UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

May 6, 2019

Mr. Peter P. Sena, III
President and Chief Nuclear Officer
PSEG Nuclear, LLC
P.O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION –TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000354/2019011

Dear Mr. Sena:

On March 29, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Hope Creek Generating Station and discussed the results of this inspection with Paul Davison, Vice President - Engineering and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements.

The inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating this violation as non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC resident inspector at Hope Creek.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; and the NRC resident inspector at Hope Creek.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Christopher G. Cahill, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000354/2019011

cc w/ encl: Distribution via LstServ

SUBJECT: HOPE CREEK GENERATING STATION –TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000354/2019011 DATED MAY 6, 2019

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000354
License Number:	NPF-57
Report Number:	05000354/2019011
Enterprise Identifier:	I-2019-011-0014
Licensee:	PSEG Nuclear, LLC
Facility:	Hope Creek Generating Station
Location:	Hancocks Bridge, NJ 08038
Inspection Dates:	March 11, 2019, to March 29, 2019
Inspectors:	J. Patel, Senior Reactor Inspector (Team Leader) D. Kern, Senior Reactor Inspector J. Rady, Reactor Inspector D. Werkheiser, Senior Reactor Inspector
Approved By:	Christopher G. Cahill, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Triennial Fire Protection inspection at Hope Creek Generating Station in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. Findings and violations being considered in the NRC's assessment are summarized in the table below. Licensee-identified non-cited violations are documented in report sections: 71111.05T.

List of Findings and Violations

Failure to Protect Automatic Start Capability of Fire Pumps Due to Fire Damage			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000354/2019011-01 Open/Closed	None (NPP)	71111.05T
The inspectors identified a finding of very low safety significance (Green), involving a non-cited violation (NCV) of Hope Creek Generating Station (HCGS) Operating License Condition 2.C.(7) for failure to implement and maintain in effect all provisions of the approved Fire Protection Program (FPP). Specifically, PSEG did not adequately protect the automatic start capability of the motor driven and diesel driven fire pumps as described in the HCGS FPP (Updated Final Safety Analysis Reports (UFSAR) 9.5.1) due to the effects of a fire.			

Inadequate Procedural Guidance to Perform Time Critical Actions			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000354/2019011-02 Open/Closed	[P.2] - Evaluation	71111.05T
The inspectors identified a finding of very low safety significance (Green) involving a non-cited violation (NCV) of Hope Creek Generating Station (HCGS) License Condition 2.C.(7) for failure to implement and maintain in effect all provisions of the approved Fire Protection Program (FPP), in that procedures for shutting down the plant in response to a fire that requires main control room evacuation were not adequate. Specifically, the alternate (remote) post-fire shutdown procedures and supporting master list of time critical actions were not accurate or adequate to secure in a timely manner high pressure coolant injection (HPCI) to prevent overfilling of the reactor vessel following a spurious fire-induced start of HPCI pump and failed reactor water high-level automatic shutdown of HPCI.			

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.05T - Fire Protection

Fire Protection Inspection Requirements (IP Section 02.02) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas and/or fire zones, including analyzed electrical circuits:

(1) CD 35, Control Equipment Room Mezzanine
(2) AB1, Electrical Access Area, Division I
(3) RB1, Reactor Building, Division I
- Room 4112, HPCI Electrical Equipment Room
- Room 4309, SACS Heat Exchanger and Pump Room

(4) CD71, Class 1E Inverter Room

Analyzed Circuits:
- PSV-F013F(H)(M), Safety Relief Valves
- KJ-CG400, Emergency Diesel Generator 'C' Output Breaker
- EG-BP210, Safety Auxiliary Cooling System Pump 'B'
- BD-FIC-4158, RCIC Pump Flow Controller
- FC-HV-F045, RCIC Turbine Steam Stop Valve
- SB-TE-3647J-2, Suppression Pool Indicator and Transmitter

B.5.b Inspection Activities (IP Section 02.03) (1 Sample)

The inspectors evaluated the following B.5.b Mitigating Strategies:

- Manually Open Containment Vent Lines
- Inject Water into the Drywell

INSPECTION RESULTS

Licensee-Identified Non-Cited Violation	71111.05T
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: HCGS License Condition 2.C.(7), in part, requires PSEG to implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR and as approved by the NRC as in the Safety Evaluation Report dated October 1984. UFSAR Section 9.5.1.6, "Standard Review Plan (SRP) Review," stated that HCGS has implemented the requirements of Branch Technical Position CMEB 9.5-1 Revision 2, dated July 1981 per NUREG 0800 (SRP 9.5.1, Revision 3) in the development of the fire protection program. Branch Technical Position CMEB 9.5-1, Section C.4.h, "Corrective Action," required that measures be established to ensure that conditions adverse to fire protection are promptly identified, reported, and corrected. Contrary to the above, from April 4, 2016, until December 4, 2018, PSEG did not promptly correct a condition adverse to fire protection associated with an issue previously documented as NCV 05000354/2016007-01, "Inadequate Testing of Emergency Diesel Generator (EDG) Takeover Switches and Remote Shutdown Panel (RSP) Transfer/Isolation Relays." Specifically, the corrective actions created by PSEG to address this NCV did not fully resolve the identified performance deficiency of not adequately verifying or demonstrating that the EDG normal-emergency takeover switches and RSP transfer/isolation relays would perform their intended function. Therefore, the previously NRC-identified condition adverse to fire protection was not corrected and compliance was not restored. Significance: Green. The inspectors assessed this finding in accordance with the NRC IMC 0609, "Significance Determination Process," Appendix F, "Fire Protection Significance Process." In Appendix F, the inspectors answered NO to step 1.4.7-C because this finding did not adversely affect the ability to reach and maintain hot shutdown conditions using the credited safe shutdown success path. Subsequently, PSEG adequately tested EDG takeover switches and RSP transfer/isolation relays and demonstrated reasonable expectation of functionality of these switches. Therefore, based on these aspects, the finding is determined to be of very low safety significance (Green). Corrective Action Reference: Notification 20803353	

Failure to Protect Automatic Start Capability of Fire Pumps Due to Fire Damage			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000354/2019011-01 Open/Closed	None (NPP)	71111.05T
The inspectors identified a finding of very low safety significance (Green), involving a non-cited violation (NCV) of Hope Creek Generating Station (HCGS) Operating License Condition 2.C.(7) for failure to implement and maintain in effect all provisions of the approved Fire Protection Program (FPP). Specifically, PSEG did not adequately protect the automatic			

start capability of the motor driven and diesel driven fire pumps as described in the HCGS FPP (Updated Final Safety Analysis Reports (UFSAR) 9.5.1) due to the effects of a fire.

Description: The UFSAR Section 9.5.1.2.3.2, "Pumps," stated that the electric motor driven fire pump starts automatically at 110 psig of fire water system header pressure. If it fails to start or cannot meet the water flow demand, the diesel driven fire pump starts automatically when the fire water system header pressure drops to 100 psig. The fire pumps continue to operate until manually stopped at the local pump control panel. Both fire pumps can be manually started remotely from the main control room or locally within the fire pump house.

The inspectors reviewed the circuit analysis of Hope Creek's electric motor driven and diesel driven fire pumps. The inspectors noted that Hope Creek has a capability to remotely start any of the two fire pumps using the switches located in the main control room. The inspectors performed a review of cable routing associated with remote start circuits and determined that the cables associated with remote start circuit of the fire pumps could be damaged by a fire occurring in the areas between the main control room and the fire pump house, through which cables are routed. The inspectors determined that a short-to-ground fault on the remote start cables could result in a loss of capability of both fire pumps to automatically start, continue to run if already auto-started on low fire water header pressure, or to manually start from the main control room. The cables for both fire pumps are routed through three fire areas (Fire areas CD35, CD46, and AB3) in close proximity to each other. Therefore, both pumps remote start circuit cables could be exposed to potential damage by a single fire. Fire Area CD35, Control Equipment Room Mezzanine, credits a backup manual water deluge system and water hose stations for suppression. Fire Area CD46, Main Control Room, credits water hose stations for suppression. Fire Area AB3, Auxiliary Building Radwaste Area, credits an automatic water suppression system. The inspectors determined if both pumps' cables were damaged due to an exposure fire, then no water would be available for fire suppression in these fire areas until at least one fire pump was manually started at the fire pump house. Cable damage to the motor driven fire pump would render its operation unavailable until adequate repairs were implemented. However, the inspectors determined that the diesel driven fire pump could be started manually at the local control panel.

Corrective Action: PSEG placed this issue into the corrective action program and implemented compensatory measures by issuing Hope Creek standing order 2019-20. The Standing order directs Hope Creek to utilize procedure HC.FP-EO.ZZ-0001, "Fire and Medical Emergency Response Manual Hope Creek Control Room Fire Response," upon notification of a confirmed fire in those three fire areas to dispatch an operator to the fire pump house to monitor and/or start the diesel driven fire pump.

Corrective Action Reference: Notification 20823038

Performance Assessment:

Performance Deficiency: The inspectors determined that failure to protect the automatic start capability of fire pumps due to fire damage and ensure a reliable fire protection water supply for the fixed and manual fire suppression systems credited as part of the fire protection program was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Mitigating Systems cornerstone. The finding adversely affected the Mitigating System

cornerstone objective to ensure the availability, reliability, and capability of systems that respond to fire events to prevent undesirable consequences. Specifically, failure to protect the automatic start capability of fire pumps affected the defense-in-depth barriers of the FPP to rapidly suppress fire that occurs in the plant areas. If fire is not suppressed in a timely manner could result in a damage to the safe shutdown systems and could challenge the plant operations.

Significance: The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post - Fire Safe Shutdown SDP." Using Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," the inspectors assigned the category to fire water supply. Using Appendix F, Attachment 2, "Degradation Rating Guidance" the inspectors assigned a LOW degradation to the performance deficiency because there would be adequate fire water capacity for fixed and manual fire suppression after the nuclear equipment operator is dispatched to manually start a diesel driven fire pump at the local control panel. Therefore, based on these aspects, the finding is determined to be of very low safety significance (Green).

Cross-cutting Aspect: Not Present Performance. No cross cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: HCGS License Condition 2.C.(7), in part, requires PSEG to implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR and as approved by the NRC. Hope Creeks' FPP is described in the UFSAR Section 9.5.1, "Fire Protection Program." UFSAR Section 9.5.1.2.3.2, "Pumps," stated that the electric motor driven fire pump starts automatically at 110 psig. If it fails to start or cannot meet the water flow demand, the diesel engine driven fire pump starts automatically when the system pressure drops to 100 psig. Contrary to the above, as of March 28, 2019, PSEG had not protected the automatic start capability of the fire pumps due to fire damage and ensure a reliable fire protection water supply for the fixed and manual fire suppression systems credited as part of the fire protection program.

Enforcement Action: This violation is being treated as an Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

Inadequate Procedural Guidance to Perform Time Critical Actions			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000354/2019011-02 Open/Closed	[P.2] - Evaluation	71111.05T

The inspectors identified a finding of very low safety significance (Green) involving a non-cited violation (NCV) of Hope Creek Generating Station (HCGS) License Condition 2.C.(7) for failure to implement and maintain in effect all provisions of the approved Fire Protection Program (FPP), in that procedures for shutting down the plant in response to a fire that requires main control room evacuation were not adequate. Specifically, the alternate (remote) post-fire shutdown procedures and supporting master list of time critical actions were not accurate or adequate to secure in a timely manner high pressure coolant injection (HPCI)

to prevent overfilling of the reactor vessel following a spurious fire-induced start of HPCI pump and failed reactor water high-level automatic shutdown of HPCI.

Description: HCGS's thermal hydraulic analysis BJ-0024, Failure of the High-level HPCI Turbine Trip, Revision 2, analyzed a scenario for a fire in the main control room that causes HPCI to malfunction so that the HPCI high-level trip is disabled with or without a spurious start of HPCI. For a fire in the main control room, operators would evacuate the control room and transfer the controls of the required equipment at the remote shutdown panel (RSP). If HPCI is no longer required, and if necessary, operators perform a manual action at the Class 1E switchgear room to open the 1AD417-10 breaker to induce a HPCI trip. While operators are transiting from the main control room to the RSP room and from the RSP room to the Class 1E switchgear room, HPCI injection would continue to fill the reactor vessel. The analysis determined that for the worst-case scenario, water would enter the steam lines at 4 minutes and 10 seconds. If HPCI is not promptly secured, it will overfill the reactor vessel and water would enter the main steam lines which would adversely impact the reactor core isolation cooling (RCIC) turbine driven pump. For the alternate safe shutdown method, RCIC is the only credited system for inventory control function. The analysis showed that if RCIC is not operating and if HPCI is secured within 10 minutes, then there is adequate time for the RCIC steam line to drain prior to being required for inventory control.

The inspectors walked down procedures with PSEG to evaluate their response to a fire that would require control room evacuation (HC.OP-AB.FIRE-0001, Fire - Spurious Operations, Revision 2), evaluate main control room evacuation and transfer of control to the RSP (HC.OP-AB.HVAC-0002, Control Room Environment, Revision 10), and complete remote shutdown and cooldown from the RSP (HC.OP-IO.ZZ-0008, Shutdown From Outside Control Room, Revision 37). Also, the inspectors compared time-critical actions (TCAs) documented in Hope Creek's master list HC-OP-102-106, Hope Creek's Master List of Time Critical and Time Sensitive Operator Activities, Revision 4, to the referenced procedures that were walked down.

The inspectors questioned the applicability and timeliness of TCA-9 and TCA-10, where each required actions to secure HPCI to prevent reactor vessel overfill, since TCA-10 included additional actions to establish control at the RSP and spanned across different procedures. The inspectors also noted that the "expected performance time" for TCA-9 and TCA-10 were the same (5 minutes) in Table 1 of OP-HC-102-106, though TCA-10 included more actions. These actions include (1) scramming the reactor from the reactor protections system (RPS) breakers, (2) closing main steam line isolation valves from the RPS panel, (3) verifying reactor scram from lower relay room, and (4) trip/secure HPCI to prevent overfill. The expected performance time of 5 minutes did not appear to be consistent with what was observed by the inspectors during the walkdown.

The inspectors reviewed PSEG's evaluation and response in notification 20723308 regarding a previous time critical action concern during the 2016 NRC fire protection inspection. A revalidation of actions by PSEG under order 80107159, operations 25 and 26, documented a time to secure HPCI to be approximately 5 minutes and 7 seconds but did not account for diagnosis time of HPCI fire-damage spurious operation. After discussions with PSEG, the inspectors observed an additional ad-hoc timed walkdown of control room evacuation procedures HC.OP-AB.HVAC-0002 and HC.OP-IO.ZZ-0008 to identify the approximate time to evacuate the control room and diagnosis spurious operation of HPCI. PSEG recorded 5 minutes and 2 seconds on March 15, 2019. The addition of the time to evacuate the control room and diagnosis spurious operation of HPCI (5 min 2 sec), and the time to secure HPCI (5 min 7 sec) did not completely bound the expected performance time of TCA-10

(10 min 9 sec). This approximation exceeded the 10 minute maximum allowed time for TCA-10 and provided reasonable doubt that TCA-10 would be reliably completed in the required time based on the existing procedures and guidance.

Corrective Action: PSEG reviewed the issue and agreed there are errors in the TCA procedure OP-HC-102-106 and that the TCA and alternate post-fire safe shutdown procedures need to be revised to clarify required actions and priorities. PSEG issued Hope Creek standing order 2019-17 to require each crew to tabletop HC.OP-AB.HVAC-0002, Condition C, control room evacuation, to prioritize actions to prevent HPCI overfill. Other corrective actions are to evaluate affected time-critical actions and revise related procedures.

Corrective Action References: Notifications 20820914, 20821021, and 20821328.

Performance Assessment:

Performance Deficiency: The inspectors determined that PSEG's failure to provide adequate procedural guidance for post-fire safe shutdown was a performance deficiency that was reasonably within PSEG's ability to foresee and prevent.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone. The finding affected the Mitigating Systems cornerstone objective of ensuring the reliability and availability of the RCIC system under postulated fire safe shutdown conditions. The finding is also similar to IMC 0612, Appendix E, Example 3.k, where there was a reasonable doubt on the operability of RCIC system because inadequate procedure guidance could result in overfill of the reactor vessel, and water would enter the main steam lines which would impact RCIC turbine driven pump.

Significance: The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post - Fire Safe Shutdown SDP." Using Appendix F, Attachment 1, "Fire Protection SDP Phase 1 Worksheet," the inspectors assigned the category to post-fire safe shutdown. Using Appendix F, Attachment 2, "Degradation Rating Guidance" the inspectors assigned a LOW degradation to the performance deficiency because the identified procedure inadequacies were compensated by operator training and familiarity, such that it would not affect the ability to reach and maintain a stable hot shutdown conditions. Therefore, based on these aspects, the finding is determined to be of very low significance (Green).

Cross-cutting Aspect: P.2 - Evaluation: The organization thoroughly evaluates issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, PSEG's evaluation of time critical actions under notification 20723308 and order 80107159, operations 25 and 26, was not thorough, in that it did not consider the diagnosis time of HPCI fire-damage spurious operation in the performance time of the TCA 9 and 10.

Enforcement:

Violation: License Condition 2.C(7) for HCGS states in part that, "PSEG Nuclear LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report." Updated Final Safety Analysis Report, Appendix 9A states in part that, "Procedures are in effect to implement this [alternate shutdown] capability." Contrary to the above, until March 15, 2019, when Hope Creek standing order 2019-017 was issued as a temporary compensatory measure, PSEG failed to

provide adequate procedural guidance for post-fire safe shutdown in that the alternate (remote) post-fire shutdown procedures and supporting master list of time critical actions were not accurate or adequate to timely secure HPCI to prevent overfilling of the reactor vessel following a spurious fire-induced start of HPCI pump and failed reactor water high-level automatic shutdown of HPCI.

Enforcement Action: This violation is being treated as an Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On March 29, 2019, the inspector presented the inspection results to Paul Davison, Vice President - Engineering and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.05T	Calculations	11-0028	Reactor Building Flood Calculation for Elevation 102'	4
		11-0092	Reactor Building Flood Calculation for Elevation 54/ and 77'	5
		19-0018	Maximum Flood Levels in Control/Diesel Generator Areas	8
		431856	Hope Creek Generating Station Safe Shutdown Analysis Reports for Fire Areas RB1, RB2, AB1, CD20, CD71, and CD82	1
		70143136-0410	Time Critical Operator Action Validation to Secure HPCI per HC.OP-IO.ZZ-0008, Attachment 9	3/4/13
		70185264-10-80	Evaluation of Securing HPCI as a Time Critical Action and Procedure HC.OP-AB.FIRE-0001	2/22/19
		80107159-25	Re-Validation of HPCI Time Critical Actions	3/17/18
		BJ-0024	Failure of High Level Turbine Trip	2
		E-26	Breaker and Fuse Coordination for Appendix R Systems	4
		E-7.4	Class 1E 4.16kV System Protective Relay Settings	6
		E-7.7	Class 1E 480V System Protective Relaying	7
		H-1-KC-FEE-1582	Gypsum Board Wall and Fire Dampers 262D2 and 263D2	0
		H-1-KC-FEE-1889	Carbon Dioxide System 1C10 Preop Test Review Room 5403	0
		H-1-ZZ-SEE-0278-1	Evaluation of Gypsum Board Fire Barrier between Rooms 5301 and 5339	0
		H-1-ZZ-SEE-0279	Evaluation of Gypsum Board Fire Barrier Rooms 5237 and 5207	1
		PM652-0066	Vendor Calculation for Control Equipment Room Mezzanine, System 1C10	7
	Corrective Action Documents	20442810 20452227 20452335 20722147 20723341 20723357 20723901		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		20723902 20803353 20804672 20804674 20804675 20804990 20813283 20818156		
	Corrective Action Documents Resulting from Inspection	20722174 20723308 20723338 20819997 20820010 20820020 20820080 20820082 20820083 20820301 20820551 20820565 20820601 20820606 20820689 20820690 20820691 20820707 20820812 20820879 20820895 20820913 20820914 20820915 20820924 20820926		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		20820927 20821021 20821328 20821331 20821703 20821704 20822786 20822823 20822848 20823038 20823433		
	Drawings	E-0001-0	Single Line Station Diagram	24
		E-0005-0	Single Line Meter and Relay Diagram 4.16kV Station Power System	10
		E-0006-1, Sht. 1	Single Line Meter and Relay Diagram 4.16kV Class 1E Power System	15
		E-0006-1, Sht. 2	Single Line Meter and Relay Diagram 4.16kV Class 1E Power System	13
		E-0013-0, Sht. 2	Single Line Meter and Relay Diagram 480V Units	20
		E-0084-0	Electrical Schematic Diagram Class 1E 4.16kV Station Power System	12
		E-0086-0	Electrical Schematic Diagram Class 1E 4.16kV Station Power System	12
		E-6067-0, Sht. 4	Electrical Schematic Diagram Solenoid Pilot Valves	9
		E-6084-0, Sht. 7	Electrical Schematic Diagram RCIC Main Steam Supply Valve	10
		J-0399-0, Sht. 13	Remote Shutdown Control Panels 10C399 Instrument and Control Section	5
		J-0399-0, Sht. 3	Remote Shutdown Control Panels 10C399 Instrument and Control Section	9
		J-0399-0, Sht. 4	Remote Shutdown Control Panels 10C399 Instrument and Control Section	11
		J-4041-0, Sht. 3	Loop Diagram for Nuclear Boiler Suppression Pool Temperature Recorder on Remote Shutdown Panel	7

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		J-4049-0, Sht. 2	RCIC Pump Turbine Control	7
		M-11-1, Sht. 1	Safety Auxiliary Cooling System Reactor Building	33
		M-22-0, Sht. 1	Fire Protection Fire-Water Permanent & Temporary Fire Pump House	21
		M-22-0, Sht. 2	Fire Protection Fire-Water Permanent & Temporary Fire Pump House	20
		M-22-0, Sht. 3	Fire Protection Fire-Water Permanent & Temporary Fire Pump House	17
		M-41-1, Sht. 1	Nuclear Boiler	42
		M-41-1, Sht. 2	Nuclear Boiler	30
		M-49-1, Sht. 1	RCIC	31
		M-50-1, Sht. 1	RCIC Pump Turbine	33
	Engineering Changes	80106533	Replace Pyrotechnics Panels, Reactor Building Smoke Detectors	0
		80112397	New Fire Door at U2 Reactor Building South Wall, Elevation 102’	0
		80112930	Fire Detection System Upgrade, DCP Part 1	0
		80112931	Fire Detection System Upgrade, DCP Part 2	0
		80117295	Delete CREG Deluge Flow Trip	0
		80120545	TSC (RB6, 132’) Smoke Detector Changes and Retired CAS Floor Detector Removal	0
		80122468	MPT FP On-Line Initiation Interlock	0
	Engineering Evaluations	0003-00A3-013-001	Hope Creek Manual Action Feasibility Assessment by Hughes Associates, Inc.	0
		70143136-0410	Scenerio 35, Time Validation to Secure HPCI by Opening Breaker 10, HPCI Relay Vertical Board	2/11/13
		80107159-0025	Time Validation to Secure HPCI by Opening Breaker 10, HPCI Relay Vertical Board	3/17/18
	Fire Plans	FP-HC-3413	HPCI Pump & Turbine Room, RHR Pump & Heat Exchanger Rooms	0
		FP-HC-3423	MCC Area, RHR Heat Exchanger Room, Safeguard Instrument Rooms & RACS Pumps & Heat Exchanger Area	0
		FP-HC-3424	MCC Area	0
		FP-HC-3433	‘A’ SACS Heat Exchanger & Pump Room	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		FP-HC-3523	Diesel/Control & Radwaste Building	0
		FP-HC-3533	Electric Access Area	0
		FP-HC-3542	Control Equipment Mezzanine Area	0
		FP-HC-3543	Electric Access Area and HVAC Wing	0
		FP-HC-3562	HVAC Equipment, Inverter & Battery Rooms	0
	Miscellaneous	10855-M660-51	Installation and Operating Instructions for Engine Driven Fire Pump Control Panel	5/2/80
		313234-01	Patterson Pump Company Motor Driven Fire Pump – Pump Performance Curve	1
		313235-01	Patterson Pump Company Diesel Engine Driven Fire Pump – Pump Performance Curve	1
		55700508	Unannounced Fire Drill	6/25/18
		55752660	Unannounced Fire Drill Assessed by Independent Third Party	9/19/18
		55826571	Offsite Assistance Training and Fire Drill	11/14/18
		80121712	Fire Drill Lessons Learned Program, 1st Quarter 2018	
		80121712	Fire Drill Lessons Learned Program, 2nd & 3rd Quarter 2018	
		BC001	Place ‘A’ RHR loop in Suppression Pool Cooling IAW Attachment 3 of HC.OP-IO.ZZ-0008	
		BD008	Place RCIC in Service from the RSP and Commence Injection to the Reactor Vessel IAW HC.OP-AB.HVAC-0002	
		Bisco Test Report 748-134	Bisco Product Equivalency Fire Test Utilizing Bisco SF-20 and Bisco SE-Foam	5/14/84
		EA002	PERFORM Steps 1.1 and 1.2 of HC.OP-IO.ZZ-0008, Attachment 4, Shutdown from Outside Control Room A RHR Loop Suppression Pool Cooling	
		HC Standing Order 2019-17	Procedure HC.OP-AB.HVAC-0002 Control Room Environment Condition ‘C’ clarification and emphasis to secure HPCI	3/15/19
		HCGS UFSAR	Table 9A-14, Fire Hazard Analysis Tabulation Summary	22
		HCGS UFSAR	Appendix 9A, Appendix R Comparison to NRC Generic Letter 81-12	0
		HCGS UFSAR	Section 9.5, HCGS Safe Shutdown Analysis and Fire Hazards Analysis	23

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		NOH04IO008C-05	Operator Lesson Plan for Shutdown from Outside Control Room, HC.OP-IO.ZZ-0008	11/6/13
		NOH04IOP008C	Operator Lesson Plan PowerPoint Slide deck for Shutdown from Outside Control Room, HC.OP-IO.ZZ-0008	12/8/18
		NOSA-HPC-18-07	Fire Brigade Drills	9/28/18
		NRC Information Notice 2009-29	Potential Failure of Fire Water Supply Pumps to Automatically Start Due to a Fire	11/24/09
		NUREG-1852	Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire	10/2007
		PM018-0366	EDG 'B' Electrical Control Schematic	11/29/95
		SB005	Open the RPS circuit breakers in accordance with Step 5.1.2 of HC.OP-IO.ZZ-0008.NOH04ABPROCUC-08, Lesson Plan for Upgraded Abnormal Operating Procedures	11/4/15
		TCP 2018-008	RB1 room 4315	0
		TCP 2018-053	AB3 room 3202	0
		TCP 2019-019	AB1 room 5501	0
		TCP 2019-031	RB7 room 4220	0
		TCP 2019-034	RB1 room 4211	0
	Procedures	CC-AA-211	Fire Protection Program	5
		CC-AA-320-011	Transient Loads	1
		CY-AB-140-410	Hope Creek Station Diesel Fuel Oil Testing Program	0
		FP-AA-002	Fire Protection Impairment Program	5
		FP-AA-005	Fire Protection Surveillance and Periodic Test Program	5
		FP-AA-010	Pre-Fire Plans	1
		FP-AA-011	Control of Transient Combustible Material	6
		FP-AA-012	Fire Protection Organization, Duties and Staffing	3
		FP-AA-014	Fire Protection Training Program	4
		FP-AA-024	Fire Drill Performance	1
		FP-AA-105	Compensatory Measure Firewatch Program	9
		FP-HC-004	Actions for Inoperable Fire Protection – Hope Creek Station	6
		HC-OP-102-106	Hope Creek Master List of Time Critical and Time Sensitive Operator Activities	4

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		HC.FP-PM.KC-0038	Annual and Monthly Fire Extinguisher Inspection	10
		HC.FP-ST.KC-0009	Diesel Driven Fire Pump Operability Test	22
		HC.FP-ST.QB-0039(F)	Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Test and Inspection	10
		HC.FP-ST.QK-0029(F)	Class 1 Fire Detection Functional Test	16
		HC.FP-ST.ZZ-0031(F)	Class 1 Fire Damper Functional Test	7
		HC.IC-CC.FC-0013	RCIC Turbine Pump Control	15
		HC.MD-CM.PG-0002	Low Voltage Breaker Overhaul and Repair	5
		HC.MD-PM.PB-0001	4.16kV Breaker Cleaning and Maintenance	29
		HC.OP-AB.FIRE-001(Q)	Fire – Spurious Operations	2
		HC.OP-AB.HVAC-0002(Q)	Control Room Environment	10
		HC.OP-AB.ZZ-0001	Transient Plant Conditions	34
		HC.OP-AB.ZZ-0135(Q)	Station Blackout // Loss of Offsite Power // Diesel Generator Malfunction	44
		HC.OP-AM.TSC-0023	Alternate Containment Flooding Via Fire Water	8
		HC.OP-AM.TSC-0024	Remote Operation of SRV's With RPV Injection	9
		HC.OP-EO.ZZ-0318	Containment Venting	13
		HC.OP-IO.ZZ-0008(Q)	Shutdown from Outside Control Room	37
		HC.OP-ST.SV-	Remote Shutdown Monitoring Instrumentation Channel	26

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		0001	Check	
		HC.OP-ST.SV-0002	Remote Shutdown Control Operability	25
		HC.OP-ST.SV-0003	Remote Shutdown Control Operability	12
		HC.OP-ST.SV-0004	Remote Shutdown Control Operability	11
		HC.OP-ST.SV-0012	Remote Shutdown Control Operability	1
		HR-AA-07-106	Respirator/Heat Stress Surveillance Exam	7
		HR-AA-07-107	Fire Department Surveillance Exam	5
		SH.FP-TI.FP-0001(Z)	FP Freeze Prevention and Winter Readiness	5
	Work Orders	30299934	Non-Class 1 Fire Suppression Water System Flush	3/11/18
		30308297-10	B.5.b Hope Creek Equipment Inventory	2/25/18
		30318289	Class 1 Fire Detector Functional Test	7/28/18
		30324901	Firefighting and Rescue Equipment Inventory	10/08/18
		30327322	Firefighting and Rescue Equipment Inventory	1/07/19
		30330339	Fire Engine Operability Test and Firefighting Equipment Inventory	1/27/19
		30330998	Fire Department and EMS Equipment Inspection and Inventory	2/10/19
		50087206	Flood and Fire Barrier Penetration Seal Inspection	10/02/06
		50135226	Fire Main Flow Test	5/11/14
		50167497	Fire Main Flow Test	01/11/18
		50179725	Fire Pump Capacity Test	9/21/16
		50184932	Pre-Action Sprinkler System Functional Test and Inspection	6/9/17
		50186965	Class I Fire Suppression Water System Flush	8/2/17
		50187289	Deluge System 1D28 Functional Test	7/6/16
		50189177	Fire Pump Capacity Test	12/3/17
		50195504	Pre-Action Sprinkler System Functional Test and Inspection	6/5/18
		50196834	Deluge System 1D28 Functional Test	8/2/18
		50197517	Class I Fire Suppression Water System Flush	10/9/18

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		50199093	Class 1 Fire Detector Functional Test	3/31/18
		50201002	Class 1 Fire Detector Functional Test	7/31/18
		50202975	Class 1 Fire Detector Functional Test	10/8/18
		50203065	Class 1 Fire Detector Functional Test	9/30/18
		HC.FP-ST.QB-0070(F)	Standby Self Contained 8 Hour Battery Powered Emergency Light Unit Test and Inspection	1/18/19
		HC.OP-ST.SV-0001	Remote Shutdown Monitoring Instrumentation Channel Check	12/10/18
		HC.OP-ST.SV-0001	Remote Shutdown Monitoring Instrumentation Channel Check	12/10/18
		HC.OP-ST.SV-0002	Remote Shutdown Control Operability	4/12/15
		HC.OP-ST.SV-0003	Remote Shutdown Control Operability	5/6/18
		HC.OP-ST.SV-0004	Remote Shutdown Control Operability	10/31/16
		HC.OP-ST.SV-0005	Remote Shutdown Control Operability	4/13/18
		HC.OP-ST.SV-0012	Remote Shutdown Control Operability	11/8/16