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10CFR54

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Peach Bottom Atomic Power Station, Units 2 and 3
Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Response to Request for Additional Information Related to Scoping and Screening Results for Reactor Coolant System, Engineered Safety Features Systems, and Auxiliary Systems

Reference: Letter from R. K. Anand (USNRC) to M. P. Gallagher (Exelon), dated March 1, 2002

Dear Sir/Madam:

Exelon Generation Company, LLC (Exelon) hereby submits the enclosed responses to the request for additional information transmitted in the reference letter. For your convenience, attachment 1 restates the questions from the reference letter and provides our responses.

If you have any questions or require additional information, please do not hesitate to call.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 05-07-02 Michael P. Gallagher

Michael P. Gallagher
Director, Licensing & Regulatory Affairs
Mid-Atlantic Regional Operating Group

Enclosures: Attachment 1

cc: H. J. Miller, Administrator, Region I, USNRC
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS

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ATTACHMENT 1

Exelon Generation Company, LLC (Exelon)
License Renewal Application (LRA)
Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3

Request for Additional Information

2.3 Scoping and Screening Results

2.3.1 REACTOR COOLANT SYSTEM

RAI 2.3.1-1

In Table 3.1-1 of the LRA, "spraying" of the fuel assemblies following a LOCA was not identified as an intended function for the core spray spargers. The table also identified "cracking" as the only aging effect for the subject components. The staff requests the applicant to address the following staff concerns:

a) The staff believes that adequate long-term core cooling following a LOCA can only be assured by retaining the original spray distribution over the core which was assumed for the CLB. In the safety evaluation report (SER) for the BWRVIP-18 report, the staff had concluded that when performing inspection of core spray spargers, all BWR plants need to be treated as "geometry-critical" plants. In addition, it is staff's understanding that the previous BWRVIP designations of "geometry-tolerant" plants have been rescinded and all plants are now considered to be "geometry-critical." Consequently, in order to assure adequate cooling of the uncovered upper third of the core, the core spray system must provide adequate spray distribution to all bundles in the core. It is also staff's understanding that leakage through sparger and piping cracks and repairs and potential blockage of spray nozzles must be considered in assessing the core spray distribution. As a result, the staff believe that it is essential that spraying water on the fuel assemblies in a pattern that was originally designed for the core be acknowledged as one of the license renewal intended functions for the spargers, and that the applicant's aging management activities be designed to provide a reasonable assurance that the original spray distribution will be preserved during the period of extended operation. The staff, therefore, requests the applicant to identify the spray distribution function as an intended function of the spargers to be within the scope of license renewal so that this function will be maintained during the license renewal period, and the applicant affirm that when performing inspection of core spray spargers, the Peach Bottom plants are inspected in accordance to the requirements for the geometry-critical plants, as required by the staff SER for BWRVIP-18 report.

b) The staff believes that "cracking" of the core spray spargers is not the only aging mechanism which can degrade the spray distribution over the core following a LOCA, as Table 3.1-1 has suggested. Blockage, partially or fully, of the spray holes due to repairs to reactor internals, by foreign objects (loose parts), and/or due to corrosion can also influence the core spray pattern. The staff understands that the applicant's ISI program (B.2.7) for the vessel internals is geared towards detecting cracking of the internals. The staff, therefore, requests the applicant to explain how they plan to detect other means of degradation of the spray pattern, as discussed above, when the B.2.7 program is used for managing the aging effects due only to cracking and loss of material, as stated in page B-64 of the LRA.

Response:

a) `The core spray sparger is identified in BWRVIP-06, "Safety Assessment of BWR Reactor Internals," as a safety-related component. The BWRVIP-06, section 2.5.2 on safety assessment of core spray sparger states, "The loss of the ability to distribute coolant to individual fuel bundles only has safety significance when the core cannot be fully flooded, as in the case of a recirculation line break...However, this loss of localized cooling would affect a limited number of bundles. The resultant consequences for BWR/3-6 plants would be bounded by plant safety analyses...In BWR/3 and BWR/4 plants (PBAPS is a BWR/4 plant), analysis has shown that steaming of water in the lower bundle provides adequate localized cooling...Therefore, in these plants, the loss of spray distribution has no safety significance." However, based on GE Position Summary DRF-E22-00135-01, Rev. 0, "Long-Term Post-LOCA Adequate Core Cooling Requirements," we agree that spray is an intended function of the core spray spargers.

PBAPS Units 2 and 3 are following the latest BWRVIP Guidelines (Ref. BWRVIP response to NRC Safety Evaluation of BWRVIP-18, dated 1/11/99). This latest guidance concedes that all plants are considered "geometry critical" with respect to core spray sparger examination. The Reactor Pressure Vessel and Internals ISI program, LRA Appendix B.2.7, directs reexamination of the sparger welds in accordance with the latest BWRVIP-18 guidelines.

b) Because core spray piping is made of stainless steel material, corrosion is not a credible aging mechanism to cause flow blockage. Also, BWRVIP-18, "Core Spray Internals Inspection and Flaw Evaluation Guidelines," provides a means to inspect the core spray piping. When performing the inspection of the welds and brackets for the aging effect of cracking, the nozzle openings are also visually inspected for flow blockage.

RAI 2.3.1 – 2

The staff requests the applicant to verify whether the plant is equipped with a thermal shield, whose intended function is to provide shielding for the safety-related SCs, such as the reactor vessel and the internals, from gammas and neutrons, and thereby, it may be relied upon to minimize irradiation induced embrittlement of the vessel and/or the internals. If the component exists at Peach Bottom, please justify its exclusion from aging management; otherwise, submit an AMR for the subject component.

Response:

The BWR internals do not provide gamma or neutron shielding. This function is accomplished by the water. Further, the BWR design does not employ a thermal shield. Therefore, there is no need to identify such a component in the LRA.

RAI 2.3.1 – 3

The staff requests the applicant to verify whether the pumps at Peach Bottom, such as the recirculation pumps, are designed with lube motor-oil collection systems, as required under 10 CFR 50, App. R, III O. If they are, then the components should be in scope requiring aging management. It appears that the subject components were not identified in the LRA, and therefore, it is requested that the exclusion be justified.

Response:

10 CFR 50 App R III O requires oil collection systems for reactor coolant pumps if the containment is not inerted during normal operation. PBAPS containments are inerted during normal operation. Therefore, this requirement is not applicable.

RAI 2.3.1 – 4

The staff SER for the BWRVIP-41 listed the jet pump sub-components that should be subjected to an AMR. The following sub-components of the jet pump were listed in the BWRVIP-41 SER, and were also described in the Peach Bottom UFSAR, Section, "Jet Pump Assemblies;" but the sub-components were not identified in the LRA:

Nozzle thermal sleeve, riser pipe, and diffuser.

Please explain, why.

Response:

Sub-components of the jet pump assembly were not separately identified in the LRA. 10 CFR 54 only requires that the application include a listing of components. Sub-components are not required.

However, the Aging Management Review (AMR) Technical Report includes the following sub-components as part of jet pump assembly:

Riser pipe, riser elbows, thermal sleeve, diffusers, hold down beams, riser braces, inlet-mixer nozzles, elbows and adapters, restrainer brackets and restrainer bracket wedges and adjusting screws.

2.3.2 ENGINEERED SAFETY FEATURES (ESF) SYSTEMS

RAI 2.3.2 – 1

One of the intended functions of the main steam line flow restrictors is to limit steam line flow during a steam line rupture outside of primary containment until the MSIVs can close, thereby limiting potential radioactive release. Over the extended life of the plant, it is therefore, essential to maintain the flow area of the flow restrictors used in the CLB to calculate the amount of steam released. The staff believes that erosion/corrosion due to high energy steam flow can eventually increase this flow area beyond the value used in the CLB. It appears from the Table 3.4-1 of the LRA that the applicant's aging management program for flow-accelerated corrosion (FAC), which was implemented as required by NRC Generic Letter 89-08, "Erosion/Corrosion-Induced Pipe Wall Thinning" has not been applied to the flow restrictor component groups; however for some of the flow restrictors, the In service Inspection (ISI) program is applied in addition to RCS chemistry control. The staff requests the applicant to provide the following information:

a) Are the main steam line flow restrictors, and their flow restriction function within scope? If not, why?

b) If in scope, how will the applicant determine that the flow area does not exceed more than the value used in the CLB, so that the intended functions will be maintained consistent with the CLB for the period of extended operation?

Response:

a) The main steam line flow restrictors are in the scope of license renewal. The main steam line flow restrictors are identified under Piping Specialties in LRA Table 3.4.1. The main steam line flow restrictor is identified in the LRA as a flow element consisting of a body and a throat. The intended function of the flow element throat is identified as Throttle, which addresses the main steam line flow restriction function.

b) The main steam line flow restrictors are designed with a throat constructed of stainless steel. In accordance with EPRI NSAC-202L-R2, "Recommendations for an Effective Flow-Accelerated Corrosion Program," stainless steel components are not susceptible to flow-accelerated corrosion. The LRA identifies aging effects of Loss of Material and Cracking for the stainless steel throat. The RCS Chemistry Activity (LRA Appendix B.1.2) is adequate to manage these aging effects, such that the intended functions will be maintained consistent with the CLB for the period of extended operation.

RAI 2.3.2 – 2

The low pressure coolant injection (LPCI) coupling was identified in the BWRVIP-06 report as a safety-related component. It appears, however, that the component was not identified in the LRA requiring an AMR. If the component exists at Peach Bottom, then the staff requests the applicant to justify its exclusion from aging management; otherwise, submit an AMR for the subject component.

Response:

As is noted in BWRVIP-06, the use of a LPCI coupling is limited to three BWR/4 plants. Neither PBAPS unit has a LPCI coupling, so it is not identified in the LRA.

2.3.3 AUXILIARY (AUX) SYSTEMS

RAI 2.3.3 – 1

The staff understands that the control rod drop accident is a design-basis event for Peach Bottom, and that in the CLB it is assumed that the control rod drive is fully withdrawn before the stuck rod falls out of the core at a maximum velocity of 5 ft/sec. According to Section 1.6.2.13 of the UFSAR, the control rod velocity limiter, an engineered safeguard, limits the rod drop velocity to less than this value, and the velocity limiters contain no moving parts. Furthermore, the staff understands that the limiter is relied upon to keep the resultant doses due to radioactive material release below the guideline values of 10 CFR 100. One of the required

functions designated in the rule for safety-related SSCs, as delineated in 10 CFR 54.4(a)(1)(iii), is the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR 100 guidelines. It appears that the subject components were not identified in the LRA, and therefore, the staff requests the applicant to either include the subject components within the scope of license renewal requiring an AMR, or submit a basis for concluding that the components are not in scope.

Response:

The control rod velocity limiter is part of the control rod blade, which is short lived and therefore is not subject to aging management review requirements.

RAI 2.3.3 – 2

Section 1.6.2.14 of the UFSAR states that the CRD Housing Supports (CRDHS) limit the travel of a control rod in the event that a control rod housing is ruptured. The supports prevent a nuclear excursion as a result of a housing failure, thus protecting the fuel barrier, and limiting radioactive releases. In addition, Section 3.4.6.4 of the UFSAR states that following a postulated failure of the drive housing at the attachment weld at the same time the control rod is withdrawn, and if the collet were to stay unlatched, the housing would separate from the vessel, and the drive and housing would be blown downward against the CRDHS. Since credit is taken for the CRDHS, and the CRDHS are passive and long-lived, the staff believes that the subject components should be within the scope of license renewal requiring aging management. It appears, however, that the subject components and their intended function of limiting travel of the control rod following control rod housing rupture have not been identified in the LRA. Therefore, the staff requests the applicant to provide an explanation.

Response:

The CRD housing supports are included in the scope of license renewal and subject to aging management review. The supports are not listed separately in the LRA; but included in the component support commodity group described in section 2.4.13 of the LRA. This approach is consistent with NUREG-1800, wherein CRD housing supports are not listed separately.