

July 24, 2003

Mr. John L. Skolds  
President and CNO  
Exelon Nuclear  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INTEGRATED  
INSPECTION REPORT 05000277/2003003 AND 050000278/2003003

Dear Mr. Skolds:

On June 28, 2003, the US Nuclear Regulatory Commission (NRC) completed an inspection at the Peach Bottom Atomic Power Station, Units 2 and 3. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 2, 2003, with Mr. Rusty West and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green) and one unresolved item with potential safety significance greater than Green. The unresolved item involved the loss of power to the Unit 3 high pressure coolant injection alternative control station, for approximately nine days in May 2003, due to an undetected broken wire that occurred during maintenance activities on the station. This issue does not present an immediate safety concern because the wire was repaired and power was restored to the station on May 14, 2003.

All of these issues were determined to involve violations of NRC requirements. However, because of the very low safety significance of the two Green findings and because they have been entered into your corrective action program, the NRC is treating the Green findings as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny any of these non-cited violations noted in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Peach Bottom facility.

"Since the terrorist attacks on September 11, 2001, NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during calendar year '02 and the remaining inspection activities have been recently completed for Peach Bottom - Inspection Report Number 50-277/03-010, 50-278/03-010. The NRC will continue to monitor overall safeguards and security controls at Peach Bottom.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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 me at 610-337-5209.

Sincerely,

*/RA/*

Mohamed Shanbaky, Chief  
Projects Branch 4  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000277/2003003 and 05000278/2003003  
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Docket Nos.: 50-277, 50-278

License Nos.: DPR-44, DPR-56

Report No.: 05000277/2003003 and 05000278/2003003

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Location: 1848 Lay Road  
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Dates: March 30, 2003 - June 28, 2003

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## SUMMARY OF FINDINGS

IR 05000277/2003003, IR 05000278/2003003; 03/30/2003 - 06/28/2003; Peach Bottom Atomic Power Station, Units 2 and 3; Maintenance Risk Assessment and Emergent Work Evaluation; Operability Evaluations.

The report covered a 13-week period of inspection by resident inspectors, regional inspectors, and announced inspections by a senior physical security inspector, a senior emergency preparedness inspector and a health physicist. Two Green non-cited violations (NCVs) and one unresolved item with potential safety significance greater than Green were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) of very low safety significance (Green) of Technical Specification 5.4.1 because Exelon did not adequately establish and maintain torque values for the engine top cover flange joint bolts in an emergency diesel generator (EDG) maintenance procedure. The lack of torque values resulted in lube oil leakage from an improperly torqued joint which led to a small fire on the E2 EDG exhaust manifold during surveillance testing.

This finding was considered more than minor, since it was associated with an attribute and affected the objective of the Mitigating System cornerstone. The applicable attribute was maintenance procedure quality and affected the objective of the cornerstone to ensure the reliability of emergency electrical systems to respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance because all four EDGs remained available with the loose top cover flange bolts. (Section 1R13.1)

- TBD. The inspectors identified an apparent violation of Condition 2.C.4 of the operating license for Unit 3 having potential safety significance greater than very low significance. This apparent violation occurred because Exelon instrumentation and controls (I&C) technicians did not follow work order instructions for conducting testing on the Unit 3 high pressure coolant injection (HPCI) alternative control station following maintenance activities. Consequently, the HPCI alternative control station power supply remained deenergized for approximately nine days, resulting in the control station being inoperable for safe shutdown of Unit 3 during specific scenarios, a violation of Condition 2.C.4 of the Unit 3 operating license.

## Summary of Findings (cont'd)

The safety significance of the potential inability to monitor other systems during a postulated fire remained unresolved following this inspection. This finding is more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone. Operations did not have the ability to use the alternative control station for operation of HPCI and lost the ability to monitor some important reactor parameters. The finding was determined to have potential safety significance greater than very low significance (Green) because in case of fire in the control room or emergency shutdown panel, level control using HPCI at the control station was unavailable and the loss of reactor instrumentation at the control station potentially affected operators' ability to perform depressurization and containment cooling functions.

A contributing cause of the inoperable HPCI alternative control station was related to the Human Performance cross-cutting area. Specifically, I&C technicians did not follow procedures to perform the post-maintenance test specified in a maintenance work order. As a result, the control station was returned to service while in a degraded condition and was unavailable for operation of HPCI and monitoring of important reactor parameters for safe shutdown of Unit 3 in certain fire scenarios. Pending determination of the finding safety significance, this finding is identified as an unresolved item. (Section 1R15)

### Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation (NCV) of very low safety significance (Green) of Technical Specification 3.6.4.3 due to the inoperability of one train of the SBGT for greater than seven days. Around November 2002, the charcoal and HEPA filters on the 'A' train were sprayed with water from the deluge system. The 'A' train of SBGT was unable to perform its safety function for greater than seven days, due to the wetting of the charcoal filters.

This finding was considered more than minor since it is associated with the Containment Barrier performance attribute of the Barrier integrity cornerstone. The finding affected the cornerstone objective to provide reasonable assurance that physical design barriers provide protection against a radiological release caused by accidents or events. The finding was determined to be of very low safety significance because the SBGT system was not required to mitigate a radiological release while the 'A' train was unavailable and the 'B' train of SBGT was operable while the 'A' train was unavailable. (Section 1R13.2)



## REPORT DETAILS

### Summary of Plant Status

Unit 2 began this inspection period operating at 100 percent power. On April 12, 2003, an automatic reactor shutdown occurred due to high reactor pressure after the 'D' outboard main steam isolation valve (MSIV) failed closed. The MSIV closed as a result of a failed instrument air line on the valve. Unit 2 returned to 100 percent power on April 15, 2003. On April 30, Unit 2 power was reduced to approximately 30 percent to facilitate repairs to the Caldon leading edge flowmeter (LEFM) system and for power suppression testing, to identify a leaking fuel assembly. During power ascension to approximately 85 percent, on May 6, following repairs to the Caldon LEFM system and after the leaking fuel assembly was identified and the adjacent control rod was inserted and de-energized, the #3 main turbine control valve started oscillating. Unit 2 power was reduced to approximately 40 percent to facilitate repairs to the #3 main turbine control valve. On May 11, 2003, Unit 2 returned to 100 percent power after the #3 main turbine control valve was repaired. Unit 2 operated at approximately 100 percent power throughout the remainder of the inspection period except for scheduled power changes to support routine maintenance activities and rod pattern adjustments.

Unit 3 operated at approximately 100 percent power throughout the inspection period except for scheduled power changes to support routine maintenance activities and rod pattern adjustments.

#### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

##### 1R01 Adverse Weather Protection

###### a. Inspection Scope

The inspectors reviewed Exelon's preparations for hot weather conditions and walked down selected systems that could be affected by high temperatures to verify that these systems would remain functional during hot weather conditions. The inspectors used RT-O-040-610-2, Revision 7, "Outbuilding HVAC and Equipment Inspection for Summer Operation," during this inspection. The inspectors also reviewed the documentation of the actions taken for summer readiness preparations in accordance with OP-AA-108-109, Revision 0, "Seasonal Readiness." The inspectors discussed these actions with station engineering, operations, and work management personnel.

###### b. Findings

No findings of significance were identified.

Enclosure

## 1R04 Equipment Alignments

### a. Inspection Scope

Partial System Walkdowns. The inspectors performed three partial system walkdowns during this inspection period to verify system and component alignments and note any discrepancies that would impact system operability. The inspectors verified selected portions of redundant or backup systems/trains were available while a system was out-of-service. The inspectors reviewed selected valve positions, electrical power availability, and the general condition of major system components. The walkdowns involved the following systems:

- Electrical lineup during maintenance outage on the 2SU switchgear (Class 1E AC electrical offsite power source)
- Unit 2 reactor building ventilation system
- Unit 3 reactor core isolation coolant (RCIC) system while Unit 3 high pressure coolant injection (HPCI) was out of service

### b. Findings

No findings of significance were identified.

## 1R05 Fire Protection

### Routine Plant Area Tours

### a. Inspection Scope

The inspectors reviewed the Fire Protection Plan (FPP), Technical Requirements Manual (TRM), and the respective Pre-Fire Action Plan procedures to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the areas examined during this inspection. The inspectors then performed walkdowns of these areas to assess control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The fire areas included:

- Unit 3 control rod drive equipment and west corridor 135'
- Unit 2 RCIC system
- Unit 2 HPCI system
- Unit 3 RCIC system
- Unit 3 condensate bay
- Unit 2 condensate bay

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

External Flood Protection

a. Inspection Scope

The inspectors reviewed the station's external flood analysis, flood mitigation procedures, and design features, to verify whether they were consistent with the Peach Bottom design requirements and industry standards. The inspectors walked down selected risk significant plant areas, including the moats and surrounding areas for large on-site tanks. The inspectors evaluated the condition and adequacy of room flood detectors, sump pumps, sump level alarm circuits, watertight doors, drainage from manholes, and other flood protection design features. The inspectors assessed whether these flood protection design features, for equipment located below the postulated flood levels, were adequate and operable. During the walk downs, the inspectors also verified whether there were any unidentified or unanalyzed sources of flooding, including holes and un-sealed penetrations in floors and walls. The specific areas included:

- Units 2 and 3 reactor building to turbine building watertight doors, elevation 135 feet and below
- Emergency diesel generator (EDG) building, including the cardox and emergency service water booster pumps room
- High pressure service water pump room, including the diesel driven fire pump room
- Rooms below the emergency cooling towers
- Units 2 and 3 condensate storage tanks
- Refueling water storage tank
- Torus de-watering tank
- Auxiliary boiler fuel oil storage tank

The inspectors reviewed the station's flood mitigation procedures, flood alarm response procedures, and selected preventive maintenance tasks and surveillance tests for room flood detectors, flood barriers, and watertight doors to evaluate whether component functionality was routinely verified. The inspectors also reviewed the response by station personnel and interim corrective actions for the abnormally high river level (approximately 100.8 feet) that occurred due to the loss of power at the Conowingo Hydroelectric Generating Station. Conowingo lost all power during a severe thunderstorm on the night of June 13, 2003. In addition, the inspectors reviewed the station's corrective action program, including system health reports, and interviewed selected system engineers and maintenance personnel to verify whether previous flood related issues had been appropriately identified, evaluated and resolved. The following procedures were included in the review:

- Updated Final Safety Analysis Report (UFSAR) Section 2.4.3.5.3, "Flood Studies or Flood Design Considerations"

- UFSAR Section 2.4.3.5.5, "Emergency Shutdown due to High or Low Water Level in the Conowingo Pond"
- UFSAR Appendix C, Section 2.5.4, "Flood Loads and Flood Protection"
- Peach Bottom Atomic Power Station (PBAPS) Individual Plant Examination for External Events, Section 5.2, "External Floods"
- PBAPS Fire Protection Plan, Section 6.3, "Analysis of the Yard"
- Technical Requirements Manual and Bases, Section 3.15, "River Level"
- Design Basis Document P-T-07, Revision 2, "External Hazards," Section 3.1.2, "Flooding Analysis"
- SE-4, Revision 20, "Flood"
- SE-4 Bases, Revision 10, "Flood"
- A-C-134, Revision 4, "Control of Hazard Barriers"

b. Findings

No findings of significance were identified.

Internal Flood Protection

a. Inspection Scope

The inspectors reviewed the station's internal flood analysis, flood mitigation procedures, and design features, to verify whether they were consistent with the PBAPS design requirements and industry standards. The inspectors walked down selected risk significant plant areas to verify whether room flood detectors, watertight doors, sump pumps, and other flood protection design features were adequate and operable. During the walk downs, the inspectors also verified whether there were any unidentified or unanalyzed sources of flooding, including holes and un-sealed penetrations in floors and walls, between flood areas, and between common drain systems and sumps and the flood areas. The specific areas included:

- Units 2 and 3 residual heat removal (RHR) system pump rooms
- Units 2 and 3 HPCI system pump rooms
- Units 2 and 3 RCIC system pump rooms
- Units 2 and 3 core spray pump rooms
- Units 2 and 3 high pressure service water (HPSW) system pump rooms, including the diesel driven fire pump room

The inspectors reviewed the station's preventive maintenance tasks and surveillance tests for room flood detectors, flood barriers, and watertight doors to evaluate whether component functionality was routinely verified. In addition, the inspectors reviewed the station's corrective action program, including system health reports, and interviewed selected system engineers and maintenance personnel to verify whether previous flood related issues had been appropriately identified, evaluated, and resolved. The specific procedures and documents reviewed included:

- PBAPS Individual Plant Examination [Internal Events], Section 3.3.8, "Internal Floods"
- T-103, Sheet 1, Revision 14, "Secondary Containment"
- T-103 Bases, Revision 12, "Secondary Containment Control"

- HPCI, RCIC, RHR, and Core Spray alarm response procedures for "Pump Room Flooded"
- Design Basis Document P-T-09, Revision 8, "Internal Hazards," Section 3.1.4, "Internal Flooding Analysis"
- A-C-134, Revision 4, "Control of Hazard Barriers"
- AO 20A.1, Revision 11, "Temporary Removal and Installation of Flood Barriers in the Reactor Building Drainage System"
- Maintenance Rule Basis Document and System Health Report for Secondary Containment

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On May 27, 2003, the inspectors observed licensed operators' performance in the simulator in response to an anticipated transient without scram (ATWS) condition. The specific ATWS involved a stuck open safety relief valve (SRV) and being unable to manually scram the reactor. The reactor pressure vessel water level was lowered to control reactor power. The simulator scenario included an evaluation of the performance of shift supervision to properly use the Emergency Operating Procedures. The inspectors observed and evaluated the critiques of the operators' performance to ensure that any performance errors were detected and corrected. The inspectors focused on the control room supervisor's satisfactory completion of critical tasks, including proper and timely identifications and classifications of emergencies. The inspectors also evaluated whether the operators adhered to Technical Specifications (TSs), emergency plan implementation, and the correct use of the emergency operating procedures. The inspectors discussed the training, simulator scenario and critique with operators, shift supervision, operations management, and training instructors.

b. Findings

No findings of significance were identified.

## 1R12 Maintenance Rule Implementation

### a. Inspection Scope

The inspectors reviewed the follow-up actions for issues identified on systems, structures, or components (SSCs) and the performance of these SSCs, to assess the effectiveness of Exelon's maintenance activities. The inspectors verified that problem identification and resolution of these issues had been appropriately monitored, evaluated, and dispositioned in accordance with Exelon's procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals, and corrective actions to verify that the actions were reasonable and appropriate. The following systems, equipment problems, and documents were reviewed:

#### Systems

- Fire protection deluge system
- Unit 2 recirculation pump seals

#### Procedures and Documents

- Peach Bottom Health Overview Reports
- Peach Bottom Maintenance Rule Bases Documentation
- ER-AA-310, Revision 1, "Implementation of the Maintenance Rule"
- ER-AA-310-1002, Revision 0, "Maintenance Rule - SSC Risk Significance Determination"
- ER-AA-310-1003, Revision 0, "Maintenance Rule - Performance Criteria Selection"
- ER-AA-310-1004, Revision 0, "Maintenance Rule - Performance Monitoring"
- ER-AA-310-100, Rev 0, "Maintenance Rule - Dispositioning between (a)(1) and (a)(2)"
- Condition Report (CR) #126967, "Maintenance Rule Functional Failure - Inadvertent Actuation of 3A Main Transformer Deluge System"
- CR #151566, "Inadvertent Actuation of the 2B Main Transformer Deluge System"
- CR #152945, "2B Recirculation Pump Seal #2 Stage HI Pressure"
- Action Request (A/R) #A1406063

### b. Findings

No findings of significance were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Evaluation

### a. Inspection Scope

The inspectors reviewed Exelon's risk evaluations and contingency plans for selected planned and emergent work activities to verify that appropriate risk evaluations were performed and to assess Exelon's management of overall plant risk. The inspectors compared the risk assessments and risk management actions against the requirements of 10 CFR 50.65(a)(4) and the recommendations of NUMARC 93-01, Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors verified that risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors attended planning meetings and discussed the risk management of the activities with operators, maintenance personnel, system engineers, and work coordinators to verify that risk management action thresholds were identified correctly. The inspectors also verified that appropriate implementation of risk management actions were performed. The following planned and emergent work activities were reviewed:

- Review of risk for the maintenance outage on the 2SU switchgear (Class 1E AC electrical offsite power source)
- Unit 2 fuel leak and power suppression activities
- Review of risk for rescheduled/deferred 3A RHR maintenance work activities
- E2 EDG exhaust manifold fire
- Standby gas treatment (SBGT) water intrusion corrective maintenance
- Review of risk for maintenance activities during the Unit 3 HPCI pump maintenance outage

In addition, the inspectors reviewed the assessed risk configurations against the actual plant conditions and any in-progress evolutions or external events to verify that the assessments were accurate, complete, and appropriate for the issues. The inspectors performed control room and field walkdowns to verify that compensatory measures identified by the risk assessments were appropriately performed.

### Findings

#### .1 E2 EDG Exhaust Manifold Fire during a Load Endurance Run Test

##### Introduction

A Green, self-revealing, non-cited violation (NCV) of Technical Specification (TS) 5.4.1 was identified because Exelon did not adequately establish and maintain torque values for the engine top cover flange joint bolts in an EDG maintenance procedure. The lack of torque values resulted in lube oil leakage from an improperly torqued joint which led to a small fire on the E2 EDG exhaust manifold during surveillance testing.

### Description

On April 19, 2003, a self-revealing finding was identified when approximately 25 minutes into a planned load endurance test run for the E2 EDG, a small fire occurred on the EDG exhaust manifold. The fire resulted from oil leakage through an engine top cover flange bolt joint located above the #3 and #4 cylinders onto the exhaust manifold. The inspectors observed that oil on the hot exhaust manifold flashed into flames but burnt out in less than a minute. Approximately one hour later during the run, oil dripping from the engine top cover flange bolt joint onto the hot exhaust manifold smoldered and occasionally flashed into a small fire with a sustained burn of 60 to 90 seconds, then burnt out. The small fires occurred several times before plant personnel wiped up the leaking oil.

After completion of the E2 surveillance test, operations personnel removed the E2 EDG from service and performed corrective maintenance to repair the lube oil leak. Several bolts on the E2 engine top cover flange were found at approximately one-half of the 40-55 ft-lbs torque values specified by the vendor. Additionally, all engine top cover flange torque values on the E1, E3 and E4 EDGs were checked. The torque values on these EDGs ranged from 3 to 45 ft-lbs. All engine top cover flange bolts on each of the four EDGs were either tightened or checked to the vendor specified torque values. All EDGs remained available with the loose flange bolts. On April 20, 2003, after the lube oil leak repair, the E2 EDG was returned to operable status following a 1-hour post-maintenance verification run with no indication of engine top cover flange lube oil leakage.

Maintenance procedure, M-052-002, Revision 25, "Diesel Engine Maintenance," did not establish torque requirements for the diesel engine top cover flange bolts. In addition, it did not reference or incorporate the vendor's specified torque values of 40-55 ft-lbs., in vendor manual, E-5-166, "Fairbanks Morse EDG," on the top cover flange bolts.

### Analysis

Exelon did not adequately establish and maintain torque values in procedure M-052-002 is a performance deficiency because TS 5.4.1 and Regulatory Guide 1.33 required that this procedure contain appropriate information, such as these torque values. Traditional enforcement does not apply for this issue because it did not have any actual safety consequences or the potential for impacting the NRC's regulatory function and was not the result of any willful violations of NRC requirements.

This finding was considered more than minor, since it was associated with an attribute and affected the objective of the Mitigating System cornerstone. The applicable attribute was maintenance procedure quality and affected the objective of the cornerstone to ensure the reliability of emergency electrical systems to respond to initiating events to prevent undesirable consequences. Exelon's inadequate procedure for EDG maintenance was determined to be of very low safety significance (Green) using Phase 1 of the Significance Determination Process (SDP) for Reactor Inspection



Findings for At-Power Situations. This issue was of very low safety significance because all four EDGs remained available with the loose top cover flange bolts. Exelon entered this issue into their corrective action program as CR #154779.

### Enforcement

Technical Specification 5.4.1, "Procedures," requires that written procedures be established and maintained covering activities specified in Regulatory Guide 1.33. Regulatory Guide 1.33 includes written procedures appropriate to the circumstance for performing maintenance which can affect the performance of safety-related equipment. Contrary to these requirements, prior to April 19, 2003, Exelon did not properly establish and maintain maintenance procedure, M-052-002, "Diesel Engine Maintenance." Specifically, M-052-002 did not contain vendor torque values for the engine top cover joint bolts. Consequently, the engine top cover flange leaked lube oil through a flange bolt joint which led to a fire on an E-2 EDG exhaust manifold. This violation of TS 5.4.1 is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 50-277;50-278/03-03-01)**

## .2 Standby Gas Treatment System Water Intrusion

### Introduction

A Green, self-revealing, NCV of TS 3.6.4.3 was identified due to the inoperability of one train of the SBTG for greater than seven days during the time period between November 2002 and May 28, 2003. Around November 2002, the charcoal and HEPA filters on the 'A' train of SBTG System were sprayed with water from the fire protection deluge system. The 'A' train of SBTG was unable to perform its safety function due to the wetting of the charcoal filters.

### Description

On May 28, 2003, a self-revealing finding was identified when station personnel discovered standing water in the 'A' train of the SBTG ventilation system while performing job setup and surveillance testing prerequisites. Maintenance technicians found approximately 4 inches of standing water while preparing to access the equipment downstream of the charcoal filters. Plant workers also found heavy scale deposits upstream of the charcoal filters. Exelon removed the water from the ventilation unit and replaced most of the HEPA filters and all of the absorbent charcoal to restore the system to normal operating condition. Exelon also took samples of the charcoal to determine if it would perform as required, to assure the radiological barrier function of the SBTG system was met. The sample test results were initially satisfactory. Further investigation indicated that the wetted charcoal would not have adequately performed its safety function.

The inspectors determined that the 'A' train of SBTG was inoperable for greater than seven days during the time period between November 2002 and May 28, 2003. The

system was not capable of performing the intended function described in the TS basis after the charcoal and HEPA filters were wetted down from the fire deluge system. This is because vendor testing showed that wetted charcoal will not provide the adsorption required when SBGT is initiated to reduce the radioactive material released to the environment for all events analyzed. Also, the wetted HEPA filters would not provide the required filtration to limit radioactive material released to the environment due to potential tearing and filter breakdown which would occur due to wetted filters being exposed to design flow rates and pressure differentials.

The deluge system for SBGT is a manual system with a normal lineup of three locked isolation valves in series. Exelon's prompt investigation team determined that the only plausible cause for the water intrusion was testing activities which manipulated manual valves in the fire deluge system around November 2002. After reviewing Exelon's associated action requests, the inspectors determined that inadequate procedures compliance and lack of formalized procedures control over fire deluge system surveillance and post maintenance testing may have contributed to the water intrusion.

#### Analysis

The inoperability of the "A" train of SBGT for greater than seven days is a performance deficiency because technical specifications limit the inoperability of one train of SBGT to seven days. Traditional enforcement does not apply for this issue because it did not have any actual safety consequences or the potential for impacting the NRC's regulatory function and was not the result of any willful violations of NRC requirements.

This finding was considered more than minor since it is associated with the Containment Barrier performance attribute of the Barrier integrity cornerstone. The finding affected the cornerstone objective to provide reasonable assurance that physical design barriers provide protection against a radiological release caused by accidents or events. This finding was determined to be of very low safety significance (Green) using Phase 1 of the SDP for Reactor Inspection Findings for At-Power Situations. This issue was of very low safety significance because the SBGT system was not required to mitigate a radiological release while the 'A' train was unavailable and the 'B' train of SBGT was operable while the 'A' train was unavailable. Exelon entered this issue into their corrective action program as CR #160784.

#### Enforcement

Technical Specification 3.6.4.3 requires that two SBGT subsystems (trains) shall be operable and allows for one SBGT subsystem to be inoperable for 7 days or both units shall be placed in Hot Shutdown (Mode 3) within 12 hours. Contrary to this requirement, the 'A' subsystem (train) of SBGT was not operable for a period of greater than seven days, between November 2002 and May 28, 2003, and both units were not placed in Hot Shutdown within 12 hours. This violation of TS 3.6.4.3 is being treated as a non-cited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 50-277;50-278/03-03-02)**

### 1R14 Personnel Performance Related to Non-Routine Plant Evolutions and Events

#### a. Inspection Scope

The inspectors reviewed plant computer and recorder data, operator logs and approved procedures while evaluating the performance of operations and engineering personnel in response to non-routine evolutions. The inspectors assessed personnel performance to determine whether the operators' response was appropriate and in accordance with procedures and training. The inspectors also assessed whether engineering personnel followed procedures, as required, and were properly trained and briefed prior to performing work evolutions. The following non-routine evolution was observed or reviewed:

- Unit 2 fuel leak detection, testing, and power suppression

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five operability evaluations to assess the adequacy of the evaluations, the use and control of compensatory measures, compliance with the Technical Specifications, and the risk significance of the issues. The inspectors verified that the operability determinations were performed in accordance with LS-AA-105, Rev. 0, "Operability Determinations" and CC-AA-11, Rev. 0, "Nonconformances." The inspectors used the Technical Specifications, Technical Requirements Manuals, the UFSAR and associated Design Basis Documents as references during these reviews. The issues reviewed included:

- E2 emergency diesel generator (EDG) when E23 breaker reopened after it was closed due to anti-motoring relay activation
- Unit 3 alternate shutdown panel following discovery of the broken power supply for the panel instruments and HPCI speed controller
- E1EDG with carbon build-up in the area of the exhaust belts that was discovered during the E1 maintenance overhaul
- Diesel driven fire pump with the 'B' battery connected lamp not lit and the "diesel driven fire pump trouble" annunciator lit in the main control room
- Use of non-approved fittings (Swagelok) in lieu of (Parker Hannifin) fittings on the E1, E2, E3 and E4 EDGs

The following additional documents were used during the operability review of the loss of power to the Unit 3 alternate shutdown panel:

- Preventive Maintenance Work Order R0864040, "Calibration Check of Alternate Shutdown Power Supply Inverter"
- A/R A1417845
- CR #158665, "Inoperable Unit 3 Alternate Shutdown Panel Broken Wire"
- Surveillance Test SI3F-10-177-XXC2, Revision 1, "Calibration Check of Alternative Shutdown Panel RHR Heat Exchanger HPSW Flow Instruments FT/FI 3-10-177"
- Electrical Schematic Diagram E-2557, Revision 9, "Alternative Control Instrumentation"
- Electrical Schematic Diagram M-1-S-36, Revision 76, "High Pressure Coolant Injection System"

b. Findings

Unit 3 HPCI Alternative Control Station Loss of Power

Introduction

The inspectors identified an apparent violation of Condition 2.C.4 of the operating license for Unit 3 having potential safety significance greater than very low significance. This apparent violation occurred because Exelon instrumentation and controls (I&C) technicians did not follow work order instructions for conducting testing on the Unit 3 HPCI alternative control station following calibration of an inverter in the control station. Consequently, the control station power supply remained deenergized for approximately nine days. This resulted in the alternative control station being inoperable for safe shutdown of Unit 3 during specific scenarios, a violation of Condition 2.C.4 of the Unit 3 operating license. The Peach Bottom fire protection plan (FPP) requires that alternate shutdown capability be available in case of a fire in the control room, the cable spreading room, the computer room or the emergency shutdown panel area.

Description

On May 13, 2003, during a surveillance test on the Unit 3 HPCI alternative control station, I&C technicians observed that a pressure indicator on the panel did not respond to a test signal. Further investigation revealed that a wire for the station power supply, E/S-9344A, was broken.

The broken wire resulted in a loss of power to the HPCI turbine emergency speed controller and to multiple reactor vessel and emergency core cooling system instrumentation at the control station, such as reactor pressure and level. Thus, this failure caused a loss of function for HPCI during scenarios that required evacuation of the control room and use of the alternative control station. In addition, this condition would have prevented operators from using the alternative control station to monitor some key reactor parameters such as reactor pressure and level.

Exelon's investigation determined that on May 5, 2003, I&C technicians did not complete the post-maintenance test, as specified in the work order, following maintenance activities on the control station that included calibration of an inverter associated with the power supply. During these activities, a technician moved the power supply, apparently causing the wire to break. The post-maintenance test would have detected the broken wire if it had been properly performed.

Exelon discovered the condition on May 13, 2003, when I&C technicians observed an unexpected response while performing surveillance test, SI3F-10-177-XXC2, Revision 1, "Calibration Check of Alternative Shutdown Panel RHR Heat Exchanger HPSW Flow Instruments FT/FI 3-10-177." This test was not directly associated with the deenergized power supply. Since the identification of the failure mechanism was not within the intended scope of this test, this finding is considered self-revealing.

#### Analysis

The technicians' did not complete the specified post-maintenance testing for work on the Unit 3 HPCI alternative control station power supply. This is a performance deficiency because the technicians did not follow Exelon's instruction in the preventive maintenance work order. Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violations of NRC requirements.

This finding was considered more than minor because it resulted in a loss of function of the Unit 3 HPCI alternative control station for approximately nine days. The finding was associated with the human performance attribute of the Mitigating Systems cornerstone. The cornerstone objective was affected because operators did not have the ability to use the alternative control station for operation of HPCI and lost the ability to monitor some important reactor parameters in the event the control room and emergency shutdown panel area were evacuated due to fire.

The safety significance of this finding is unresolved. The failure of the I&C technicians to follow the work order, resulting in the loss of function of the Unit 3 HPCI alternative control station, was determined to have a potential safety significance greater than very low significance (Green) because in case of fire in the control room or the emergency shutdown panel, level control using HPCI was unavailable and the loss of reactor instrumentation (reactor level and pressure) affected operators' ability to perform depressurization and containment cooling functions. Exelon entered this issue into their corrective action program as CR #158665.

A contributing cause of the inoperable HPCI alternative control station was related to the Human Performance cross-cutting area. Specifically, I&C technicians did not follow procedures to perform the post-maintenance test specified in a maintenance work order. As a result, the control station was returned to service while in a degraded condition and was unavailable for operation of HPCI and monitoring of important reactor parameters for safe shutdown of Unit 3 in certain fire scenarios.

#### Enforcement

Condition 2.C.4 of the operating license for Unit 3 requires Exelon to implement and maintain the fire protection program described in the NRC Safety Evaluation Reports. Section 5.2, Method D and 5.3 of the Peach Bottom Fire Protection Plan (FPP) requires that "alternate shutdown capability be available in case of a fire in the control room, the cable spreading room, the computer room or the emergency shutdown panel area." Contrary to the above, from May 5, 2003 till May 14, 2003, the Unit 3 HPCI alternative control station power supply was deenergized resulting in the loss of alternate shutdown capability for safe shutdown of the unit. The loss of ability to use the HPCI alternative control station during a fire in the control room envelope constituted potentially greater than a Green finding, using the NRC SDP. The safety significance of the potential inability to monitor other systems during a postulated fire remained unresolved. Pending determination of the finding's safety significance, this finding is identified as an unresolved item (URI). **(URI 50-278/03-03-03)**

#### 1R17 Permanent Plant Modifications

##### b. Inspection Scope

The inspectors observed some of the installation work and reviewed the following permanent plant modification package to verify that (1) the design bases, licensing bases, and performance capability of risk significant structures, systems, and components (SSCs) had not been degraded through plant modifications, and (2) modifications performed during increased risk configuration did not place the plant in an unsafe condition. The following modification was observed and reviewed:

- Undervoltage relay and monitoring upgrades to the Station Blackout 34.5 KV bus and associated 13 KV bus. (Primary and secondary side of station blackout (SBO) Transformer)

The following documents were used during the review of this modification:

- Engineering Change Request (ECR) PB 03-00329-000, "Modify SBO Undervoltage Trip Function"
- CR #163240, "Conowingo Pond Level Management and SBO Line Vulnerabilities"
- CC-AA-102, Revision 5, "Design Input Configuration Change Impact Screening"
- RT-O-51H-900-2, Revision 4, "Station Blackout Line Loading Verification"
- Tagging Clearance # 03001309
- Electrical Schematic Diagram NE-179-4, Sheet 2, Revision 0, "38KV Main Breaker Unit 5"
- Electrical Connection Diagram NE-179-12, Sheet 1, Revision 1, "38KV Unit 4"

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities in the field and reviewed selected test data at the job site. The inspectors observed whether the tests were performed in accordance with the approved procedures and assessed the adequacy of the test methodology based on the scope of maintenance work performed. In addition, the inspectors assessed the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the TS requirements. The inspectors reviewed the recorded test data to evaluate whether the acceptance criteria were satisfied. The specific activities reviewed included:

- E1 EDG testing after the maintenance overhaul (RT-O-052-203-2, Revision 13)
- 3A HPSW post-pump maintenance test (ST-O-032-301-3, Revision 17)
- E3 EDG test after then jacket water cooling temperature probe replacement (RT-O-52-203-2, Revision 13)
- Testing following Unit 3 hydraulic control units (HCUs) repairs for HCUs 18-11,42-39,34-15 (ST-R-003-485-3, Revision 14)
- SBGT testing following charcoal and high-efficiency particulate air (HEPA) replacement on SBGT Filter Train 'A' (ST-M-09A-600-2, Revision 10)
- Unit 3 HPCI testing following scheduled work week maintenance (ST-O-023-301-3, Revision 33)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

The inspectors reviewed and observed portions of following surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing the intended safety functions. The inspectors also verified that the systems and components maintained operational readiness, met applicable technical specification requirements, and were capable of performing the design basis functions. The observed or reviewed surveillance tests included:

- ST-O-052-703-2, Revision 11, "E3 EDG 24 Hour Endurance Test"
- ST-I-01G-105-2, Revision 6, "Unit 2 Automatic Depressurization System (ADS) Channel B Logic System Functional Test"
- ST-R-003-485-2, Revision 9, "Unit 2 Control Rod Drive Scram Insertion Timing of Selected Control Rods"
- ST-O-08-500-2, Revision 10, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" during Unit 2 Cooldown Subsequent to Reactor Scram on April 12, 2003
- ST-O-052-312-2, Revision 16, "E2 Diesel Generator Slow Start Full Load and IST Test" on April 5, 2003
- RT-O-052-202-2, Revision 14, "E2 Diesel Generator Load Run" on April 19, 2003

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modificationsa. Inspection Scope

The inspectors reviewed the temporary plant modifications that jumpered out portions of the fire protection deluge system for the 2C, 3A and 3C main transformers. These modifications were performed to return the deluge system to service for these three main transformers.



This review was performed to determine whether the temporary changes adversely affected system or support system availability, or adversely affected a function important to plant safety. The inspectors reviewed the associated system design bases, including the UFSAR and TSs, and assessed the adequacy of the 10 CFR 50.59 safety screening or evaluation for this issue. The inspectors also assessed configuration control of the temporary changes by reviewing selected drawings and procedures to verify that appropriate updates had been made, and were in compliance with Exelon Nuclear's procedure, "Temporary Configuration Changes," CC-AA-112, Revision 5. The inspectors reviewed work order documents for these temporary modifications to verify that the implemented changes were consistent with the approved documents. The following temporary modifications and documents were included in this review:

#### Temporary Modification

- Fire protection deluge system heat detectors bypassed on 2C, 3A and 3C main transformers

#### Procedures and Documents

- CC-MA-112-1001, Revision 0, "Temporary Configuration Change Packages (TCCP)"
- CC-AA-103, Revision 4, "Configuration Change Control"
- A/Rs # A1390469, A1390470, and A1390474
- CR #126967, "Maintenance Rule Functional Failure - Inadvertent Actuation of 3A Main Transformer Deluge System"
- CR #151566, "Inadvertent Actuation of the 2B Main Transformer Deluge"
- AG-CG-12.1, Revision 4, "Actions for Fire System Impairments"
- RT-I-037-320-2, Revision 0, "Functional Test of Water Deluge Sprinkler System Supervisory Circuit"
- UFSAR Section 8.4, "Auxiliary Power Systems"
- Electric Release Control 125 Volts Schematic Wiring Diagram, (M-45-6, Revision 8)
- Grinnel Model F760 Electric Release Control 125 Volts DC Panel Wiring, (M-45-23, Revision 0)
- Wire and Cable Notes and Details: Power Control and Instrumentation, PECO, Peach Bottom (E-1317, Revision 63)

#### b. Findings

No findings of significance were identified.

## Cornerstone: Emergency Preparedness (EP)

1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed a station emergency response organization (ERO) drill on May 22, 2003. The inspectors focused on the performance of risk significant evolutions by site personnel in a simulated main control room and technical support center (TSC). These risk significant evolutions included emergency classification, NRC and offsite agency notifications, and coordination with the emergency operations facility (EOF) to issue the protective action recommendations (PARs). The inspectors also evaluated the emergency response organization's recognition of abnormal conditions, command and control, communications, potential utilization of repair and field monitoring teams, and the overall implementation of the emergency plan procedures. The inspectors observed Exelon's critique of personnel performance and verified that any weaknesses or deficiencies observed during the drill were discussed and evaluated.

b. Findings

No findings of significance were identified.

## 3. SAFEGUARDS

Cornerstone: Physical Protection

3PP2 Access Controla. Inspection Scope

The following inspections were conducted to verify that the licensee has effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area, as measured against 10 CFR 73.55(d) and the Physical Security Plan and Procedures:

- Site access control activities were observed, including personnel and package processing through the search equipment during peak ingress periods on June 3 and 4, 2003.
- On June 4, 2003, observation of vehicle search activities was also conducted.
- On June 3, 2003, testing of all access control equipment; including metal detectors, explosive material detectors, and X-ray examination equipment, at the access point, was observed.

b. Findings

No findings of significance were identified.

3PP3 Response to Contingency Events

a. Inspection Scope

The following inspections were performed to determine the effectiveness of Peach Bottom's response to contingency events, as measured against the requirements of 10 CFR 73.55 and the Peach Bottom Safeguards Contingency Plan:

- On June 4, 2003, a review of documentation associated with the licensee's force-on-force exercise program was conducted. The review included documentation and critiques for exercises conducted since the third quarter of 2002.
- On June 2, 2003, performance testing of the Peach Bottom intrusion detection and alarm assessment systems was conducted. This testing was accomplished by one inspector who toured the entire perimeter, selected, and subsequently performance tested, areas of potential vulnerability in the intrusion detection system. Concurrently, a second inspector observed the alarm assessment capabilities from the Central Alarm Station. During the walk-down of the intrusion detection system, fourteen specific locations were selected for testing.

b. Findings

No findings of significance were identified.

3PP4 Security Plan Changes

a. Inspection Scope

An in-office review was conducted of changes to the licensee's Security Plan identified as Revision 18. This document was submitted to the NRC on April 30, 2002, in accordance with the provisions of 10 CFR 50.54(p). The review was conducted to confirm that the changes were made in accordance with 10 CFR 50.54(p), and did not decrease the effectiveness of the above listed plans. The NRC recognizes that some requirements contained in this Security Plan may have been superseded by the February 2002 Interim Compensatory Measures Order.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification

###### a. Inspection Scope

The inspectors reviewed selected records at the station to assess the accuracy and completeness of the NRC Performance Indicator (PI) data. The records reviewed included Technical Specification limiting condition for operation logs, system surveillance tests, licensee event reports, action requests and condition reports. The information reviewed was compared against the criteria contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment PI Guideline, Revision 2. The inspectors verified that conditions met the NEI criteria, were recognized, identified, and accurately reported. The following specific indicators were reviewed:

- Unit 2 and 3 reactor core isolation cooling (RCIC) unavailability
- Unit 2 and 3 reactor coolant leak rate
- Unit 2 and 3 high pressure coolant injection (HPCI) unavailability

###### b. Findings

No findings of significance were identified.

##### .2 Security Performance Indicators

###### a. Inspection Scope

On June 3, 2003, a review was conducted of the licensee's programs for gathering, processing, evaluating, and submitting data for the Fitness-for-Duty, Personnel Screening, and Protected Area Security Equipment PIs to verify these PIs had been properly reported as specified in NEI 99-02. The review included the licensee's tracking and trending reports, personnel interviews and security event reports for the PI data collected from the 2nd quarter of 2002 through March 2003.

###### b. Findings

No findings of significance were identified.

##### .3 Emergency Preparedness (EP) Performance Indicators

###### a. Inspection Scope

The inspectors reviewed Exelon's process for identifying the data that was utilized to determine the values for the following three EP PIs: 1) Drill and Exercise Performance, 2) ERO Participation, and 3) Alert Notification System (ANS) Reliability. The review assessed data submitted to the NRC from the fourth quarter of 2002 (since the last EP

PI verification inspection) up to and including the first quarter of 2003. Classification, notification, and protective action opportunities were reviewed from licensed operator simulator sessions and site ERO drills and exercises. Attendance records for drill and exercise participation were reviewed for completeness and accuracy. Test results of the ANS testing were reviewed for compliance with licensee testing methodology. The inspectors reviewed this data using the criteria of NEI 99-02.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

Selected Issue Follow-up Inspection - Loss of TSC due to Loss of 351 Line and SBO Power Supply: CR #060103

a. Inspection Scope

A Problem Identification and Resolution Inspection for a selected issue was performed for the loss of 34 kV off-site power line 351, in August 1999, that resulted in a loss of both the energized SBO line and Unit 1 power. Line 351 was connected to SBO line 191 and the 34 kV SBO bus (in Unit 1) through a normally closed breaker at the Susquehanna Substation. There were two 480V buses (Buses 24 and 14) in Unit 1 that were tied together through two normally closed breakers. These two buses could be powered by either the SBO bus through a step-down transformer and a normally closed breaker (breaker 24) or by line 351 through a step-down transformer and a normally open breaker (breaker 14). The Peach Bottom TSC is located in Unit 1 and the TSC and ventilation system for the TSC is powered by both of these 480V buses. Breaker 24 was inoperable two days before the power was lost to line 351 and breaker 14 was used to power the buses. Although the SBO line was recovered 15 minutes after power was lost on the 351 line, the Unit 1 buses and the TSC lost power for five hours and 45 minutes due to various equipment problems. The licensee found both breakers 14 and 24 were mechanically inoperable due to lack of maintenance. When the breakers were later repaired, the breaker coils could not be energized due to a lack of dc power because the battery charger did not work. The prolonged loss of power in Unit 1 and the subsequent draining of Unit 1 battery were not recognized by the operators because the alarm circuit had been disconnected earlier from the control room (documented in PEP I0010179). The licensee made a 10 CFR 50.72 report to the NRC when the loss of power to the TSC exceeded one hour.

The inspectors also reviewed three other events (documented in PEPs I0010014, 0010273, 0010274) for loss of Unit 1 power from July to September 1999.

Following these events, the licensee initiated five major corrective actions involving:

- Vegetation management (on Exelon's power lines)
- Susquehanna 351/191 distribution line enhancements
- Maintenance improvement of Unit 1 electrical equipment
- Unit 1 emergency lighting improvement
- Procedural upgrades for Unit 1 power restoration

The inspectors reviewed the root cause analysis, immediate and subsequent actions and assignments within the CR to ensure that Exelon had taken proper and effective corrective actions. The inspectors also reviewed documents associated with the implementation of the above corrective actions, including Modification P00907 for the addition of one transmission line with a network reclosure, between line 351 and the 34 kV SBO bus. The inspectors walked down Unit 1 electrical systems (both ac and dc) and verified that: 1) the inoperable Unit 1 battery charger was replaced in March 2000; 2) all breakers (19 total) associated with Buses 14 and 24 had received a preventive maintenance (all in 2002) and were included in the Peach Bottom breaker maintenance program; and 3) the battery and battery charger were also included in the preventive maintenance and test program. The inspectors conducted interviews with several individuals, including engineering and operations personnel, to ensure that actions taken and planned were appropriate and would result in effective resolution of this issue.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up

(Closed) Licensee Event Report (LER) 2-03-001-00: Outboard Main Steam Isolation Valve Instrument Air Line Failure Results in Scram on Reactor High Pressure

On April 12, 2003, Unit 2 automatically shutdown from 100% power due to high reactor pressure which occurred when a broken air line caused the 'D' outboard main steam isolation valve (MSIV) to close. Additionally, Unit 2 experienced Groups II and III primary containment isolation valve closures due to decreased reactor water level as a result of the reactor scram.

The inspectors observed plant parameters and status following the automatic reactor shutdown and reviewed strip charts for key reactor parameters. The inspectors also reviewed Check-Off List (COL) GP-18, Revision 32, "Scram Review Procedure Check List" and discussed the automatic reactor shutdown with several operation and engineering managers and staff. The inspectors verified that no significant anomalies of plant parameters occurred during or following the shutdown. This event was entered into Exelon's corrective action program as CR #153675. The inspectors on-site review of this LER identified no findings of significance.

Enclosure

#### 4OA4 Cross Cutting Aspects of Findings

##### Cross-Reference to the Human Performance Finding Documented in Section 1R15

Section 1R15 describes a finding where the Unit 3 HPCI alternative control station was returned to service without verifying that power to the panel instruments and HPCI turbine speed controller was available. Approximately nine days later, station I&C personnel discovered that the power to this equipment was not available and, therefore, the Unit 3 HPCI alternative control station could not perform its safety function. The condition of the power supply could have been reasonably identified, prior to returning the HPCI alternative control station to service, if I&C personnel had performed sufficient post-maintenance testing following maintenance activities on this station.

#### 4OA5 Other Activities

##### Operation of an Independent Spent Fuel Storage Installation (ISFSI)

###### a. Inspection Scope

The inspectors observed selected spent fuel loading operations for TN-68 Cask No. 17 conducted in accordance with ISFSI procedure SF-220, "Spent Fuel Cask Loading and Transport Operations." Vacuum drying operations and preliminary helium leak testing of TN-68 Cask No. 17 were reviewed with respect to TN-68 TSs 3.1.1 and 3.1.3 criteria, respectively. Radiological work practices and exposure rates were discussed with technicians responsible for on-going work. Conformance to the requirements of ISFSI procedure SF-420, "Radiation Protection Requirements During Spent Fuel Cask Loading and Transport Operations" was evaluated. Results of contamination surveys of the cask were compared to the TN-68 TS 3.2.1 limits. Personnel exposures were reviewed and RWP C-03-100 was examined. A comparison of radiological data to previous casks was performed.

The inspectors discussed with Exelon representatives, the procedural controls to ensure that only designated fuel assemblies were properly selected and loaded into TN-68 casks. A review of the spent fuel assembly move sheets and verification records, that were required by RE-C-40, "Core Component Transfer Authorization Sheet Generation and Administration" and SF-300, "TN-68 Cask Spent Fuel Assemblies Storage Selection and Documentation Requirements," was conducted. The inspectors observed a video tape of the final fuel configuration in the TN-68 Cask No. 16, which clearly indicated fuel assembly serial numbers. Fuel characteristics, including enrichments, burn-up, post irradiation cooling time, heat generation, and known structural defects, were reviewed and evaluated against the TN-68 TS 2.1.1 limits.

The inspectors reviewed 10CFR72.48 safety evaluations generated since the last spent fuel transfer campaign in 2002, including one to support ECR 02-00248, modifying the methodology for calculating offsite doses to the public from ISFSI storage operations. The inspectors also reviewed CR #156623 regarding identification of a 1/8th inch space at the top of TN-68 No. 17 after seating of the basket hold down ring.

Training and qualifications of selected personnel involved with ISFSI work were reviewed to ensure adherence to SF-140, "Independent Spent Fuel Storage Training Program Plan" and the requirements of TN-68 TS 5.1 and the general license criteria in 10CFR72.212(b)(6). This review included personnel responsible for rigging and cask handling, vacuum drying, helium backfill operations, and helium leak testing. The training material were also evaluated for inclusion of ISFSI operating experience.

A tour of the ISFSI pad and enclosed area was conducted to ensure TN-68 TS 4.2.1 criteria regarding cask spacing center to center was being maintained.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On July 2, 2003, the resident inspectors presented the inspection results to Mr. Rusty West and members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.



**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT**Licensee Personnel

R. West, Site Vice-President  
 J. Stone, Plant Manager  
 E. Eilola, Operations Director  
 P. Davison, Maintenance Director  
 G. Stathes, Site Engineering Director  
 M. Anthony, Work Management Director  
 C. Behrend, Senior Manager Plant Engineering  
 B. Norris, Radiation Protection Manager  
 E. Anderson, Manager, Regulatory Assurance  
 W. Trump, Nuclear Security Manager  
 A. Coppa, Emergency Preparedness Manager  
 K. Langdon, Site Nuclear Oversight Manager

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**Opened

50-278/03-03-03	URI	Unit 3 HPCI Alternative Control Station Loss of Power
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Closed

2-03-001	LER	Outboard Main Steam Isolation Valve Instrument Air Line Failure Results in Scram on Reactor High Pressure
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Opened and Closed

50-277;50-278/03-03-01	NCV	Inadequate E2 Emergency Diesel Generator Maintenance Procedure Resulted in a Lube Oil Leak that Caused a Small Fire on the Exhaust Manifold
50-277;50-278/03-03-02	NCV	'A' Train of Standby Gas Treatment System Rendered Inoperable Due to Inadequate Control of Testing of the Associated Fire Protection Deluge System

**LIST OF DOCUMENTS REVIEWED**

ST-M-037-351-2, Revision 2, "SBGT Filter Train 'A' Deluge System Nozzle and Piping Inspection"

ST-M-09A-600-2, Revision 10, "SBGT System Filter Train 'A'"

CM ETT A/Rs #A1394150, A1394148, and A1394151

CR #160784, "SBGT Filter (0AF036) Failure During ST-M-09A-600-2"

Vendor lab reports - Iodine-131 Removal Efficiency of Adsorbent samples

Security Plan Audit Nos.      NOSA-PB-02-2Q April - June 2002  
   NOSA-PB-02-3Q July - Sept. 2002  
   NOSA-PB-02-4Q Oct - Dec 2002  
   NOSA-PB-03-1Q Jan - Mar 2003

Safeguards Event Log, April 2002 - March 2003

EP-AA-125-1003, Revision 2, "ERO Readiness - Performance Indicators Guidance"

LS-AA-2110, Revision 5, "Monthly PI Data Elements for ERO Drill Participation"

LS-AA-2120, Revision 3, "Monthly PI Data Elements for Drill/Exercise Performance"

LS-AA-2130, Revision 3, "Monthly PI Data Elements for Alert and Notification System (ANS) Reliability"

**LIST OF ACRONYMS**

AC	alternating current
ANS	Alert and Notification System
A/R	action request
CFR	Code of Federal Regulations
CR	condition report
DC	direct current
ECR	engineering change request
EDG	emergency diesel generator
EP	Emergency Preparedness
ERO	Emergency Response Organization
FPP	Fire Protection Plan
HEPA	high efficiency particulate air
HPCI	high pressure coolant injection
I&C	instrument and control
ICMs	interim compensatory measures
kV	kilovolt
LEFM	leading edge flow meter
NRC	Nuclear Regulatory Commission
PBAPS	Peach Bottom Atomic Power Station
PEP	Performance Enhancement Program
PI	Performance Indicator
RHR	residual heat removal
SBO	station blackout
SCBA	self contained breathing apparatus
SDP	Significance Determination Process
SSC	structures, systems and components
SBGT	stand-by gas treatment
SW	service water
TSC	Technical Support Center
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
V	volt