October 27, 2004

Mr. A. Christopher Bakken, III
President and Chief Nuclear Officer
PSEG Nuclear LLC - N09
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000354/2004010

Dear Mr. Bakken:

On October 7, 2004, the NRC completed a triennial fire protection inspection at your Hope Creek Generating Station facility. The enclosed report documents the inspection findings that were discussed on October 7, 2004, with Mr. J. Carlin, Vice President Nuclear Assessments, and other members of your staff.

This inspection 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 no findings of significance were identified.

In accordance with 10 CFR 2.390 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).

We appreciate your cooperation. Please contact me at 610-337-5146 if you have any questions regarding this letter.

Sincerely,

***/RA/***

John F. Rogge, Chief
Electrical Branch
Division of Reactor Safety

Docket No. 50-354
License No. NPF-57

Enclosure: NRC Inspection Report 05000354/2004010
w/Attachment: Supplemental Information

cc w/encl:
M. Brothers, Vice President - Site Operations
J. T. Carlin, Vice President - Nuclear Assessment
M. Gallagher, Vice President - Engineering and Technical Support
W. F. Sperry, Director - Business Support
C. Perino, Director - Nuclear Safety and Licensing
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| DATE | 10/27/04 | | 10/27/04 | | | | | | | |

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REGION 1

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|---|---|
| Docket No: | 50-354 |
| License No: | NPF-57 |
| Report No: | 05000354/2004010 |
| Licensee: | Public Service Electric & Gas Company |
| Facility: | Hope Creek Generating Station |
| Location: | Hancocks Bridge, New Jersey |
| Inspection Period: | September 13 - October 7, 2004 |
| Inspectors: | Keith Young, Senior Reactor Inspector, DRS (Team Leader)<br>John Richmond, Reactor Inspector, DRS<br>David Werkheiser, Reactor Inspector, DRS<br>Jorge Hernandez, Reactor Engineer, DRP |
| Approved by: | John F. Rogge, Chief<br>Electrical Branch<br>Division of Reactor Safety |

Enclosure

## SUMMARY OF FINDINGS

IR 05000354/2004-010; 09/13/2004 - 10/07/2004; Hope Creek Generating Station; Triennial Fire Protection Inspection.

The report covered a two week team inspection by specialist inspectors. 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 Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None

Report Details

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05, “Fire Protection.” The objective of the inspection was to assess whether Public Service Electric and Gas Company (PSEG) has implemented an adequate fire protection program and that post-fire safe shutdown capabilities have been established and are being properly maintained at the Hope Creek Generating Station. The following fire areas (FAs) were selected for detailed review based on risk insights from the Hope Creek Generating Station Individual Plant Examination (IPE)/ Individual Plant Examination of External Events (IPEEE):

- Division I Reactor Building (FA RB1)
  Focus Areas; SACS Heat Exchanger & Pump Room
  MCC Area
  C RHR Pump Room
- Cable Spreading Room (FA CD16)
- Control Equipment Room Mezzanine (FA CD35)
- Switchgear Room Channel A (FA CD82)
- Switchgear Room Channel B (FA CD62)

This inspection was a reduced scope inspection in accordance with the March 6, 2003, revision to IP 71111.05, “Fire Protection.” Issues regarding equipment malfunction due to fire-induced failures of associated circuits were not inspected. Criteria for review of fire-induced circuit failures are currently the subject of a voluntary industry initiative. The definition of associated circuits of concern used was that contained in the March 22, 1982, memorandum from Mattson to Eisenhut, which clarified the requests for information made in NRC Generic Letter 81-12.

## 1. REACTOR SAFETY
**Cornerstones: Initiating Events, Mitigating Systems**

### 1R05 Fire Protection

1. Fire Area Boundaries and Barriers

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries, fire doors, and fire dampers. The team reviewed engineering evaluations, as well as surveillance and functional test procedures for selected items. The team also reviewed the licensee submittals and NRC safety evaluation reports (SERs) associated with fire protection features at Hope Creek Generating Station. Additionally, the team reviewed the design and qualification testing of selected barriers and reviewed surveillance procedures for structural fire barriers, penetration seals and structural steel. These reviews were performed to ensure that the passive fire barriers were properly maintained and met the

licensing and design bases as described in the licensee submittals, NRC SERs, and the Hope Creek Generating Station Updated Final Safety Analysis Report (UFSAR).

b. Findings

No findings of significance were identified.

2. Post-Fire Safe Shutdown Lighting and Communications

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights throughout the selected fire areas, including the remote shutdown panel area, to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation for post-fire safe shutdown. The team also reviewed preventive maintenance procedures and various documents, including the vendor manual and surveillance tests, to determine if adequate surveillance testing and periodic battery replacements were in place to ensure reliable operation of the emergency lights.

The team reviewed radio repeater location, power sources and preventive maintenance procedures to ensure fire department and operator communications could be maintained for fire fighting and post-fire safe shutdown conditions. This also included review of surveillance activities for the sound powered phone system.

b. Findings

No findings of significance were identified.

3. Programmatic Controls

a. Inspection Scope

During tours of the facility, the team observed the material condition of fire protection systems and equipment, the storage of permanent and transient combustible materials, and control of ignition sources. The team also reviewed the procedures that controlled hot-work activities and combustibles at the site. Additionally, the team reviewed a sample of hot-work permits and combustible control permits. These reviews were accomplished to ensure that PSEG was maintaining the fire protection systems, controlling hot-work activities, and controlling combustible materials in accordance with the UFSAR, administrative procedures and other fire protection program procedures.

b. Findings

No findings of significance were identified.

4. Fire Detection Systems and Equipment

a. Inspection Scope

The team reviewed the adequacy of the fire detection systems in the selected plant fire areas. This included a walkdown of the systems and review of the type of installed detectors as shown per location drawings. The team also reviewed licensee submittals and the NRC SERs associated with the selected fire areas. These reviews were performed to ensure that the fire detection systems for the selected fire areas were installed in accordance with the design and licensing bases of the plant. Additionally, the team reviewed fire detection surveillance procedures to determine the adequacy of the fire detection component testing and to ensure that the detection systems would function as required.

b. Findings

No findings of significance were identified.

5. Fixed Fire Suppression Systems

a. Inspection Scope

Carbon Dioxide and Sprinkler Systems

The team reviewed the adequacy of the control equipment room mezzanine (FA CD35) total flooding carbon dioxide ($CO_2$) systems by performing walkdowns of the systems and the room envelope. The team also reviewed the design and installation, NFPA 12, "Standard on Carbon Dioxide Extinguishing Systems," initial discharge testing and the adequacy of surveillance procedures. Completed surveillance procedures were also reviewed to ensure periodic testing of the system was being accomplished. These reviews were performed to ensure that the total flooding $CO_2$ system met the design and licensing bases as described in the licensee submittals, NRC SERs and the UFSAR and that the system could perform their intended function in the event of a fire in this area.

The team reviewed the adequacy of the cable spreading room (FA CD16) and the control equipment room mezzanine (FA CD35) sprinkler systems by performing walkdowns of the systems. The sprinkler system in the control equipment room mezzanine provides a manual backup to the automatic total flooding $CO_2$ system. The team also reviewed the design and installation, NFPA 13, "Standard for the Installation of Sprinkler Systems," and the adequacy of surveillance procedures. Completed surveillance procedures were also reviewed to ensure periodic testing of the systems was being accomplished. These reviews were performed to ensure that the sprinkler systems met the design and licensing bases as described in the licensee submittals, NRC SERs and the UFSAR and that the system could perform its intended function in the event of a fire in this area.

b. Findings

No findings of significance were identified.

6. Manual Fire Suppression Capability

b. Inspection Scope

The team assisted the resident inspectors assess an unannounced fire drill held on September 14, 2004. The drill was conducted in the 1E Inverter Room (FA FC060, room number 5448). The team observed timeliness in responding to the fire drill scenario, proper donning of turnout gear, proper use of self-contained breathing apparatus (SCBA), use of pre-fire plans, proper use of fire fighting strategies, proper use of communications equipment and implementation of smoke removal activities to determine readiness for fire fighting. The team also observed and reviewed the fire drill critique following the drill.

Additionally, the team walked down selected standpipe systems and observed portable extinguishers to determine the material condition of the manual fire fighting equipment and verify locations as specified in the fire fighting strategies and fire protection program documents. The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting their design requirements. The team also reviewed the fire main loop flow tests to ensure that the flow distribution circuits were able to meet the design requirements. The team inspected the fire brigade's protective ensembles, SCBA, and various fire brigade equipment to determine operational readiness for fire fighting.

The team reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire department members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact safe shutdown.

The team performed in-plant walk downs to evaluate the physical configuration of electrical raceway and safe shutdown components in the selected fire areas to determine whether water from an inadvertent fire suppression system pipe rupture or from manual fire suppression activities in the selected areas could cause damage that could inhibit the ability to safely shutdown the plant. This included review of a flooding analysis.

The team reviewed fire department initial training and continuing training course materials to verify appropriate training was being conducted for the station firefighting personnel.

The team reviewed the qualifications of several fire department leaders and members to ensure that they had met and maintained the requirements to be fire department leaders and members.

b. Findings

No findings of significance were identified.

7. Safe Shutdown Capability

a. Inspection Scope

The team reviewed the fire response procedures, alarm response procedures and operating procedures for the selected fire areas to evaluate the methods and equipment used to achieve safe shutdown following a fire. The team also reviewed piping and instrumentation drawings (P&ID) for post-fire safe shutdown systems to identify required components for establishing flow paths, to identify equipment required to isolate flow diversion paths, and to verify appropriate components were properly evaluated and included in the safe shutdown equipment list. The team also reviewed selected safe shutdown components and their power/control circuits to determine whether proper isolation was provided for remote shutdown capability, in the event of a fire affecting the control room or relay room. The team performed field walkdowns to evaluate equipment protection from the effects of fires, and reviewed selected remote shutdown equipment surveillance tests to assess whether periodic testing was adequate to ensure component operability and satisfied applicable surveillance requirements.

Post-fire shutdown procedures for the selected areas were also reviewed to determine if appropriate information was provided to plant operators to identify protected equipment and instrumentation and if recovery actions specified in post-fire shutdown procedures considered manpower needs for performing required actions. The team also reviewed training lesson plans for the alternative shutdown procedures, discussed training with licensed operators, reviewed selected remote shutdown equipment tests, reviewed the adequacy of shift manning, and evaluated the accessibility of the remote shutdown panel and required manual action locations.

The specific procedures reviewed for safe shutdown from outside the control room included:

- HC.FP-EO.ZZ-0001(Z), “Control Room Fire Response”
- HC.OP-AB.HVAC-0002(Q), “Control Room Environment”
- HC.OP-IO.ZZ-0008(Q), “Shutdown From Outside Control Room”
- HC.OP-SO.BC-0002(Q), “Decay Heat Removal Operation”

The team performed a walkdown of procedures for a main control room fire, evacuation, and plant shutdown form outside the main control room. In addition, the team observed a demonstration, by licensed operators, of a transfer of plant control to the remote shutdown panel, and a simulated plant shutdown to hot standby conditions. The team primarily focused on the portion of the procedures associated with achieving stable hot shutdown conditions, within the time frames assumed in the safe shutdown thermal hydraulic analysis. The team evaluated the approximate time for critical steps, such as

establishing makeup flow to the reactor vessel, to assess the ability of operators to maintain plant parameters within the required limits.

b. Findings

No findings of significance were identified.

8. Safe Shutdown Circuits

a. Inspection Scope

The team reviewed the cable routing for post-fire safe shutdown components to confirm that cables subject to fire damage in the five selected fire areas were identified and adequately addressed. The team also reviewed cable raceway drawings for a sample of components required for post-fire safe shutdown to verify that cables were routed thru the appropriate fire areas.

The team reviewed circuit breaker coordination studies to ensure equipment needed to conduct post-fire safe shutdown activities would not be impacted due to a lack of coordination. The team confirmed that coordination studies had addressed multiple faults due to fire. Additionally, the team reviewed a sample of circuit breaker maintenance and records to verify that circuit breakers for components required for post-fire safe shutdown were properly maintained in accordance with procedural requirements.

The team reviewed the electrical isolation capability of selected equipment needed for post-fire safe shutdown to ensure that such equipment could be operated locally or from the alternate shutdown panels, if needed. The team also reviewed the surveillance test procedure and test records of the fire transfer switch panel to ensure that the functionality of the switch panel had been adequately demonstrated.

Due to the issuance of Change Notice 00-020 to Inspection Procedure 71111.05, “Fire Protection,” the team did not review associated circuit issues during this inspection. This change notice has suspended this review pending completion of an industry initiative in this area.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

### 4OA2 Identification and Resolution of Problems

1. Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

On August 23, 2004, the NRC's Executive Director for Operations approved a deviation from the NRC's Action Matrix to provide a greater level of oversight for the Salem/Hope Creek station than would typically be called for by the Action Matrix. One provision of the deviation memorandum provided for the enhancement of existing reactor oversight process (ROP) baseline inspections by adjusting inspection scopes to verify effectiveness of PSEG's improvement efforts for Safety Conscience Work Environment (SCWE) and related performance attributes. In accordance with this deviation, the following additional inspection activities were performed.

- The inspection was augmented with an additional inspector to assist in the review of SCWE related issues.
- The scope of review of notifications (corrective action documents) was increased to greater than fifty items. This included review of the associated work orders when issued.
- The scope of the inspection was expanded to include review of fire protection backlog and work management activities to ensure plans were in place to correct fire protection issues.

The team reviewed the open corrective maintenance work orders for fire protection and safe shutdown equipment, selected notifications for fire protection and safe shutdown issues, the fire impairment log and recent Hope Creek Generating Station fire protection systems health reports to evaluate the identification, prioritization for resolving fire protection related deficiencies and the effectiveness of corrective actions. The team also reviewed recent Quality Assurance (QA) Audits, self-assessments of the fire protection program and notifications to determine if PSEG was identifying program deficiencies and implementing appropriate corrective actions. Long standing open fire protection issues, fire protection backlog (engineering and maintenance), backlog reduction plans, work management review and effectiveness of work control for fire protection impairments were also reviewed to determine if identified issues were being corrected, and for issues that were not immediately corrected, proper compensatory measures were appropriately implemented.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

1. Exit Meeting Summary

The team presented their preliminary inspection results to Mr. J. Carlin, Vice President Nuclear Assessment, and other members of the Hope Creek Generating Station staff at an exit meeting on October 7, 2004. The team confirmed that proprietary information was not provided or examined during the inspection.

**ATTACHMENT**

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Public Service Electric & Gas Personnel:

| | |
|---|---|
| J. Carlin | Vice President Nuclear Assessments |
| J. Hutton | Hope Creek Plant Manager |
| J. Balcita | Electrical, Safe Shutdown Engineer |
| J. Berg | Emergency Operating Procedure Co-ordinator |
| M. Bergman | Systems Engineer |
| J. Bisti | Design Engineering |
| B. Bowen | System Engineering |
| W. Buirch | Fire Department Superintendent |
| J. Carlin | Fire Brigade Supervisor |
| T. Catalano | Operations Training Instructor |
| K. Fleischer | Electrical/I&C Design Supervisor |
| T. MacEwen | Operations, Control Room Supervisor |
| J. Nagle | Licensing Compliance |
| P. Orsm | QA Engineer |
| E. Ortalan | Engineering Programs |
| M. Patti | QA Auditor |
| C. Perino | Licensing Director |
| S. Robitzski | Engineering Programs |
| S. Savar | Systems Engineer |
| D. Shumaker | Fire Protection Programs |
| D. Shuman | Fire Protection Engineer |
| M. Tadjalli | Engineering Design Manager |
| B. Thomas | Licensing Engineer |
| K. Wolf | Fire Protection Systems Engineer |

Nuclear Regulatory Commission Personnel:

J. Rogge, Chief, Electrical Branch, Division of Reactor Safety
M. Gray, Senior Resident Inspector, Hope Creek Generation Station
M. Ferdas, Resident Inspector, Hope Creek Generation Station

Other

| | |
|---|---|
| J. Humphreys | State of NJ, DEP BNE |

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

Opened

None

Closed

None

Discussed

None

## LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

Hope Creek Generating Station, Updated Final Safety Analysis Report, Rev. 13
UFSAR Section 7.4.1.4, "Remote Shutdown System"
UFSAR Section 9A Appendix-R Criteria III.L, "Alternate and Dedicated Shutdown Capability"
UFSAR Section 9A.5, "Fire Hazards Analysis - Safe Shutdown Methods"
UFSAR Section 9A NRC Generic Letter 81-12, "Appendix-R Criteria III.G.2 and G.3"
Safety Evaluation Report
Supplemental Safety Evaluation Report 2
Supplemental Safety Evaluation Report 5
Supplemental Safety Evaluation Report 6
Hope Creek Technical Specification 3/4.3.7.3, "Remote Shutdown System Instrumentation and Control"
NRC SER Section 7.4, "Systems Required for Safe Shutdown"
NRC SER Supplement 2, Section 9.5.1, "Fire Protection"
NRC SER Supplement 5, Section 9.5.1.4, "Alternate and Dedicated Shutdown Capability"
Hope Creek License NPF-57 Condition 2.C(7), "Fire Protection"
Letter Dated May 13, 1986, Fire Detection Program Technical Specification Deletion Hope Creek Generating Station Docket No. 50-354
Letter Dated April 8, 1986, High Pressure - Low Pressure Interface Hope Creek Generating Station Docket No. 50-354

Calculations/Engineering Evaluations

DE-PS.ZZ-0001(Q)-A7, Safe Shutdown Analysis
E-7.4(Q), Class 1E 4.16kV System, Rev. 3
E-7.7(Q), Class 1E 480 Volt System, Rev. 3
E-26, Breaker to Fuse Coordination for Appendix R, Rev. 2
GE-NE-208-02-1092, Hope Creek Engineering Report, February 1993
General Electric Fire Protection Analysis for Hope Creek
GR-0022, Loss of Ventilation during a Station Blackout (RCIC & HPCI rooms)

H-1-BCXX-MEE-0323, Engineering Evaluation of Low Pressure Suction of RHR and Core Spray Piping Subject to Spurious Valve Actuation due to Design

| | |
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| | Basis Fire and Resultant Reactor Coolant Leakage during Power Operation, Rev. 0 |
| H-1-KC-ECS-0037, | Fire Detection Computer Replacement, Rev. 0 |
| H-C-KC-MSE-0825, | Safety Evaluation: Salem Generating Station Fire Water System adequate backup fire suppression system for Hope Creek Generating Station, Rev. 0 |
| H-C-KC-MSE-0825, | 10CFR50.59 Evaluation to Determine If Salem Generating Station Fire Water System is Adequate Backup for Hope Creek, Rev. 0 |
| H-1-KC-MDC-1262, | Use of Salem Fire Pump for Hope Creek Fire Protection System, Rev. 0 |
| H-1-KC-NDC-1709, | Minimum Fuel Supply For Hope Creek Diesel Fire Pump |
| H-1-ZZ-MEE-1013, | One Hour Rated Gypsum Board Penetration Seals In Two Hour & Three Hour Fire Rated Barriers, Rev. 0 |
| H-1-ZZ-NEE-0400, | Fire Barriers That Do Not Separate Redundant Safe Shutdown Equipment Do Not Require Internal Smoke Seals, March 22, 1990\ |
| H-1-ZZ-NEE-0477, | Acceptability of Conduit Configurations, without internal Fire Seals, in rooms 4301 and 4317, Rev. 0 |
| IN 83-41, | Actuation of Fire Suppression System Causing Inoperability of Safety Related Equipment, June 22, 1983 |
| 11-92(Q), | Reactor Building Flooding- EL. 54' and 77', Rev. 5 |
| 19-18(Q), | Max Flood Levels In Control/Diesel Generator Areas, Rev. 4 |
| 645(Q)-1-10, | Check Slab for Control Building EL. 117'-6" For Fire System Deluge Water Allowable Flood Level on Floor, Rev. 0 |
| 10855-D5.12, | Design, Installation, and Test Specification for Remote Shutdown Station |

Operability Determinations

| | |
|---|---|
| August 3, 2004, | Operability Determination, CO2 System in Control Equipment Room Mezzanine |

Initial Discharge Testing for Halon & $CO_2$

Initial Discharge Test for $CO_2$ in Control Equipment Room Mezzanine, 1985

Design Change Requests/Modifications

| | |
|---|---|
| DCP-7108, | CO2 Test Mezzanine Room |
| PSE-SE-E012, | Temp Mod: 10C671 Fire Protection Computer – Class ‘A’ Supervised Circuitry, Rev. 0 |

Procedures

| | |
|---|---|
| DE-PS.ZZ-0001(Q)-A7, | PG&E Programmatic Standard For Fire Protection Appendix 7, Tech. Std., Hope Creek Safe Shutdown Analysis |
| HC.DE-PS.ZZ-0021(F)-A1, | PG&E, Hope Creek Penetration Seal Program, Appendix L, Barrier Separation Criteria Review, Rev. 0 |
| HC.FP-PM.QB-0039(Q), | Appendix “R” Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Inspection & Preventive Maintenance, Rev. 2 |

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| HC.IC-CC.BB-0039(Q), | Nuclear Boiler – Division 4, Channel P-7853D, Reactor Vessel Pressure – Remote Shutdown Panel, Rev. 3 |
| HC.IC-CC.BC-0024(Q), | Nuclear Boiler – Division 2, Channel F-4435, RHR Return Coolant Flow – Remote Shutdown Panel, Rev. 3 |
| HC.IC-SC.BB-0117(Q), | Nuclear Boiler – Division 2, Channel L-7854-1, Reactor Vessel Level – Remote Shutdown Panel, Rev. 6 |
| HC.IC-SC.BJ-0009(Q), | HPCI – Division 1, Channel A, LT-4805-2, HPCI Suppression Pool Level – Remote Shutdown Panel, Rev. 6 |
| HC.MD-CM.QB-0001(Q), | Removal & Rework of Eight Hour Battery Operated Emergency Florescent & Sealed Beam Lights, Rev. 2 |
| HC.MD-CM.PG-0002(Z), | Low Voltage Breaker Overhaul and Repair (AKR-75), Rev. 5 |
| HC.MD-PM.NA-0002(Z), | 7.2kV Breaker Time Response, Rev. 3 |
| HC.MD-PM.PB-0001(Q), | 4.16kV Breaker Cleaning and P.M., Rev. 19 |
| HC.MD-PM.PB-0002(Q), | 4.16kV Breaker Time Response, Rev. 6 |
| HC.MD-ST.PB-0007(Q), | 18 Month Primary Containment Penetration Conductor 4.16kV Circuit Breaker Overcurrent Protective Device Channel Calibration and Integrated System Functional Test, Rev. 7 |
| HC.MD-ST.ZZ-0006(Q), | Low Voltage Type AKR Air Circuit Breaker Inspection and Preventive Maintenance, Rev. 16 |
| HC.MD-ST.ZZ-0011(Q), | Low Voltage Molded Case Circuit Breaker Overcurrent Trip Testing, Rev. 18 |
| HC.OP-AB.HVAC-0002(Q), | Control Room Environment, Rev. 0 |
| HC.OP-AB.ZZ-0000(Q), | Reactor Scram |
| HC.OP-AB.ZZ-0130(Q), | Control Room Evacuation, Rev. 7 |
| HC.OP-AB.ZZ-0135(Q), | Station Blackout/ Loss of Offsite Power/Diesel Generator Malfunction |
| HC.OP-AR.QK-0001(F), | Fire Protection Status Panel 10C671 Alarm Summary, Rev. 15 |
| HC.OP-AR.QK-0002(F), | Fire Protection Status Panel 10C671 Alarm Responses, Rev. 11 |
| HC.OP-SO.BB-0002, | Reactor Recirculation System Operation |
| HC.OP-IO.ZZ-0004(Q), | Shutdown from Rated Power to Cold Shutdown |
| HC.OP-IO.ZZ-0006(Q), | Power Changes during Operation |
| HC.OP-IO.ZZ-0008(Q), | Shutdown from Outside Control Room, Rev. 18 |
| HC.OP-SO.BC-0002(Q), | Decay Heat Removal Operation |
| HC.FP-EO.ZZ-0001(Z), | Control Room Fire Response |
| NC.CC-AP-ZZ-0007(Q), | Speciality Interface for Engineering Changes, Rev. 4 |
| NC.CC-AP-ZZ-0080(Q), | Engineering Change Process, Rev. 10 |
| NC.DE-PS.ZZ-0001(Q), | Programmatic Standard - Fire Protection, Rev. 3 |
| NC.FP-AP.ZZ-0001(Q), | Fire Protection Organizational Duties and Staffing, Rev. 3 |
| NC.FP-AP.ZZ-0004(Q), | Actions For In-Operable Fire Protection - Hope Creek Station, Rev. 9 |
| NC.FP-AP.ZZ-0005(Q), | Fire Protection Surveillance and Periodic Test Program, Rev. 9 |
| NC.FP-AP.ZZ-0006(Q), | Tracking Inaccessible Fire Protection Equipment For Testing, Rev. 3 |
| NC.FP-AP.ZZ-0007(Q), | Processing Nuclear Fire Protection Documents, Rev. 6 |
| NC.FP-AP.ZZ-0009(Q), | Fire Protection Training Program, Rev. 3 |
| NC.FP-AP.ZZ-0010(Q), | Fire Protection Impairment Program, Rev. 9 |
| NC.FP-AP.ZZ-0012(Q), | Safe Performance of Hot Work, Rev. 0 |
| NC.FP-AP.ZZ-0020(Q), | Compensatory Measure Firewatch Program, Rev. 0 |

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|---|---|
| NC.FP-AP.ZZ-0025(Q), | Precautions Against Fire, Rev. 2 |
| NC.FP-AP.ZZ-0107(Q), | Conduct of Shift Turnover, Rev. 0 |
| NC.NA-AP.ZZ-0008(Q), | Configuration Control Program, Rev. 19 |
| NC.NA-AP-ZZ-0025(Q), | Operational Fire Protection Program, Rev. 6 |

Surveillance Procedures

| | |
|---|---|
| HC.FP-PM.QB-0039(F), | Appendix R Self Contained 8 Hour Battery Powered Emergency Light Unit Inspection & Preventive Maintenance, Rev. 2, Completed March 20, 2003, & May 14, 2004 |
| HC.FP-ST.QB-0039(F), | Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Test and Inspection, Rev. 4 |
| HC.FP-ST.QB-0039(F), | Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Test and Inspection, Rev. 3, Completed June 10, 2002, & December 17, 2003 |
| HC.FP-ST.QB-0070(F), | Standby Self Contained 8 Hour Battery Powered Emergency Light - 8 Hour Functional Test, Rev. 5 |
| HC.FP-ST.QB-0070(F), | Standby Self Contained 8 Hour Battery Powered Emergency Light - 8 Hour Functional Test, Rev. 3, Completed March 10, 2002, & August 18, 2003 |
| HC.FP-ST.QK-0001(Z), | Operation of PB-25 "A2-A5 Re-flash Defeat", Rev. 1 |
| HC.FP-ST.QK-0029(F), | Semi-annual Class 1 Fire Detection Functional Test<br>October 20, 2003 (Attachment 1)<br>April 18, 2004 (Attachment 1)<br>January 14, 2004 (Attachment 2)<br>September 23, 2003 (Attachment 3)<br>March 18, 2004 (Attachment 3)<br>January 11, 2003 (Attachment 4)<br>July 11, 2004 (Attachment 4)<br>January 14, 2004 (Attachment 5)<br>July 27, 2003 (Attachment 6)<br>January 14, 2004 (Attachment 6)<br>November 15, 2003 (Attachment 7)<br>May 1, 2004 (Attachment 7)<br>July 10, 2003 (Attachment 8)<br>January 7, 2004 (Attachment 8) |
| HC.FP-ST.QK-0030(F), | Supervised Circuit Operability Test, Rev. 1<br>November 16, 2003<br>May 15, 2004 |
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| A-P700-0, | Aux. Bldg. Control Areas Interior Wall EL. Wall No. 327 & 326, Rev. 4 |
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E-0212-0, sheet 2&3, SSW HV-2197B&D and Strainer Controls Electrical Schematic
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M-49-1(Q), Reactor Core Isolation Cooling
M-50-1(Q), RCIC Pump Turbine
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M-55-1(Q), High Pressure Coolant Injection
M-56-1(Q), HPCI Pump Turbine
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41, Sleeve or Conduit With Cable Thru Fire Barrier, Rev. 4
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E-4223-0(Q), Cable Block Diagram, Safety Auxiliaries Cooling RHR Outlet Vlave 1HV-2512A, Sh. 1 Rev. 1
J-10-0(Q), Logic Diagram, Station Service Water System, Sh. 3 Rev.14, Sh. 3 Rev. 10
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50879060, Hope Creek Turbine, Completed February 18, 2004
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Simulator Scenario Guide SG-211, Toxic Gas, RSP Operation
Simulator Scenario Guide SG-169, Control Room Evacuation, RSP Operations
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JPM.BC-009-06, Place "B" RHR in Suppression Pool Cooling from the RSP
JPM.BC-010-05, Reduce Suppression Pool Water Level via the RSP
JPM.BD-008-07, Place RCIC In-Service from RSP
JPM.EA-001-05, Place "B" Service Water Loop In-Service from RSP
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Ignition Source Permits

Fire Prevention Permits

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| 20067543 | 20069001 | 20070537 | 20073321 | 20088259 | 20096445 |
| 20099948 | 20113292 | 20113307 | 20113292 | 20113307 | 20123707 |
| 20130100 | 20133814 | 20134028 | 20138931 | 20138890 | 20139145 |
| 20141451 | 20143283 | 20151370 | 20152245 | 20155497 | 20156035 |

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| 20156036 | 20156643 | 20156584 | 20156815 | 20159204 | 20162712 |
| 20166777 | 20167190 | 20167189 | 20168150 | 20169726 | 20169727 |
| 20170351 | 20170352 | 20170353 | 20175309 | 20175409 | 20175414 |
| 20184888 | 20184951 | 20192651 | 20199671 | 20199674 | 20199675 |
| 20203672 | 20203844 | 20203863 | 20203939 | 20203999 | 20204072 |
| 20204075 | 20205142 | 20205143 | 20205320 | 20205355 | 20205462 |

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| 50043978 | 50044915 | 50044947 | 50078213 | 60040382 | 60041241 |
| 60041382 | 60046450 | 70013824 | 70015191 | 70016305 | 70017805 |
| 70018160 | 70019042 | 70019298 | 70024987 | 70028526 | 70029474 |
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PSE-E1-Z-008, Remote Shutdown System Engineering Test Instruction
Transient Combustibles In Safety Related Areas Impairment Log, June-Sept., 2004

## LIST OF ACRONYMS USED

| | |
|---|---|
| BTP | Branch Technical Position |
| CFR | Code of Federal Regulations |
| $CO_2$ | Carbon Dioxide |
| DRS | Division of Reactor Safety |
| ELU | Emergency Lighting Unit |
| EOP | Emergency Operating Procedure |
| FA | Fire Area |
| IP | Inspection Procedure |
| IPE | Individual Plant Examination |
| IPEEE | Individual Plant Examination of External Events |
| IR | Inspection Report |
| NFPA | National Fire Protection Association |
| NRC | Nuclear Regulatory Commission |
| PAR | Publicly Available Records |
| P&ID | Piping and Instrumentation Drawing |
| PSEG | Public Service Electric & Gas Company |
| QA | Quality Assurance |
| RHR | Residual Heat Removal |
| ROP | Reactor Oversight Process |
| RSP | Remote Shutdown Panel |
| SACS | Safety Auxiliary Cooling System |
| SCBA | Self-Contained Breathing Apparatus |
| SCWE | Safety Conscience Work Environment |
| SDP | Significance Determination Process |
| SER | Safety Evaluation Report |
| UFSAR | Updated Final Safety Analysis Report |