



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

February 8, 2021

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 05000387/2020004 AND
05000388/2020004

Dear Mr. Berryman:

On December 31, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Susquehanna Steam Electric Station, Units 1 and 2. On January 28, 2021, the NRC inspectors discussed the results of this inspection with Mr. Kevin Cimorelli, Site Vice President, 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.

If you contest the violation or the significance or severity of the violation 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,

X /RA/

Signed by: Christopher Lally
Chris M. Lally, Acting 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 05000387/2020004 AND
 05000388/2020004 DATED FEBRUARY 8, 2021

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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: 05000387/2020004 and 05000388/2020004

Enterprise Identifier: I-2020-004-0023

Licensee: Susquehanna Nuclear, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, PA

Inspection Dates: October 1, 2020, to December 31, 2020

Inspectors: C. Highley, Senior Resident Inspector
M. Rossi, Resident Inspector
H. Anagnostopoulos, Senior Health Physicist
J. DeBoer, Reactor Inspector
P. Ott, Operations Engineer
A. Patel, Senior Reactor Inspector
N. Warnek, Senior Allegations Coordinator

Approved By: Chris M. Lally, Acting Chief
Reactor Projects Branch 4
Division of 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. 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

Failure to Meet the Requirements of 10 CFR 50.73 for Reportability Due to a Condition Prohibited by Technical Specifications			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Not Applicable	NCV 05000387/2020004-01 Open/Closed	Not Applicable	71153
The inspectors identified a Severity Level IV violation of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) 50.73, "Licensee Event Report System," for the licensee's failure to report within 60 days from discovering an existing condition prohibited by technical specifications (TSs). Specifically, the licensee failed to submit a licensee event report (LER) for exceeding 26 percent reactor power with two channels of the reactor protection system inoperable which is a condition prohibited by TS 3.0.4. The licensee entered this into the corrective action program (CAP) as condition report CR-2020-16405 and submitted LER 05000387/2020-003-00 dated December 21, 2020.			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at 100 percent power. On October 23, 2020, operators reduced reactor power to approximately 78 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on October 24, 2020. On November 5, 2020, operators reduced reactor power to approximately 97 percent for turbine valve testing and returned to 100 percent reactor power. On November 19, 2020, operators reduced reactor power to approximately 88 percent for turbine valve cycling and rod pattern adjustment and returned to 100 percent reactor power. On December 17, 2020, operators reduced reactor power to approximately 97 percent for a rod pattern adjustment and returned to 100 percent reactor power. The unit remained at or near 100 percent power for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent power. On October 4, 2020, operators reduced reactor power to approximately 91 percent for a rod pattern adjustment. Reactor power was returned to 100 percent on October 5, 2020. On October 6, 2020, operators reduced reactor power to approximately 60 percent due to loss of extraction steam to the 4A feed water heater and rod pattern adjustment. Reactor power was returned to approximately 100 percent on October 8, 2020. On October 9, 2020, operators reduced reactor power to approximately 85 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on October 10, 2020. On October 16, 2020, operators reduced reactor power to approximately 87 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on October 17, 2020. On October 22, 2020, operators reduced reactor power to approximately 85 percent for a rod pattern adjustment. The unit was returned to 100 percent on October 23, 2020. On October 30, 2020, operators reduced reactor power to approximately 65 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on November 1, 2020. On November 6, 2020, operators reduced reactor power to approximately 95 percent for a rod pattern adjustment and returned to 100 percent reactor power. On November 13, 2020, operators reduced reactor power to approximately 95 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on November 14, 2020. On November 18, 2020, operators reduced reactor power to approximately 90 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on November 19, 2020. On December 4, 2020, operators reduced reactor power to approximately 70 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on December 6, 2020. On December 11, 2020, operators reduced reactor power to approximately 75 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on December 13, 2020. On December 18, 2020, operators reduced reactor power to approximately 87 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on December 19, 2020. On December 27, 2020, operators reduced reactor power to approximately 70 percent for a rod pattern adjustment. The unit was returned to 100 percent reactor power on December 29, 2020. The unit 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 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. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D, observed risk significant activities, and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

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:
 - Emergency service water and spray pond network
 - Residual heat removal service water (RHRSW)
 - Blue Max emergency alternating current power system

71111.04 - Equipment Alignment

Partial Walkdown (IP Section 03.01) (2 Samples)

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

- (1) Unit Common, 'A', 'B', 'D', and 'E' emergency diesel generators during 'C' emergency diesel generator and startup transformer T-20 work windows on October 14, 2020
- (2) Unit 2, emergency core cooling system components during 'B' residual heat removal (RHR) system outage on November 12, 2020

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 Common, 'C' emergency diesel generator bay (FZ 0-41C) after oil system maintenance on October 20, 2020

- (2) Unit 2, high-pressure coolant injection (FZ 2-1C) and 'A' RHR pump (FZ 2-1F) rooms on November 10, 2020
- (3) Unit Common, main control room (FZ 0-26H, N, and P) on November 17, 2020
- (4) Unit 1, control structure, 698-foot elevation, general area (FZ 0-24C, D, L, and M), during instrumentation and control and operations surveillance testing on November 19, 2020
- (5) Unit Common, refueling floor (FZ 0-8A) on November 24, 2020

Fire Brigade Drill Performance (IP Section 03.02) (1 Sample)

- (1) Unit 1 announced fire drills: control structure (698-foot elevation), computer room, and lower cable spreading room (714-foot elevation) on December 11, 2020

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 requalification exam results for the annual operating exam and biennial written exam on October 29, 2020

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 Unit 1 control room during control rod sequence exchange on October 23, 2020

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

- (1) The inspectors observed and evaluated Examination 009, Revision 0, on October 14, 2020

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, 'B' RHRSW due to multiple maintenance preventable functional failures on October 19, 2020

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, reactor vessel level functional test with automatic depressurization system permissive when U1 RHRSW inoperable due to 1A RHR heat exchanger RHRSW outlet PSV 11213A leak on October 5, 2020
- (2) Unit Common, elevated risk to electrical systems during coincident 'C' emergency diesel generator and startup transform T-20 system maintenance windows on October 13 to 15, 2020
- (3) Unit 2, elevated risk (Yellow) for 'A' RHR isolation at the end of reactor coolant isolation cooling station outage window on October 29, 2020

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 2, 2A core spray unit cooler emergency service water downstream return isolation valve through wall leak past operability October 1, 2020
- (2) Unit 1, CR-2020-13059, testing light did not extinguish as expected during main steam isolation valve testing on October 2, 2020
- (3) Unit 1, 1A RHR heat exchanger RHRSW outlet valve (PSV 11213A) leak by on October 5, 2020
- (4) Unit Common, 'C' emergency diesel generator failure of monthly operability surveillance (SO-024-001C) due to not achieving an acceptable start time on November 2, 2020
- (5) Unit 1, main steam bypass valves opened during turbine valve cycling surveillance test on December 17, 2020
- (6) Unit Common, wooden framed filters found in the control building ventilation system that supports the control room envelope on December 28, 2020

71111.19 - Post-Maintenance Testing

Post-Maintenance Test (IP Section 03.01) (4 Samples)

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

- (1) Unit 1, 1A PSV 11213A, 1A RHR heat exchanger RHRSW outlet relief valve replacement following failure on October 5, 2020 (PCWO 2375725-0)
- (2) Unit Common, 'C' emergency diesel generator lube oil modification installation on October 13 to 19, 2020

- (3) Unit 2, reactor coolant isolation cooling maintenance window for work orders 2280539 and 2318486 on October 27, 2020
- (4) Unit 2, 'B' traversing incore probe repair on November 10, 2020

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

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

- (1) Unit 1, turbine valve, stop valve, and control valve surveillance on November 19, 2020

Inservice Testing (IP Section 03.01) (2 Samples)

- (1) Unit 2, high pressure coolant injection quarterly flow surveillance on December 9, 2020, following valve and breaker repairs
- (2) Unit Common, 'D' emergency diesel generator monthly operability run on December 14, 2020

FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Unit Common, FLEX and B.5.b fire pump truck deployment and operation at the spray pond on November 12, 2020

RADIATION SAFETY

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01) (2 Samples)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

- (1) 'B' train of the control structure heating, ventilation, and air conditioning
- (2) The Unit 2 reactor building heating, ventilation, and air conditioning

Temporary Ventilation Systems (IP Section 03.02) (2 Samples)

The inspectors evaluated the configuration of the following temporary ventilation systems:

- (1) Hot shop 50-inch lathe and Kelly building enclosure
- (2) Welding booth

Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's use of respiratory protection devices

Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated the licensee's use and maintenance of self-contained breathing apparatuses

71124.04 - Occupational Dose Assessment

External Dosimetry (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to external dosimetry that is used to assign occupational dose

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

- (1) Unit 1 (October 1, 2019, to September 30, 2020)
- (2) Unit 2 (October 1, 2019, to September 30, 2020)

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

- (1) Unit 1 (October 1, 2019, to September 30, 2020)
- (2) Unit 2 (October 1, 2019, to September 30, 2020)

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

- (1) November 1, 2019, to November 1, 2020

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

- (1) November 1, 2019, to November 1, 2020

71152 - Problem Identification and Resolution

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

- (1) The inspectors reviewed the licensee's CAP for potential adverse trends that might be indicative of a more significant safety issue

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

The inspectors reviewed the licensee's implementation of its CAP related to the following issues:

- (1) Response to a chilled work environment in the radiation protection department

- (2) Self-assessment plan of the plant floor drain system design and maintenance
- (3) Selected Non-Compliances with the Susquehanna Cyber Security Plan

INSPECTION RESULTS

Observation: Review of the Licensee’s Self-Assessment Plan of the Plant Floor Drain System Design and Maintenance	71152
<p>The inspectors reviewed a self-assessment and associated corrective actions that were completed by the licensee staff. The self-assessment evaluated whether the technical bases for the floor drain flow rate stated in their plant calculations for Units 1 and 2 bounded plant configurations, and whether routine preventative maintenance on the floor drain system is effective to prevent blockage.</p> <p>The licensee’s evaluation included an extent of condition review to identify all drain piping configurations on Units 1 and 2 that could potentially be challenged due to blockages during an internal flood event. The licensee staff performed detailed calculations to confirm that their draining configurations protected safety-related equipment even with a certain percent blocked. The licensee staff also revised their maintenance procedures to improve their ability to detect and clean the drain piping going forward.</p> <p>The inspectors reviewed the self-assessment, extent of condition review, revised maintenance procedures, relevant action reports, and interviewed the responsible system engineer and licensee subject matter expert on the topic. Based on the documents reviewed and discussions with personnel, the inspectors determined the licensee's evaluation of the issue was adequate and provided for corrective actions commensurate with the safety significance of the problem. No performance deficiencies were identified.</p>	

Observation: Semi-Annual Trend Review	71152
<p>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 the licensee 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 the licensee's CAP evaluated and responded to individual issues identified by the NRC inspectors during routine plant walkdowns and daily condition report reviews.</p> <p><u>Adverse Human Performance Trend</u></p> <p>In continued monitoring of the human performance error trend from the preceding semi-annual trend, the inspectors closely tracked human performance errors spanning the final two quarters of 2020. In the second half of 2020, there were 302 condition reports generated by the licensee with the human performance trend code assigned, versus 206 condition reports generated in 2019. The inspectors chose several notable examples of this issue:</p> <ul style="list-style-type: none"> • The inspectors reviewed the circumstances and corrective actions related to the failure to make a required limiting condition of operation (LCO) entry during a maintenance window, as documented in CR-2020-10391. On July 23, 2020, while performing maintenance on the Unit 2 'A' core spray unit cooler, operators failed to 	

enter LCO 3.7.2 Condition C due to the loss of system integrity. Operations staff later identified the failure to make the required entry, which resulted in an operations crew clock reset for human performance errors. During the affected time period, there was no loss of safety function, and the allowed outage time was not exceeded. This event constitutes a licensee-identified minor performance deficiency because the failure to enter the required action statement for an LCO not met did not adversely impact the mitigating systems cornerstone.

- The inspectors reviewed the circumstances and corrective actions related to an incorrect assignment of a maintenance rule functional failure, as documented in CR-2020-12484. On September 9, 2020, the 1B RHRSW pump indicated that the charging springs failed to charge upon securing the pump, resulting in unavailability of the pump. The station incorrectly assigned the event as “No” for maintenance rule functional failure, until NRC inspectors questioned the validity of this designation, resulting in a correction to the event code, and assigning a human performance error to the system engineer. The station did not exceed any equipment performance criteria as a result of this event.
- The inspectors reviewed the circumstances and corrective actions related to improper designation of protected equipment, as documented in CR-2020-15548. On November 10, 2020, the NRC inspectors questioned the protected equipment scheme and in-field labeling associated with a Unit 2 RHR maintenance window. Upon further review by the station, the protected equipment postings should have been, but were not, placed on some of the key components of the intended protected equipment scheme. This event resulted in an operations crew clock reset for human performance errors, and the station released communications stressing the importance of in-field protected equipment postings. This event constitutes an NRC-identified minor performance deficiency because while the station failed to meet the Protected Equipment Procedure, NDAP-QA-0340, and to fully implement risk mitigating actions, no work or equipment manipulations were performed in the affected spaces.
- The inspectors reviewed the circumstances and corrective actions related to an on-site motor vehicle accident, as documented in CR-2020-15670. On November 15, 2020, a security officer was operating a mobile patrol vehicle within the protected area and was adjusting the portable radio device when the officer struck a light fixture. The station determined that the distraction of making equipment adjustments resulted in the accident and vehicle damage. The station initiated a prompt investigation, assigned a crew clock reset to Security for the human performance error, and released a rapid communication to staff emphasizing expectations and requirements when operating vehicles and equipment.

Observation: Selected Non-Compliances with Susquehanna Cyber Security Plan | 71152

During the Susquehanna Steam Electric Station, Units 1 and 2 cyber security inspection completed in November 2018, six non-compliances with the cyber security plan were identified as documented in Susquehanna Cyber Security Inspection Report 05000387/2018403 and 05000388/2018403 (ADAMS Accession No. ML18341A114). Five NRC-identified and one licensee-identified non-cited violations were documented.

The scope of this inspection evaluated the licensee’s initial, interim, and long-term corrective actions and extent of condition related to the five non-cited violations that were attributed to the licensee’s specific implementation of the cyber security plan. These issues were documented in the licensee’s CAP as CR-2018-17002, CR-2018-17021, CR-2018-17023,

CR-2018-17026, and CR-2018-17028. The inspectors reviewed the cause analysis, technical evaluations performed, and the corrective actions taken and planned. The inspectors assessed the licensee's problem identification threshold, prioritization of the issues, apparent cause analyses, use of operating experience, and timeliness of corrective actions.

The results of the review are documented in NRC Inspection Report 05000387/2020403 and 05000388/2020403 due to the information being security-related and non-publicly available.

Observation: Licensee's Response to a Chilled Work Environment in the Radiation Protection Department

71152

The NRC performed a remote inspection from November 2 to 13, 2020, to review the licensee's response to a chilled work environment in the radiation protection (RP) department. The chilled work environment was identified by the licensee in 2019 during an independent investigation that was commissioned by the site in response to indications of work environment problems. The licensee subsequently conducted a Level 2 CAP evaluation and implemented corrective actions to address the chilled work environment. The purpose of the inspection was to assess the licensee's identification, evaluation, and corrective actions taken in response to the chilled work environment. The inspectors interviewed 18 members of the RP organization and reviewed relevant documentation including the licensee's investigation report, Level 2 CAP evaluation, and other corrective action documentation.

The NRC defines a safety conscious work environment as a work environment in which employees are encouraged to raise safety concerns, are free to raise concerns to both their management and NRC without fear of retaliation, where concerns are promptly reviewed, given the appropriate priority, and are appropriately resolved, and where timely feedback is provided. A chilling effect is defined as a condition that occurs when an event, interaction, decision, or policy change results in a perception that the raising of safety concerns to the employer or to the NRC is being suppressed or is discouraged. A chilled work environment is a condition where the chilling effect is not isolated (e.g., multiple individuals, functional groups, shift crews, or levels of workers within the organization are affected). A chilled work environment is often referred to as a condition that is the opposite of a safety conscious work environment.

The inspectors determined that the licensee appropriately identified apparent and contributing causes and developed corrective actions to address the chilled work environment. A new RP manager was hired and tasked with creating an RP recovery plan. The plan emphasized the creation of opportunities for open dialogue between staff, supervisors, and managers, and was instrumental in establishing an environment in which individuals felt comfortable speaking up and trusting their voices would be heard. The inspectors determined that the licensee had, at the time of this inspection, restored a healthy safety conscious work environment in the RP department, specifically:

- Environment for Raising Concerns: RP staff expressed a willingness to raise radiological safety, nuclear safety, and quality issues via CRs and directly to supervision. None of the interviewees expressed that they had experienced or were aware of someone else receiving a negative response to a CR, a supervisor/manager trying to reword a CR, or being challenged as to whether a CR should have been written. Trending data demonstrated that RP staff was generating CRs at a significantly higher rate than in 2019.

- Evaluation of Issues: RP staff expressed that, in general, radiological and nuclear safety concerns are addressed adequately and in a timely manner. A few examples were cited in which RP technicians were not satisfied with the timeliness or final disposition of issues; however, these items generally dealt with lower level equipment and procedural issues for which the station was experiencing backlogs. No items of regulatory significance were identified.
- Concern/Issue Feedback: RP staff stated that, in general, they receive in-person feedback on issues important to safety, especially those raised directly to a supervisor or manager. Some technicians stated they did not consistently receive feedback on lower-level items that were entered directly into the CAP.

The licensee's CAP evaluation recognized that they had missed opportunities to detect the chilled work environment earlier. Corrective actions were developed to make the employee concerns program more proactive, establish work environment metrics, and re-establish the employee concerns oversight team. The inspectors noted these actions should provide earlier indication of work environment challenges at the site and allow for easier detection of developing issues.

The NRC concluded that the licensee adequately identified, evaluated, and addressed the work environment challenges in the RP department. No findings or violations were identified during this inspection.

Failure to Meet the Requirements of 10 CFR 50.73 for Reportability Due to a Condition Prohibited by Technical Specifications			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000387/2020004-01 Open/Closed	Not Applicable	71153
The inspectors identified a Severity Level IV violation of 10 CFR 50.73, "Licensee Event Report System," for the licensee's failure to report within 60 days from discovering an existing condition prohibited by TSs. Specifically, the licensee failed to submit an LER for exceeding 26 percent reactor power with two channels of the reactor protection system inoperable which is a condition prohibited by TS 3.0.4. The licensee entered this into the CAP as condition report CR-2020-16405 and submitted LER 05000387/2020-003-00 dated December 21, 2020.			
<u>Description:</u> On May 9, 2020, operators at Susquehanna Steam Electric Station (SSES), Unit 1, were raising power following a maintenance outage. At approximately 15:19, with reactor power at 24 percent rated thermal power, operators withdrew control rods to raise power to approximately 28 percent rated thermal power. SSES TS LCO 3.3.1.1, "Reactor Protection System Instrumentation," requires that turbine stop valve (TSV) and turbine control valve (TCV) instrumentation be operable (i.e., not bypassed) at greater than or equal to 26 percent rated thermal power. However, at approximately 15:23, Unit 1 reached 26 percent rated thermal power and the TSV and TCV instrumentation was still bypassed. Operators immediately stopped withdrawing control rods, declared the TSV and TCV instrumentation inoperable, and entered Conditions A and B of LCO 3.3.1.1. Unit 1 was brought below 26 percent rated thermal power at approximately 15:37, thereby exiting Conditions A and B of LCO 3.3.1.1 after approximately 14 minutes.			
Subsequent to reducing power below 26 percent rated thermal power, operators discovered			

two steam leaks on instrument piping lines SPDCD117-2 (specifically from Field Weld-10 (FW-10)) and JD-5-3-1A (specifically from FW-60). These leaks resulted in the instrument lines being unable to provide adequate steam pressure to turbine instrument sensing lines and were determined to have rendered the TSV and TCV instrumentation inoperable during startup. The operators repaired the leaks by installing new socket welds on May 11, 2020, and resumed power ascension.

The completion times associated with LCO 3.3.1.1, Required Actions A.1 and B.1 (12 hours and 6 hours, respectively), were not exceeded. However, SSES TS LCO 3.0.4 prohibits entering a mode of applicability (i.e., reaching 26 percent rated thermal power) without meeting all required LCOs. Based on the investigation and determined cause for this condition, the instrumentation piping likely failed, rendering the TCV and TSV instrumentation inoperable, prior to entry into the Mode of Applicability for LCO 3.3.1.1. As such, this event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS.

Corrective Actions: Four condition reports were written to document the material condition and the plant condition/procedural issue. Condition report CR-2020-16405 was written to document the failure to report the condition prohibited by TS. The corrective actions taken were to submit the LER, which was originally due 60 days after the event on May 9, 2020, but was submitted on December 21, 2020.

Corrective Action References: CR 2020-16405, CR-2020-07186, CR-2020-07187, and CR-2020-07201.

Performance Assessment: The NRC determined that this violation was associated with a previously documented finding assessed using the significance determination process.

Enforcement: The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter non-compliance.

Severity: The failure to make reports to the NRC as required by 10 CFR 50.73(a)(2)(i)(B) impacted the regulatory process and was a violation of NRC requirements. The violation was processed using traditional enforcement and determined to be a Severity Level IV violation consistent with NRC's Enforcement Policy section 6.9.d.9, "Inaccurate and Incomplete Information or Failure to Make a Required Report."

Violation: 10 CFR 50.73(a)(2)(i)(B) requires, in part, that the holder of an operating license shall submit an LER within 60 days of discovery of the event, which includes any operation or condition which was prohibited by TSs. Susquehanna Unit 1 TS 3.0.4 requires, in part, "When an LCO is not met, entry into a mode or other specified condition in the Applicability shall only be made: a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited time; b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of the risk management actions, if appropriate, exceptions to this Specification are stated in the individual Specification; or c. When an allowance is stated in the individual value, parameter, or other Specification. Susquehanna Unit 1 TS LCO 3.3.1.1, "Reactor Protection System Instrumentation," requires that TSV and TCV instrumentation be operable (i.e., not bypassed) at greater than or equal to

26 percent rated thermal power.

Contrary to the above, the licensee failed to submit an LER within 60 days from the discovery of the existing condition prohibited by the plant's TS. Specifically, the licensee failed to submit an LER within 60 days of entering a mode of applicability (i.e., reaching 26 percent rated thermal power) without having the TSV and TCV instrumentation operable.

Enforcement Action: This violation is being treated as a 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 November 13, 2020, the inspectors presented the response to a chilled work environment in the radiation protection department inspection results to Mr. Brad Berryman, Senior Vice President and Chief Nuclear Officer, and other members of the licensee staff.
- On November 19, 2020, the inspectors presented the in-plant airborne radioactivity control and mitigation inspection results to Mr. Kevin Cimorelli, Site Vice President, and other members of the licensee staff.
- On November 19, 2020, the inspectors presented the internal flooding problem identification and resolution inspection results to Mr. Dave Ambrose, General Manager of Engineering, and other members of the licensee staff.
- On November 19, 2020, the inspectors presented the cyber security problem identification and resolution inspection results to Mr. Dave Ambrose, General Manager of Engineering, and other members of the licensee staff.
- On January 28, 2021, the inspectors presented the integrated inspection results to Mr. Kevin Cimorelli, Site Vice President, and other members of the licensee staff.

THIRD PARTY REVIEWS

Inspectors reviewed Institute on Nuclear Power Operations (INPO) report in July 2020 for the INPO report timeframe of November 2017 to December 2019.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Corrective Action Documents Resulting from Inspection	CR-2020-15472	NRC Question Regarding Steam Leak Impacts to HPCI Components	11/10/2020
		CR-2020-15548	NRC Resident Question on Protected Equipment Scheme During U2 RHR SOW	11/10/2020
71111.05	Corrective Action Documents	CR-2020-13975	Emergency Lighting Battery E7-12 in the Main Control Room Is Warm and Smells of Sulfur	10/11/2020
	Corrective Action Documents Resulting from Inspection	CR-2020-16082	NRC Resident Question about Execution of Fire and B.5.b Plans	11/24/2020
		CR-2020-16086	NRC Resident Identified Trash Containers Filled Above Flame Arrestor Lids	11/24/2020
		CR-2020-16087	NRC Resident Identified Improperly Secured Combustible Storage Locker	11/24/2020
	Fire Plans	FP-013-132	Common Refueling Floor	Revision 4
		FP-013-138	Unit 1, UPS Panel Room	Revision 6
		FP-013-139	Unit 1, Lower Relay Room	Revision 9
		FP-013-144	North Center and South Cable Chases	Revision 7
		FP-013-155	Unit Common, Main Control Room Fire Plan	Revision 8
		FP-013-195	Unit Common, Diesel Generator Bay 'C'	Revision 5
		FP-213-238	Unit 2, HPCI Pump Room	Revision 5
		FP-213-241	Unit 2, RHR Pump Room 'A'	Revision 6
71111.11Q	Procedures	GO-100-012	Power Maneuvers	Revision 57
71111.12	Corrective Action Documents	CR-2020-09452	1B RHRSW Pump Failed to Start	07/01/2020
		CR-2020-12484	Field Operator Reports 1B RHRSW Charging Springs Discharge	09/08/2020
	Corrective Action Documents Resulting from Inspection	CR-2020-12680	NRC Inspector Identified Incorrect MRFF Code Applied to CR-2020-12484	09/14/2020
	Procedures	NSEP-AD-0413D	Maintenance Rule - Performance Monitoring	Revision 7
71111.13	Procedures	SI-183-208	Unit 1, Quarterly Functional Test - Reactor Vessel Water Low-Low Level 3	Revision 19
		SI-283-208	Unit 2, Quarterly Functional Test - Reactor Vessel Water	Revision 19

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Low-Low Level 3	
71111.15	Corrective Action Documents	CR 2020-15041		
		CR-2020-05779		
		CR-2020-13627		
		CR-2020-13697		
		CR-2020-15044		
		CR-2020-15303	All 5 U1 Bypass Valve Cycled Open During Turbine Valve Cycling SO	11/05/2020
	CR-2020-17249			
	Operability Evaluations	ACT-01-CR-2020-17249	Prompt Operability Determination	Revision 0
	Procedures	GO-100-002	Plant Startup Procedure	Revision 115
71111.19	Corrective Action Documents Resulting from Inspection	CR 2020-14815		
	Procedures	SO-250-002	Quarterly RCIC Flow Verification	Revision 58
		SR-278-012	Unit 2, LPRM Calibration and Validation	11/16/2020
	Work Orders	PCWO 2258325	Work Order for Modification to 'C' EDG Oil System	10/13/2020
		PCWO 2374383-2	2B TIP Detector Replacement Alternate TIP Room Blocking	11/05/2020
		PCWO 2375725-0	PSV11223A RHR HX A RHRSW Pressure Relief PSV Setup & Test per MT-GM-005 and NDAP-QA-0423	10/05/2020
		RTSV 2374345	Performance of 'C' Diesel Monthly Operability Test, SO-024-001C	10/17/2020
	WO 2384231-0 Att. G	Unit 1, Risk Management Challenge Board for EHC Troubleshooting and Repair Following Inadvertent Opening of Bypass Valves During Valve Cycling	11/17/2020	
71111.22	Corrective Action Documents	CR-2020-15328		
	Procedures	DC-B5B-001	Spray/Makeup to the Spent Fuel Pools Using Portable Pump Truck	Revision 21
SO-193-001		Quarterly Turbine Valve Cycling	Revision 51	
	Work Orders	RTSV 2369881	HPCI Quarterly Flow Surveillance	12/09/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152	Corrective Action Documents Resulting from Inspection	AR-2020-15914		
	Self-Assessments	DI-2020-08830		07/23/2020
71153	Corrective Action Documents	CR-2020-06920	Unit 1 Automatic Reactor Scram Due to Main Turbine Trip	05/03/2020