



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

February 11, 2022

Mr. Brad Berryman  
Senior Vice 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 05000387/2021004 AND  
05000388/2021004

Dear Mr. Berryman:

On December 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Susquehanna Steam Electric Station, Units 1 and 2. On January 27, 2022, 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.

One Severity Level IV violation without an associated finding is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

No NRC-identified or self-revealing findings were identified during this inspection.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as an NCV consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the 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 Susquehanna Steam Electric Station, Units 1 and 2.

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* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

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

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 05000387/2021004 AND  
05000388/2021004 DATED FEBRUARY 11, 2022

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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: 05000387/2021004 and 05000388/2021004

Enterprise Identifier: I-2021-004-0002

Licensee: Susquehanna Nuclear, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: 769 Salem Blvd., Berwick, PA

Inspection Dates: October 1, 2021, to December 31, 2021

Inspectors: C. Highley, Senior Resident Inspector  
M. Rossi, Resident Inspector  
H. Anagnostopoulos, Senior Health Physicist  
L. Casey, Senior Project Engineer  
J. DeBoer, Senior Emergency Preparedness Inspector  
T. Fish, Senior Operations Engineer  
T. Hedigan, Operations Engineer  
A. Patel, Senior Reactor Inspector  
M. Patel, Senior Reactor Inspector  
S. Seeley, Health Physicist  
A. Turilin, Reactor Inspector

Approved By: Jonathan E. Greives, Chief  
Projects Branch 4  
Division of Operator Reactor Projects

Enclosure

## 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 (ROP). The ROP 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. A licensee-identified non-cited violation (NCV) is documented in report section: 71114.05.

### List of Findings and Violations

Unit 1B Residual Heat Removal Service Water Pump Failure to Start When Being Placed into Service for Spray Pond Cooling Testing			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000387,05000388/2021004-01 Open/Closed	Not Applicable	71152
A Severity Level IV NCV of Unit 1 Technical Specification (TS) 3.7.1 was self-revealed following the Unit 1B residual heat removal service water (RHRSW) pump failure to start when being placed into service for spray pond cooling testing. Specifically, based on completion of investigation, it was determined that the inoperable condition existed for longer than allowed by TS 3.7.1.			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000387/2020-002-00	LER 2020-002-00 for Susquehanna Steam Electric Station, Unit 1, Inoperability of Unit 1B Residual Heat Removal Service Water Pump	71153	Closed
LER	05000387/2020-002-01	LER 2020-002-01 for Susquehanna Steam Electric Station Unit 1, Inoperability of Unit 1B Residual Heat Removal Service Water Pump Due to the Circuit Breaker Spring Charging Motor Contact Actuator Being Out of Adjustment	71153	Closed

## PLANT STATUS

Unit 1 began the inspection period at or near rated thermal power. On October 1, 2021, the unit was down powered to 63 percent for a control rod sequence exchange. The unit was returned to rated thermal power on October 10, 2021. On October 22, 2021, the unit was down powered to 66 percent due to loss of the off gas recombiner. The unit was returned to rated thermal power on October 24, 2021. On November 30, 2021, the unit was down powered to 80 percent for turbine valve testing and an automatic scram occurred during performance of the testing. The unit was returned to rated thermal power on December 12, 2021, and remained at or near rated thermal power for the remainder of the inspection period.

Unit 2 began the inspection period at or near rated thermal power. On October 8, 2021, the unit was down powered to 63 percent for a rod sequence exchange and scram time testing. On October 11, 2021, the unit was restored to 94 percent and subsequently the unit scrambled due to the opening of the 500kV synch breakers in the switchyard. The unit was returned to rated thermal power on October 24, 2021, and remained at or near rated thermal 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 activities described in IMC 2515, Appendix D, "Plant Status," conducted routine reviews using IP 71152, "Problem Identification and Resolution," observed risk significant activities, and completed on-site portions of IPs. 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

#### Seasonal Extreme Weather (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures for the following systems:

Reactor building, control building, and turbine building; heating, ventilation, and air conditioning systems; river intake de-icing system in operation; snow melt systems operational in various buildings; and heat trace systems for freeze protection function on emergency service water and service water pump house on November 4, 2021

#### 71111.04 - Equipment Alignment

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

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

- (1) Unit 1, standby liquid control system on October 5, 2021
- (2) Unit Common, 'C' emergency diesel generator during replacement of an Agastat relay on 'A' emergency diesel generator on November 24, 2021
- (3) Unit 1, automatic depressurization system during the high-pressure coolant injection maintenance window on December 9, 2021
- (4) Unit 2, secondary containment per SO-200-010, "Monthly Zone II Integrity Verification," Revision 35, on December 27, 2021

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

- (1) The inspectors evaluated system configurations during a complete walkdown of the Unit 1 reactor protection system on December 15, 2021.

#### 71111.05 - Fire Protection

##### Fire Area Walkdown and Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 2, reactor core isolation cooling pump room, 645-foot elevation, fire zone 2-1D, on November 9, 2021
- (2) Unit Common, 'A' radioactive waste treatment filter room, 676-foot elevation, within fire area W-1 and within fire zone 0-63A, on November 30, 2021
- (3) Units 1 and 2, control structure lower relay rooms, 698-foot elevation, fire zone 0-24D, G, on December 13, 2021
- (4) Unit 1, remote shutdown panel room and access area, 670-foot elevation, fire zone 1-2B, D, on December 15, 2021
- (5) Unit 2, condensate demineralizers A-H rooms, 676-foot elevation, fire zone 2-32H, on December 29, 2021

#### 71111.06 - Flood Protection Measures

##### Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Units 1 and 2, circulating, service, and fire water pump house on December 9, 2021

## 71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

### Requalification Examination Results (IP Section 03.03) (1 Sample)

- (1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam administered September to October 2021.

## 71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

### Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

- (1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered September to October 2020.

#### Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the facility licensee's annual requalification operating test.

#### Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the facility licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives.

#### Requalification Examination Security

The inspectors evaluated the ability of the facility licensee to safeguard examination material, such that the examination is not compromised.

#### Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

#### Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

#### Control Room Simulator

The inspectors evaluated the adequacy of the facility licensee's control room simulator in modeling the actual plant and for meeting the requirements contained in 10 CFR 55.46.



### Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

#### 71111.11Q - Licensed Operator Regualification 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 Unit 2 reactor startup to include criticality, point of adding heat, and establishment of the initial heat up rate on October 14, 2021.

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

- (1) The inspectors observed and evaluated just-in-time training of plant startup procedure GO-200-002, "Plant Startup Procedure," on October 13, 2021.

#### 71111.12 - Maintenance Effectiveness

##### Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components remain capable of performing their intended function:

- (1) Unit 1, 1A control rod drive pump breaker change out for upgraded motor cutout switches and failure to perform lube oil cooler end bell leak repair (cancelled) on December 27, 2021

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

##### Risk Assessment and Management (IP Section 03.01) (3 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Unit Common, increased plant risk due to emergent ground on 1B RHRSW pump on October 11, 2021
- (2) Unit Common, increased plant risk due to work window for spray pond nozzle cleaning on October 21, 2021
- (3) Unit Common, increased plant risk due to emergent 'C' emergency diesel generator work while in a T-10 transformer planned system outage window on November 1, 2021

## 71111.15 - Operability Determinations and Functionality Assessments

### Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Unit 1, ground on 1B RHRSW pump due to damaged cable and conduit during excavation as documented in CR-2021-13913, CR-2021-14625, and CR-2021-14630 on October 11, 2021
- (2) Unit 1, loss of the off gas recombiner due to low cooling water flow as documented in CR 2021-15222 on October 22, 2021
- (3) Unit Common, 'C' emergency diesel generator automatic transfer switch for 125VDC motor change out as documented in CR-2021-15514 on November 1, 2021
- (4) Unit Common, 'A' emergency diesel generator trip during the cooldown portion of the monthly operability run as documented in CR 2021-16532 on November 29, 2021
- (5) Unit Common, 'A' emergency diesel generator jacket water cooling system malfunctions as documented in CR-2021-17178 and CR-2021-17192 on December 9, 2021
- (6) Unit 2, 'A' RHRSW pump did not achieve required flow during surveillance as documented in CR-2021-15416 on December 14, 2021

## 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 Common, 'C' emergency diesel generator temporary modification on automatic transfer switch motor to leave installed but deenergized on November 1, 2021
- (2) Unit 1, isophase deionizing baffle permanent modification in the isophase bus ducting on December 22, 2021

## 71111.19 - Post-Maintenance Testing

### Post-Maintenance Test (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) Unit 1, 1A core spray system outage window performance for routine preventative maintenance (work order 2413135), core spray pump 'C' low flow check valve inspection (work order 1998797), and core spray pump room unit cooler cleaning and inspection on October 1, 2021
- (2) Unit 2, steam jet air ejector piping replacement during the forced outage on October 14, 2021
- (3) Unit 2, swing bus auto transfer switch repair with work orders 2476707-2 and 2476707-0 on October 29, 2021
- (4) Unit Common, 'C' emergency diesel generator automatic transfer switch for 125VDC motor change out PCWO 2477611-0 on November 1, 2021

- (5) Unit 1, reactor core isolation cooling system and breaker maintenance on November 23, 2021
- (6) Unit 1, high-pressure coolant injection planned maintenance on December 16, 2021

#### 71111.20 - Refueling and Other Outage Activities

##### Refueling/Other Outage (IP Section 03.01) (2 Samples)

- (1) The inspectors evaluated Unit 2 forced outage due to plant scram from October 11, 2021, to October 15, 2021.
- (2) The inspectors evaluated Unit 1 forced outage due to reactor scram from November 30, 2021, to December 5, 2021.

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

##### Surveillance Tests (other) (IP Section 03.01) (1 Sample)

- (1) Unit 1, SO-153-004, "Standby Liquid Control System," Revision 45, quarterly flow verification on October 6, 2021

##### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Unit Common, 'B' emergency diesel generator monthly operability test on October 4, 2021

##### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Emergency AC power generators 0G514, 0G515, and 0G516 run and load share testing on November 22, 2021

#### 71114.02 - Alert and Notification System Testing

##### Inspection Review (IP Section 02.01-02.04) (1 Sample)

- (1) The inspectors evaluated the following maintenance and testing of the alert and notification system on October 25 to 28, 2021, for the period of October 2019 to September 2021.

#### 71114.03 - Emergency Response Organization Staffing and Augmentation System

##### Inspection Review (IP Section 02.01-02.02) (1 Sample)

- (1) The inspectors evaluated the readiness of the Emergency Preparedness Organization on October 25 to 28, 2021, for the period of October 2019 to September 2021.

#### 71114.04 - Emergency Action Level and Emergency Plan Changes

##### Inspection Review (IP Section 02.01-02.03) (1 Sample)

- (1) The inspectors evaluated the following submitted Emergency Action Level and Emergency Plan changes:
  - Screening S2021-01-14-02, EP-RM-004, EAL Classification Basis, Revision 18
  - Screening S2021-08-26-01, EP-RM-004, EAL Classification Basis, Revision 19
  - Screening S2021-09-22-01, EP-RM-004, EAL Classification Basis, Revision 20
  - Screening S2020-08-05-01, Emergency Plan, Revision 64
  - Screening S2021-01-14-01, Emergency Plan, Revision 65

This evaluation does not constitute NRC approval.

#### 71114.05 - Maintenance of Emergency Preparedness

##### Inspection Review (IP Section 02.01 - 02.11) (1 Sample)

- (1) The inspectors evaluated the maintenance of the emergency preparedness program on October 25 to 28, 2021, for the period of October 2019 to September 2021.

#### 71114.06 - Drill Evaluation

##### Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) Emergency response organization performance in the technical support center for a simulated loss of offsite power and subsequent station blackout on December 14, 2021

### **OTHER ACTIVITIES – BASELINE**

#### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

##### MS06: Emergency AC Power Systems (IP Section 02.05) (2 Samples)

- (1) Unit 1 (July 1, 2020, through June 30, 2021)
- (2) Unit 2 (July 1, 2020, through June 30, 2021)

##### MS07: High-Pressure Injection Systems (IP Section 02.06) (2 Samples)

- (1) Unit 1 (July 1, 2020, through June 30, 2021)
- (2) Unit 2 (July 1, 2020, through June 30, 2021)

MS08: Heat Removal Systems (IP Section 02.07) (2 Samples)

- (1) Unit 1 (July 1, 2020, through June 30, 2021)
- (2) Unit 2 (July 1, 2020, through June 30, 2021)

MS09: Residual Heat Removal Systems (IP Section 02.08) (2 Samples)

- (1) Unit 1 (October 1, 2020, through September 30, 2021)
- (2) Unit 2 (October 1, 2020, through September 30, 2021)

MS10: Cooling Water Support Systems (IP Section 02.09) (2 Samples)

- (1) Unit 1 (October 1, 2020, through September 30, 2021)
- (2) Unit 2 (October 1, 2020, through September 30, 2021)

OR01: Occupational Exposure Control Effectiveness (IP Section 02.15) (1 Sample)

- (1) December 2020 through December 2021

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences Radiological Effluent Occurrences (IP Section 02.16)  
(1 Sample)

- (1) December 2020 through December 2021

EP01: Drill/Exercise Performance (IP Section 02.12) (1 Sample)

- (1) Unit Common (October 1, 2020, through September 30, 2021)

EP02: Emergency Response Organization Drill Participation (IP Section 02.13) (1 Sample)

- (1) Unit Common (October 1, 2020, through September 30, 2021)

EP03: Alert and Notification System Reliability (IP Section 02.14) (1 Sample)

- (1) Unit Common (October 1, 2020, through September 30, 2021)

71152 - Problem Identification and Resolution

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

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in procedural use and adherence that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (5 Samples)

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

- (1) Corrective actions taken to prevent the undocumented propping open of fire protection, high energy line break, and medium energy line break doors
- (2) 'C' diesel generator surveillance test failure
- (3) Corrective actions and extent of condition of the failure to start the Unit 1B RHRSW pump when being placed into service
- (4) Selected non-compliances with the licensee Cyber Security Plan
- (5) Control and calibration of maintenance and test equipment (M&TE)

#### 71153 - Follow Up of Events and Notices of Enforcement Discretion

##### Event Follow Up (IP Section 03.01) (2 Samples)

- (1) The inspectors evaluated the Unit 2 reactor scram and licensee's response on October 11, 2021.
- (2) The inspectors evaluated the Unit 1 reactor scram and licensee's response on November 30, 2021.

##### Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000387/2020-002-00, Inoperability of Unit 1B Residual Heat Removal Service Water Pump (ADAMS Accession No. ML20240A183) – The inspection conclusions associated with this LER are documented in this report under the Problem Identification and Resolution Section, IP 71152, Severity Level IV NCV 05000387/2021-004-01.
- (2) LER 05000387/2020-002-01, Inoperability of Unit 1B Residual Heat Removal Service Water Pump Due to the Circuit Breaker Spring Charging Motor Contact Actuator Being Out of Adjustment (ADAMS Accession No. ML21041A348) – The inspection conclusions associated with this LER are documented in this report under the Problem Identification and Resolution Section, IP 71152, Severity Level IV NCV 05000387/2021-004-01.

##### Reporting (IP Section 03.05) (1 Sample)

- (1) The inspectors evaluated the licensee's assessment of the fire in the unit 1 'B' steam packing exhaustor motor, 1K103B, as documented in CR 2021-14649 on October 9, 2021.

## **INSPECTION RESULTS**

Licensee-Identified Non-Cited Violation	71114.05
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 an NCV, consistent with Section 2.3.2 of the Enforcement Policy.	

Violation: 10 CFR 50.54(q)(2) requires, in part, that a licensee shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E to this Part and, for nuclear power reactor licensees, the planning standards of §50.47(b). 10 CFR 50.47(b)(15) requires that radiological emergency response training is provided to those who may be called on to assist in an emergency. Contrary to the above, from approximately 2012 to the present, the licensee failed to ensure that their non-licensed operators completed their annual Damage Control training as required by Table 9.1 of their Emergency Plan. This meant that the licensee had unqualified personnel, due to lapsed training, to respond to a radiological emergency. This represented a degraded planning standard function specifically 10CFR50.47(b)(15).

Significance/Severity: Green. The inspectors assessed the significance of the finding using IMC 0609, Appendix B. The inspectors determined that this finding was similar to the example in Table 5.15-1, Significance Examples §50.47(b)(15), which states “ERO [Emergency Response Organization] personnel would not be available (e.g., lapsed training) to provide continuous coverage (24 hours) for any ERO position listed in the licensee’s E-plan. Unqualified personnel (e.g., lapsed training) are maintained on the ERO duty roster and are relied upon to respond during an emergency.” Thus, the inspectors determined that the finding was of very low safety significance (Green).

Corrective Action References: CR 2021-14043

Unit 1B Residual Heat Removal Service Water Pump Failure to Start When Being Placed into Service for Spray Pond Cooling Testing			
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Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000387,05000388/2021004-01 Open/Closed	Not Applicable	71152

A Severity Level IV NCV of Unit 1 TS 3.7.1 was self-revealed following the Unit 1B RHRSW pump failure to start when being placed into service for spray pond cooling testing. Specifically, based on completion of investigation, it was determined that the inoperable condition existed for longer than allowed by TS 3.7.1.

Description: On July 1, 2020, the 1B RHRSW pump (1P506B) did not start in accordance with procedure OP-116-001 (RHRSW), Section 5.3 (RHRSW Loop B Startup - Unit 1 Pump to Unit 1 Heat Exchanger), when it was being placed into service for spray pond cooling. It was identified that the closing springs on the breaker for the 1B RHRSW pump never recharged when it was last cycled.

The inspectors reviewed the issue, condition report (CR), and the engineering evaluation performed by the licensee. The inspectors concluded that the breaker for the Unit 1B RHRSW pump was unable to successfully close due to the closing springs not being charged the last time the breaker was cycled. The last time the 1B RHRSW pump breaker was cycled was on June 21, 2020, in accordance with OP-116-001 (RHRSW), Section 5.3 (RHRSW Loop B Startup - Unit 1 Pump to Unit 1 Heat Exchanger). The motor cutoff switch, LS-1, did not experience full travel which led to the spring charging motor never re-charging the closing springs. This condition remained until the condition was identified by the licensee on July 1, 2020. The licensee was in Condition B of TS 3.7.1 for greater than the allowable 7 days.

The cause of the failure to charge was that the motor cutoff switch, LS-1, did not experience full travel. Based off vendor guidance, the licensee's corrective action program, post-maintenance program, and previous operational experience, there was no preventative maintenance planned or expected that would have prevented the failure of the LS-1. The inspectors determined that the maintenance plan for the breaker was appropriate and this was not a foreseeable event.

The breaker for the Unit 1B RHRSW pump has an indicator on the front face of the breaker which indicates if the closing springs are properly charged or not. This indicator, however, is not able to be seen when the compartment door is closed. The condition of the closing springs could only be verified if the breaker compartment door was open. The inspectors determined that it was not reasonably foreseeable for the licensee to identify that the closing springs were not charged.

Corrective Actions: Restored Unit 1 RHRSW to operable.

Corrective Action References: CR-2020-09452

Performance Assessment: The NRC determined this violation was not reasonably foreseeable and preventable by the licensee and therefore is not a performance deficiency.

Enforcement: Based off not having a performance deficiency, the use of the ROP is not appropriate. This is because the ROP does not specifically consider a violation without a performance deficiency in its assessment of licensee performance. Therefore, it is necessary to address this violation using traditional enforcement.

Severity: The NRC Enforcement Policy, Section 2.2.4, states, in part, that some aspects of violations at power reactors cannot be addressed solely through the significance determination process. In these cases, violations must be addressed separately from any associated ROP findings (when findings are present). Since there was not an identified performance deficiency, the violation will be addressed solely with traditional enforcement.

Section 6.1.d of the NRC Enforcement Policy provides examples of Severity Level IV violations. Section 6.1.d.1 states, in part, that failure to comply with the allowances for limiting condition for operation and surveillance requirement applicabilities in TS Section 3.0 is an example of a Severity Level IV violation. This is considered a Severity Level IV violation for a TS violation that impacts one of two RHRSW subsystems.

Violation: TS 3.7.1, RHRSW system and the ultimate heat sink, limiting condition for operation requires two RHRSW subsystems and the ultimate heat sink to be operable. TS 3.7.1 states, in part, that each RHRSW subsystem is made up of a header, one pump, a suction source, valves, piping, heat exchanger, and associated instrumentation. If an RHRSW subsystem is declared inoperable, TS 3.7.1, Condition B, requires the subsystem to be restored in 7 days.

Contrary to the above, from June 21, 2020, until the date of discovery, July 1, 2020, the Unit 1B RHRSW pump was inoperable for a period greater than 7 days.

The disposition of this violation closes LER 05000387/2020-002-00 and LER 05000387/2020-002-01.

Enforcement Action: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.



Observation: Semiannual Trend of Procedural Use and Adherence	71152
<p>The inspectors performed a review of the corrective action program CRs, action reports (ARs), and the associated corrective actions to assess an apparent trend associated with procedural use and adherence issues identified during daily review of the corrective action program. The inspectors reviewed 66 corrective ARs that were identified with procedural use and adherence trend codes from April 1 to December 20, 2021. The corrective actions that have been taken to address this trend were reviewed. Of note, three of the CRs documented occurrences in which implemented corrective actions were different than was directed in the original corrective action program documents (2021-11800, 2021-11785, and 2021-16481). These were identified during a self-assessment review in accordance with site process. Two CRs (2021-09642 and 2021-11401) documented issues with installation of housekeeping patches on emergency service water piping through wall leaks that did not conform with the direction of the engineering change. One occurred in June 2021 and the other in July/August 2021. Corrective action to change the NEPM-QA-1170 procedure to remove the requirement to issue a temporary engineering change to install the housekeeping patch was completed on December 17, 2021. However, the installation of the housekeeping patch for the emergency service water leak (CR-2021-17847) on December 27, 2021, appeared to not follow the advanced work authorization nor an appropriate work instruction. The site is taking action to address the above identified corrective action issues by reviewing departmental procedures to remove any contradictions and ensure the procedures compliment the required actions. Training has been performed with personnel to ensure that the process is known and followed when corrective actions cannot be completed as directed. The inspectors did not identify any violations or performance deficiencies.</p>	
Observation: Review of Corrective Action Taken to Prevent the Propping Open of Fire Protection, High Energy Line Break, and Medium Energy Line Break Doors without Following the Correct Process for Documentation	71152
<p>The inspectors reviewed 25 CRs and ARs associated with the failure to ensure that fire protection, high energy line break, and medium energy line break doors were properly controlled by station procedure. These types of doors, if not controlled appropriately, can lead to significant loss of safety systems during an event. Of the 25 CRs and ARs reviewed, there were 6 documented occurrences in which doors were propped open without proper paperwork. For each of these, immediate corrective actions included closing the door and/or completing the proper paperwork to allow for the door to remain open for the duration of the work. Additionally, the longer-term corrective actions taken to ensure personnel are trained on the process and procedure seemed to be reasonable. The inspectors did not identify any violations or performance deficiencies.</p>	
Observation: Review of the Control and Calibration of Maintenance and Test Equipment	71152
<p>The inspectors reviewed corrective actions associated with control of M&amp;TE due to seeing an apparent rise in CRs documenting failure during calibration, loss of M&amp;TE, and failure to return the M&amp;TE to the appropriate personnel, which can impact the validity of quality maintenance performed. Thirty-two CRs and ARs were reviewed, 20 of which appeared to be appropriately dispositioned. For 1 of the 32 corrective action program documents, the inspectors determined that it appeared a procedural use and adherence trend code and/or contractor trend code might be appropriate (2021-03745). DI-2021-06859 identified a trend during the Unit 2 outage of supplemental workers losing M&amp;TE, although it was eventually determined that only four of the eight potentially lost M&amp;TE were actually lost. In reviewing the occurrences, the licensee did not identify a gap with returning M&amp;TE in accordance with</p>	

site procedure. The inspectors also reviewed a self-assessment conducted by the licensee on the M&TE documented in DI-2021-00410. The self-assessment (DI-2021-00410) documented the review and assessment of numerous CRs and ARs, including some that were reviewed by the inspectors. Overall, the results showed that there was a total of 17 lost M&TE and 5 uncontrolled M&TE during the year. The self-assessment identified a corrective action to review the results by the maintenance manager and instrument and controls supervisor, which allowed for the documentation of a long-term corrective action in DI-2022-08774 to take additional actions, as necessary, to address the procedural use and adherence trend for the personnel accountability with lost M&TE. The inspectors did not identify any violations or performance deficiencies.

Observation: 'C' Diesel Generator Failure to Meet Fast Time Surveillance Requirements	71152
<p>The inspectors reviewed corrective actions related to the 'C' diesel generator not meeting fast start time surveillance test requirements on November 2, 2020. This problem was documented in CR-2020-15041 and CR-2020-15044. The licensee's evaluation concluded the delayed 'C' diesel generator start (17.9 seconds versus 10 seconds) was due to an air operated cylinder delayed repositioning to the "Fuel On" position during the test. This was affirmed through review of 'C' diesel generator surveillance test video recordings of the air operated cylinder. Based on the design of the system, the licensee concluded the cylinder not changing state was most likely due to its associated shuttle valves (USCV-9 and USY-9) not re-positioning, as designed, to apply air to the cylinder.</p> <p>The licensee replaced the two suspected shuttle valves and satisfactorily completed the surveillance test on November 5, 2020, with no observed delay in the cylinder repositioning to the "Fuel On" position. The licensee disassembled and examined both removed shuttle valves for signs that would indicate which of the two shuttle valves caused the problem. The visual examination did not identify conclusive evidence in either of the valve internals. As a result, the licensee staff concluded both valves remained as probable causes of the cylinder slow movement to the proper position.</p> <p>The inspectors determined the licensee staff used the appropriate corrective action program evaluation templates (failure mode analysis worksheet) from their procedures to identify the problem and evaluate with appropriate rigor to determine the likely causes and provide for corrective actions which in this case involved replacement of shuttle valves. The inspectors reviewed preventative maintenance activities to determine they were up to date. The inspectors also reviewed the results of subsequent 'C' diesel generator monthly surveillance tests up to and including November 2021 and did not identify issues that would indicate improper operation of the shuttle valves (USCV-9 and USY-9) or the air operated cylinder. Additionally, through review of system drawings, the inspectors independently confirmed that the air cylinder and shuttle valve operation was used in Testing Mode only of the 'C' diesel generator and this problem would not have affected the diesel generator ability to start and fulfill its design basis function if called upon in the emergency mode. The inspectors considered that the corrective actions were commensurate with the potential safety significance of the problem. This was in consideration that while no definite cause was identified by the licensee visual examination of the shuttle valves, the video evidence showed the problem involved cylinder operation, the shuttle valves involved were replaced, the 'C' diesel generator monthly surveillance tests were satisfactory from November 2020 to present (November 2021), and the emergency mode of operation was not affected by this problem.</p>	

Observation: Selected Non-Compliances with the Licensee Cyber Security Plan	71152
The inspectors identified a non-compliance with the licensee's nuclear Cyber Security Plan which resulted in a Green NCV. The results of the review are documented in Susquehanna Steam Electric Station, Units 1 and 2 - Cyber Security Problem Identification and Resolution Inspection Report 05000387/2021403 and 05000388/2021403 due to the information being security-related and non-publicly available.	

## EXIT MEETINGS AND DEBRIEFS

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

- On October 14, 2021, the inspectors presented the failure of the Unit 1B RHRSW pump breaker inspection results to Mr. Jerry Lubinsky, Station Engineering Manager, and other members of the licensee staff.
- On October 28, 2021, the inspectors presented the emergency preparedness program inspection results to Mr. Brad Berryman, President and Chief Nuclear Officer, and other members of the licensee staff.
- On December 9, 2021, the inspectors presented the cyber security problem identification and resolution inspection results to Mr. Derek Jones, Plant Manager, and other members of the licensee staff.
- On December 9, 2021, the inspectors presented the radiation safety performance indicator verification inspection results to Mr. Derek Jones, Plant Manager, and other members of the licensee staff.
- On December 21, 2021, the inspectors presented the annual problem identification and resolution 'C' diesel generator inspection results to Ms. Melisa Krick, Regulatory Affairs Manager, and other members of the licensee staff.
- On January 27, 2022, the inspectors presented the integrated inspection results to Mr. Brad Berryman, Senior Vice President and Chief Nuclear Officer, and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	NDAP-00-1913	Seasonal Readiness	Revision 15
71111.04	Drawings	E106253 SH1	Standby Liquid Control System	Revision 40
71111.05	Corrective Action Documents Resulting from Inspection		CR-2021-17538	
	Fire Plans	FP-013-139	Unit 1 Lower Relay Room (C 203), Fire Zone 0-24D, Elevation 689'-0"	Revision 10
		FP-013-142	Unit 2 Lower Relay Room (C 201), Fire Zone 0-24G, Elevation 698'-0"	Revision 8
		FP-013-313	Storage and Equipment Areas (R-220), Dewatering Rooms (R-225, R-227, R-230), Filter and Precoat Tank Room (R-226), Container Areas (R-222, R-223, R-224), Fire Zone 0-63A Elevation 676'	Revision 1
		FP-113-109	Remote Shutdown Panel Room (I-109), Access Area (I-102), Fire Zone 1-2B, 1-2D, Elevation 670'-0"	Revision 5
		FP-213-278	Sample Station (II-110) RFP, Turbine Rooms "C" (II-114), "B" (II-115), "A" (II-116), Demineralizer Equipment Area (II-128), Demin Vessel Rooms Fire Zone 2-32I, 2-32G, 2-32H, Elevation 676'-0"	Revision 5
71111.11Q	Procedures	GO-100(200)-002	Plant Startup Procedure	Revision 103
71111.12	Corrective Action Documents		2021-07415, 2021-14053	
	Work Orders		ERPM 2395752, PCWO 2263189	
71111.18	Engineering Changes	2449342	Perform Repair of Unit 1 Isophase Bus Deionizing Baffles	Revision 0
		TDC 2477154	Temporary Disable of the C DG MC 0B536 Auto Transfer Switch 0ATS536 Motor in Place	Revision 1
71111.19	Procedures	OP-206-A01	Monthly ESS Division 1 Swingbus	Revision 10
	Work Orders		ERPM 2324964, ERPM 2305651, ERPM 2305652, ERPM 2305653, ERPM 2333458, ERPM 2341987, ERPM 2342658, PCWO 2448344-0, ERPM 2337377, PCWO 2492613-2, PCWO 2494613-1, ERPM 2405769	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.22	Corrective Action Documents Resulting from Inspection		CR 2021-14537	
	Procedures	SO-024-001B, RTSV 2462760	Monthly Diesel Generator 'B' Operability Test	Revision 29
71114.05	Corrective Action Documents Resulting from Inspection		CR-2021-15293, CR-2021-15350, CR-2021-15427, CR-2021-15465, CR-2021-15469	
	Procedures		Emergency Plan	Revision 64
			Emergency Plan	Revision 65
71152	Corrective Action Documents		CR-2016-18468, CR-2020-95452, CR-2020-12099, CR-2020-13332, CR-2020-15041, CR-2020-15044, CR-2020-16165, CR-2021-03003	
	Corrective Action Documents Resulting from Inspection		AR-2021-14875, AR-2021-14928	
	Drawings	E-31	Sheet 9 Logic Diagram-Electrical System Diesel Generators A, B, C, D	Revision 6
		M30-124 Sh. 11B	DG Control Schematic Shutdown and Alarm Sys. for 0C521C	Revision 5
		M30-124 Sh. 1B	DG Control Schematic Starting Sequence Control Panel 0C521C	Revision 11
		M30-124 Sh. 2B	DG Control Schematic Starting Sequence Control Panel 0C521C	Revision 5
		M30-150 Sh. 1	Common Standby Generator Set Control Diagram	Revision 9
	Procedures	MT-GE-048	Cutler-Hammer Type DHP-VR 4.16kV Circuit Breaker and Switchgear Inspection and Maintenance	Revision 30
	Work Orders		1966637, 2052188, 2077950, 2167130, 2379084, 2382860-0, 2384117, 2390595, 2395332, 2403118, 2410756, 2419408, 2420601, 2429120, 2435366, 2442316, 2446679, 2453366, 2460287, 2468207, 2477612, 2479120	