September 27, 2002

Mr. John L. Skolds
Chief Operating Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INSPECTION REPORT 50-277/02-10, 50-278/02-10

Dear Mr. Skolds:

On August 15, 2002, the NRC essentially completed the second of three inspections of your application for renewal of the operating licenses for the Peach Bottom Atomic Power Station (PSAPS), Units 2 and 3. Two members of the inspection team returned to Peach Bottom Atomic Power Station the week of September 16, 2002, to complete the inspection by performing a walkdown of the Unit 2 containment during the regularly scheduled outage. The results of the inspection were discussed with members of your staff on August 15, 2002, at a public exit meeting held at the Peach Bottom Inn, Restaurant and Lounge. The enclosed inspection report presents the results of that inspection.

The inspection was conducted in accordance with NRC Manual Chapter 2516, “Policy and Guidance for the License Renewal Inspection Program,” using NRC Inspection Procedure 71002, “License Renewal Inspections.” The inspection was the second of three NRC inspections that review your application for a renewed license for the PBAPS facilities. The inspection consisted of a selected examination of procedures and representative records, systems walkdowns, and interviews with personnel regarding the aging management of systems, structures and components within the scope of license renewal in accordance with the Code of Federal Regulations (10 CFR Part 54).

The aging management portion of your license renewal activities were being implemented or planned as described in your license renewal application. The documentation supporting your application is in an auditable and retrievable form. The team identified three open items for which your staff must take further action to assure your application is complete and accurate: (1) the aging management program that will be applied to fuse clips has not been specified, (2) one Boiling Water Owners Group Vessel Internals Program procedure was included in the application before the procedure was endorsed by the NRC, and (3) a training kit, used to assure that inspectors can identify cable aging effects, did not include samples of the kinds of cable that are installed at Peach Bottom. Except for these open items, your aging management programs can acceptably identify and manage the structures, systems, and components within the scope of license renewal.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

If you have any questions, please contact David Lew of my staff at (610) 337-5120.

Sincerely,

/RA/

Wayne D. Lanning, Director
Division of Reactor Safety

Docket Nos: 50-277, 50-278
License Nos: DPR-44, DPR-56

Enclosure: Inspection Report Nos. 50-277/02-10 and 50-278/02-10

Attachments: (1) Supplemental Information
(2) Structures/Systems Selected for Inspection

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Vice President, Mid-Atlantic Operations Support
Senior Vice President, Nuclear Services
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-277, 50-278
License Nos:	DPR-44, DPR-56
Report Nos:	50-277/02-10, 50-278/02-10
Licensee:	Exelon Generation Company, LLC Correspondence Control Desk 200 Exelon Way, KSA 1-N-1 Kennett Square, PA 19348
Facility:	Peach Bottom Atomic Power Station, Units 2 and 3
Location:	1848 Lay Road Delta, Pennsylvania
Inspection Period:	July 8 to August 15, 2002
Inspectors:	Michael Modes, Team Leader, Region I Richard Barkley, Senior Project Engineer, Region I Suresh Chaudhary, Senior Reactor Engineer, Region I Alfred Lohmeier, Reactor Inspector, Region I George Morris, Reactor Inspector, Region I
Approved by:	David Lew, Chief Performance Evaluation Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000277-02-10, IR 05000278-02-10, on July 8 - August 15, 2002; Peach Bottom Atomic Power Station, Units 2 & 3; License Renewal Application, Aging Management Inspection Report.

This inspection of license renewal activities was performed by five regional office inspectors. The inspection program followed was NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0612.

The inspection concluded that the aging management portion of Exelon's license renewal activities were conducted as described in the license renewal application and that documentation supporting the application is in an auditable and retrievable form. The implemented and planned aging management processes acceptably manage the aging effects on the systems, structures, and components within the scope of license renewal. However, the following open items were identified:

(1) Fuse clips (or holders), within the scope of the application, were originally classified as active components by the applicant. Classification of some of the clips as active was considered incorrect. This was documented in the scoping inspection report as an open item (50-277/02-09-02; 50-278/02-09-02). Further discussion by the NRC staff and the industry resolved this scoping question, and fuse clips were included within the scope of license renewal. At the conclusion of this inspection, however, the issue of aging management of fuse clips had not been resolved. So while open item 50-277/02-09-02; 50-278/02-09-02 is considered closed, the follow-on issue of aging management of fuse clips is considered open. **(Open Item 50-277/02-10-01; 50-278/02-10-01)**

(2) Where applicable Exelon took advantage of the existing Boiling Water Owners Group Vessel Internals Program (BWRVIP) to manage the identified aging of the reactor vessel internals. One of the procedures, BWRVIP 76, was still being discussed by NRC staff with the Owners Group. Because NRC has not yet endorsed BWRVIP 76, the procedure cannot currently be used by the applicant for aging management. This item is considered open. **(Open Item 50-277/02-10-02; 50-278/02-10-02)**

(3) As part of the aging management of cable, the applicant will develop a training program for their staff who would check the cables. As part of the training program, the applicant may include samples of aged cable in the form of a cable kit similar to one acquired from the Electric Power Research Institute. The EPRI kit does not currently contain examples of the kinds of cable that are being age managed at Peach Bottom. This item will remain open until the applicant develops or plans a cable kit that includes samples of the kinds of cable at Peach Bottom. **(Open Item 50-277/02-10-03; 50-278/02-10-03)**

Report Details

I. Inspection Scope

This inspection was conducted to determine if the license renewal application (LRA) submitted by the Exelon Generating Company (Exelon), herein referred to as the applicant, for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, was in accordance with 10 CFR Part 54, regarding the aging management of systems, structures and components (SSC). The team evaluated the applicant's implementation of the aging management process by reviewing a number of risk significant plant systems and structures that the applicant determined to be within the scope of license renewal. The inspection objective was to determine if the programs submitted for these selected systems and structures, as part of the license renewal application, are consistent with NRC guidance for license renewal including the statements of consideration (SOC) that accompanied the rule (60FR22461, published May 8, 1995); Regulatory Guide 1.188, "Standard Format and Content for the Application to Renew Nuclear Power Plant Operating Licenses," dated July 2001; and the draft license renewal standard review plan (SRP-LR), "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants," dated April 21, 2000, and other staff guidance documents. The results of the review in this area are discussed below.

By letter dated July 2, 2001, Exelon submitted the LRA for PBAPS. The team reviewed supporting documentation and interviewed applicant personnel to confirm the accuracy of the LRA conclusions. The systems and structures selected for review during this inspection are listed in Attachment 2 to this report.

II. Findings

A. Evaluation of Mechanical Aging Management Activities

1. Reactor Coolant System Chemistry Program

The Reactor Coolant System (RCS) Chemistry Program is an existing program which is credited with managing the effects of aging on the RCS and other SSCs that directly communicate with the RCS. The aging effects are managing by maintaining RCS chemistry within stringent standards established by the Electric Power Research Institute (EPRI) to minimize corrosion (i.e., loss of material) and cracking. The RCS chemistry program and supporting chemistry procedures, surveillance test procedures and graphs of historic chemistry conditions for contaminates such as chlorides and sulfates were reviewed to determine the effectiveness of the program.

The inspectors noted that Peach Bottom has typically maintained RCS water chemistry contaminant levels to a small fraction of Technical Specification (TS) limits and has established more stringent administrative standards for RCS chemistry than prescribed by EPRI TR-103515, "BWR Water Chemistry Guidelines." On increasingly infrequent occasions, chemistry excursions occurred due to river water intrusion caused by condenser tube leakage or plant outage activities or due to resin intrusion events. These events were promptly identified and dealt with to ensure that chemistry conditions returned to normal as promptly as possible. In recent years, significant efforts were undertaken by Peach Bottom to improve water chemistry to minimize RCS corrosion and cracking. These measures included hydrogen and noble metals addition to the

RCS. In addition, efforts are underway to continue to improve chemistry by taking measures to improve the plant demineralizing systems to avoid future resin intrusion events.

The inspectors concluded that the applicant conducted adequate evaluations as well as industry experience and historical reviews to determine aging effects that can be managed by good RCS chemistry. The applicant provided adequate guidance to ensure aging effects are appropriately managed. Thus, there is reasonable assurance the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

2. Closed Cooling Water System Chemistry Program

The closed cooling water system chemistry program is an existing program which is credited with managing corrosion and the fouling of certain heat exchangers. The aging effects are managed by chemistry sampling and analysis as well as chemical addition to maintain critical chemistry parameters within specifications established by Peach Bottom. The closed cooling water chemistry program and supporting chemistry procedures and graphs of historic chemistry conditions and chemical addition concentrations were reviewed to determine the effectiveness of the program.

The inspectors noted that Peach Bottom has generally maintained closed cooling water chemistry for the reactor building closed cooling water, EDG jacket water and drywell cooling systems within stringent administrative standards. The chemistry program requirements, as contained in Peach Bottom procedures, were consistent with the applicant's license renewal submittal. Peach Bottom chemistry personnel noted that there has been no evidence of significant loss of material or microbiologically influenced corrosion (MIC) in treated systems. In recent years, efforts were undertaken by Peach Bottom to increase the level of corrosion inhibitors in closed cooling water systems to improve water chemistry and thus minimize system corrosion and fouling.

The inspectors concluded that the applicant had conducted adequate evaluations as well as industry experience and historical reviews to determine aging effects that can be managed by good closed cooling water system chemistry. The applicant provided adequate guidance to ensure aging effects are appropriately managed. Thus, there is reasonable assurance the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

3. Lubricating and Fuel Oil Testing Program

The lubricating and fuel oil testing program is an existing program supplemented with minor enhancements which is credited with managing corrosion and cracking as well as fouling of certain SSC heat exchangers. The aging effects are managed by chemistry sampling and analysis as well as the replacement of lubricating and fuel oils that do not meet specifications established by Peach Bottom. The lubricating and fuel oil testing program, supporting chemistry procedures and analysis reports of the condition of certain lubricating and fuel oils were reviewed to determine the effectiveness of the program.

The inspectors noted that Peach Bottom has maintained a lubrication oil analysis program for a number of years for SSC equipment as well as a range of other equipment that are essential to plant power operations. Detailed analysis of lubricating oils provided insights in equipment degradation in addition to other existing Peach Bottom programs such as vibration monitoring performed during inservice testing (IST). The lubricating and fuel oil program requirements, as contained in Peach Bottom procedures, were consistent with the applicant's license renewal submittal.

The inspectors concluded that the applicant had conducted adequate evaluations as well as industry experience and historical reviews to determine aging effects managed by a good lubrication and fuel oil testing program. The applicant provided adequate guidance to ensure aging effects are appropriately managed. Thus, there is reasonable assurance the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

4. Boiling Water Reactor Internals Inspection Program

The Exelon PBAPS Units 2&3 inservice inspection (ISI) program, Specification NE-280, Revision 1, an existing ISI program, complies with requirements of the 1989 Edition of the ASME Boiler and Pressure Vessel Code Section XI. For the examination of the reactor vessel internals, which are not covered by the ASME Code, the PBAPS ISI program is augmented to include requirements from the Boiling Water Reactor Vessel Internals Program (BWRVIP) guidelines, an industry developed effort focused on detecting evidence of projected future component degradation. The proprietary guidelines of BWRVIP have been developed through proprietary results of study programs at the Electric Power Research Institute (EPRI). The BWRVIP program results were reviewed by PBAPS and the designs and operating conditions reviewed were found to appropriately bound the design and operation of PBAPS. These results were reviewed by NRC and documented in Final Safety Evaluation Reports.

The inspectors reviewed the ISI program for reactor internals within the scope of the license renewal application (LRA) requiring aging management review (AMR). Included in the review were the status of guidelines for inspection and evaluation provided to NRC by the BWRVIP, including core shroud, core shroud re-examination, and core shroud vertical welds (BWRVIP - 01,07, 63), Generic Letter 88-01 inspection schedules (BWRVIP - 75), core spray and core plate (BWRVIP - 18, 25), top guide (BWRVIP - 26), lower plenum (BWRVIP - 47), jet pump (BWRVIP - 41), core shroud supports (BWRVIP - 38), vessel attachment welds (BWRVIP - 48), and reactor vessel and flaws (BWRVIP - 74). For each of these reports, initial reports were submitted to NRC for review, satisfactory responses to NRC requests for additional information (RAI) were given to NRC, and acceptance provided through the NRC Final Safety Evaluation report and notification of acceptance by NRC. In only one case, that of BWRVIP - 76 (core shroud inspection and flow evaluation guidelines (rev. 2)), the inspector found acceptance through a final safety review had not been completed. The use of procedure BWRVIP-76, for the purposes of aging management remains open. **(Open Item 50-277/02-10-02; 50-278/02-10-02)**

The inspectors reviewed the details of the augmented examination programs in Appendix A of the Specification related to the core spray internals, jet pump assembly, top guide, shroud support, core shroud, core plate, and lower plenum region. The inspector, through examination of the documented technical bases, and discussion with cognizant personnel, found that effective aging effects management is provided. The reactor internals examination plans include the application of ultrasonic techniques for volumetric examinations, liquid penetration tests for surface examinations, and several progressively more sensitive visual inspection techniques for visual inspections. The program provides for condition monitoring activities that detect the early onset of crack formation or material degradation of the internals prior to loss of functionality. This is accomplished through utilization of appropriately sensitive detection methods and an appropriate frequency of application that facilitate trending. The acceptance criteria, corrective action program, confirmation process, and administrative controls are all established within the PBAPS administrative systems.

The inspectors concluded that the applicant conducted adequate inspections, calculations, industrial experience reviews, and historical reviews to determine and locate aging effects. The applicant provided adequate guidance to ensure that aging effects are appropriately managed when the program is implemented. Based on the use of industry guidelines and PBAPS operating experience, there is reasonable assurance that the PBAPS reactor vessel internals augmented ISI program will continue to manage the identified aging effects for the reactor vessel internal safety components to maintain their intended functions consistent with the current licensing basis for the period of extended operation.

5. Generic Letter (GL) 89-13 program

The GL 89-13 program is an existing program which is credited with managing the effects of aging in the heat exchangers cooled by the service water system. The aging effects are managed by conducting performance testing of all heat exchangers, which are cooled by the service water system and which are needed to perform a safety function and by verification of heat exchanger heat transfer capability. Additionally, the aging effects are managed by inspection, on a regular basis, of important portions of the piping of the service water system for corrosion, erosion, and biofouling. The GL 89-13 program, supporting procedures, surveillance tests and historical examples of reduced capacity of exchangers, were reviewed to determine the effectiveness of the program.

The inspectors noted that Peach Bottom's primary problem with heat exchangers is clam intrusion. The program effectively predicts and minimizes the intrusion of the clam population by careful chemistry injection, regular inspection, and on-line flow monitoring. Plant personnel are sensitive to other possible aging effects such as microbiological influenced corrosion or flow accelerated corrosion; very little of which occurs in the systems reviewed. Programs are in place to effectively deal with corrosion problems. Plant personnel are also aware of problems caused at other power plants, nuclear and fossil, by the invasion of Zebra Mussels (deissena polymorpha) and are taking precautions to defend against an invasion by mussels brought from contaminated facilities.

The inspectors concluded that the applicant conducted adequate evaluations as well as industry experience and historical reviews to determine aging effects that can be managed by the GL 89-13 program. The applicant provided adequate guidance to ensure aging effects are appropriately managed. Thus, there is reasonable assurance the effects of aging will be adequately managed and the intended function of the SCCs will be maintained through the period of extended operation.

B. Review of Electrical Equipment Aging Management Activities

During the previous license renewal inspection, the applicant identified the Conowingo Hydroelectric plant, the Susquehanna substation, a wooden takeoff tower at Susquehanna, two manholes at Conowingo and Peach Bottom, and the transmission line (a submarine cable) within the scope of license renewal. The license renewal component screening form, however, did not specify what Conowingo and Susquehanna components are included in the program. In a letter dated April 1, 2002, the NRC issued the "Staff Guidance on Scoping of Equipment Relied on to Meet the Requirement of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))." The applicant's further evaluation to determine the specific components of Conowingo and Susquehanna that need to be included in the LRA, and to address the newly issued NRC guidance was incomplete at the conclusion of the previous inspection. Because the previous license renewal inspection team was unable to verify the component screening for the systems, the team identified this as an open item. At the time of this inspection, the applicant has completed the component level screening and the inspection team has reviewed the components and found them to be appropriately included within license renewal. The open item is closed. **(Closed Item 50-277/02-09-03; 50-278/02-09-03)**

1. Susquehanna Substation Wooden Pole Inspection

The Susquehanna Substation Wooden Pole Inspection program is an existing program supplemented with a recurring task which explicitly identifies pole number 14 at the Susquehanna substation. The Susquehanna Substation Wooden Pole Inspection program is credited with managing the potential loss of materials and change in material properties from deterioration due to insects or environment. The aging effects are managed by a visual inspection of the condition of the pole at ten year intervals. The Susquehanna Substation Wooden Pole Inspection program and supporting surveillance procedures, drawings, walkdowns and interviews were reviewed to determine the effectiveness of the program.

The Conowingo Hydroelectric Generating Station serves as the Alternate AC Supply for PBAPS in the event of a Station Blackout. Pole number 14 at the 35 kV Susquehanna Substation at Conowingo supports sub-transmission line number 191-000. This insulated 35 kV line starts as an aerial line to pole number 14. The line transitions underground at the base of the pole and runs to the manhole where it connects to the 35 kV submarine cable to PBAPS. Pole number 14 is the only wooden pole on this line.

The applicant credited in LRA Appendix B.2.11 (Commitment NBRT04348) an existing wooden pole inspection program in use at PECO for providing the aging management

activities for Susquehanna Substation pole number 14. The applicant incorporated a requirement to perform a 10-year inspection program by incorporating PECO Engineering Services Specification No. 8901, “Inspection, Treatment and Reinforcement of Distribution and Transmission Poles,” into a new recurring task number PM378159.

The inspectors verified that the recurring task had been issued and the first inspection was due June 2003. However, the inspectors identified that the task start date was identified as June 2010. The applicant indicated this inconsistency would be corrected to indicate a start date of June 2003. The inspectors verified that the recurring task indicated a frequency would be performed at the committed 10-year intervals.

The inspectors concluded the applicant had conducted adequate inspections, industrial experience reviews, historical reviews, etc., to determine aging effects. The applicant provided adequate guidance to ensure the aging effects will be appropriately managed when the program is implemented. There is reasonable assurance the effects of aging will be adequately managed and the intended function of Susquehanna Substation pole number 14 will be maintained through the period of extended operation.

2. Non - Environmentally Qualified (EQ) Cable Inspection Program

The Non - EQ Cable Inspection program is a new program containing in-scope accessible cables which is credited with managing the deterioration of the material properties of the insulation of cables in adverse environments. The aging effects are managed by performing visual examination of a sample of cables identified to be at risk. The Non - EQ Cable Inspection program and supporting preventive maintenance procedures, drawings, analyses and interviews were reviewed to determine the effectiveness of the program.

This new program will perform periodic visual inspections of non-EQ cables which are in the scope of license renewal. The inspections will look for adverse localized equipment environments caused by heat or radiation which can accelerate aging of low voltage electrical cables. The initial inspections are to be performed between year 30 and the end of the current operating license and subsequent inspections are to be performed with a 10-year frequency. The inspectors reviewed documents PM 378117 and PM 378120, Inspection of a Sample of PVC Insulated Cables, in the Peach Bottom Atomic Power Stations Unit 2 and Unit 3, respectively, and found them acceptable for the early stage of development of this program. The applicant has performed a search of past operating history, maintenance records, Licensee Event Reports, condition reports, and industry experience reports to try to determine the past failure history of electrical cables.

a - Low Voltage Power Cables

Aging of power cables from the effects of heat is determined by a combination of the ambient temperature and the internal heat rise caused by ohmic heating. The applicant established a service temperature threshold for a 60 year life based on an extrapolation of each cable insulation material aging characteristics. The applicant assumed a self-heating temperature rise based on typical ohmic heating data found in either an EPRI technical document or in reports from other plants. The applicant then established allowable ambient temperatures based on the difference of the previous two values.

The inspectors reviewed a sample of the documentation and concluded that the applicant's review was thorough except for their conclusion that generic industry ohmic heating data applied to PBAPS. A typical plant establishes the allowable ampacity of a given conductor size based on the Insulated Cable Engineers Association (ICEA) cable ampacity standards for cables installed in air, conduit, duct bank, direct burial or in cable trays. These standards are based on the specific insulation type, ambient temperature and percent fill of the raceway. The maximum percent fill selected in the plant's design basis then establishes the most restricting allowable ampacity for each size conductor for use throughout the facility. This method has some built in conservatism because not all raceways are filled to their limit and not all conductors are operated to their actual allowable current limit. However, the applicant informed the inspectors that the allowable conductor ampacity for PBAPS was established automatically by their Integrated Nuclear Data Management System (INDMS) computer program based on the current fill of the subject raceway.

The applicant's analysis had indicated cable code P17 (500 kcm) was the only polyethylene (PE) insulated power cable associated with license renewal. A number of the PE cables in their analysis indicated "None," implying that those cable codes were not installed at PBAPS. The inspectors requested the applicant to review their Integrated Nuclear Data Management System (INDMS) computer database for other PE cable codes which had indicated "None" in the license renewal analysis. This review determined there were other PE power cables installed at PBAPS that had to be reviewed for license renewal applications. As a result, the applicant performed a detailed review of all 1616 polyethylene cables and confirmed that there was only one cable in the scope of License Renewal that was continuously loaded to an amount to be a concern for ohmic heating.

The inspectors also observed that the justification to eliminate the P17 cable from an aging management program was a one time thermogram of the conduit containing the heaviest loaded 500 kcm cable. No measurement of the ambient temperature was recorded and no relationship of the temperature relationship between the conduit and the cable insulation had been established by the applicant. In response to this observation, the applicant performed a calculation of ohmic heating and concluded that the ohmic heating was only 16^{o}C compared to the 32^{o}C assumed in the original analysis. The inspectors confirmed that the results of this calculation were conservative.

The inspectors concluded that the applicant provided adequate guidance to ensure the aging effects will be appropriately managed when the program is implemented. There is adequate assurance that the effects of aging will be adequately managed and the

intended function of the PE cables will be maintained through the period of extended operation.

b - Instrument and Control Cables

PVC Insulated Fire Safe Shutdown Cables (LRA B.3.2)

This is a new aging management program that will be implemented prior to the end of the current licenses. The applicant has performed a search of all fire safe shutdown cables looking for cable types that could require an aging management program. The result of that review identified that only the polyvinyl-chloride (PVC) insulated cables located inside the drywell fit that requirement. The applicant has committed to an inspection of the PVC insulated cables in the drywell associated with fire safe shutdown. The inspectors reviewed recurring task work orders and procedures PM 378117 (Unit 2) and PM 378120 (Unit 3) and verified that the procedures identified the associated PVC cables and had an acceptable acceptance criteria for the visual examination of the cables for surface anomalies. According to the procedure, the presence of a visual anomaly, such as embrittlement, discoloration or cracking, would be considered a precursor indication of possible loss of material properties for the PVC cable and would be subject to an engineering evaluation.

As part of the aging management of this cable, the applicant will develop a training program for their staff who would check the cables. As part of the training program, the applicant may include samples of aged cable in the form of a cable kit similar to one on loan from the Electric Power Research Institute, which contained different aging characteristics for cross linked polyethylene (XLPE) and ethylene propylene rubber (EPR) cables but did not contain any examples for the PCV cables of interest. As a consequence, this item will remain open until the applicant develops or plans a cable kit that includes samples of the kinds of cable at Peach Bottom. **(Open Item 50-277/02-10-03; 50-278/02-10-03)**

The inspectors verified that the procedures call for a sample of 3 of the 15 identified PVC cables (20% sample) at a frequency of every five refueling outages.

The inspectors concluded the applicant had conducted adequate, inspections, industrial experience reviews, historical reviews, etc., to determine aging effects. The applicant provided adequate guidance to ensure the aging effects will be appropriately managed when the program is implemented. There is reasonable assurance the effects of aging will be adequately managed and the intended function of the PVC insulated cables will be maintained through the period of extended operation.

3. Medium Voltage Cable Aging Management Program

PBAPS' application does not contain a Medium Voltage Cable Aging Management Program. The applicant's supporting justification for not having a Medium Voltage Cable Aging Management Program (cable replacement program, drawings, interviews, etc.) was reviewed by the inspectors to determine the basis for not having a program. The Office of Nuclear Regulatory Regulation (NRR) has identified this as an unacceptable omission in the applicant's submittal in the NRC draft safety evaluation report (Tracking Number 3.6.1.2.1-1). The NRC Regional Office will review the applicant's submittal of an aging management program for Medium Voltage Cable in a subsequent inspection.

a - Applicant Response to Station Blackout Issue

On April 1, 2002, NRC issued a memorandum to the industry informing them of the NRC staff position on the license renewal rule 10 CFR 54.4 as it relates to the Station Blackout (SBO) rule 10 CFR 50.63. The position holds that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included in the scope of license renewal. This is necessary because this is the power path that would be used to recover from a SBO.

The inspectors reviewed plant drawings and conducted walkdowns with applicant engineers to understand what raceways were in scope. The inspectors walked down the SBO cables from the generators at the Conowingo Hydro station, the Susquehanna Substation, the terminations of the submarine cable and the underground raceway to the SBO switchgear. The inspectors also walked down the routing of a sampling of in-plant medium voltage cables at PBAPS. The applicant was not able to find a definitive description of the 15 kV cables at Conowingo or the 35 kV underground cables connecting to the submarine cable. The 35 kV medium voltage cables are normally energized, lightly loaded and in a moist environment.

The inspectors determined that the SBO response would include 5, 15 and 35 kV medium voltage cables. The inspectors also determined that these cables could be run in underground duct banks, buried cable trenches, direct buried, and submarine. While the majority of the in-scope cables had been recently replaced with an improved EPR insulation system, some cables still existed with XLPE or unknown insulation system.

b - Electrical Manholes

At PBAPS, there are many power instrumentation and control electrical cables routed through underground duct banks with numerous electrical manholes along the route. The manholes were used for original cable installation and some, but not all, are available for maintenance and cable replacement. The manholes are generally susceptible to flooding from rain water, melting snow, ground water or other sources and they should be periodically pumped out to avoid having energized cables under water. There is an industry concern that submerged continuously energized power cables increases their susceptibility to early failure. This is a concern that NRR identified as not being fully addressed in the applicant's license renewal submittal. The inspectors asked

the applicant to open a sample of the manholes containing safety-related power cables and cables required for recovery from a SBO.

At PBAPS, inspectors examined manhole numbers SBO 01, SBO 02, MH 09 and MH 25 and found them damp (SBO 01) or flooded up to the elevation of some of the cables (SBO 02 and MH 09). All manholes inspected were without an operable sump. The cable tray supports in MH 025 were very corroded and there was evidence of significant past flooding. The applicant initiated a Condition Report (CR 00105462) prior to this inspection in April 2002 on manhole flooding as a result of a previous NRC inspection conducted as part of the current PBAPS license. The applicant initiated the CR to determine the need for an organized maintenance program to periodically inspect manholes for flooding and pump them out, if needed. As of this NRC inspection, the procedure for inspecting and pumping of electrical cable manholes was still being developed.

The inspectors, in consultation with NRR, concluded the applicant had not conducted a sufficient number of inspections, industrial experience reviews, or historical reviews, to fully determine the aging effects of the cables under these conditions. NRR determined the applicant had not, therefore, provided adequate guidance to ensure the aging effects will be appropriately managed. As a consequence there is not sufficient reasonable assurance that the effects of aging will be adequately managed and the intended function of the medium voltage cables will be maintained through the period of extended operation. This issue will be addressed when the applicant responds to the SER open item (3.6.1.2.1-1) which is the same item used to track the general issue of Medium Cable Aging Management. The NRC Regional Office will review the aging management program proposed in response to the open item during a subsequent LRA inspection.

4. Fuse Clips

The team noted, in the Scoping and Screening Inspection Report (50-277/02-09; 50-278/02-09), that fuse clips (or holders) were among the components classified as active by the applicant and questioned this determination. The applicant's position was that the fuse clip and the associated fuse comprise an active assembly. The team agreed that the fuse was appropriately classified as active; however, classifying the clip as active was considered incorrect and not in accordance with the intent of 10 CFR 54.21(a). Further review revealed that this issue would require further discussion by the NRC staff and the industry to resolve. This was reported as an open item (50-277/02-09-02; 50-278/02-09-02). Subsequently the industry and the NRC agreed that consistent with the requirements specified in 10 CFR 54.4(a), fuse holders (including fuse clips and fuse blocks) are considered to be passive electrical components. Fuse holders are scoped, screened, and included in the AMR in the same manner as terminal blocks and other types of electrical connections that are currently being treated in the process. This position only applies to fuse holders that are not part of a larger assembly such as switchgear, power supplies, power inverters, battery chargers, circuit boards, etc. Fuse holders in these types of active components would be considered to be piece parts of the larger assembly and not subject to an AMR . Piece parts and subcomponents inside the enclosure of an active component, such as switchgear, are inspected and maintained as part of the plant's normal maintenance and surveillance activities. This

position was agreed to by Exelon. They have included the appropriate fuse holders within the scope of license renewal and their action closes open item 50-277/02-09-01; 50-278/02-09-01. However, the action to include the fuse clips did not take place in time for the applicant to develop an aging management program for review by this team. As a consequence, the aging management of fuse clips is an open item. **(Closed Item 50-277/02-09-02; 50-278/02-09-02), (Open Item 50-277/02-10-01; 50-278/02-10-01)**

C. Review of Structural Aging Management Activities

1. Primary Containment Inservice Inspection Program

The Primary Containment Inservice Inspection Program (ISI) is an existing program for both the Units 2 & 3, and is credited with managing the aging effects on the containment structure. It is described in the specification NE-291. The specification establishes the requirements for the ISI of the Class MC pressure-retaining components and their integral attachments to the constrainments. The applicant has determined that the primary aging effect on the primary containment system is the loss of material in the carbon steel structures of the drywell and the torus. This is documented in the Table 3.5.1 of the PBAPS Licence Renewal Application.

The PBAPS Inservice inspection Program (NE-291), ISI summary reports submitted to the NRC, internal assessments, ISI results, maintenance and ISI procedures and work orders, drawings, operating experience were reviewed to determine the effectiveness of the program.

The inspectors determined that effective September 9, 1996, the NRC endorsed Subsections IWE, and IWL of American Society of Mechanical Engineers (ASME) Section XI. These subsections contain inservice inspection, and repair and replacement rules for metal containment vessels and metallic liners of concrete containment vessels (Class MC), and for concrete containment vessels (Class CC).

The PBAPS containment ISI program has been developed in accordance with the 1992 Edition through 1992 Addenda of the ASME Boiler and Pressure Vessel Code (B&PVC), Section XI, Subsections IWA and IWE for Inspection Program B.

The primary containment system is a leak tight enclosure for the reactor vessel, the reactor coolant reticulation system pressure boundary, and other system piping. The containment system consists of a Drywell and a suppression chamber. The drywell is a steel pressure vessel in the shape of an inverted light bulb with 67ft. Diameter spherical lower portion and a 32ft. 4in. cylindrical upper portion. After the initial leak rate and over pressure testing, the Unit 2 drywell was embedded in concrete to elevation 119ft. 11in. for providing uniform support by following the contour of the vessel. The Unit 3 drywell was embedded in concrete up to the same elevation prior to the completion of drywell fabrication. The weld seams, therefore, were checked for leak tightness by halide detection methods since the welds would be inaccessible during the initial leak rate tests.

The suppression chamber is a stiffened steel pressure vessel in the shape of a torus which is positioned below and encircling the drywell. Inside the torus is the vent system distribution header, and from the header there are 96 downcomer pipes terminating below the water surface of the suppression pool.

The applicant has submitted the results of the Third 10-Year interval ISI of both Units to the NRC. The primary containment ISI program manages loss of material in pressure boundary components and supports of the drywell, pressure suppression chamber, and the vent system. The component monitored in the drywell are: the shell, head, control; rod drive removal hatch, equipment hatch, personnel air lock, access manhole, inspection ports, and penetration sleeves. The component monitored in the suppression chamber are: the shell, ring girders, access hatches, and penetrations. All credited aging management activities are subject to administrative control requiring formal reviews and approval.

Indications of coating degradation and loss of material in some wetted areas of the pressure suppression chamber were found at PBAPS in 1991. The interior surface of the torus were re-coated and the water chemistry was improved to mitigate the degradation. Subsequent observations and inspections indicated that the rate of degradation had decreased.

The inspectors concluded that the applicant had conducted adequate inspections, industry operating experience reviews, historical maintenance reviews to determine aging effects, and had provided adequate guidance to ensure aging effects were appropriately managed. There is reasonable assurance that the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

2. Maintenance Rule Structural Monitoring Program

The Maintenance Rule Structural Monitoring Program (MRSMP) is a portion of the existing Maintenance Rule Program which is credited with managing the aging effects on the plant structures. The program provides for monitoring the condition of structures and components for evidence of aging and degradation within the scope of license renewal for life extension. The structures and component covered are: concrete walls in contact with raw water in emergency cooling tower and reservoir; structural steel components outside primary containment; outdoor piping support anchors for emergency cooling water; and penetration seals and joint seals. The program is primarily based on visual inspection and monitoring to identify aging effects. No preventive or mitigating attributes are associated with this program.

The PBAPS Maintenance Program, ISI summary reports submitted to the NRC, internal assessments, ISI results, maintenance and ISI procedures and work orders, drawings, and operating experience were reviewed; and a walk-through inspection also was performed to determine the effectiveness of the program.

The inspectors performed a walk down inspection inside the drywell of the Unit 2. The inspection consisted of visual examinations of equipment, steel and concrete structures, and protective coatings for any evidence of distress, degradation, or corrosion. The

inspection also included the examination of valves and pumps covered by Maintenance Rule for leakage and/or evidence of distress or degradation. The areas and components covered in the walk through visual inspection included:

- Elevation 116 ft., recirculation pumps, drywell sump, down-comer to torus, steel liner and paint;

- Elevation 135 ft., recirculation pump motors, drywell chillers, LPCI, core spray, RHR injection valves, and CRD tube bundles;

- Elevation 157 ft., safety relief valves, and recirculation nozzles and whip restraints.

The inspectors concluded that the applicant had conducted adequate inspections, industry operating experience reviews, and historical maintenance reviews to determine aging effects; and had provided adequate guidance to ensure aging effects were appropriately managed. There is reasonable assurance that the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

3. Outdoor, Buried, and Submerged Component Inspection Activities

The outdoor, buried, and submerged component inspection program is covered by the existing maintenance and ISI programs, and will be further supplemented with enhanced periodic visual inspection of external surfaces of the CST, ECW pump casing and casing bolts, and inspection of buried commodities whenever they are uncovered during any excavation. The future enhancement will also include enhanced inspection of Refueling Water Storage Tanks. The existing program provides for management of loss of material and cracking of external surfaces of components subject to outdoor, buried, and/or raw water external environments. The program activities are implemented in accordance with plant maintenance procedures, and routine test procedures and inspection. Component examinations include inspections of external surfaces for pitting, corrosion, and other abnormalities.

In addition to the review of the maintenance program implemented to satisfy the Maintenance Rule, the ASME Code mandated ISI program in the course of the primary containment, and the MR structural monitoring program review, a visual inspection of the accessible buried and submerged structures and components (HPSW, ESW, ECTR, CST) were performed to determine the effectiveness of the program.

The inspectors determined that the program establishes inspection methods to identify aging effects on external surfaces of outdoor, buried, and submerged SSCs prior to the loss of intended functions. There are no preventive or mitigating attributes associated with these activities. The program provides for inspection of buried and submerged commodities for the presence of base metal corrosion or cracking, coating degradation; examination of external surfaces of the CST; and inspection of outdoor condensate system piping insulation to verify that the jacketing is free of damage; and volumetric inspection of the bottom of RWST for corrosion. All credited aging management activities are administratively controlled requiring formal reviews and approval.

The inspectors concluded that the applicant had conducted adequate inspections, industry operating experience reviews, and historical maintenance reviews to determine aging effects; and had provided adequate guidance to ensure aging effects were appropriately managed. There is reasonable assurance that the effects of aging will be adequately managed and the intended function of the SSCs will be maintained through the period of extended operation.

4. Reactor Building Closed Cooling Water System

During the previous license renewal inspection it was determined that the applicant correctly excluded the RBCCW system from the scope of the LRA because the system is not safety-related and does not perform an accident mitigation function. The piping and components, of the RBCCW, that make up part of the primary containment boundary are, however, included within the scope of the LRA. It was further determined that the applicant had not completed an assessment of portions of the non-safety RBCCW system that could affect safety-related systems in the reactor building and which meet the criterion of 10 CFR 54.4(a)(2). This issue is similar to that affecting the RHR and CS systems regarding treatment of the keep fill subsystems and was identified as an open item (Open Item 50-277/02-09-01; 50-278/02-09-01). During the current inspection, the technical reviewer, from NRR, responsible for reviewing the portion of the application addressing 10 CFR 54.4(a)(2) accompanied a member of the aging management inspection team during presentations made by the applicant and during a walkdown to verify the implementation of the program. It was concluded that the applicant satisfied the requirements and the NRC could close item 50-277/02-09-01; 50-278/02-09-01 **(Closed Item 50-277/02-09-01; 50-278/02-09-01)**

III. Conclusion

The inspection concluded that the aging management portion of Exelon's license renewal activities were as described in the license renewal application and that documentation supporting the application is in an auditable and retrievable form. The implemented and planned aging management processes acceptably manage the aging effects on the systems, structures, and components within the scope of license renewal. However, the following open items were identified:

(1) Fuse clips (or holders) within the scope of the application were originally classified as active components by the applicant. Classification of some of the clips as active was considered incorrect. The was reported, in the scoping inspection, as an open item (50-277/02-09-02; 50-278/02-09-02). Further discussion by the NRC staff and the industry resolved this scoping question. Exelon agreed to include fuse clips within the scope of license renewal; for systems and components within the scope of license renewal. At the conclusion of this inspection, however, the question of aging management of fuse clips had not been resolved. So while open item 50-277/02-09-02; 50-278/02-09-02 is considered closed the follow-on question of aging management of fuse clips is considered open. **(Open Item 50-277/02-10-01; 50-278/02-10-01)**

(2) Where applicable Exelon took advantage of the existing Boiling Water Owners Group Vessel Internals Program (BWRVIP) to manage the identified aging of the

reactor vessel internals. One of the procedures, BWRVIP 76, was still being discussed by NRC staff with the Owners Group. Because NRC has not yet endorsed BWRVIP 76, the procedure cannot currently be used by the applicant for aging management. This item is considered open. **(Open Item 50-277/02-10-02; 50-278/02-10-02)**

(3) As part of the aging management of cable, the applicant developed a training program for the inspectors who would check the cables. As part of the training program, the applicant included samples of aged cable in the form of a cable kit acquired from the Electric Power Research Institute. This kit, however, does not currently contain examples of the kinds of cable that are being age managed at Peach Bottom. As a consequence, the NRC cannot fully embrace the aging management program for cables. This item will remain open until the applicant develops or plans a cable kit that includes samples of the kinds of cable at Peach Bottom. **(Open Item 50-277/02-10-03; 50-278/02-10-03)**

Management Meetings

Exit Meeting Summary

The results of this inspection were discussed with members of the Exelon staff on August 15, 2002, at a public exit meeting held at the Peach Bottom Inn, Restaurant and Lounge. At the exit meeting, the inspectors verified that no materials provided to or reviewed by the inspectors were considered to be proprietary.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generating Company

L. Corsi, License Renewal Mechanical Engineer
A. Fulvio, License Renewal Site Coordinator and Mechanical Engineer
J. Grimes, Director of Engineering
D. Honan, License Renewal Project Manager
W. Maher, License Renewal Database Administrator
K. Muggleston, License Renewal Mechanical Engineer
A. Ouaou, License Renewal Civil/Structural Engineer
E. Patel, License Renewal Technical Lead
J. Philabaum, License Renewal Licensing Engineer
F. Polaski, Manager, License Renewal
P. Thomas, License Renewal Electrical Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Open:

50-277/02-10-01; 50-278/02-10-01	The aging management program that will be applied to fuse clips has not been specified.
50-277/02-10-02; 50-278/02-10-02	One Boiling Water Owners Group Vessel Interns Program procedure was included in the application before the procedure was endorsed by the NRC.
50-277/02-10-03; 50-278/02-10-03	A training kit, used to assure that inspectors can identify cable aging effects, did not include samples of the kinds of cable that are installed at Peach Bottom.

Closed:

50-277/02-09-01; 50-278/02-09-01	The applicant did not complete an assessment of portions of non-safety systems that could affect safety-related systems in the reactor building.
50-277/02-09-02; 50-278/02-09-02	Classification of fuse clips as active was considered incorrect and not in accordance with the intent of 10 CFR 54.21(a).

50-277/02-09-03; 50-278/02-09-03	Specific components from the Conowingo Hydroelectric Plant and Susquehanna Substation need to be included within the scope of license renewal.

LIST OF DOCUMENTS REVIEWED

Program Documents

Specification NE-290	PBAPS 2&3 ISI Program
Specification 908	Environmental Service Conditions For PBAPS Units 2& 3

Inspection Documents

T04349	Torus Inspection
T04339	HPCI and RCIC Lube Oil Cooler Inspection
T04343	PBLR Inservice Inspection Program Commitments
T04333	PBLR NRC Generic Letter 89-13 Activities

License Renewal Corrective Actions

A/R A0355539	HPCI Gland Seal Condenser
A/R A0356999	HPCI Gland Seal Condenser
A/R A0666332	HPCI Turbine Lube Oil Cooler
A/R A1327190	HPCI Turbine Lube Oil Cooler
A/R A1284213	VIP-75 Changes to GL 88-01 Schedule
A/R A1329988	RHR Heat Exchanger D
A/R A1330044	RHR Heat Exchanger A
A/R A1330081	RHR Heat Exchanger B
A/R A1330135	RHR Heat Exchanger C
A/R A1330159	RHR Heat Exchanger D
A/R A1329857	RHR Heat Exchanger B
A/R A1329159	RHR Heat Exchanger A
A/R A1329942	RHR Heat Exchanger C
A/R A0158206	RHR Heat Exchanger B + D Disch Header Blo
A/R A1090856	Invalid ID See PB 2 23 F Misc System-32-Q U/2
A/R A1090966	Invalid ID See PB 2 23 F Misc System-32-Q U/2
A/R A1140734	Invalid ID See PB 2 23 F Misc System-32-Q U/2
A/R A1141036	Invalid ID See PB 2 23 F Misc System-32-Q U/2
A/R A1140747	Invalid ID See PB 3 23 F Misc System-32-Q U/3
A/R A1090976	Invalid ID See PB 3 23 F Misc System-32-Q U/3
A/R A1090968	Invalid ID See PB 3 23 F Misc System-32-Q U/3
A/R A1140783	Invalid ID See PB 3 23 F Misc System-32-Q U/3
A/R A0355683	Generic System, ** ID used to Perform System MAI
A/R A0898077	Generic System, ** ID used to Perform System MAI
A/R A0898082	Generic System, ** ID used to Perform System MAI
A/R A0898096	Generic System, ** ID used to Perform System MAI
A/R A0898104	Generic System, ** ID used to Perform System MAI
A/R A0355692	Generic System, ** ID used to Perform System MAI
A/R A0355693	Generic System, ** ID used to Perform System MAI
A/R A0939859	Generic System, ** ID used to Perform System MAI

A/R A0867897	Emergency Service Water Booster Pump B
A/R A0041839	HPSW 2AP042 Discharge Check Valve
A/R A0140137	HPSW 2AP042 Discharge Check Valve
A/R A0939866	ESW to RBCW Heat Exchanger 2AE018 Inlet Block V
A/R A0939876	ESW to RBCW Heat Exchanger 3AE018 Inlet Block V
A/R A0939879	ESW to RBCW Heat Exchanger 3BE018 Inlet Block V
A/R A1331158	NDE Isolated Room Cooler Pipe
A/R A1331672	NDE Isolated Room Cooler Pipe
A/R A0140137	HPSW 2BP042 Discharge Check Valve
A/R A0041840	HPSW 2CP042 Discharge Check Valve
A/R A0140140	HPSW 2DP042 Discharge Check Valve
A/R A0150346	HPSW 2AP042 Discharge Check Valve
A/R A0150348	HPSW 3BP042 Discharge Check Valve
A/R A0150351	HPSW 2CP042 Discharge Check Valve
A/R A0150354	HPSW 3DP042 Discharge Check Valve
A/R A0384287	ESW Pump 0AP057 Discharge Check Valve
A/R A0384288	ESW Pump 0BP057 Discharge Check Valve
A/R A0041463	Emergency Cooling Water Pump
A/R A0047180	E1 D/G Jacket Coolant Cooler
A/R A0137845	E2 D/G Jacket Coolant Cooler
A/R A0138354	E3 D/G Jacket Coolant Cooler
A/R A0138576	E4 D/G Jacket Coolant Cooler
A/R A0047183	E1 D/G Lube Oil Cooler
A/R A0156707	E2 D/G Lube Oil Cooler
A/R A0156711	E3 D/G Lube Oil Cooler
A/R A0156713	E4 D/G Lube Oil Cooler
A/R A0047184	E1 D/G Air Coolant Cooler
A/R A00156719	E2 D/G Air Coolant Cooler
A/R A0156722	E3 D/G Air Coolant Cooler
A/R A0156728	E4 D/G Air Coolant Cooler
A/R A0159711	’2A’ HPSW MTR
A/R A0679861	’2B’ HPSW MTR
A/R A0141376	’2C’ HPSW MTR
A/R A0679874	’2D’ HPSW MTR
A/R A0150592	’3A’ HPSW MTR
A/R A0151006	’3B’ HPSW MTR
A/R A0151347	’3C’ HPSW MTR
A/R A0151526	’3D’ HPSW MTR
A/R A1349428	Brunswick Green Finding: Electrical Manhole Degradation
A/R A1362010	NRC IN 2002-12: Submerged Safety-related Electrical Cables
A/R A1364470	Water Leaking Down Cable Tray
A/R A1367712	Inspect Critical Manholes for Groundwater Intrusion
A/R A1371011	Revise LRA Table 3.6-2
A/R A1322638	New Pms for License Renewal
A/R A1332409	U/2 FSSD Cables in Drywell
A/R A1332506	U/3 FSSD Cables in Drywell
A/R A1334076	Inspect SBO Wooden Pole at Susquehanna Substation

Surveillance and Maintenance

M-032-013	HPSW Pump Motor Maintenance
M-C-756-006	HPCI Lube Oil Cooler Cleaning and Inspection
M-C-750-003	RCIC Tube Lube Oil Cooler Maintenance
MAG-CG-407	Visual Examination of Pumps, Valves, Bolting, and Component Supports
RT-O-010-660-3	RHR Heat Exchanger Performance Test
RT-O-032-310-2	High Pressure Service Water Oil Cooler Heat Transfer Capability Test
RT-O-032-310-2	High Pressure Service Water Oil Cooler Heat Transfer Capability Test
RT-O-033-600-2	Flow Test of ESW to ECCS Coolers and Diesel Generators
RT-I-0033-632-2	Core Spray Room Cooler ESW Heat Transfer Test
RT-I-033-632-3	Core Spray Room Cooler ESW Heat (Transfer Test, ed.)
RT-I-033-631-2	RHR Room Cooler ESW Heat Transfer Test
RT-I-033-631-3	RHR Room Cooler ESW Heat Transfer Test
RT-O-031-910-3	Chemical Maintenance Treatment for U/3 Service Water Systems
RT-O-031-910-2	Chemical Maintenance Treatment for U/2 Service Water Systems
RT-O-014-310-3	Core Spray Motor Oil Cooler Heat Transfer Capability Test
RT-O-014-310-2	Core Spray Motor Oil Cooler Heat Transfer Capability Test
RT-O-010-660-2	RHR Heat Exchanger Performance Test
M-510-704	Inbody Valve Inspection and Machining Guidance for Globe and Gate Valves
M-510-701	Tufline Sleeved Plug Valve Maintenance (1 through 8 Inch In-Line)
M-510-605	Walworth Mark 139 Globe Valve Maintenance
M-510-107	Inspection and Refurbishment of Atwood and Morrill Mark No. 234 & 237 Swing Check Valves
M-510-306	Rockwell Edwards Mark 130 Valve Maintenance
M-510-107	Inspection and Refurbishment of Atwood and Morrill Mark No. 234 & 237 Swing Check Valves
M-510-104	Inspection and Refurbishment of Crane Mark No 234 & 237 Swing Check Valves
M-510-603	Walworth and Aloyco Bolted Bonnet Gate Valve Maintenance
M-033-001	Emergency Service Water (ESW) Pump Maintenance
M-033-003	Emergency Service Water (ESW) Pump Motor Maintenance
M-010-002	Residual Heat Removal (RHR) Heat Exchanger Maintenance
M-032-001	High Pressure Service Water (HPSW) Pump Maintenance
M-048-004	Emergency Cooling Water (ECW) Pump Motor Maintenance
M-048-002	Emergency Cooling Water (ECW) Pump Maintenance
ST-O-004-611-2	RPV Flange Leak Detection Pipe Pressure Test
ST-O-004-611-3	RPV Flange Leak Detection Pipe Pressure Test
ST-O-003-635-2	Scram Discharge Volume Pressure Test Inspection
ST-O-003-635-3	Scram Discharge Volume Pressure Test Inspection
ST-O-033-636-2	ECW Piping Pressure Test Inspection
ST-O-033-635-2	ESW Piping Pressure Test Examination
ST-O-001-635-2	Main Steam Line Piping Pressure Test Inspection
ST-O-001-635-3	Main Steam Line Piping Pressure Test Inspection
ST-O-080-680-2	Reactor Pressure Vessel (Class1) Hydrostatic Pressure Test
ST-O-080-680-3	Reactor Pressure Vessel (Class1) Hydrostatic Pressure Test

ST-O-080-675-2	Reactor Pressure Vessel (ASME Class 1) Leakage Pressure Test
ST-O-080-675-3	Reactor Pressure Vessel (ASME Class1) Leakage Pressure Test
ST-O-011-611-1	Standby Liquid Control System Piping Pressure Test Inspection
ST-O-011-611-3	Standby Liquid Control System Piping Pressure Test Inspection
ST-O-052-701-2	E1 Diesel Generator 25 Hour Endurance Test
ST-O-052-702-2	E2 Diesel Generator 25 Hour Endurance Test
ST-O-052-703-2	E3 Diesel Generator 25 Hour Endurance Test
ST-O-052-704-2	E4 Diesel Generator 25 Hour Endurance Test
PM 378117	Visual inspection of U/2 FSSD Cables in Drywell
PM 378120	Visual inspection of U/3 FSSD Cables in Drywell
PM 378159	Inspect SBO Wooden Pole at Susquehanna Substation
R0878129-01	Recurring Task: Inspect SBO Wooden Pole No. 14 at Susquehanna Substation
R0877202	Recurring Task: Visual inspection of U/2 FSSD Cables in Drywell
R0877205	Recurring Task: Visual inspection of U/3 FSSD Cables in Drywell
PECO Spec 8901	Inspection, Treatment and Reinforcement of Wood Poles

Drawings

AB-176851	Susquehanna Substation-Conowingo Hydro Single Line Diagram
E-1	Station Single Line Diagram
E-5	13.2 kV Unit 2 Single Line Diagram
E 265	Electrical Schematic BOP Temperature Readout
E 1001	Electrical Layout Site Plan
E 1002	Electrical Layout Site
E 1004	Pump Structure Unit 2 Raceway Layout
E 1018	Diesel Generator Building Electrical Layout
E 1023	Electrical Layout Unit 2 Startup Transformer
E 1024	Recirculation Pump Electrical Layout
E 1032	Turbine Building Embedded Conduit
E 1174	Reactor Building Drywell El. 135 Raceway Layout
E 1175	Reactor Building Drywell El. 120 and 154 Raceway Layout
E 1400	Manhole Notes and Details (Selected Sheets)
E 2203	Underground Conduit Layout
E 1317	Wire and Cable Notes and Details
E 5280	Submarine Cable Details
E 5281	Submarine Cable Plans
E 5338	Station Blackout Substation Arrangement
E 5340	Station Blackout Substation Trench and Duct Plan
E 5341	Station Blackout Substation Sections and Details
E 5342	Station Blackout Substation Elevations and Details

6280-E-28	Specification for 600 Volt Power Cable (XLPE)
6280-E-30	Specification for 600 Volt Power Cable (PVC)
125-P-7	Specification for 600 Volt Power Cable (FR-XLPE)

Reference Documents

NE-074	Specification for 5kV and 15 kV Power Cables
E-02	AMR Technical Report - Electrical Cables

IEEE-1205	Guide for Assessing, Monitoring, and Mitigating Aging Effects on Class 1E Equipment used in Nuclear Power Generating Stations
EPRI 1001391	Training Aids for Visual/Tactile Inspection of Electrical Cables for Detection of Aging
Project 97437	Seventh Independent Inspection of the Conowingo Hydroelectric Project

Corrective Actions under Current License

CR 00105462	Drain Pipe to Manhole 35 Clogged Preventing Water Drainage
CR 00116979	Potential Personnel Safety Issue Where SBO Line Enters River

Boiling Water Owners Group Vessel Inspection Program

BWRVIP-01	Core Shroud Inspection and Evaluation Guidelines (5/18/00)
BWRVIP-07	Core Shroud Re-Inspection Guidelines (3/26/02)
BWRVIP-18	Core Spray Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-25	Core Plate Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-26	Top Guide Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-38	Shroud Support Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-41	Jet Pump Inspection and Evaluation Guidelines (5/22/02)
BWRVIP-47	Lower Plenum Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-48	Vessel Attachment Weld Inspection and Evaluation Guidelines (4/16/01)
BWRVIP-63	Core Shroud Vertical Weld Inspection/ Evaluation Guidelines (5/18/00)
BWRVIP-75	Technical Basis for Revisions to GL 88-01 Inspection Schedules (6/10/02)
BWRVIP-76	BWR Core Shroud Inspection and Flaw Evaluation Guidelines (3/26/02)
95-313A/24	Final SE of BWRVIP-01, Rev 1 (6/16/95)
98-168A/76	Final SE of BWRVIP-07 (4/27/98)
99-519	Final SE of BWRVIP-18 (4/16/01)
99-524A	Final SE of BWRVIP-25 (4/16/01)
99-386	Final SE of BWRVIP-26 (9/20/99)
2000-224	Final SE of BWRVIP-38 (9/24/00)
2001-062	Final SE of BWRVIP-41 (2/22/01)
99-420A	Final SE of BWRVIP-47 (10/13/99)
99-387	Final SE of BWRVIP-48 (9/29/99)
2001-300	Final SE of BWRVIP-63 (8/27/01)
99-369	Initial SE of BWRVIP-74 (9/99)
2002-119A	Final SE of BWRVIP-75 (5/14/02)
99-517	Initial SE of BWRVIP-76 (12/15/99)

Applicant Commitments

TO4347	PBLR RPV and Internals ISI Program Commitments
	Plant Systems Evaluated in the GALL Report (Volume 2)
IV.B1.	Reactor Pressure Vessel Internals (BWR)
XI.M9.	BWR Vessel Internals

Misc

PBAPS 2&3 Specification NE-290, Rev 1

PBAPS 2&3 ISI Program Text, pp 1-139

Appendix A	Mandatory Augmented Inspection Programs (AUG), pp 2-6 (Introduction, BWRVIP, Examination Methods)
AUG-01	GL 88-01Inspection Program
AUG-03	Core Spray Internals
AUG-04	Jet Pump Assembly
AUG-06	Top Guide
AUG-09	Core Shroud
AUG-10	Core Plate
AUG-11	Lower Plenum Region
AUG-14	Vessel ID Attachment Welds

Revisions to ISI Program NE-290 Text from Specification M-733, Inservice Inspection Program, Second Ten Year Interval, Units 2 & 3 (Engineering Change Requests (ECRs)) related to reactor internal components)

ECR 07-02899, Rev 3	Unit 3 jet pump riser elbow to thermal sleeve welds (AUG-04)
ECR 98-02721, Rev 0	Inspection recommendations of Jet Pump Beam (AUG-04)
ECR 98-02725, Rev 0	Core Spray Header T-Box UT exam recommendations (AUG-03)
ECR 99-02244, Rev 0	Jet pump weld indications inspection recommendations
ECR 99-01324, Rev 0	Program changes re Code Case N-509
ECR 00-00396, Rev 0	Jet pump hold down beam

Reactor Internals Inspection History

PBAPS Unit 2	Reactor Internals Inspection History 1980 - 2000
PBAPS Unit 3	Reactor Internals Inspection History 1976 - 2001
PBAPS Unit 2	2R14 ISI/CISI/IVVI Examination Plan Augmented IVVI

Technical Information and Agreements

NUREG-1557	Summary of Technical Information and Agreements (10/96)

Core Spray “T” Box Repair and Modification

ECR PB 98-02725	Evaluate the B Loop Core Spray “T” Box Indications (10/30/98)
ECR PB 96-03414	Indications on B Loop Core Spray Header “T” Box Cover Plate (09/27/96)
ECR PB 96-94925	Unit 2 Core Spray 120 Deg. “T” Box Repair Modification (9/25/98)

GENE-B13-01805-104 Core Spray “T” Box Modification at PBAPS Unit 2 (11/96)

B.1.9 Primary Containment Inservice Inspection Program

Appendix B	Primary Containment In-service Inspection Program
Response RAIB.1.9	Primary Containment In-service Inspection Program
Response RAI 3.5	Aging Management of Containment, Structures, and Components
NRC Safety Eval.	Proposed Alternatives to ASME Section XI Requirements, TACs MA4973 & MA4974
ISI Summary Rpt.	Submittal to the NRC, dated January 31,2000

ISI Summary Rpt.	Submittal to the NRC, Third 10-yr Interval, First Inspection Period, dated April 26, 2002
NE-291, Rev. 0,	Specification for Inservice Inspection Program for First Interval Class MC, Primary Containment at Peach Bottom Atomic Power Station
ST-N-080-900-2	Visual Examination of Drywell and Torus Surfaces
ST-N-080-900-3	Visual Examination of Drywell and Torus Surfaces
RT-M-007-900-2	Drywell Airgap Drains Flow Test
RT-M-007-900-3	Drywell Airgap Drains Flow Test
MAG-CG-425	Visual Examination of Containment Vessel and Internals
A/R A1306880	Annotate Specification NE-291with GL 98-04 Commitments
A/R A1044634	Unit 3 Torus Internal Underwater Pit Inspection
TO 4345	PBLR Primary Containment ISI Program Commitments
CO176306	Station Work Order, Unit 3 Torus Internal Underwater Pit Inspection
CO197083	Station Work Order, ISI-07 Drywell Visual and Internal Moist/Barrier
CO197097	Station Work Order, ISI-07 Toru Containment Exam.
Drwg. S-51	Containment Vessels-Requirements, Drywell-Plans and Sections

Maintenance Rule Structural Monitoring Program

Appendix B	Maintenance Rule Structural Monitoring Program
ER-PB-310-1010	Maintenance Rule Implementation
Response to RAI	Appendix B, Aging Management Activities, dated April 29, 2002
Response to RAI	Aging Management of Containment, Structures, and Component Supports
AG-CG-028.1-10	Station Maintenance Rule Structural Monitoring Program(canceled 5/1/02)
ER-AA-310	Implementation of Maintenance Rule
TO4344	PBLR Maintenance Rule Monitoring Program

Outdoor, Buried, and Submerged Component Inspection Program

Appendix B	Outdoor, Buried, and Submerged Component Inspection Program
RT-I-066-200-2	Heat Trace System Testing
RT-O-100-911-2	Inspection of Above Ground Storage Tanks
M-048-002	Emergency Cooling Water (ECW) Pump Maintenance
M-032-001	High Pressure Service Water (HPSW) Pump Maintenance
M-037-002	Diesel Driven Fire Pump Maintenance
M-037-004	Motor Driven Fire Pump Maintenance
M-510-603	Walworth and Aloyco Bolted Bonnet Gate Valve Maintenance
M-510-704	Inbody Valve Inspection and Machining Guidance for Globe and Gate Valve
M-C-700-606	Excavating
ST-O-032-635-3	HPSW System Pressure Test Examination
A/R A0041463	Perform Diver Inspection of Emergency Cooling Towers
A/R A0355457	Perform Visual Inspection and Testing of Refueling Water Storage Tank
RO 236367	Recurring Task Work Order, Perform Visual Inspection and UT of Refueling Water Storage Tank
RO 008904	Recurring Task Work Order, 00P186: Diver Inspection, Mud Sample and Depth for Emergency Cooling Water Pump
TO4329	PBLR Outdoor, Buried, and Submerged Component Inspection Activities
Drwg. C-50, Rev. 24	Underground Piping- North Area

Drwg. C-51, Rev. 37 Underground Piping- South Area
Drwg. C-26, Rev. 12 Service Water Pipe Tunnel

LIST OF ACRONYMS USED

AAC	Alternate AC
AC or ac	Alternating Current
ADS	Automatic Depressurization System
AMR	Age Management Review
CFR	Code of Federal Regulation
CRL	Component Record List
CS	Core Spray
DBA	Design Basis Accident
DBD	Design Basis Document
ECCS	Emergency Core Cooling System
ECTR	Emergency Cooling Tower and Reservoir
EDG	Emergency Diesel Generator
ESW	Emergency Service Water
HPCI	High Pressure Coolant Injection
HPSW	High Pressure Service Water
KV or KV	Kilovolt
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
LPCI	Low Pressure Coolant Injection
LR	License Renewal
LRA	License Renewal Application
P&ID	Piping and Instrument Diagram
MCC	Motor Control Center
NEI	Nuclear Energy Institute
PBAPS	Peach Bottom Atomic Power Station
PCIS	Primary Containment Isolation System
RBCCW	Reactor Building Closed Cooling Water
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RPV	Reactor Pressure Vessel
RPS	Reactor Protection System
RWCU	Reactor Water Cleanup
SBO	Station Blackout
SBLC	Standby Liquid Control System
SSC	Systems, Structures and Components
UFSAR	Updated Final Safety Analysis Report

ATTACHMENT 2

Peach Bottom Atomic Power Station License Renewal Inspection
Structural/Systems Selected for Inspection

Mechanical Systems Within Scope of License Renewal

Auxiliary Systems
-Standby Liquid Control System
-High Pressure Service Water System
-Emergency Service Water System
-Emergency Diesel Generator
-Diesel Generator Building Ventilation System
Reactor Coolant System
-Reactor Pressure Vessel and Internals
-Reactor Recirculation System
Engineered Safety Features System
-High Pressure Coolant Injection
-Primary Containment Isolation System (includes containment boundary piping and components from out-of-scope systems which interface with the primary containment.)
-Reactor Core Isolation Cooling System
-Residual Heat removal System
-Core Spray System
Steam and Power Conversion System
-Feedwater System (portions of the system required to support HPCI and RCIC injection flowpaths, reactor coolant pressure boundary and primary containment boundary are the only parts of feedwater included in scope).

Mechanical Systems Not in Scope of License Renewal

Auxiliary Systems
-Reactor Building Closed Cooling Water System (piping and components associated with the primary containment boundary are included with PCIS)
-Reactor Water Clean-up System (RWCU system piping and components inside containment are included with Reactor Recirculation System. RWCU containment penetration piping and components are included with PCIS)
-Instrument Air System (piping and components associated with the outboard main steam isolation valve air accumulator pressure boundary are included with the main steam system. Piping and components associated with safety grade instrument gas system pressure boundary are included with the safety grade instrument gas system. Piping and components associated with nitrogen backup to the battery and emergency switchgear ventilation system are included with the battery and emergency switchgear ventilation system.)

Engineered Safety Features System
-Drywell Ventilation System

Electrical and I&C Systems Within Scope of License Renewal

-4 KV
-480 V Emergency Load Centers
-480 V Emergency Motor Control Centers
-Station Blackout
-Reactor Protection System
-DC System

Electrical and I&C Systems Not in Scope of License Renewal

-13 KV Equipment credited for Fire Safe Shutdown and Station Blackout are included in those systems.
-480 Volt Load Centers
-Cathodic Protection

Structures Within Scope of License Renewal

Containment Structure
Reactor Building Structure
Emergency Cooling Tower and Reservoir
Station Blackout Structures and Foundations
Yard Structures
Emergency Diesel Generator Building

Structures Not in Scope of License Renewal

Dewatering Building
Discharge Control
Intake Screen