



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

May 13, 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 05000387/2019001 AND
05000388/2019001

Dear Mr. Berryman:

On March 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Susquehanna Steam Electric Station, Units 1 and 2. On April 5, 2019, the NRC inspectors discussed the results of this inspection with Mr. Derek Jones, Plant Manager, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

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

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

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:
Inspection Report 05000387/2019001 and
05000388/2019001

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SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 –
 INTEGRATED INSPECTION REPORT 05000387/2019001 AND
 05000388/2019001 DATED MAY 13, 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: 05000387/2019001 and 05000388/2019001

Enterprise Identifier: I-2019-001-0035

Licensee: Susquehanna Nuclear, LLC (Susquehanna)

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, PA 186036828

Inspection Dates: January 1, 2019 to March 31, 2019

Inspectors: L. Micewski, Senior Resident Inspector
T. Daun, Resident Inspector
J. Furia, Senior Health Physicist
M. Rossi, Resident Inspector

Approved By: Jonathan E. Greives, Chief
Reactor Projects Branch4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Quarterly inspection at Susquehanna, 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

List of Findings and Violations

Inadequate Engagement of the Reactor Core Isolation Cooling (RCIC) Turbine Trip Latch			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000388/2019001-01 Open/Closed	[P.5] - Operating Experience	71111.04
<p>The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when the procedures used to reset the RCIC turbine following surveillance testing did not include sufficient acceptance criteria to determine that the turbine reset had been satisfactorily accomplished. Specifically, after tripping the RCIC turbine following a routine flow surveillance, the surveillance procedure did not ensure that the turbine trip mechanism had adequate engagement to prevent tripping the system on a subsequent system startup.</p>			

Swing Bus Automatic Transfer Switch Failure due to Improper Maintenance Activities			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000387/2019001-02 Open/Closed	[P.2] - Evaluation	71111.12
<p>A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were self-revealed when the safety-related automatic transfer switch (ATS) associated with the division 2 low-pressure coolant injection (LPCI) swing bus failed to transfer during its monthly surveillance test. The cause of the failure was attributed to the work instructions used during the previous cleaning of the ATS not providing sufficient detail to properly clean and lubricate the ATS, which resulted in a build-up of oxidation of the contact swivel hinge causing it to bind.</p>			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at 100 percent power. On January 4, 2019, operators reduced power to approximately 67 percent to perform a rod pattern adjustment. Full power was achieved again on January 5, 2019. On February 8, 2019, operators reduced power to approximately 78 percent to perform a rod pattern adjustment. Full power was achieved again on February 10, 2019. On March 8, 2019, operators reduced power to approximately 65 percent to perform a rod sequence exchange. Full power was achieved again on March 9, 2019. Unit 1 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 January 11, 2019, operators reduced power to approximately 70 percent to perform a rod pattern adjustment and control rod stroke time testing. Full power was achieved again on January 12, 2019. On January 18, 2019, operators reduced power to approximately 75 percent to perform a rod pattern adjustment and control rod stroke time testing. Full power was achieved again on January 19, 2019, and operators commenced end-of-cycle coast down for the remainder of the cycle. On March 22, 2019, operators commenced reducing power from 80 percent for a planned refueling outage. Unit 2 reached Mode 4 on March 23, 2019, and remained shut down 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

Impending Severe Weather Sample (IP Section 03.03) (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for a winter storm warning on March 2, 2019.

71111.04 - Equipment Alignment

Partial Walkdown (IP Section 03.01) (3 Samples)

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

- (1) Unit 2, RCIC following inoperability of latch hook overspeed trip mechanism on January 25, 2019
- (2) Unit 1, division 1 emergency service water (ESW) during division 2 pipe replacement on February 11, 2019
- (3) Unit 2, division 2 shut down cooling during division 1 work window on March 28, 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, standby liquid control area (fire zone 1-5AS) on January 9, 2019
- (2) Unit 1, reactor building 779' access area (fire zone 1-6A) on January 23, 2019
- (3) Unit 1, reactor building 779' fuel pool holding tank room (fire zone 1-6I) on January 25, 2019
- (4) Unit 2, drywell (fire zone 2-4F) on March 25, 2019
- (5) Unit 2, reactor building main steam pipeway (fire zone 1-4G) on March 26, 2019

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)

The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 shutdown for refueling outage on March 22–23, 2019.

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

The inspectors observed and evaluated licensed operator requalification training in the simulator on February 12, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

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

- (1) RCIC maintenance rule functional failure determination on March 6, 2019
- (2) 10 CFR 50.65 (a)(1) determination for LPCI swing bus ATS on March 11, 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, fire risk management implementation during division 2 core spray system outage window on January 9, 2019
- (2) Unit 1, risk management activities during division 2 ESW piping replacement on February 11, 2019
- (3) Unit 2, yellow risk following failure of spray pond isolation valve to open during surveillance testing on March 16, 2019
- (4) Unit 2, yellow risk due to de-inerting primary containment on March 22, 2019

71111.15 - Operability Determinations and Functionality Assessments

Sample Selection (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Unit 2, inadequate engagement of RCIC overspeed trip mechanism on January 25, 2019
- (2) Unit 1, degraded fire barrier on safe shutdown pathway 1 in fire zone 1-6I on January 25, 2019
- (3) Unit 2, LPCI swing bus under frequency time delay relay failure on February 11, 2019
- (4) Unit 2, multiple control rods failed to settle at 00 following scram on March 23, 2019
- (5) Unit 2, unexpected response residual heat removal relay timer on March 30, 2019

71111.19 - Post Maintenance Testing

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

The inspectors evaluated the following post maintenance tests:

- (1) Unit 1, emergency switchgear cooling fan 1V222B following maintenance on March 14, 2019
- (2) Unit Common, 'E' emergency diesel generator (EDG) loop 'B' ESW isolation valve following motor control center breaker maintenance on March 13, 2019
- (3) Unit 1, residual heat removal service water (RHRSW) following damper failure on March 18, 2019
- (4) Unit 2, 4.16 kV engineered safeguard system (ESS) bus 2B following switch replacement on March 30, 2019

71111.20 - Refueling and Other Outage Activities

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

The inspectors evaluated Unit 2 refueling outage 2R19 activities from March 23, 2019 to March 31, 2019. The inspectors completed inspection procedure sections 03.01.a,b, and c.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

In Service Testing (IST) (IP Section 03.01) (1 Sample)

- (1) Unit 1, quarterly high pressure coolant injection flow verification on March 4, 2019

Surveillance Testing (IP Section 03.01) (5 Samples)

- (1) Unit Common, 'E' EDG monthly operability test on February 6, 2019
- (2) Unit 1, quarterly calibration of reactor water cleanup leak detection logic on February 19, 2019
- (3) Unit Common, quarterly loss of coolant accident (LOCA) test of drywell area unit coolers/fans on March 14, 2019
- (4) Unit 2, division 2 diesel generator LOCA loss of offsite power (LOOP) test on March 25, 2019
- (5) Unit 2, actions to comply with limiting condition for operation (LCO) 3.5.2 surveillance requirement during control rod drive mechanism changeout on March 29, 2019

71114.06 - Drill Evaluation

Emergency Preparedness (EP) Drill (IP Section 02.01) (1 Sample)

The inspectors evaluated the emergency director, dose assessment personnel, and communicator's emergency preparedness implementation during a tabletop training exercise on February 14, 2019. The scenario involved a simulated fuel handling accident during a seismic event and a resulting radiological release due to damage to the fuel.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 02.01) (1 Sample)

The inspectors conducted independent radiation measurements during walkdowns of the facility and reviewed the radiological survey program, air sampling and analysis, continuous air monitor use, recent plant radiation surveys for radiological work activities, and any changes to plant operations since the last inspection to verify survey adequacy of any new radiological hazards for onsite workers or members of the public.

71124.02 - Occupational ALARA Planning and Controls

Verification of Dose Estimates and Exposure Tracking Systems (IP Section 02.02) (1 Sample)

The inspectors reviewed the current annual collective dose estimate; basis methodology; and measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors reviewed post-job as low as reasonably achievable (ALARA) evaluations of excessive exposure.

71124.04 - Occupational Dose Assessment

External Dosimetry (IP Section 02.02) (1 Sample)

The inspectors reviewed dosimetry National Voluntary Laboratory Accreditation Program (NVLAP) accreditation, onsite storage of dosimeters, the use of "correction factors" to align electronic personal dosimeter (EPD) results with NVLAP dosimetry results, dosimetry occurrence reports, and corrective action program documents for adverse trends related to external dosimetry.

Internal Dosimetry (IP Section 02.03) (1 Sample)

The inspectors reviewed internal dosimetry procedures, whole body counter measurement sensitivity and use, adequacy of the program for whole body count monitoring of plant radionuclides or other bioassay technique, adequacy of the program for dose assessments based on air sample monitoring and the use of respiratory protection, and internal dose assessments for any actual internal exposure.

Source Term Categorization (IP Section 02.01) (1 Sample)

The inspectors reviewed the plant radiation characterization (including gamma, beta, alpha, and neutron) being monitored. The inspector verified the use of scaling factors to account for hard-to-detect radionuclides in internal dose assessments.

Special Dosimetric Situations (IP Section 02.04) (1 Sample)

The inspectors reviewed the licensee's worker notification of the risks of radiation exposure to the embryo/fetus, the dosimetry monitoring program for seven declared pregnant workers, external dose monitoring of workers in large dose rate gradient environments, and dose assessments performed since the last inspection that used multi-badging, skin dose or neutron dose assessments.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

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

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

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

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03)
(2 Samples)

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

INSPECTION RESULTS

Inadequate Engagement of the Reactor Core Isolation Cooling (RCIC) Turbine Trip Latch			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000388/2019001-01 Open/Closed	[P.5] - Operating Experience	71111.04
<p>The inspectors identified a Green non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when the procedures used to reset the RCIC turbine following surveillance testing did not include sufficient acceptance criteria to determine that the turbine reset had been satisfactorily accomplished. Specifically, after tripping the RCIC turbine following a routine flow surveillance, the surveillance procedure did not ensure that the turbine trip mechanism had adequate engagement to prevent tripping the system on a subsequent system startup.</p>			
<p><u>Description:</u> The RCIC system consists of a turbine, pump, piping, valves, and instrumentation designed to assure that sufficient reactor water inventory is maintained in the reactor vessel to permit adequate core cooling to take place and prevent fuel overheating should the vessel be isolated and either maintained in hot standby, experience a loss of feedwater, or to complete a plant shutdown with a loss of normal feedwater. Since RCIC is a safe shutdown system for an isolation event with a loss of feedwater, RCIC is classified as safety-related. The turbine trip device consists of an overspeed trip device, consisting of a tappet, spring and tappet nut, connected by a mechanical trip linkage to a trip hook and trip latch. When the turbine trip is reset, the trip hook and trip latch are engaged to allow the motor operator to move the valve stem of the turbine trip throttle valve, which allows steam to flow to the RCIC turbine. When the trip latch and trip hook are disengaged the closing spring forces the stem of the trip and throttle valve to close, isolating steam to the RCIC turbine. A trip solenoid is also provided to allow disengaging the trip latch from the trip hook remotely. To reset the turbine trip, the tappet assembly must be locally reset and then the motor operator for the trip and throttle valve must be fully closed to reengage the trip hook with the trip latch.</p> <p>On January 24, 2019, operators declared RCIC inoperable and performed the RCIC comprehensive flow verification surveillance (SO-250-006) to meet the quarterly and biennial comprehensive testing requirements of the station in-service testing (IST) program and technical specification surveillance requirements. At the completion of the test, the RCIC system is shut down and restoration of the RCIC system to a standby alignment is directed. The procedure further directs resetting of the RCIC turbine trip and then verifies this is accomplished remotely using various annunciators in the control room. Based on satisfactory performance of the test, operators declared the RCIC system operable.</p>			

Inspectors walked down the RCIC system following its return to a standby alignment and noted there was less than 10 percent engagement between the mating surfaces of the trip hook and latch lever. Based on industry operating experience in which inadequate engagement of the trip latch resulted in system trips, inspectors questioned operators on the acceptability of the observed engagement. Engineering was consulted and identified that the minimum required engagement to reasonably prevent a spurious trip of the RCIC system was 75 percent between the mating surfaces of the trip hook and latch lever. As such, operators determined that the RCIC system had been inoperable due to the observed condition. Inspectors' review of industry documents identified that visual verification of engagement of the latch is recommended following rest of the trip mechanism.

Corrective Actions: Immediate corrective actions included tripping the RCIC turbine, lubricating portions of the trip linkage, and taking critical measurements on the trip linkage. The turbine trip was reset and full engagement verified, restoring the RCIC system to an operable condition. Operations issued a communication to all operators directing the visual observation of the RCIC turbine trip hook and latch lever to ensure full engagement following the reset of a RCIC turbine trip. The issue was entered into the corrective action program so that more comprehensive corrective actions could be identified.

Corrective Action References: CR-2019-01177, CR-2019-03130, AR-2019-01667

Performance Assessment:

Performance Deficiency: The inspectors determined that not ensuring the RCIC trip hook and latch lever were adequately engaged before returning the RCIC system to an operable state was reasonably within Susquehanna's ability to foresee and correct and should have been prevented and therefore was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone. This finding adversely affected the Procedure Quality attribute of the Mitigating Systems cornerstone to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedures utilized to reset the RCIC turbine trip did not direct a visual check of the trip hook and latching lever to verify that adequate engagement existed to prevent a spurious trip of the turbine during system initiation.

Significance: The inspectors assessed the significance of the finding using Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations." The finding did not represent an actual loss of function of RCIC for greater than its technical specification allowed outage time so inspectors determined the finding was of very low safety significance (Green).

Cross-cutting Aspect: P.5 - Operating Experience: The organization systematically and effectively collects, evaluates, and implements relevant internal and external operating experience in a timely manner. Specifically, though Susquehanna had evaluated external operating experience related to spurious trips of similar systems, the operations procedures did not incorporate a recommended visual verification to ensure valve trip latch engagement was adequate as discussed in external operating experience and other industry guidance.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" requires, in part, that "procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to this, on January 24, 2019, the RCIC surveillance procedure (SO-250-006) did not include appropriate quantitative or qualitative acceptance criteria to ensure the RCIC turbine was reset satisfactorily. Specifically, the procedure relied upon the fact that the trip hook and latching lever were engaged enough to allow valve movement as indicated by remote indicators, but did not ensure the engagement was adequate to prevent a spurious trip following a system initiation.

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

Swing Bus Automatic Transfer Switch Failure due to Improper Maintenance Activities

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000387/2019001-02 Open/Closed	[P.2] - Evaluation	71111.12

A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were self-revealed when the safety-related ATS associated with the division 2 LPCI swing bus failed to transfer during its monthly surveillance test. The cause of the failure was attributed to the work instructions used during the previous cleaning of the ATS not providing sufficient detail to properly clean and lubricate the ATS, which resulted in a build-up of oxidation of the contact swivel hinge causing it to bind.

Description: Two redundant Class 1E 480 VAC swing buses provide power to their respective division's LPCI valves (including the LPCI injection, RHR minimum flow bypass, and reactor recirculation system pump discharge and bypass valves). The LPCI swing bus is capable of receiving electrical power from either of two Class 1E 480 VAC load centers, a preferred source and an alternate source. An ATS is provided for automatically transferring the swing bus from the preferred to the alternate power source. A common mode-common cause failure analysis demonstrates that the transfer switch, as a component of the swing bus system design, will not degrade the independence and separation between the redundant Class 1E channels (load center channels A and C or B and D).

On December 4, 2018, while performing the Unit 1 division 2 monthly swing bus surveillance (SO-106-B01), the ATS, 1ATS229, failed to close in on the alternate supply. The surveillance test was aborted, the ATS was returned to its normal power supply, and appropriate technical specification actions were entered for an inoperable LPCI swing bus. The ATS was isolated for further troubleshooting. Troubleshooting by engineering and electrical maintenance identified binding in the contact swivel hinge. An investigation by the vendor of the ATS revealed oxidation on a contact swivel hinge which was removed with cleaning solvent and then lubricated.

Susquehanna entered this condition into their corrective action program as CR-2018-16474. An equipment apparent cause evaluation (EACE) was performed by engineering that

identified binding of the contact swivel hinge as the direct cause of the failure. The apparent cause of the binding was contributed to inadequate cleaning and lubrication of the contact swivel hinge the last time the preventive maintenance was performed on the ATS. Susquehanna's EACE found that the work instructions provided for the cleaning and inspection of the ATS in October 2017 did not provide sufficient detail for less experienced technicians to ensure sensitive components were properly maintained during the preventive maintenance activity.

Corrective Actions: Corrective actions included removing the oxidation with a cleaning solvent and lubricating the area as directed by the vendor. The switch was retested, which verified it had been restored to an operable condition. Planned corrective actions include obtaining vendor oversight during the performance of the next preventive maintenance activity and revising work instructions based on the vendor input.

Corrective Action References: CR-2018-16474, CR-2019-00779, CR-2016-05589, CR-2016-21554, CR-2016-277281

Performance Assessment:

Performance Deficiency: Inspectors determined that work instructions were not written to a level of detail required to ensure adequate cleaning and lubrication of an ATS's internal components constituted a performance deficiency that was within Susquehanna's ability to foresee and correct, and should have been prevented.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone. The finding adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The lack of detail to ensure technicians adequately clean and lubricate the contact swivel hinge during preventative maintenance resulted in the inability of the ATS to shift to the alternate power supply for the LPCI swing bus and the inoperability of one division of LPCI.

Significance: The inspectors assessed the significance of the finding using Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations." Specifically, the finding was determined to be of very low safety significance (Green) because it did not result in a loss of the LPCI system function or inoperability of a single train of LPCI for greater than its technical specification allowed outage time.

Cross-cutting Aspect: P.2 - Evaluation: The organization thoroughly evaluates issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Susquehanna did not thoroughly evaluate issues to ensure that resolutions address causes and extent of condition commensurate with their safety significance. Specifically, although previous causal evaluations identified inadequate lubrication with specific internal components of the ATS, Susquehanna did not ensure that this information was translated into work instructions sufficiently so that it could be accomplished by less experienced technicians. [P.2]

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, "Activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances." Contrary to the above, on October 30, 2017, the documented instructions utilized to perform the cleaning and inspection of the 1ATS229 swing bus automatic transfer switch were not appropriate to the circumstances in that the removal of oxidation and proper lubrication of the contact swivel hinges was not adequately performed resulting in the failure of the ATS to transfer to the alternate power supply on December 4, 2018, 13 months into a four-year maintenance cycle.

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 April 5, 2019, the inspectors presented the quarterly resident inspector inspection results to Mr. Derek Jones, Plant Manager, and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.04

Procedures

SO-150-002, Quarterly RCIC Flow Verification, Revision 57

SO-250-001, Monthly RCIC Alignment Check, Revision 23

LS-120, Issue and Identification and Screening Process, Revision 11

SO-250-006, Reactor Core Isolation Cooling Comprehensive Flow Verification, Revision 19

NSEP-AD-0413D, Maintenance Rule Performance Monitoring, Revision 5

Condition Reports

CR-2014-07151

CR-2019-01177

CR-2019-03130

Miscellaneous

Licensing Document Change Notice 5366, RCIC Safety Classification Clarification in Section 5.4

EPRI Licensed Material, Turbine Overspeed Trip System

EPRI Licensed Material, Terry Turbine Maintenance Guide, RCIC Application

Maintenance Rule Basis Document, System 50, RCIC

71111.05

Procedures

NDAP-QA-0443, Firewatch Procedure, Revision 14

SI-113-245, Annual Functional Test of Fire Protection Smoke Detectors for Fire Zones 1-6I and 1-6A, Revision 9

Condition Reports (*identified by NRC)

CR-2019-00739

CR-2019-01497*

Action Requests

AR-2019-00903

AR-2019-01849

Drawings

C-1726, Unit 1 Reactor Building Fire Detector Location Plan Elevation 799'-1" to 818'-1", Sheet 4, Revision 4

C-1725, Unit 1 Reactor Building Fire Zone Plan of Protected Conduit Raceway Elevation 779'-0", Sheet 6, Revision 2

FF62009, Unit 1 Fire Barrier Upgrade A1P075, A1P105, C1P107 & E1P005 Wrapped Raceways and JB2068 Sketch No. 1-6I-05, Sheet 115, Revision 0

C-1725, Unit 1 reactor Building Fire Detector Location Plan Elevation 779'-1" to 799'-1", Sheet 4, Revision 6

C-1725, Unit 1 Reactor Building Fire Zone Plan Elevation 779'-1', Sheet 1, Revision 9

C-1725, Unit 1 Reactor Building Fire Doors and Fire Dampers Elevation 779'-1", Sheet 2, Revision 6

C-1725, Unit 1 Reactor Building Fire Protection Plan Elevation 779'-1", Sheet 3, Revision 5

C-1725, Unit 1 Reactor Building Fire Zone Plan of Protected Tray Raceway Elevation 779'-1", Sheet 10, Revision 2

Miscellaneous

OI-013-002, Fire Risk Management, Revision 11

EC-013-1081, Generic Letter 86-10 Evaluation to Determine Raceway Fire, Revision 1

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