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

August 9, 2019

Mr. Brad Berryman
President and Chief Nuclear Officer
Susquehanna Nuclear, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000387/2019002 AND 05000388/2019002

Dear Mr. Berryman:

On June 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Susquehanna Steam Electric Station, Units 1 and 2. On July 11, 2019, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Jonathan E. Greives, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos. 05000387 and 05000388
License Nos. NPF-14 and NPF-22

Enclosure:
As stated

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SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000387/2019002 AND 05000388/2019002 DATED AUGUST 9, 2019

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000387 and 05000388
License Numbers:	NPF-14 and NPF-22
Report Numbers:	05000387/2019002 and 05000388/2019002
Enterprise Identifier:	I-2019-002-0035
Licensee:	Susquehanna Nuclear, LLC
Facility:	Susquehanna Steam Electric Station, Units 1 and 2
Location:	Berwick, PA
Inspection Dates:	April 1, 2019 to June 30, 2019
Inspectors:	L. Micewski, Senior Resident Inspector M. Rossi, Resident Inspector D. Beacon, Resident Inspector T. Daun, Resident Inspector E. Dipaolo, Senior Reactor Inspector J. Furia, Senior Health Physicist J. Kulp, Senior Reactor Inspector A. Turilin, Reactor Inspector
Approved By:	Jonathan E. Greives, Chief Reactor Projects Branch 4 Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Susquehanna Steam Electric Station, Units 1 and 2 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.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at 100 percent power. On May 1, 2019, operators reduced power to approximately 80 percent for a control rod pattern adjustment, condenser waterbox cleaning, and scram time testing. Operators returned the unit to 100 percent on May 4, 2019. On May 22, 2019, operators reduced power to approximately 78 percent after a loss of power to a breaker for a 480-volt motor control center (MCC) caused the unit to enter Technical Specification Limiting Condition for Operation (LCO) 3.0.3, which required a shutdown to Mode 3 within 12 hours. Operators commenced the shutdown, however exited LCO 3.0.3 after restoring power to the affected MCC, when the unit was at about 78 percent. Operators returned the unit to 100 percent power later that same day. On May 31, 2019, operators reduced power to approximately 66 percent to perform a control rod sequence exchange. Operators returned the unit to 100 percent on June 2, 2019, and remained at or near 100 percent power for the remainder of the inspection period.

Unit 2 began the inspection period shutdown in Mode 5 for a planned refueling outage. Following the completion of refueling and maintenance activities, operators commenced a reactor startup on April 20, 2019, and achieved full power on April 30, 2019. On May 6, 2019, a recirculation pump rundown was automatically initiated following an electrical fault that tripped reactor building cooling water and chillers. The rundown reduced power to 78 percent. Operators subsequently reduced power to approximately 70 percent to stay within rod line operating limits. Following repairs and restoration from the electrical fault, operators returned the unit to 100 percent on May 7, 2019. On May 22, 2019, operators reduced power to approximately 79 percent after a loss of power to a breaker for a 480-volt MCC caused the unit to enter Technical Specification LCO 3.0.3, which required a shutdown to Mode 3 within 12 hours. Operators commenced the shutdown, however exited LCO 3.0.3 after restoring power to the affected MCC, when the unit was at about 79 percent. Operators returned the unit to 100 percent power later that same day. On June 28, 2019, operators reduced power to approximately 57 percent to perform a control rod sequence exchange. Operators returned the unit to 100 percent on June 30, 2019, and remained at or near 100 percent power for the remainder of the inspection period.

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 performed plant status activities described in IMC 2515, Appendix D, “Plant Status,” and conducted routine reviews using IP 71152, “Problem Identification and Resolution.” 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

71111.01 - Adverse Weather Protection

Summer Readiness Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated summer readiness of offsite and alternate alternating current power systems on May 30, 2019.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) Unit 2, core spray prior to division swap on April 4, 2019
(2) Unit 2, snubbers inside containment on April 16, 2019
(3) Unit 1 and Unit 2, spent fuel pool cooling during Unit 2 residual heat removal (RHR) common system outage window on April 22, 2019
(4) Unit 1, standby liquid control quarterly flow surveillance on April 23, 2019

71111.04S - Equipment Alignment

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of the Unit 2 high pressure injection system on April 9, 2019.

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated fire brigade performance on May 23, 2019.

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Unit 1, division 2, 250V and 125V battery rooms (fire zones 0-28M, 0-28N, 0-28J) on April 3, 2019
(2) Unit 2, equipment access area elevation 683' (fire zone 2-3C) on April 16, 2019
(3) Unit Common, 'E' emergency diesel generator (EDG) while swapped in during air compressor upgrades (fire zone 0-41E) on June 5, 2019
(4) Unit 2, load center and switchgear rooms (fire zones 2-4C/D and 2-5F/G) on June 17, 2019
(5) Unit 1, low pressure coolant injection equipment elevation 645' (fire zones 1-1B/D/E/F) on June 19, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

(1) Unit 2, division 1 RHR room while aligned for shutdown cooling while flood doors obstructed on April 8, 2019

71111.07A - Heat Sink Performance

Annual Review (IP Section 02.01) (1 Sample)

The inspectors evaluated readiness and performance of:

(1) Unit 2, division 2 RHR heat exchanger on April 22, 2019

71111.08G - Inservice Inspection Activities (BWR)

BWR Inservice Inspection Activities Sample - Nondestructive Examination and Welding Activities (IP Section 03.01) (1 Sample)

(1) The inspectors verified that the reactor coolant system (RCS) boundary, reactor vessel internals, risk-significant piping system boundaries, and containment boundary are appropriately monitored for degradation and that repairs and replacements were appropriately fabricated, examined, and accepted by reviewing the following activities during the Susquehanna Unit 2 2R19 refueling outage from April 1, 2019, to April 5, 2019:

03.01.a - Nondestructive Examination and Welding Activities

1. Manual encoded phased array ultrasonic examination of standby liquid control system weld (SPDCA239-1 W3) for license renewal commitment to examination small bore piping welds
2. Ultrasonic examination of reactor vessel bottom head meridional weld “DC”
3. Magnetic particle examination of high pressure coolant Injection piping support weld (HBB2081-HW-1)
4. Visual examination (VT-1) of N2B jet pump riser support weld “A”
5. Visual examination (EVT-1) of core shroud horizontal weld “H4”
6. ASME IWE visual examination of drywell liner and penetrations elevation 738’-752’

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the Control Room during reactor startup operations on April 20, 2019.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed and evaluated a simulation of a seismic event resulting in multiple system failures on May 23, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

(1) Unit 2, reactor pressure vessel/pressure boundary flow accelerated corrosion program on April 15, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Unit 2, spent fuel pool cooling system during common shutdown cooling work window on April 10, 2019
(2) Unit Common, yellow risk during 'B' emergency service water outage on May 21, 2019
(3) Unit Common, elevated risk while 'C' and 'E' EDG inoperable on June 7, 2019
(4) Unit 1, breaker 1B22023 swap at power on June 11, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) Unit 2, 250 VDC molded case circuit breaker failure on April 10, 2019
(2) Unit 2, high pressure injection snubber inoperable due to missing parts on May 13, 2019
(3) Units 1 and 2, ACT-01-CR-2019-07154, MCC 0B136 prompt operability determination, dated May 24, 2019
(4) Unit 2, local power range monitor connection swapped 48-33 B/D on June 11, 2019

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

(1) Unit 2, EC 2203222, replace obsolete Mallory M200 PK potentiometer with Bourns 3400S-1-201L on April 10, 2019
(2) Unit Common, 'D' EDG starting air compressor modification on May 13, 2019

71111.19 - Post Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (10 Samples)

The inspectors evaluated the following post maintenance tests:

(1) Unit 2, division 2 RHR following maintenance during refueling outage on April 4, 2019
(2) Unit 2, 125V battery charger 2D633 following maintenance and installation of engineering change on April 9, 2019
(3) Unit 2, 125VDC molded case circuit breaker 2D614 on April 11, 2019
(4) Unit 2, snubber replacement inside containment on April 16, 2019
(5) Unit 2, reactor vessel leak check on April 18, 2019
(6) Unit 2, safety relief valve replacement on April 18, 2019
(7) Unit Common, HS-0041B synchroscope selector switch replacement on April 20, 2019
(8) Unit 2, reactor core isolation cooling 150# test on April 20, 2019
(9) Unit 2, high pressure coolant injection exhaust vacuum breaker checked on May 3, 2019
(10) Unit Common, 'B' emergency system water discharge isolation and check valve repair on May 22, 2019

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated Unit 2 refueling outage 2R19 activities from April 1, 2019, to April 20, 2019.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

(1) Unit 2, main steam isolation valve 28 D test after maintenance on May 3, 2019

Inservice Testing (IP Section 03.01) (1 Sample)

(1) Unit 1, standby liquid control quarterly flow surveillance on April 23, 2019

Surveillance Tests (other) (IP Section 03.01) (3 Samples)

(1) Unit 2, division 2 automatic depressurization system logic system functional test on April 16, 2019
(2) Unit 2, RCS pressure test on April 18, 2019
(3) Unit Common, 'A' EDG analyzer run on April 29, 2019

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Instructions to Workers (IP Section 02.02) (1 Sample)

The inspectors evaluated instructions to workers, including radiation work permits, used to access high radiation areas.

(1) The inspectors reviewed high radiation area work permit controls and use; and observed containers of radioactive materials and assessed whether the containers were labeled and controlled in accordance with requirements.

Radiological Hazards Control and Work Coverage (IP Section 02.04) (1 Sample)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

(1) The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walkdowns and observation of radiological work activities. The inspectors examined the physical controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupational performance indicator.

High Radiation Area and Very High Radiation Area Controls (IP Section 02.05) (1 Sample)

(1) The inspectors reviewed the procedures and controls for high radiation areas, very high radiation areas, and radiological transient areas in the plant.

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 02.06) (1 Sample)

(1) The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

71124.02 - Occupational ALARA Planning and Controls

Implementation of ALARA and Radiological Work Controls (IP Section 02.03) (1 Sample)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls.

(1) The inspectors reviewed radiological work controls and as low as reasonably achievable (ALARA) practices during the observation of in-plant work activities. The inspectors reviewed the results achieved against the intended ALARA estimates to confirm adequate implementation and oversight of radiological work controls.

71124.07 - Radiological Environmental Monitoring Program

Groundwater Protection Initiative Implementation (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed: groundwater monitoring results; changes to the Groundwater Protection Initiative program since the last inspection; anomalous results or missed groundwater samples; leakage or spill events including entries made into the decommissioning files (10 CFR 50.75(g)); evaluations of surface water discharges; and evaluation of any positive groundwater sample results including appropriate stakeholder notifications and effluent reporting requirements.

Site Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the radiological environmental monitoring program implementation.

(1) The inspectors walked down various thermoluminescent dosimeter and air and water sampling locations and reviewed associated calibration and maintenance records. The inspectors observed the sampling of various environmental media as specified in the Offsite Dose Calculation Manual. The inspectors reviewed the groundwater monitoring program as it applies to selected potential leaking structures, systems, and components; and 10 CFR 50.75(g) records of leaks, spills, and remediation since the previous inspection.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicator submittals listed below:

BI01: RCS Specific Activity Sample (IP Section 02.10) (2 Samples)

(1) Unit 1 (January 1, 2018 - December 31, 2018)
(2) Unit 2 (January 1, 2018 - December 31, 2018)

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

(1) Unit 1 (January 1, 2018 - December 31, 2018)
(2) Unit 2 (January 1, 2018 - December 31, 2018)

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (3 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program (CAP) related to the following issues:

(1) Essential service water (ESW) piping erosion
(2) Non-Cited Violation (NCV) 05000387; 05000388/2018001-01, Failure to Proper Testing of 125VDC Molded Case Circuit Breakers to Confirm their Design Adequacy Long-Term
(3) Compensatory measures associated with fire barrier impairments

Semiannual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed Susquehanna's CAP for trends that might be indicative of a more significant safety issue.

INSPECTION RESULTS

Observation: Annual Follow-Up of Selected Issues- Essential service water (ESW) piping erosion CR-2017-13423	71152
The inspectors reviewed Susquehanna's evaluation and corrective actions to address corrosion of safety-related ESW piping located in vault VA021 as documented in CR 2017-13423. Susquehanna staff performed a causal evaluation and determined the corrosion was a result of original construction pipe wrap failure and standing water in the vault. Susquehanna staff performed an extent of condition evaluation which included all other vaulted ESW piping. The extent of condition identified similar but less extensive pipe wrap degradation and piping corrosion in vaults VA022 to VA026. Susquehanna staff implemented or scheduled corrective actions to drain the vaults and repair the degraded areas of the pipe wrap. Additionally, the inspectors determined that Susquehanna staff conducted an extent of cause evaluation and determined that the water intrusion resulted from rain water permeating the original deteriorated vault lid gasket. Susquehanna staff developed and implemented corrective actions to prevent rain water intrusion into the vaults. The corrective actions included assessing the vault lid gasket condition after each opening as well as caulking around the vault lid after the vault is closed. Furthermore the inspectors determined that corrective actions are scheduled to evaluate the inner and outer surface condition of the portion of the pipe that is embedded in the ground with non-destructive inspection methods to determine whether the water is intruding into the vaults from the ground. Corrective actions to eliminate standing water in safety-related vaults, which include installation of automatic sump pumps, have also been implemented or scheduled. Additionally, as part of their In-service Inspection program, Susquehanna staff initiated periodic inspections of the vaults to monitor the piping condition and effectiveness of the implemented corrective actions. Inspectors reviewed Susquehanna's evaluation and implemented and scheduled corrective actions and did not identify any issues of concern. The inspectors determined that Susquehanna's corrective actions involving extent of condition review, extent of cause, subsequent cleaning and repair of the pipe coating, installation of the automatic sump pumps in the vaults, and periodic vault inspections by the in-service inspection program were commensurate with the safety significance of the issue.	

Observation: Annual Follow-Up of Selected Issues- Failure to Conduct Proper Testing of 125VDC Molded Case Circuit Breakers (MCCBs) to Confirm their Design Adequacy Long Term	71152
The inspectors performed an in-depth review of Susquehanna's evaluations and corrective actions associated with NCV 05000387; 05000388/2018001-01 (ADAMS Accession No. ML18241A044) for failing to adequately exercise and test safety-related 125 VDC MCCBs. Issues related to verifying the adequacy of the design for 125VDC MCCBs were	

previous identified in NCV 05000387; 05000388/2013010-01 (ADAMS Accession No. ML13275A074), and in a licensee-identified violation documented in NRC Inspection Report 05000387; 05000388/2016007 (ADAMS Accession No. ML16328A097) for failure to implement corrective actions to establish a preventive maintenance program for MCCBs associated with containment penetration conductors.

The inspectors performed a review of Susquehanna's corrective action to address the adequacy of testing 125VDC MCCBs as documented in condition report (CR)-2018-09952, CR-2018-11415, and other related CRs. The inspectors verified that Susquehanna properly evaluated the issue and performed or planned appropriate corrective actions. The inspectors verified that Susquehanna conducted adequate testing of the Unit 2 125VDC MCCBs associated with containment penetration conductors during the Spring 2019 refueling outage and planned to complete similar testing during the next Unit 1 refueling outage.

The inspectors observed incomplete documentation of actions performed and/or planned to correct the issue within individual CAP documents. For example, the population of 125VDC MCCBs associated with containment penetration conductors had to be re-verified by engineering and actual work orders performed during the Unit 2 refueling outage had to be reviewed by the inspectors to conclude that Susquehanna's actions were adequate. These issues were determined to be minor because the appropriate population of 125VDC MCCBs associated with containment penetration conductors was subsequently verified, all the associated MCCBs on Unit 2 were tested during the Spring 2019 refueling outage, and all the associate MCCBs on Unit 1 were planned to be tested during the next scheduled refueling outage.

Observation: Annual Follow-Up of Selected Issues– Alternate Compensatory Measures for Firewatches Associated with High Radiation Areas	71152

The inspectors performed a review of Susquehanna's corrective action to address the adequacy of compensatory measures documented in CR-2019-00739, CR-2019-03992, and other related CRs. The inspectors verified that Susquehanna properly evaluated the issue and performed or planned appropriate corrective actions. The inspectors verified that Susquehanna implemented appropriate corrective actions to perform a fire hazards analysis prior to authorizing alternate compensatory actions to ensure an adequate level of fire protection is maintained when fire impairments are identified in high radiation areas.

The inspectors identified that Susquehanna's fire protection procedure, NDAP-QA-0443, allowed for an hourly firewatch to check around the fire door for smoke and to touch the door to verify no heat was present. After the inspectors questioned whether this practice was evaluated as an alternate compensatory action, Susquehanna initiated CR-2019-03992 and determined that this practice required an area-specific engineering evaluation to ensure an adequate level of fire protection is maintained.

While the ability of procedurally allowing an alternate compensatory action existed for greater than ten years, the inspectors were only able to identify the one instance described in CR-2019-00739 where the practice was used. Additionally, the station performed an engineering analysis for the affected fire zone as part of their past operability process and determined that the alternate compensatory action provided an adequate level of fire protection. Though this evaluation was done after the alternate compensatory action was established, the inspectors determined this conclusion was reasonable.

The immediate and planned corrective actions are appropriate to ensure that an engineering evaluation in the form of a zone-specific fire hazard analysis is performed prior to implementing alternate compensatory actions. While other methods such as installing portable camera(s) could enable the required firewatch actions to be accomplished, the inspectors acknowledged that other factors such as radiation dose concerns must be considered and that establishing an alternate compensatory action following an engineering evaluation can provide for an adequate level of fire protection.

Observation: Semi-Annual Trend Review - Issues not appropriately entered into station processes	71152

The inspectors performed a semi-annual review of site issues to identify trends that might indicate the existence of more significant safety concerns. As part of this review, the inspectors included repetitive or closely-related issues documented by Susquehanna in the CAP database, trend reports, site performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed how Susquehanna's CAP evaluated and responded to individual issues identified by the NRC inspectors during routine plant walkdowns and daily CR reviews.

The inspectors noted an example where a condition adverse to quality (CAQ) was not entered promptly into the CAP, as required by station procedure LS-120, "Issue Identification and Screening Process." LS-120 defines a CAQ as any condition identified with a quality related function which is determined to be in conflict with design documents, regulatory commitments, Final Safety Analysis Report (FSAR) commitments, or applicable state or federal codes. When Susquehanna discovered that a small water leak was wetting a fire barrier beneath it, hourly firewatches were instituted. However, since the location was a locked high radiation area, Susquehanna allowed the firewatch to look at the door for smoke or discolored paint, and feel the outside of the door for heat. When the inspectors questioned whether a more intrusive check was required, such as using a remote camera or opening the door and looking in, Susquehanna documented the question as DI-2019-01497, which is a non-CAP process, and stated that the current practice as described in procedure NDAP-QA-0443, "Fire Watch," needed to be evaluated against the Fire Protection Review Report (FPRR). After further assessment of the question, Susquehanna staff concluded that NDAP-QA-0443 did not meet standards as defined in the FPRR, which is a CAQ. The inspectors observed that upon recognition that a CAQ existed, and that actions needed to be taken to correct the condition, Susquehanna staff did not enter the issue into the CAP. After the inspectors shared this observation, Susquehanna staff initiated CR-2019-03992 to document the CAQ. The inspectors determined that the failure to properly document this issue in station programs, as required by procedures LS-120, was a performance deficiency. The inspectors evaluated the deficiency using IMC 0612, Appendix B, "Issue Screening," and IMC 0612, Appendix E, "Examples of Minor Issues," and determined it was of minor significance because the failure to enter the issue into the formal station process did not have any adverse impact on the cornerstone objectives. The underlying technical issue was reviewed and documented separately.

EXIT MEETINGS AND DEBRIEFS

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

- On July 11, 2019, the inspectors presented the integrated inspection results to Mr. Brad Berryman and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	CR-2019-07504	Indicating lights if shorted in the SSES KV switchyard could possibly trip Unit 2 off-line	05/30/2019
	Miscellaneous		Certification Letter for 2019 Summer Readiness	05/15/2019
71111.04	Corrective Action Documents	CR-2019-03868	Two nuts found in U2 drywell	03/27/2019
		CR-2019-03942	Snubber failed on high drag	03/26/2019
		CR-2019-03971	MSRV cable number did not match procedure	03/26/2019
		CR-2019-04249	L MSRV contacted airlock while in transport	03/30/2019
		CR-2019-05197	Paint not reapplied to snubber	04/13/2019
	Drawings	E105952	Unit 2 Division 2 Core Spray P&ID	Revision 31
		E106253	Unit 1 Standby Liquid Control System P&ID	Revision 40
	Procedures	CL-251-0012	Unit 2 Core Spray System Division 1 Mechanical	Revision 12
		CL-251-0013	Unit 2 Core Spray System Division 2 Mechanical-Containment	Revision 5
		CL-251-0015	Unit 2 Core Spray System Division 2 Mechanical	Revision 13
71111.04S	Drawings	E105956	Unit 2 HPCI P&ID	Revision 31
	Procedures	CL-252-0011	Unit 2 HPCI System Electrical	Revision 11
		CL-252-0012	Unit 2 HPCI System Mechanical	Revision 17
		CL-252-0013	Unit 2 HPCI System Mechanical-Containment	Revision 5
71111.05A	Fire Plans	FP-213-238	HPCI Pump Room (II-11) Fire Zone 2-1C Elevation 645'-0"	Revision 5
	Miscellaneous	TQ-171-0105	Unit 2 HPCI	Revision 0
71111.05Q	Corrective Action Documents	CR-2019-07537	PA-015 FP in E EDG bay has packing leak	06/03/2019
	Fire Plans	FP-013-236	'E' Diesel Generator Building Fire Zone 0-41E Elevation 656'-6", 675-6", 708'-0"	Revision 7
		FP-113-104	RCIC Pump Room (I-12) Fire Zone 1-1D Elevation 645'-0"	Revision 5
		FP-113-105	RHR Pump Room "B" (I-13) Fire Zone 1-1E Elevation 645'-0"	Revision 3
		FP-113-106	RHR Pump Room "A" (I-14) Fire Zone 1-1F Elevation 645'-0"	Revision 5
		FP-113-1102	Core Spray Pump Room "B" (1-10) Fire Zone 1-1B Elevation 645'-0"	Revision 4
		FP-213-247	Equipment Access Area (II-202,204,205) Fire Zones 2-3C-N,	Revision 5

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			2-3C-W, 2-3C-S, Elevation 683'-0"	
		FP-213-250	Switchgear Rooms (II-406, II-407) Fire Zones 2-4C, 2-4D, Elevation 719'-1"	Revision 7
		FP-213-258	Load Center Room (II-510) Load Center Room (II-507) Fire Zone 2-5F, 2-5 G, Elevation 749'1"	Revision 5
71111.07A	Corrective Action Documents	CR-2018-05387	RHR heat exchanger pressure relief valve failed lift test	04/07/2018
		CR-2018-06358	Documentation of plugging in RHR heat exchanger	04/19/2018
	Procedures	MT-116-002	RHR Heat Exchanger Cleaning, Inspection, and Repair	Revision 15
		MT-GM-025	Heat Exchanger Cleaning and Inspection	Revision 22
		MT-GM-031	Immersed Component/Heat Exchanger Internals Epoxy Lining/Cladding	Revision 22
		MT-GM-078	SSES Heat Exchanger Tube Plugging	Revision 8
71111.11Q	Corrective Action Documents	CR-2019-05411	Simulator response not as expected during start up Just-In-Time Training	04/16/2019
	Procedures	GO-200-002	Plant Startup, Heatup and Power Operation	Revision 96
71111.12	Corrective Action Documents	CR-2019-05079	Wall thinning trend identified in bottom head drain piping	04/11/2019
71111.13	Calculations	EC-049-0655	RHR fuel pool cooling mode heat capacity	Revision 0
		EC-THDY-1069	Excel program for calculating fuel pool heat-up during refueling operations	Revision 8
	Corrective Action Documents	AR-2015-07176	Confirm time after shutdown when fuel pool cooling assist can be credited for decay heat removal	03/12/2015
		AR-2015-09056	Update shutdown EOOS model to reflect availability of fuel pool cooling and FPC assist	04/01/2015
	Miscellaneous	TM-OP-054-ST	Emergency Service Water	Revision 8
71111.15	Calculations	EC-PIPE-2569	Piping analysis of Unit 2 HPCI inside containment	Revision 0
		EC-SOPC-0554	Relay Setting Calculation for Motor Control Center 0B136 Circuit Breaker at Load Center 1B230	Revision 2
	Corrective Action Documents	AR-2019-04083	Missing rings, washers, and retaining pins on snubber	03/28/2019
		CR-2019-04020	Missing pin, washers, and retaining rings on snubber	03/27/2019
		CR-2019-04879	AK breaker fails as-found testing	04/07/2019
		CR-2019-04935	Removed AK breaker failed to meet acceptance criteria	04/08/2019
		CR-2019-07089	Loss of 0B136	05/22/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR-2019-07122	Troubleshooting revealed an issue with 0EP01	05/22/2019
	Corrective Action Documents Resulting from Inspection	CR-2019-07153	NRC question regarding breaker coordination	05/22/2019
	Miscellaneous	EPRM 1447078	Perform Preparation of 480 Volt Overhauled Spare Load Center Breaker Returned from Vendor for use in 1B23023	07/25/2013
		EPRM 1802920	Perform Preventive Maintenance of 480 Volt Motor Control Center Breaker 0B136033	12/14/2016
		ST-200-001	Snubber visual inspection	Revision 2
		UFSAR Table 8.1-2	Affiliated and Non-Class 1E Circuits that Connect to Class 1E Power Supplies	Revision 69
71111.18	Calculations	2033998	Replace the Compressors and Air Dryers in Diesel Generator Air Start System	Revision 2
	Miscellaneous	2203222	Mallory M200PK is obsolete is being replaced by Bourns 3400S-1-201L	Revision 0
	Work Orders	2150074	Remove existing EDG air compressor equipment	02/12/2018
71111.19	Corrective Action Documents	CR-2015-27535	B ESW pump discharge valve has leakby ~10 gpm	10/12/2015
		CR-2019-04153	Electrical questioning the effectiveness of not using lock ring on new sync switches	03/29/2019
		CR-2019-04683	CR to document resolution of 125 VDC electrical testing	04/04/2019
		CR-2019-04732	EC-1 failed to trip breaker during testing	04/05/2019
		CR-2019-04758	Breaker failed to reset during testing	04/06/2019
		CR-2019-04822	Could not build pressure while testing accumulator	04/07/2019
		CR-2019-04935	Removed AK breaker failed to meet acceptance criteria	04/08/2019
		CR-2019-04957	O-ring leak found	04/08/2019
		CR-2019-05260	Casting of new disc arm will not fit in valve body	04/14/2019
		CR-2019-05491	40dpm leak found during vessel leak check	04/18/2019
		CR-2019-05502	CRDM leaking during RPV hydro test	04/18/2019
		CR-2019-05507	CRDM leaking during RPV hydro test	04/18/2019
		CR-2019-05529	Packing leak identified	04/18/2019
	Drawings	E105955	HPCI system P&ID	Revision 46
	Procedures	MT-GM-003A	Swing check valve disassembly, inspection, and reassembly	Revision 2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		SE-249-301	RHR system leakage test	Revision 11
		SE-249-400	RHR system leakage quantification test	Revision 15
		SM-202-C04	48 Month Channel C 2D630 125VDC Battery Discharge Modified Performance Test and Battery Charger Capability Test	Revision 25
		SO-054-B03	Quarterly ESW Flow Verification LOOP B	Revision 20
		SO-249-014B	RHR cold shutdown valve exercising, Division II	Revision 0
		SO-249-018	RHR Division II, 2 year RPI checks	Revision 0
		SO-249-B02	92 day RHR flow verification B loop	Revision 27
		SO-250-005	24 Month RCIC Flow Verification	Revision 23
	Work Orders	1938604	B ESW pump discharge valve has ~10 gpm leakby	10/13/2015
		2177800	HPCI exhaust vacuum breaker check valve repair	04/13/2019
		2211054	125 VDC electrical testing	10/11/2018
		2242551	92 day RHR flow verification Loop B	03/05/2019
71111.22	Corrective Action Documents	AR-2019-04097	Revise TP-259-030 for relief valve set pressure	03/28/2019
		CR-2019-04137	Outboard D MSIV exceeded TS leakage limit	03/28/2019
		CR-2019-05012	Unexpected results for SO-283-005, test aborted	04/10/2019
		CR-2019-05398	Simulator does not respond correctly during RPV hydrostatic pressurization/depressurization	04/14/2019
	Procedures	MT-024-024	Diesel Engine Analysis and Load Bearing	Revision 21
		OP-024-001	Diesel Generators	Revision 87
		SE-259-024	LLRT of main steam isolation valves penetration number X-7D	Revision 21
		SO-024-001A	Monthly Diesel Generator 'A' Operability Test	Revision 28
		SO-153-004	Unit 1 Quarterly SBLC Flow Verification	Revision 45
		SO-200-023	ASME Class I Boundary System Leakage Test	Revision 4
71152	Calculations	EC-013-1081	Generic Letter 86-10 to Determine Raceway Fire	Revision 1
		EC-013-1910	Calculation to Determine CO2 Room Concentrations for the Rooms Protected with an Automatic CO2 System	Revision 1
	Corrective Action Documents	AR-2019-00903	Evaluate impacts to degraded fire wraps	01/15/2019
		AR-2019-01849	Engineering evaluation of wetted versa-wrap on conduit C1P107 in fire zone 1-6I in support of Operab	02/06/2019
		CR-2014-04167	A re-review of IN-2007-06 revealed the original evaluation	02/06/2014

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			did not address ESW/RHRSW manhole pipes	
		CR-2014-07344	External corrosion discovered on safety related piping and supports in vaults	03/06/2014
		CR-2016-04833	Gaps in corrective actions from CDBI inspection	02/26/2016
		CR-2016-23373	Issues identified during CDBI with 125VDC MCCBs	10/14/2016
		CR-2017-13423	ISI inspection of A ESW piping VA021	07/18/2017
		CR-2017-14366	The scope of the safety related vault inspections needs to be expanded to five additional vaults	08/04/2017
		CR-2017-18437	ISI inspection of ESW/RHRSW piping in VA022	10/27/2017
		CR-2018-09952	Understand why actions were not taken to address 2013 NCV	06/29/2018
		CR-2018-11415	Electrical testing of 125VDC molded case circuit breakers may be necessary	08/01/2018
		CR-2018-12271	Minor surface corrosion found on flange bolting	08/23/2018
		CR-2018-12276	Minor surface corrosion found on flange bolting	08/23/2018
		CR-2018-12564	Minor surface corrosion found on flange bolting	08/29/2018
		CR-2018-12566	Minor surface corrosion found on flange bolting and minor coating loss on flange surface	08/29/2018
		CR-2018-12598	NRC Green NCV for 2018 PIR	09/28/2018
		CR-2018-16967	U1 Entry into ON-FLOOD-101 due to flooding in the reactor building	12/17/2018
		CR-2018-16972	Floor drain slow to accept influent on RW 646'	12/17/2018
		CR-2018-17000	U1 RB 749' floor drain blockage requires resolution	12/18/2018
		CR-2019-00452	RTSV 2142569 (SI-213-241) fuel pool heat exchanger room fire protection not able to be performed	01/08/2019
		CR-2019-00524	Unable to repressurize PA-223 from air supply	01/09/2019
		CR-2019-00739	New Leak identified in U1 Fuel Pool Cooling Hold Pump Room, Elev 779'. Leak is 15 dpm.	01/15/2019
		CR-2019-01495	Fire damper FPD-3-21-3-1 did not pass the inspection	01/30/2019
		CR-2019-04113	The fire seal in penetration X-12-5-185 is less than the minimum required depth	03/28/2019
		CR-2019-04683	CR to document resolution of 125VDC MCCB electrical testing	04/04/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR-2019-04758	Had breaker fail to reset during testing	04/06/2019
	Corrective Action Documents Resulting from Inspection	CR-2019-01497	Question on Firewatch methodology for inaccessible areas meeting the intent of our FPRR	01/30/2019
		CR-2019-07066	NRC walk down observation	05/21/2019
		CR-2019-07153	NRC Question regarding beaker coordination of 1B23023	05/22/2019
		CR-2019-07380	Penetrations X-27-4-18 and X-27-4-19 (Unit 1 RB Elev 719') leaking gel	05/29/2019
		CR-2019-07537	PA-015 FP in E DG Bay has packing leak dripping roughly 1 drop every 2 minutes	05/31/2019
		CR-2019-07541	Housekeeping issue in Unit 1 Reactor Building Elevation 719' Identified by the NRC Resident	05/31/2019
	Drawings	C-1725	Reactor Building Fire Zone Plan of Protected Tray Raceway Elevation 779' 1"	Revision 2
		C-1725	Reactor Building Fire Protection Plan Elevation 779' 1'	Revision 5
		C-1725	Unit 1 Reactor Building Fire Doors and Fire Dampers Elevation 779' 1"	Revision 6
		C-1725	Unit 1 Reactor Building Fire Zone Plan Elevation 779' 1"	Revision 9
		C-1725	Unit 1 Reactor Building Fire Detector Location Plan Elevation 779' 1" to 799' 1"	Revision 6
		C-1725	Reactor Building Fire Zone Plan of Protected Conduit Raceway Elevation 779' 0"	Revision 2
		C-1726	Reactor Building Fire Detector Location Plan Elevation 799' 1" to 818' 1"	Revision 4
		FF62009	Fire Barrier Upgrade A1P075, A1P105, C1P107 & E1P005 Wrapped Raceways and JB2068	Revision 0
		HRC-10-1	Isometric – Yard Emergency Service Water – Unit 1 & 2	Revision 4
		HRC-2-53	Isometric – Yard RHR Service Water – Units 1 & 2	Revision 7
	Fire Plans	FP-113-125	Access Area (I-604) Adjoining Rooms (I-621, 620, 619, 606, 601) Fire Zones 1-6A, 1-61, 0-6G Elevation 779'-1"	Revision 5
		FP-113-125	Access Area (I-604) Adjoining Rooms (I-621, 620, 619, 606, 601) Fire Zones 1-6A, 1-61, 0-6G Elevation 779'-1'	Revision 5
	Miscellaneous		Fire Endurance Test Acceptance Criteria for Fire barrier Systems Used to Separate Redundant Safe Shutdown Trains Within the Same Fire Area	03/25/1994

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		2149189	Design Change Package, Install Sump Pumps in Vaults VA011 and VA012	Revision 2
		8856-M-208	Technical Specification for External Surface Treatment of Underground Steel Pipe for the Susquehanna Steam Electric Station Units 1 and 2	Revision 2
		EG263	Transient Combustibles in Crimp	Revision 1
		EPRM 2211054	Unit 2 Division I 125VDC Siemens/ITE Molded Case Circuit Breaker Electrical Testing	04/06/2019
		EPRM 2231580	Unit 2 Division II Siemens/ITE Molded Case Circuit Breaker Electrical Testing	03/27/2019
		ML042360547	NRC Regulatory Issue Summary 2005-07 Compensatory Measures to Satisfy the Fire Protection Program Requirements	04/19/2005
		NRC Information Notice 93-64	Periodic Testing and Preventive Maintenance of Molded Case Circuit Breakers	08/22/1993
		NUREG/CR-7135	Compensatory and Alternative Regulatory Measures for Nuclear Power Plant Fire Protection	August 2015
	Procedures	NDAP-QA-0443	Firewatch Procedure	Revision 14
		NDAP-QA-0446	Fire Barrier Program	Revision 8
		NSEI-AD-418	Miscellaneous Buildings Structural Monitoring	Revision 4
		SI-113-245	Annual Functional Test of Fire Protection Smoke Detectors for Fire Zones 1-6I and 1-6A	Revision 9