of how the Susquehanna Substation Wooden Pole Inspection Activity (SSWPIA) will be enhanced.

B.3.1 Torus Piping Inspection Activities

RAI B.3.1-1 There is inconsistency between Tables 3.2-2 and 3.2-5 of the LRA and the description of Program Scope in the Torus Piping Inspection Activities AMP.

Tables 3.2-2 and 3.2-5 of the LRA show that the AMP is credited to manage the loss of material for the components in the core spray and residual heat removal systems. The "*Program Scope*," however, does not include these two systems. Why are the torus piping of the core spray and residual heat removal systems not included in the program scope?