

October 2, 2006

Mr. William Levis
Senior Vice President and Chief Nuclear Officer
PSEG LLC - N09
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION - NRC TRIENNIAL FIRE
PROTECTION INSPECTION REPORT 05000354/2006014

Dear Mr. Levis:

On September 14, 2006, the NRC completed a triennial fire protection team inspection at your Hope Creek Nuclear Generating Station. The enclosed report documents the inspection results which were discussed at an exit meeting on September 14, 2006, with Mr. P. Davison and other members of your staff.

The 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.

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Sincerely,

/RA/

John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

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

Enclosure: NRC Inspection Report 05000354/2006014

Mr. William Levis

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-354

License No. NPF-57

Report No. 05000354/2006014

Licensee: Public Service Enterprise Group Nuclear LLC

Facility: Hope Creek Nuclear Generating Station

Location: P. O. Box 236
Hancocks Bridge, NJ 08038

Dates: August 28 - September 14, 2006

Inspectors: D. Orr, Senior Reactor Inspector, DRS
L. Cheung, Senior Reactor Inspector, DRS
J. Bobiak, Reactor Inspector, DRS
T. Sicola, Reactor Inspector, DRS

Approved by: John F. Rogge, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000354/2006014; 08/28/2006 - 09/14/ 2006; Hope Creek Nuclear Generating Station; Triennial Fire Protection Team Inspection.

The report covered a two week triennial fire protection team inspection by four Region I 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

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REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." The objective of the inspection was to assess whether PSEG Nuclear, LLC, 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 Nuclear Generating Station. The following four fire areas (FAs) were selected for detailed review based on risk insights from the Hope Creek Individual Plant Examination of External Events (IPEEE):

- Fire Area CD 46
- Fire Area CD 31
- Fire Area CD 61
- Fire Area CD 84

The inspection team evaluated PSEG's fire protection program (FPP) against applicable requirements which included plant technical specifications, Hope Creek operating license condition 2.C.7, NRC safety evaluation reports, 10 CFR 50.48 and 10 CFR 50 Appendix R. The team also reviewed related documents that included the Hope Creek Updated Final Safety Analysis Report (UFSAR) Section 9.5.1 and Appendix 9A, and the Hope Creek fire hazards analysis (FHA) and the post-fire safe shutdown analysis.

Specific documents reviewed by the team are listed in the attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems

1R05 Fire Protection

.01 Post-Fire Safe Shutdown From Outside Main Control Room (Alternative Shutdown) and Normal Shutdown

a. Inspection Scope

Methodology

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents to verify that hot and cold shutdown could be achieved and maintained from outside the control room for fires that rely on shutdown from outside the control room. This review included verification that shutdown from outside the control room could be performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the fire hazards analyses. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation and support systems functions.

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The team verified that the systems and components credited for use during safe shutdown would remain free from fire damage. The team verified that the transfer of control from the control room to the alternative shutdown location would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

Similarly, for fire areas that utilize shutdown from the control room, the team also verified that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe shutdown conditions.

Operational Implementation

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for all safe shutdown methods were trained, available onsite at all times, and exclusive of fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to verify adequate procedure implementation and human factors considerations. The team also verified that operators could reasonably perform specific actions within the time required to maintain plant parameters within specified limits. Time critical actions which were verified included restoring AC electrical power, establishing remote shutdown panel operation, and removing decay heat.

Specific procedures reviewed for alternative shutdown, including shutdown from outside the control room included the following:

- HC.OP-IO.ZZ-0008(Q), Shutdown From Outside Control Room, Revision 23
- HC.OP-AB.HVAC-0002(Q), Control Room Environment, Revision 2
- HC.FP-EO.ZZ-0001(Q), Nuclear Fire Protection Fire and Medical Emergency Response Manual Hope Creek Control Room Fire Response, Revision 6
- HC.OP-IO.ZZ-0004(Q), Shutdown From Rated Power to Cold Shutdown, Revision 67

The team reviewed manual actions and ensured that each action was properly reviewed and approved and that the actions could be implemented in accordance with plant procedures in the time necessary to support safe shutdown for each fire area. The team also reviewed periodic testing records of the alternate shutdown transfer capability and instrumentation and control functions to ensure the tests demonstrated functionality of the alternate shutdown method.

b. Findings

No findings of significance were identified.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the fire hazards analysis, safe shutdown analyses and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected. The team ensured that separation requirements of 10 CRF 50, Appendix R, Section III.G were maintained for the credited safe shutdown equipment including supporting power, control and instrumentation cables. This review included an assessment of the reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support systems for adequacy.

The team reviewed procedures and programs for the control of ignition sources and transient combustibles to assess PSEG's effectiveness in preventing fires and controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that protective features and administrative controls were being properly maintained or implemented.

The team also reviewed PSEG's design control procedures to ensure that the process included appropriate reviews and controls to assess plant changes for any potential adverse impact on the fire protection program, post-fire safe shutdown analysis and safe shutdown procedures.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe the material condition and design adequacy of fire area boundaries such as walls, fire doors and fire dampers, and electrical raceway fire barriers and ensured each feature was appropriate for the fire hazards within the area.

The team reviewed several penetration seal installation, repair, or qualification records and ensured the fill material was of the appropriate fire rating and that the installation satisfied design requirements.

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing and operation of the fire detection and suppression systems in the selected plant fire areas. This included verification that the manual and automatic detection and suppression systems were installed, tested and maintained in accordance with the National Fire Protection Association (NFPA) code of record, or as NRC approved deviations, and that each suppression system would control or extinguish fires associated for the hazards in the selected areas. A review of the design capability of suppression agent delivery systems was verified to meet the code requirements for the fire hazards involved. The team also performed a walkdown of accessible portions of the detection and suppressions systems in the selected areas as well as a walkdown of major support equipment (e.g., fire protection pumps, carbon dioxide (CO₂) storage tanks and supply system) and assessed the material condition of the systems and components.

The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting 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 assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. For the selected fire areas, the team reviewed pre-fire plans, which included smoke removal plans, to determine if appropriate information was available to fire brigade members and plant operators such as potentially affected safe shutdown equipment, fire hazards, available fire suppression systems, and firefighting and operational considerations. Additionally, the team inspected the fire brigade's protective ensembles, self-contained breathing apparatus (SCBA), and various fire brigade equipment, including smoke removal equipment, to verify fire fighting readiness.

b. Findings

No findings of significance were identified.

.05 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team reviewed documents and walked down the selected fire areas to verify that redundant trains of systems required for hot shutdown were not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire would not directly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage the redundant safe shutdown train,

- A fire (or the inadvertent actuation or rupture of a fire suppression system) would not directly cause damage to the redundant safe shutdown train (e.g., sprinkler caused flooding of other than the locally affected train), and
- Adequate drainage was provided in areas protected by water suppression systems.

b. Findings

No findings of significance were identified.

.06 Alternative Shutdown Capability

Alternative shutdown capability for the selected fire areas inspection utilizes shutdown from outside the control room and is discussed in Section 1R05.01 of this report.

.07 Circuit Analyses

a. Inspection Scope

The team verified that PSEG performed a post-fire safe shutdown analysis for the selected fire areas and that the analysis appropriately identified the structures, systems and components important to achieving and maintaining post-fire safe shutdown. Additionally, the team verified that PSEG's analysis ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts, shorts to ground or other failures were identified, evaluated and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, potential undesirable consequences and common power supply concerns. Specific items included the credibility of fire, cable insulation attributes, cable failure modes, spurious actuations, and actuations resulting in flow diversion or loss of coolant events.

The team also reviewed wiring diagrams and routing lists for a sample of components required for post-fire safe shutdown to verify that cables were routed as described in the cable routing matrices.

Cable failure modes were reviewed for the following components:

- Reactor core isolation cooling (RCIC) turbine steam supply valves FC-HV-F007 and FC-HV-F008,
- RCIC pump discharge valves BD-HV-F012 and BD-HV-F013,
- RCIC lube oil cooler isolation valve BD-HV-F046,
- Main steam safety relief valve solenoids SOV- 3852A and B,
- 'B' residual heat removal (RHR) motor, and
- Reactor water level transmitter BB-LT-7854-1 to remote shutdown panel.

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 the coordination studies addressed multiple faults due to fire. Additionally, the team reviewed a sample of circuit breaker maintenance records to verify that circuit breakers for components required for post-fire safe shutdown were properly maintained in accordance with procedural requirements.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the post-fire safe shutdown analysis and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review, the team considered the effects of ambient noise levels, clarity of reception, reliability and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade. The team verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of emergency lights throughout the selected fire areas and evaluated adequacy for illuminating access and egress pathways, equipment requiring local operation, or instrumentation monitoring. The team also verified that the battery power supplies were rated for at least an eight hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests and battery replacement practices were also reviewed to verify that the emergency lighting was being maintained in a manner that would ensure reliable operation.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

As stated in the Hope Creek fire hazards analysis, PSEG does not rely on cold shutdown repairs since one redundant safe shutdown train will always remain free of fire damage. This section of the report is not applicable.

.11 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment, passive fire barriers, pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that PSEG was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that PSEG was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that PSEG completed or planned appropriate corrective actions.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 14, 2006, the team presented the inspection results to Mr. P. Davison, Director of Engineering - Hope Creek, and other members of the site staff. No proprietary information was included in this inspection report.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

PSEG Personnel

J. Baker, Senior Reactor Operator
J. Barstow, Regulatory Assurance Compliance Engineer
B. Booth, Operations Manager
J. Carlin, Fire Protection Supervisor
P. Davison, Director of Engineering - Hope Creek
P. Finch, Safe Shutdown Engineer
M. Jesse, Regulatory Assurance Manager
K. Knaide, Engineering Programs Manager
B. Kopchick, Senior Reactor Operator
T. MacEwen, Senior Reactor Operator
A. Ponessa, Fire Protection Superintendent
M. Reeser, Fire Protection Engineer
M. Tadjalli, Design Engineering Manager

Exelon Personnel

C. Pragman, Corporate Fire Protection Program Manager
M. Taylor, Corporate Fire Protection

NRC

J. Rogge, Chief, Engineering Branch 3, Division of Reactor Safety
C. Cahill, Senior Reactor Analyst
G. Malone, Senior Resident Inspector

State of New Jersey

E. Rosenfeld, Department of Environmental Protection, Bureau of Nuclear Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Open and Closed

None

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

Hope Creek Updated Final Safety Analysis Report Section 9.5.1 and Appendix 9A
NUREG-1048 Hope Creek Safety Evaluation Report dated 10/1984 and Supplements 2,
5, and 6 dated 8/85, 4/86 and 7/86 respectively
NUREG-0800 Section 9.5.1 Standard Review Plan - Fire Protection Program Section
NC.DE-PS.ZZ-0001(Q) Programmatic Standard for Fire Protection, Revision 3
NC.DE-PS.ZZ-0001(Q)-A7 Technical Standard Hope Creek Safe Shutdown Analysis,
Revision 0
NC.DE-PS.AA-0001(Q)-A8 Fire Protection Regulatory Review Process, Revision 1

Calculations/Engineering Evaluation Reports

E-26 Breaker to Fuse and Fuse to Fuse Coordination for
Appendix R, Revision 3
KL-5 Instrument Gas Compressor & Receiver Sizing, Revisions
2 & 3
BJ-0024 Failure of High Reactor Level Turbine Trip, Revision 0
GE-NE-0000-0058-2435-R0 Hope Creek EPU Appendix R Analysis Due to Delayed
SPC Initiation (SCD-036), dated Sep. 12, 2006
GE-NE-0000-0013-9541-R0 Input Parameter & Assumptions for Hope Creek
Generating Station AEP Appendix R Evaluation (OPL-4R),
dated May 2003
GE-NE-0000-0045-9466-R0 Appendix R Fire Protection Analysis for SCD-033, dated
Dec. 2005

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|-------------------------|---|
| GE-NE-0000-0005-3505-R4 | Project Task Report, PSEG Nuclear LLC, Hope Creek Generating Station Extended Power Uprate, Task T0611: Appendix R Fire Protection, dated Feb. 2005 |
| 99-E17 | Evaluation of the Total Flooding Carbon Dioxide Suppression System in the Emergency Diesel Generator Rooms, HCGS, Revision A |
| H-1-KC-FEE-1583 | Diesel Room Non-Segregated Bus Duct Fire Wrap, Revision 0 |
| H-1-KC-MEE-1326 | Pressurization of EDG Rooms due to Carbon Dioxide Dump, Revision 0 |
| H-1-KC-MEE-1913 | Hope Creek Fire Protection Piping Evaluation for Potential Water Hammer, Revision 0 |
| H-1-KC-PEE-1357 | Diesel Generator Room Carbon Dioxide Boundary Upgrades, Revision 0 |
| H-1-KC-PEE-1453 | Diesel Generator Room Carbon Dioxide Migration Study, Revision 0 |
| KC-7 | Carbon Dioxide System, Revision 3 |
| KC-9 | Fire Protection Water Supply, Revision 5 |
| XX-C-008 | Drawing of Graphs to Show Contents of Tanks at all Levels, Revision 1 |
| GK-0026(Q) | Control Room and Electrical Equipment Room Heat-Up After Loss of HVAC, Revision 3 |
| GR-0022 | Gothic Model Room Heat-Up Rates, Revision 2 |

Procedures

| | |
|---------------------|---|
| HC.IC-SC.BB-0041(Q) | Nuclear Boiler - Division 2, Channel L-7854, Reactor Vessel Level (Calibration) - Remote Shutdown Panel, Revision 9 |
| HC.IC-SC.BB-0117(Q) | Nuclear Boiler - Division 2, Channel L-7854-1, Reactor Vessel Level (Calibration) - Remote Shutdown Panel, Revision 6 |
| HC.IC-SC.BJ-0009(Q) | HPCI - Division 1, Channel L-4815-2, HPCI Suppression Pool Level (Calibration) - Remote Shutdown Panel, Revision 6 |
| HC.IC-SC.BB-0039(Q) | Nuclear Boiler - Division 4, Channel P-7853D, Reactor Pressure (Calibration) - Remote Shutdown Panel, Revision 9 |
| HC.IC-SC.FC-0013(Q) | RCIC - Division 2, Channel B, FT-4158, RCIC Pump Turbine Controller (Calibration) - Remote Shutdown Panel, Revision 6 |
| HC.MD-PM.PB-0001(Q) | 4.16 KV Breaker Cleaning and PM, Revision 22 |
| HC.MD-PM.PB-0002(Q) | 4.16 KV Breaker Time response, Revision 6 |
| HC.MD-PM.PJ-0001(Q) | 250 VDC Starter Preventive Maintenance, Revision 5 |
| HC.OP-AB.ZZ-0135(Q) | Station Blackout//Loss of Offsite Power//Diesel Generator Malfunction, Revision 24 |

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|-----------------------|--|
| HC.OP-IO.ZZ-0004(Q) | Shutdown from Rated Power to Cold Shutdown, Revision 67 |
| HC.OP-IO.ZZ-0008(Q) | Shutdown from Outside Control Room, Revision 23 |
| HC.OP-AB.RPV-0005(Q) | Reactor Pressure, Revision 4 |
| HC.OP-AB.HVAC-0002(Q) | Control Room Environment, Revision 2 |
| HC.OP-AP.ZZ-0108(Q) | Operability Assessment & Equipment Control Program, Revision 25 |
| HC.OP-SO.BD-0001(Q) | Reactor Core Isolation Cooling Operation, Revision 30 |
| HC.CH-AP.ZZ-0041(Q) | HCGS Diesel Fuel Oil Testing Program, Revision 10 |
| HC.FP-AP.ZZ-0004(Q) | Actions for Inoperable Fire Protection, Revision 10 |
| HC.FP-ST.QB-0070(F) | Standby Self Contained 8-hour Battery Powered Emergency Light- 8-hour Functional Test, Revision 5 |
| NC.FP-AP.ZZ-0005(Q) | Fire Protection Surveillance and Periodic Testing Program, Revision 11 |
| NC.FP-AP.ZZ-0009(Q) | Fire Protection Training Program, Revision 5 |
| NC.FP-AP.ZZ-0010(Q) | Fire Protection Impairment Program, Revision 6 |
| NC.FP-AP.ZZ-0012(Q) | Safe Performance of Hot Work, Revision 2 |
| NC.FP-AP.ZZ-0025(Q) | Precautions Against Fire, Revision 5 |
| NC.NA-AP.ZZ-0025(Q) | Operational Fire Protection Program, Revision 6 |
| SH.FP-EO.ZZ-0002(Q) | Fire Department Fire Response, Revision 1 |
| HC.OP-AR.QK-0002(F) | Fire Protection Status Panel 10C671Alarm Response, Revision 12 |
| HC.FP-PS.KC-0000(F) | Fire and Medical Emergency Response Manual, Revision 8 |
| HC.FP-EO.ZZ-0001(Z) | Nuclear Fire Protection Fire and Medical Emergency Response Manual Hope Creek Control Room Fire Response, Revision 6 |
| NC.NA-AP.ZZ-0005(Q) | Station Operating Practices, Revision 19 |
| SH.OP-AP.ZZ-0107(Q) | Hope Creek ERO Shift Duty Positions, Revision 18 |
| NC.IS-TM.ZZ-0001(Z) | Nuclear Department Safety Manual, Revision 8 |

Completed Tests/Surveillances

| | |
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| HC.FP-PM.QB-0039(F) | Appendix R Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Inspection and Preventive Maintenance, Revision 2, Completed 9/12/04, 3/8/05, 2/24/06, 5/29/06 |
| HC.FP-ST.KC-0006(F) | Fire Pump Capacity Test, Revision 5, Completed 6/9/05, 3/20/06 |
| HC.FP-ST.KC-0008(F) | Fire Main Flow Test, Revision 1, Completed 9/18/05, 9/10/06 |
| HC.FP-ST.KC-0021(F) | Carbon Dioxide Systems Operability and Partial Discharge Test, Revision 9, Completed 8/7/04, 3/17/06 |
| HC.FP-ST.KC-0048(F) | Halon System Air Flow Test, Revision 3, Completed 5/1/03, 11/8/04 |

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|---------------------|--|
| HC.FP-ST.QB-0039(F) | Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Test and Inspection, Revision 5, Completed 9/26/04, 3/14/05, 5/3/05, 6/10/05, 2/22/06 |
| HC.FP-ST.QK-0029(F) | Class 1 Fire Detection Functional Test, Revision 7, Completed 9/20/05, 11/14/05, 1/27/06, 3/25/06, 5/15/06, 7/24/06 |
| HC.FP-ST.ZZ-0031(F) | Class 1 Fire Damper Functional Test, Revision 2, Completed 12/10/04 |
| HC.FP-SV.KC-0066(F) | Control Room Halon Storage Cylinders Volume Check, Revision 3, Completed 12/10/05, 5/21/06 |
| HC.FP-SV.ZZ-0026(F) | Flood and Fire Barrier Penetration Seal Inspection, Revision 4, Completed 2/15/04, 9/11/06 |
| HC.FP-SV.ZZ-0027(F) | Class 1 Fire Door Inspection and Operability Test, Revision 5, Completed 7/18/06 |
| HC.FP-SV.ZZ-0028(F) | Class 1 Fire Damper Visual Inspection, Revision 2, Completed 7/24/05 |
| HC.FP-SV.ZZ-0056(F) | Fire Barrier Inspection, Revision 3, Completed 4/20/05 |
| SH.FP-PM.ZZ-0046(Z) | Fire Department Safety and EMS Equipment Inspection and Inventory, Revision 2, Completed 7/25/06, 8/26/06 |
| TPR-KCE-0464 | Halon 1301 System Discharge Test, Completed 12/14/85 |
| HC.OP-ST.SV-0003(Q) | Remote Shutdown Control Operability - 18 Months RSP Transfer with "B" Shutdown Cooling in Service, Revision 7, Completed 4/4/03 |
| HC.OP-ST.SV-0002(Q) | Remote Shutdown Control Operability - 18 Months RSP Transfer with "A" Shutdown Cooling in Service, Revision 17, Completed 4/14/03, 9/1/04, 4/10/06 |
| HC.OP-ST.SV-0004(Q) | Remote Shutdown Control Operability - 18 Months RSP Transfer with No Shutdown Cooling in Service, Revision 7, Completed 3/27/03, 4/23/03, 4/14/06 |

Quality Assurance (QA) Audits and System Health Reports

Audit NOSA-HPC-06-09
Q A Assessment Report 2003-0220
System Health Report, Fire Protection Program, Quarter 2 2006

Drawings

| | |
|--------------|---|
| E-2065-0 | Cable Block Diagram, Solenoid Pilot Valves for ADS Valves PSV-F013A thru E, Revision 2 |
| E-2067-0 | Cable Block Diagram, Solenoid Pilot Valves for S/R Valves PSV-F013J,K,L,P,R&G, Revision 5 |
| E-2080-0 (2) | Cable Block Diagram, RCIC System Logic Inputs, Revision 9 |
| E-2085-0 (1) | Cable Block Diagram, RCIC Steam Supply Isolation Valves F007, Revision 4 |
| E-2084-0 (4) | Cable Block Diagram, RCIC Pump Discharge Valve F012, Revision 2 |

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| E-2084-0 (5) | Cable Block Diagram, RCIC Feedwater Isolation Valve F013, Revision 3 |
| E-2084-0 (7) | Cable Block Diagram, RCIC Main Steam Supply Valve, Revision 4 |
| E-2084-0 (8) | Cable Block Diagram, RCIC Lube Oil Cooling Water Valve, Revision 1 |
| E-2443-0 | Cable Block Diagram, RHR Pump 1BP202, Revision 4 |
| E-6067-0 (4) | Electrical Schematic Diagram, Solenoid Pilot Valves "A" for S/R Valves PSV-F013H, F, & M, Revision 8 |
| E-6067-0 (5) | Electrical Schematic Diagram, Solenoid Pilot Valves "A" for S/R Valves PSV-F013L, & P, Revision 5 |
| E-6084-0 (3) | Electrical Schematic Diagram, RCIC Pump Suction from CST Valve, Revision 4 |
| E-6084-0 (4) | Electrical Schematic Diagram, RCIC Pump Discharge Valve, Revision 4 |
| E-6084-0 (5) | Electrical Schematic Diagram, RCIC Feedwater Isolation Valve, Revision 6 |
| E-6084-0 (7) | Electrical Schematic Diagram, RCIC Main Steam Supply Valve, Revision 10 |
| E-6084-0 (8) | Electrical Schematic Diagram, RCIC Lube Oil Cooling Water Valve, Revision 6 |
| E-6085-0 (1) | Electrical Schematic Diagram, RCIC Supply Isolation Valve F007, Revision 10 |
| E-6108-0 (1) | Electrical Schematic Diagram, RHR Suction Cooling Outboard Isolation Valve, Revision 11 |
| E-6604-0 (3) | Electrical Schematic Diagram, Remote Shutdown Panel 10C399 Details, Revision 8 |
| E-6443-0 | Electrical Schematic Diagram 4.16kV Circuit Breaker Control RHR Pump 1BP202, Revision 8 |
| J-49-0 (5) | Logic Diagram, RCIC System, Revision 8 |
| J-51-0 (21) | Logic Diagram, Residual Heat Removal, Revision 5 |
| J-50-0 (5) | Logic Diagram, RCIC Turbine, Revision 4 |
| J-4049-C (2) | Loop Diagram RCIC, Revision 6 |
| E-1687-1 | Raceway Plan, Aux Building - D/G Area 28, EI 163'-6", Revision 22 |
| E-1677-1 | Raceway Plan, Aux Building - D/G Area 27, EI 163'-6", Revision 29 |
| E-1680-1 | Raceway Plan, Aux Building - D/G Area 27, EI 178'-6", Revision 21 |
| E-1683-1 | Raceway Plan, Aux Building - D/G Area 28, EI 102', Revision 33 |
| E-1690-1 | Raceway Plan, Aux Building - D/G Area 28, EI 178', Revision 18 |
| E-1803-1 | Raceway Plan, Turbine Building - Area 104, EI 102', Revision 19 |
| E-1903-1 | Raceway Plan, Turbine Building - Area 12, EI 102', Revision 22 |
| E-1750-0 | Raceway Plan, Aux Building - Radwaste Area 34, EI 102', Revision 30 |
| E-1662-1 | Raceway Plan, Aux Building - Control Area 26, EI 77'-0", Revision 20 |

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| E-1664-1 | Raceway Plan, Aux Building - Control Area 26, El 124'-0", Revision 24 |
| E-1666-1 | Raceway Plan, Aux Building - Control Area 26, El 155'-3", Revision 19 |
| E-1661-1 | Raceway Plan, Aux Building - Control Area 26, El 54'-0", Revision 30 |
| E-1651-1 | Raceway Plan, Aux Building - Control Area 25, El 54'-0", Revision 34 |
| E-1712-0 | Raceway Plan, Aux. Building - Radwaste Area 73, El 54'-0", Revision 20 |
| E-1714-0 | Raceway Plan, Aux. Building - Radwaste Area 72, El 54'-0", Revision 20 |
| E-1716-0 | Raceway Plan, Aux. Building - Radwaste Area 71, El 54'-0", Revision 10 |
| E-1631-1 | Raceway Plan, Reactor Building - Area 22, El 54'-0", Revision 4 |
| E-1412-0 | Electrical Numbering System, Public Service Electric and Gas Company, Hope Creek Generating Station, Revision 22 |
| A-P742-O | Wall Penetration Seals, Revision 8 |
| F-21 | Fire Protection Carbon Dioxide Systems, Sheet 5, Revision 15 |
| F-25 | Fire Protection Fire Water Permanent and Temporary Fire Pumphouse, Sheet 1, Revision 25 |
| O-P-KC-04 | System Isometric / Fire Pump House Fire Water System, Revision 1 |
| P-9273-1 | HVAC Area Drawing Aux Building Area 27 Plan, Revision 19 |
| P-9283-1 | HVAC Area Drawing Aux Building Area 28 Plan, Revision 24 |
| E-6604-0 (A) | Electrical Schematic Diagram Remote Shutdown Panel IOC399, Revision 25 |
| J-0399-0 (1) | Remote Shutdown Panel, Revision 12 |
| J-0399-0 (3) | Remote Shutdown Panel, Revision 7 |
| J-0399-0 (4) | Remote Shutdown Panel, Revision 9 |
| J-0399-0 (13) | Remote Shutdown Panel, Revision 3 |
| J-0399-0 (14) | Remote Shutdown Panel, Revision 0 |
| J-0399-0 (15) | Remote Shutdown Panel, Revision 9 |
| J-0399-0 (16) | Remote Shutdown Panel, Revision 5 |
| D3050199 (1-3) | Cabinet No 1BC655-2 Cabinet Layout, Revision 6 |
| D3050198, (1-3) | Cabinet No 1AC655-2 Cabinet Layout, Revision 8 |
| D3050048, (1-3) | Cabinet No 1CC655-2 Cabinet Layout, Revision 6 |
| D3050049(1-3) | Cabinet No 1DC655-2 Cabinet Layout, Revision 5 |

Safe Shutdown Component Cable Routing Reports

| | |
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| BD-HV-F013, | RCIC Feedwater Isolation Valve |
| BD-HV-F012, | RCIC Feedwater Isolation Valve |
| BD-HV-F046, | RCIC Lube Oil Cooler Isolation Valve |
| BC-BP202, | B RHR Pump Motor |
| AB-SV-3659A, | H Main Steam Line Safety Relief Valve Solenoid |
| FC-HV-F007, | RCIC Steam Supply Isolation Valve |

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| FC-HV-F045, | RCIC Steam Admission Valve |
| BB-LT-7854, | RSP Reactor Vessel Water Level Indicator |
| BB-LT-7854-1, | RSP Reactor Vessel Water Level Indicator |
| BB-PT-7853D, | RSP Reactor Vessel Pressure Indicator |

Piping & Instrumentation Diagrams

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| M-50-1 | RCIC Pump Turbine, Revision 29 |
| M-51-1 | Nuclear Boiler, Revision 35 |
| M-42-1 (1) | Nuclear Boiler Vessel Instrumentation, Revision 33 |
| M-42-1 (2) | Nuclear Boiler Vessel Instrumentation, Revision 20 |
| M-97-0, (2) | Building and Equipment Drains Aux Building Control and Diesel Areas, Revision 14 |
| M-51-1, (1&2) | Residual Heat Removal, Revision 37 |
| M-52-1, (1) | Core Spray, Revision 30 |
| M-55-1, (1) | High Pressure Coolant Injection, Revision 38 |
| M-56-1, (1) | HPCI Pump Turbine, Revision 31 |
| M-78-1, (1) | Aux Bldg Control Area Air Flow Diagram, Revision 15 |

Vendor Manuals

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| 325953 | Birns Emergency Lighting Fixture, Revision 0 |
| F-390 | Operations and Maintenance Manual for Halon System, Revision 3 |
| F50512-2-2F | Fuel System for Diesel Driven Fire Pumps, dated 5/01/84 |
| F66949-1-1F | Holophane M-19 12 Volt DC Power Pack for Automatic Emergency Lighting, dated 11/5/85 |
| VTD 317201 | 17 Ton Cardox Carbon Dioxide Storage Unit, Revision 2 |

Pre-Fire Plans

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| FRS-II-561 | Control Equipment, HVAC, Inverter and Battery Rooms, Revision 6 |
| FRS-II-571 | HVAC Equipment Rooms, Revision 5 |
| FRS-II-552 | Control Room and Electrical Access Area |
| FRS-II-531 | Diesel Generator Rooms |

Fire Drills Reports

Fire Drill Reports: 6/2/05, 3/25/06, 5/11/06, 5/18/06, 7/27/06, 8/2/06, 8/9/06

Fire Brigade Training

Fire Brigade Training Module, "Fire Fighting in Nuclear Power Plants," dated 10/11/2000
Fire Brigade Training Module, "Site Specific; Fire Hazards, Plans, and Procedures,"
dated 4/26/2000

Operator Safe Shutdown Training

SG-211 Simulator Scenario Guide, Control Room Evacuation and Shutdown from Outside the Control Room, Revision 3
NOH01IOP0008-02 Lesson Plan, Hope Creek Licensed Operator Training - Shutdown from Outside the Control Room - HC.OP-IO.ZZ-0008

Hot Work and Ignition Source Permits

60036844, 60039705, 60056388, 240001594

Transient Combustible Evaluations

60058302, 60059377, 60063782, 60064118

Miscellaneous Documents

Technical Evaluation 80087501, NRC Fire Protection Triennial Preparatory Assessment Hope Creek Generating Station, June 19 to 23, 2006
VTD 20060830, General Project Requirements for Fire Hazard Analysis Safe Shutdown Review Program for the Hope Creek Generating Station, Revision 1
Fire Protection Impairment Tracking Report, 8/30/06
Fire Protection Operator - Nuclear Turnover Checklist, 07/17/06
Evaluation for ELU failures, 9/14/06

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LIST OF ACRONYMS USED

| | |
|-----------------|---|
| ADS | Automatic Depressurization System |
| CFR | Code of Federal Regulations |
| CO ₂ | Carbon Dioxide |
| DRS | Division of Reactor Safety |
| EDG | Emergency Diesel Generator |
| FA | Fire Area |
| FHA | Fire Hazards Analysis |
| FPP | Fire Protection Program |
| FZ | Fire Zone |
| HVAC | Heating, Ventilation, and Air Conditioning |
| 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 |
| QA | Quality Assurance |
| RCIC | Reactor Core Isolation Cooling |
| RHR | Residual Heat Removal |
| SCBA | Self-Contained Breathing Apparatus |
| SER | Safety Evaluation Report |
| UFSAR | Updated Final Safety Analysis Report |