

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Docket No. 05000171  
License No. DPR-12  
Inspection No. 05000171/2011008  
Licensee: Exelon Generation Company, LLC  
Facility: Peach Bottom Atomic Power Station Unit 1  
Location: Delta, Pennsylvania  
Inspection Dates: October 26-27, 2011

Inspector: Laurie A. Kauffman  
Health Physicist  
Decommissioning Branch  
Division of Nuclear Materials Safety

Approved By: Marc S. Ferdas, Chief  
Decommissioning Branch  
Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

Exelon Generation Company, LLC  
Peach Bottom Atomic Power Station (PBAPS) Unit 1  
NRC Inspection Report No. 05000171/2011008

A routine announced safety inspection was conducted on October 26-27, 2011, by a Region I inspector at Peach Bottom Atomic Power Station (PBAPS) Unit 1. The NRC's program for overseeing the safe operation of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program." The inspection included a review of the programs associated with PBAPS Unit 1 while in a long-term safe storage (SAFSTOR) status. The inspection consisted of observations by the inspector, interviews with PBAPS personnel, and a review of procedures and records. There are currently no ongoing decommissioning activities being conducted at PBAPS Unit 1. Based on the results of this inspection, no findings of safety significance were identified.

## REPORT DETAILS

### 1.0 Background

The Peach Bottom Atomic Power Station, (PBAPS) Unit 1 is a high temperature gas-cooled demonstration power reactor that operated from February 1966 until October 31, 1974, and has been permanently shut down and in safe storage (SAFSTOR) since that time. All fuel has been removed from the reactor and shipped to an offsite facility. The spent fuel pool has been drained and decontaminated, and all radioactive liquids have been removed. The NRC's program for overseeing the safe operation of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program."

### 2.0 SAFSTOR Performance and Status Review

a. Inspection Scope (Inspection Procedures (IPs) 36801, 37801, 40801, 71801, 62801, 83750, 84750, 86750)

The inspector reviewed the organization, management, and staffing responsibilities as outlined in the PBAPS Unit 1 Technical Specifications (TS) and in PBAPS procedure, LS-PB-800, "Unit 1 Process Control Program," to assess the adequacy of management oversight of SAFSTOR responsibilities for PBAPS Unit 1. The inspector reviewed records and interviewed PBAPS personnel to determine if any design changes or modifications were completed since the last inspection in August 2010 and assess the current decommissioning status of PBAPS Unit 1. The inspector reviewed PBAPS's Check-In Self Assessment report (dated June 2011) and corrective action program (CAP) issue reports (IRs) associated with Unit 1 to determine if issues were being properly identified and evaluated, and if corrective actions were appropriately prioritized in the CAP.

The inspector reviewed the results of PBAPS's semi-annual surveillance test (ST), ST-H-099-960-2, "Unit 1 Exclusion Area Semi-Annual Inspection." The inspector reviewed the ST to ensure that PBAPS staff: (1) verified that the Unit 1 exclusion area barriers and personnel access doors to the containment building, the radioactive waste building, and the spent fuel pool building were being maintained in accordance with TS 2.19.b.1; and (2) verified that water accumulation in the containment sump was less than TS 2.1.b.9 limits. The inspector also assessed the material conditions of Unit 1 facilities during plant tours of the containment building, the radioactive waste building, and the spent fuel pool building.

The inspector reviewed activities and documentation associated with the following PBAPS programs: occupational exposure, radioactive effluent control, site radiological environmental monitoring, and groundwater monitoring. Specifically, the inspector reviewed radiation survey measurements, surface contamination surveys, and air particulate samples in the containment building. The inspector reviewed radioactive liquid effluent release permits; the analytical results associated with samples of shoreline sediment, fish, and water; and the analytical results from monitoring well water samples.

The inspector also reviewed records associated with radioactive waste management and transportation programs to determine if there had been any radioactive waste shipments from PBAPS Unit 1 for offsite disposal.

The inspector reviewed the annual "PBAPS Unit 1 Decommissioning Status Report for 2010," dated June 9, 2011, to determine if PBAPS submitted the report to the NRC annually and addressed TS 2.4(a) requirements.

b. Observations and Findings

The inspector confirmed that no organization changes, design changes, or plant modifications were made since the previous inspection. The inspector verified that procedure LS-PB-800 remained consistent with TS 2.1(a) requirements. The PBAPS organization and management controls maintained adequate oversight of SAFSTOR activities. The inspector confirmed that PBAPS submitted the "PBAPS Unit 1 Decommissioning Status Report" annually and addressed TS 2.4(a) requirements. The inspector also confirmed that no dismantlement or decommissioning activities were performed since the previous inspection. Also, PBAPS did not generate radioactive waste and therefore, did not ship radioactive waste from the Unit 1 facility for offsite disposal.

The self-assessment of the Unit 1 SAFSTOR program was thorough. Issues were entered into the CAP, and prioritized and evaluated commensurate with their safety significance. Corrective actions were implemented to address identified issues, and were being tracked to closure using the CAP.

Based on a plant tour, discussions with PBAPS personnel and the review of semi-annual surveillance test ST-H-009-960-2 results, the inspector confirmed that the PBAPS organization: (1) performed the semi-annual surveillance test of the exclusion area; (2) maintained the Unit 1 exclusion area barriers and personnel access doors in accordance with TS 2.19.b.1; and (3) implemented radiological controls and radiological protection practices.

The inspector noted that PBAPS had verified that the radiation levels in the containment building, the spent fuel pool building, and the radioactive waste building were less than 0.2 millirem per hour (mrem/hr), and that contamination levels were less than 1000 disintegrations per minute per 100 square centimeters (1000 dpm/100 cm<sup>2</sup>) for beta and gamma radiation. The inspector also noted that monitoring for ground water intrusion into the containment sump was being performed quarterly; and that any visible water was pumped out of the sump and processed through the Unit 2 radioactive waste processing system. The inspector confirmed that the water was being discharged in accordance with PBAPS procedure, ST-C-095-805-2, "Liquid Radwaste Discharge."

Radioactive liquid effluent release permits were being completed in accordance with TS 2.1.b.7 and ST-C-095-805-2. The inspector verified that: (1) the dilution volumes and flows being used were appropriate to ensure that liquid effluent would be discharged according to the applicable 10 CFR Part 20 and Part 50 requirements, and (2) the

projected doses to the public were below TS limits and were performed in accordance with the "Offsite Dose Calculation Manual" and 10 CFR 50.36 for maintaining doses to the public from radioactive effluents as low as is reasonably achievable. The inspector verified that the total effective dose equivalent to the public as a result of effluent release was a fraction of the applicable limit in 10 CFR Part 20. The inspector verified that PBAPS complied with the requirements of 10 CFR Part 20, Appendix B, and 10 CFR Part 50, Appendix I.

The inspector reviewed site radiological environmental monitoring programs. Samples were collected in accordance with PBAPS procedure, CY-PB-170-4160, "Station RGPP Controlled Sample Point Parameters," and were analyzed by a contract laboratory. The inspector noted that monitoring well water sample results collected by PBAPS were less than the lower limit of detection (200 picoCuries per Liter (pCi/L)) for tritium. Therefore, the analytical results of the monitoring well water samples indicate that the regulatory liquid release limit for tritium, as specified in 10 CFR Part 20, Appendix B, Table 2, Column 2, was not exceeded. Also based on the analytical results, the inspector verified that the total effective dose equivalent to the public was below the regulatory limit of 0.1 rem in one year. The inspector also confirmed that analytical sample results collected by PBAPS indicated that no significant radioactivity was identified in fish and the environment.

c. Conclusions

There are currently no ongoing decommissioning activities being conducted at PBAPS Unit 1. Based on the results of this inspection, no findings of safety significance were identified.

**3.0 Exit Meeting Summary**

On October 27, 2011, the inspector presented the inspection results to Garey Stathes, Plant Manager, and other members of the PBAPS staff. Mr. Stathes acknowledged the inspection findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

**SUPPLEMENTAL INFORMATION**

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

J. Armstrong, Regulatory Affairs Manager  
S. Beck, Nuclear Oversight  
P. Breidenbaugh, Senior Manager Operations Support Services  
C. Crabtree, Senior Environmental Chemist  
D. Dullum, Regulatory Affairs  
J. Dunlap, Radiation Protection  
D. Foss, Senior Regulatory Affairs Engineer  
D. Hines, Radiation Protection Supervisor  
R. Holmes, Radiation Protection Manager  
D. Hornberger, Chemistry/Radwaste Technician  
H. McCrory, Radiation Protection Technical Support Manager  
T. Moore, Engineering Director  
R. Reiner, Chemistry Manager  
E. Schwarz, Radiochemist  
R. Shortes, Radiation Protection  
G. Stathes, Plant Manager  
J. Stenclik, Chemistry Manager  
G. Swayne, Enercon, Chemistry contractor  
B. Wargo, Nuclear Oversight

**PARTIAL LIST OF DOCUMENTS REVIEWED**

CY-PB-170-4160, "Station RGPP Controlled Sample Point Parameters"  
LS-AA-126-1005, "Check-In Self-Assessments"  
LS-PB-800, "Unit 1 Process Control Program"  
ST-C-095-805-2, "Liquid Radwaste Discharge"  
ST-H-099-960-2, "Unit 1 Exclusion Area Semi-Annual Inspection"  
PBAPS Unit 1 "Decommissioning Status Report for 2010"

**ITEMS OPEN, CLOSED, AND DISCUSSED**

Opened, Closed and Discussed – None

**LIST OF ACRONYMS USED**

ADAMS	Agencywide Documents and Management Access System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
NRC	Nuclear Regulatory Commission
PBAPS	Peach Bottom Atomic Power Station
pCi/L	picoCuries per liter
SAFSTOR	safe storage
ST	Surveillance Test
TS	Technical Specifications