



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
475 ALLENDALE RD, STE 102  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

September 28, 2022

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 – DESIGN  
BASIS ASSURANCE INSPECTION (TEAMS) INSPECTION REPORT  
05000387/2022013 AND 05000388/2022013

Dear Brad Berryman:

On August 25, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Susquehanna Steam Electric Station, Units 1 and 2 and discussed the results of this inspection with Kevin Cimorelli, Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

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.

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 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,

Mel Gray, Chief  
Engineering Branch 1  
Division of Operating Reactor Safety

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

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – DESIGN BASIS ASSURANCE INSPECTION (TEAMS) INSPECTION REPORT 05000387/2022013 AND 05000388/2022013 DATED SEPTEMBER 28, 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: 05000387/2022013 and 05000388/2022013

Enterprise Identifier: I-2022-013-0004

Licensee: Susquehanna Nuclear, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, PA

Inspection Dates: August 7, 2022 to August 25, 2022

Inspectors: C. Bickett, Senior Reactor Analyst  
J. DeBoer, Senior Project Engineer  
B. Dyke, Operations Engineer  
J. Lilliendahl, Senior Emergency Response Coordinator  
J. Schoppy, Senior Reactor Inspector  
G. Stock, Senior Resident Inspector

Approved By: Mel Gray, Chief  
Engineering Branch 1  
Division of Operating Reactor Safety

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a design basis assurance inspection (teams) 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 Establish Appropriate Work Order Instructions for Work Activities on a Safety-Related Residual Heat Removal Service Water Valve  |   |                      |                |
|---|---|----------------------|----------------|
| Cornerstone   | Significance                                    | Cross-Cutting Aspect | Report Section |
| Mitigating Systems  | Green<br>NCV 05000387/2022013-01<br>Open/Closed | [H.1] - Resources    | 71111.21M      |
| The team identified a Green finding and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Susquehanna personnel did not establish appropriate work order instructions for work activities on the Unit 1 safety-related residual heat removal service water (RHRSW) system. |   |                      |                |

### Additional Tracking Items

None.

## INSPECTION SCOPES

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

## REACTOR SAFETY

### 71111.21M - Design Bases Assurance Inspection (Teams)

The inspectors evaluated the following components and listed applicable attributes, permanent modifications, and operating experience:

#### Design Review - Risk-Significant/Low Design Margin Components (IP Section 02.02) (4 Samples)

- (1) Time sensitive operator action - Align 'E' Emergency Diesel Generator to U2 ESS Bus
  - Material condition and installed configuration (e.g., visual inspection/walkdown)
  - Normal, abnormal, and emergency operating procedures
  - Consistency among design and licensing bases and other documents/procedures
  - System health report, maintenance records, and corrective action history
  - Equipment/environmental controls and qualification
  - Adequacy of design (calculations and modifications)
  - Surveillance testing and test results
  - System and component level performance monitoring
  - Equipment protection from fire, flood, steam, water intrusion, or spray
  - Heat removal, cooling water and ventilation
  - Operator actions
  - Energy source availability (electricity, fuel, air)

The team used Appendix B guidance for *Valves, Pumps, Instrumentation, and As-Built System*.

- (2) Unit 2 ESS 4.1kV Switchgear 2A201 Bus (Failure to Operate)
  - Material condition and installed configuration (e.g., visual inspection/walkdown)
  - Normal, abnormal, and emergency operating procedures
  - Consistency among design and licensing bases and other documents/procedures
  - Maintenance records and corrective action history
  - Adequacy of design (calculations and modifications)
  - Surveillance testing and test results

- System and component level performance monitoring
- Control logic
- Component adequacy for minimum voltage
- Protection coordination (load in-rush and full load current)
- Operator actions
- Energy source availability (electricity, steam, fuel, air)

The team used Appendix B guidance for *Circuit Breakers, Cables, Electrical Loads, Motor Control Centers (MCCs), and As-built System*.

- (3) Unit 1 250VDC Battery 1D650
- Material condition and installed configuration (e.g., visual inspection/walkdown)
  - Normal, abnormal, and emergency operating procedures
  - Consistency among design and licensing bases and other documents/procedures
  - System health report, maintenance effectiveness and records, and corrective action history
  - Design calculations
  - Surveillance testing and recent test results
  - Energy source availability (electricity)

The team used Appendix B guidance for *Instrumentation, Circuit Breakers and Fuses, Cables, Electric Loads, and As-Built System*.

- (4) Unit 1 Residual Heat Removal Service Water (Failure to Provide Suppression Pool Cooling)
- Material condition and installed configuration (e.g., visual inspection/walkdown)
  - Normal, abnormal, and emergency operating procedures
  - Consistency among design and licensing bases and other documents/procedures
  - System health report, maintenance effectiveness and records, and corrective action history
  - Equipment/environmental controls and qualification
  - Design calculations
  - Surveillance testing and recent test results
  - System and component level performance monitoring
  - Equipment protection from fire, flood, and water intrusion or spray
  - Operator actions
  - Heat removal cooling water and ventilation

The team used Appendix B guidance for *Valves, Pumps, Instrumentation, and As-Built System*.

Design Review - Large Early Release Frequency (LERFs) (IP Section 02.02) (1 Sample)

- (1) Unit 1 High Pressure Coolant Injection System (Failure to Operate)
  - Material condition and installed configuration (e.g., visual inspection/walkdown)
  - Normal, abnormal, and emergency operating procedures
  - Consistency among design and licensing bases and other documents/procedures
  - System health report, maintenance records, and corrective action history
  - Surveillance testing and test results
  - System and component level performance monitoring
  - Control logic
  - Operator actions
  - Process medium availability (water, air, electrical signal)
  - Energy source availability (electricity, steam, fuel, air)

The team used Appendix B guidance for *Valves, Pumps, Instrumentation, and As-Built System*.

Modification Review - Permanent Mods (IP Section 02.03) (5 Samples)

- (1) DEC 2471627 – RHRSW Cable FF1S0601A Repair
- (2) DEC 1974016 - 1X240 Engineered Safeguard System Load Center Transformer Replacement
- (3) DEC 2159657 - Add a Hydraulic Booster to 'E' EDG Governor
- (4) DEC 2489798 - Increase Set Point of PSV21213A
- (5) TDC 2308928 - Bypass Battery Cell #120 on Battery 2D660, 250VDC Battery Bank B

Review of Operating Experience Issues (IP Section 02.06) (2 Samples)

- (1) NRC Information Notice 2019-01: Inadequate Evaluation of Temporary Alterations, dated March 12, 2019
- (2) NRC Information Notice 2020-02: Flex Diesel Generator Operational Challenges

**INSPECTION RESULTS**

| Failure to Establish Appropriate Work Order Instructions for Work Activities on a Safety-Related Residual Heat Removal Service Water Valve  |   |                      |                |
|---|---|----------------------|----------------|
| Cornerstone   | Significance                                    | Cross-Cutting Aspect | Report Section |
| Mitigating Systems  | Green<br>NCV 05000387/2022013-01<br>Open/Closed | [H.1] - Resources    | 71111.21M      |
| The team identified a Green finding and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Susquehanna personnel did not establish appropriate work order instructions for work activities on the Unit 1 safety-related residual heat removal service water (RHRSW) system. |   |                      |                |
| <u>Description:</u> On April 17, 2020, operators initiated CR 2020-05941 to document that the HV-11210A RHRSW heat exchanger (HX) inlet valve stem appeared to separate from the motor operator. At the time, Unit 1 was in a refueling outage, Mode 5, with irradiated fuel in the   |   |                      |                |



vessel, with the 'A' loop of RHRSW in service supporting shutdown cooling (SDC) operation. Operators attempted to adjust HV-11210A for SDC temperature control but noted no change in system flow and pressure. Operators confirmed actuator motor operation locally, but observed no valve stem travel. The as-left position of the valve was midway open (approximately 45%) with sufficient flow to satisfy SDC requirements for plant conditions. Based on this position, operators determined that the 'A' residual heat removal (RHR) SDC subsystem remained operable. At the time, the 'B' RHR SDC subsystem was also operable and available. Operators satisfactorily maintained SDC in service on the 'A' loop of RHRSW until placing the 'B' SDC subsystem in service on April 18, 2020, in order to troubleshoot and repair the HV-11210A. The Susquehanna Fix It Now (FIN) team performed troubleshooting under Work Order 2335031 and replaced and properly torqued the actuator coupling bolts on April 19, 2020. Following a successful post-maintenance test (PMT), operators declared the HV-11210A valve operable.

During the design bases inspection, the team reviewed CR 2020-05941 and Susquehanna's associated corrective actions and noted that the Management Review Committee (MRC) assigned the CR a significance level 4 which resulted in a broke/fix approach with no causal analysis. Based on subsequent review, the team identified that maintenance removed the HV11210A actuator from the valve under Work Order 2197505 earlier in the April 2020 refueling outage to facilitate inspection of the RHRSW piping inlet flange supplying the 'A' RHR HX. Following the planned maintenance, maintenance personnel completed a leak check PMT on April 7, 2020, and operators completed a successful stroke time test on April 7, 2020, and declared the valve operable. However, the team noted that Work Order 2197505 did not contain adequate guidance to either maintain the coupling intact between the valve and actuator when removing the valve from the RHRSW piping or to retorque the coupling bolts to the proper torque value if reassembly of the coupling joint was required. The team concluded that the maintenance personnel's failure to adequately torque the stem to actuator coupling bolts directly contributed to the subsequent malfunction of the valve during SDC operations on April 17, 2020. In response to the team's assessment, the licensee initiated CR 2022-12358 on August 8, 2022, to address the work order instruction deficiencies. The team noted that the assignment of the initial CR (2020-05941) as a significance level 4 in April 2020, with no causal analysis and/or extent-of-condition review, represented a missed opportunity for the licensee to self-identify the underlying performance deficiency and evaluate the potential extent-of-condition in a more timely manner commensurate with the potential safety significance.

In addition, the team reviewed the extent-of-condition as maintenance personnel had performed similar work activities on the Unit 1 'B' RHRSW HX supply valve (HV-11210B), Unit 2 'A' RHRSW HX supply valve (HV-21210A), and Unit 2 'B' RHRSW HX supply valve (HV-21210B). HV 11210B was removed under Work Order 2366440 in April 2022. HV 21210A was removed under Work Order 2277134 in April 2021. HV 21210B was removed under Work Order 2114861 in April 2019. The three work orders documented that the valve and actuator were not decoupled for the respective valves; thus, the team determined that continued operability of these safety-related valves was not called into question based on the extent-of-condition review. However, the team identified that two of the three work orders also contained less than adequate guidance with respect to the coupling torque. Precaution 4.2 in Work Order 2277134 stated that the valve and actuator were to be removed as a unit ("DO NOT remove the operator from the valve"). However, there was not adequate guidance in the other two work orders (2366440 & 2114861) to maintain the valve and actuator coupled. In fact, for Work Order 2114861, a pen and ink change was made to the work order on

March 19, 2019, prior to the work commencing, to “remove HBC and actuator as needed.” However, in that case, the documentation provided in the work order package indicated that that option was not exercised and the actuator was not removed. In addition, those two work orders did not provide guidance for retorquing the coupling if the actuator was removed.

In reviewing the work history and operating experience associated with these RHRSW valves, the team noted that the licensee had encountered previous issues with actuator coupling bolts becoming loose in 2015. Specifically, on March 23, 2015, the licensee initiated CR 2015-8083 to address loose actuator coupling bolts that caused the Unit 2 ‘A’ RHRSW HX supply valve (HV-21210A) to fail to close while attempting to shut down the 2A RHRSW pump. The team noted that the licensee’s short-term corrective actions following the malfunction in March 2015 appeared much more thorough and responsive than their actions following the malfunction in April 2020. In particular, their actions in 2015 included an extent-of condition review, causal analysis, and implementing a recurring task preventive maintenance task to perform coupling torque checks.

Although the valve failure in April 2020 was self-revealing, the licensee’s initial corrective actions consisted of initiating a CR (level 4) and assigning the FIN team to troubleshoot and repair (a broke/fix approach) without performing an associated causal analysis or extent-of-condition review. Additional NRC follow-up during the 2022 design basis assurance inspection resulted in the identification of the inadequate work order instructions and prompted the extent-of-condition review to assess the continued operability of similar Unit 1 and Unit 2 RHRSW valves. (See extent-of-condition review discussed above.) As such, due to the NRC value-added during the inspection, the team determined that the issue was best classified as “NRC-identified” vice “self-revealing.”

Corrective Actions: The licensee’s immediate corrective actions included initiating CR 2020-05941 and repairing the valve in April 2020. Subsequently, the licensee initiated CR 2022-12358 to revise the work instruction library files associated with valves HV11210A/B and HV21210A/B to clarify that the valve and motor operator are to be removed as a unit and to not disturb the electrical setup or mechanical connections. In addition, the action stated to also consider revising the work instructions to add steps to be taken if the motor operator would need to be removed to ensure that the proper procedures and operating manuals associated with the motor operator and stem coupling are considered.

Corrective Action References: CR 2020-05941 and CR 2022-12358

Performance Assessment:

Performance Deficiency: The licensee did not provide adequate work order instructions related to planned work on the safety-related ‘A’ RHR HX inlet flange resulting in the subsequent in service malfunction of RHRSW valve HV 11210A. Specifically, Work Order 2197505 did not provide adequate guidance to either maintain the coupling intact between the valve and actuator when removing the valve from the RHRSW piping or to retorque the coupling bolts to the proper torque value if reassembly of the coupling joint was required. The team concluded that the failure to develop and implement adequate work order instructions was reasonably foreseeable and preventable and was a performance deficiency given the licensee’s internal operating experience in 2015.

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 and adversely affected the cornerstone objective to ensure the availability,

reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the team determined that maintenance work activities involving the HV 11210A RHRSW valve adversely affected the availability, reliability, and capability of the RHRSW system. The team compared this performance deficiency against examples in IMC 0612, Appendix E, "Examples of Minor Issues," effective January 1, 2021, and found similarities to example 4.c. Specifically, the HV 11210A valve was returned to service after work activities but because of the inadequate work order instructions, maintenance decoupled the stem and actuator but did not adequately re-torque the bolts during reassembly resulting in a subsequent malfunction of the valve while in service for SDC.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix G, "Shutdown Safety SDP." In accordance with IMC 0609, Appendix G, Attachment 1, Exhibit 3, the team determined that the finding screened to Green since the deficiency affected the design or qualification of a mitigating SSC that maintained its operability.

Cross-Cutting Aspect: H.1 - Resources: Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Contrary to this, Susquehanna personnel did not ensure that work order instructions were adequate to support safety-related work on the RHRSW system.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

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 August 25, 2022, the inspectors presented the design basis assurance inspection (teams) inspection results to Kevin Cimorelli, Site Vice President and other members of the licensee staff.
- On August 30, 2022, the inspectors presented the results of their review of FLEX generator testing to Dave Ambrose, Engineering General Manager and other members of the licensee staff.

**DOCUMENTS REVIEWED**

| Inspection Procedure | Type                        | Designation   | Description or Title   | Revision or Date |
|----------------------|-----------------------------|---------------|--|------------------|
| 71111.21M            | Calculations                | EC-054-1027   | Pipe-Flo Model – ESW and RHRSW Systems   | 5                |
|                      |                             | EC-088-0505   | Unit 1 and Unit 2 Class 1E 250VDC System Voltage Drop Calculation  | 8                |
|                      |                             | EC-088-0506   | Class 1E 250VDC Battery Sizing and Battery Charger Sizing for 1D650, 2D650, and 2D660  | 7                |
|                      |                             | EC-088-1005   | Battery 1D650 Load Profile   | 5                |
|                      |                             | EC-FLEX-0013  | Fukushima Flex Generators - RHR Motor Start and Load Flow Analysis   | 0                |
|                      |                             | EC-FLEX-0015  | Fukushima Flex Generators - Phase 2 Load Flow Analysis   | 3                |
|                      |                             | EC-RISK-1162  | Performance Criteria for EDG E Ability to Substitute   | 0                |
|                      |                             | EC-SOPC-0618  | Relay Setting Calculation for Transformer 1X240 Circuit Breaker Overcurrent at Bus 1A204 and Undervoltage/Overvoltage at Load Center 1B240 | 1                |
|                      |                             | EC-SOPC-0739  | RHR Pump Unit 1 and 2  | 0                |
|                      | Corrective Action Documents | AR-2014-02355 |  |                  |
|                      |                             | AR-2015-08278 |  |                  |
|                      |                             | CR-2014-21439 |  |                  |
|                      |                             | CR-2015-08083 |  |                  |
|                      |                             | CR-2017-12589 |  |                  |
|                      |                             | CR-2018-09178 |  |                  |
|                      |                             | CR-2018-13000 |  |                  |
|                      |                             | CR-2019-07041 |  |                  |
|                      |                             | CR-2019-10706 |  |                  |
|                      |                             | CR-2020-01392 |  |                  |
|                      |                             | CR-2020-03941 |  |                  |
|                      |                             | CR-2020-05274 |  |                  |
|                      |                             | CR-2020-05597 |  |                  |
|                      |                             | CR-2020-05920 |  |                  |
| CR-2020-05941        |                             |               |  |                  |
| CR-2020-09452        |                             |               |  |                  |
| CR-2021-11116        |                             |               |  |                  |

| Inspection Procedure | Type  | Designation   | Description or Title | Revision or Date |
|----------------------|---|---------------|----------------------|------------------|
|                      |   | CR-2021-12192 |                      |                  |
|                      |   | CR-2021-14609 |                      |                  |
|                      |   | CR-2021-14690 |                      |                  |
|                      |   | CR-2022-04654 |                      |                  |
|                      |   | CR-2022-05704 |                      |                  |
|                      |   | CR-2022-05939 |                      |                  |
|                      |   | CR-2022-11912 |                      |                  |
|                      |   | CR-2022-12999 |                      |                  |
|                      | Corrective Action Documents Resulting from Inspection | CR-2022-12068 |                      |                  |
|                      |   | CR-2022-12077 |                      |                  |
|                      |   | CR-2022-12078 |                      |                  |
|                      |   | CR-2022-12089 |                      |                  |
|                      |   | CR-2022-12103 |                      |                  |
|                      |   | CR-2022-12107 |                      |                  |
|                      |   | CR-2022-12109 |                      |                  |
|                      |   | CR-2022-12118 |                      |                  |
|                      |   | CR-2022-12125 |                      |                  |
|                      |   | CR-2022-12128 |                      |                  |
|                      |   | CR-2022-12130 |                      |                  |
|                      |   | CR-2022-12137 |                      |                  |
|                      |   | CR-2022-12138 |                      |                  |
|                      |   | CR-2022-12170 |                      |                  |
|                      |   | CR-2022-12194 |                      |                  |
|                      |   | CR-2022-12196 |                      |                  |
|                      |   | CR-2022-12211 |                      |                  |
|                      |   | CR-2022-12212 |                      |                  |
|                      |   | CR-2022-12249 |                      |                  |
|                      |   | CR-2022-12271 |                      |                  |
|                      |   | CR-2022-12351 |                      |                  |
|                      |   | CR-2022-12353 |                      |                  |
| CR-2022-12358        |   |               |                      |                  |
| CR-2022-12592        |   |               |                      |                  |
| CR-2022-12670        |   |               |                      |                  |

| Inspection Procedure | Type                | Designation      | Description or Title  | Revision or Date |
|----------------------|---------------------|------------------|---|------------------|
|                      |                     | CR-2022-12740    |   |                  |
|                      |                     | CR-2022-12859    |   |                  |
|                      |                     | CR-2022-12864    |   |                  |
|                      |                     | CR-2022-12866    |   |                  |
|                      |                     | CR-2022-12868    |   |                  |
|                      |                     | CR-2022-12964    |   |                  |
|                      |                     | CR-2022-12973    |   |                  |
|                      |                     | CR-2022-12978    |   |                  |
|                      |                     | CR-2022-12990    |   |                  |
|                      |                     | CR-2022-13002    |   |                  |
|                      |                     | CR-2022-13006    |   |                  |
|                      |                     | CR-2022-13007    |   |                  |
|                      | Drawings            | E-11, Sheet 1    | Unit 1 and Common Single Line Meter and Relay Diagram 125VDC and 250VDC                               | 19               |
|                      |                     | E-11, Sheet 2    | Unit 1 Single Line Meter and Relay Diagram 125VDC and 250VDC  | 28               |
|                      |                     | E106260 Sheet 1  | Unit 1 High Pressure Coolant Injection P&ID   | 60               |
|                      |                     | E107150 Sheet 1  | Susquehanna SES Unit 1 and 2 Single Line Diagram Station  | 44               |
|                      |                     | E107154 Sheet 2  | Susquehanna SES Unit 2 Single Line Meter and Relay Diagram 4.16KV Engineering Safeguards Power System | 32               |
|                      |                     | M-112            | Unit 1 RHR Service Water P&ID   | 55               |
|                      | Engineering Changes | DEC 1974016      | 1X240 Engineered Safeguard System Load Center Transformer Replacement                                 | 0                |
|                      |                     | DEC 2159657      | Add a Hydraulic Booster to the EDG E Governor   | 0                |
|                      |                     | DEC 2489798      | Design Equivalent Change Package - Increase Set Point of PSV21213A                                    | 0                |
|                      |                     | TDC 2308928      | Temporary Bypass Battery Cell #120 on Battery 2D660   | 0                |
|                      | Miscellaneous       | DBD004           | Design Basis Document for High Pressure Coolant Injection System                                      | 6                |
|                      |                     | DBD009           | Design Basis Document for ESW, RHRSW, and Ultimate Heat Sink  | 4                |
|                      |                     | IOM224 Section A | Wafer-Sphere Butterfly Valves Installation, Maintenance and Operating Instructions                    | 05/01/1996       |

| Inspection Procedure | Type  | Designation      | Description or Title  | Revision or Date                |
|----------------------|---|------------------|---|---------------------------------|
|                      |   | OP-AD-327-1      | SCRAM Event Summary (Unit 1)  | 05/23/2022                      |
|                      |   | SE-116-301       | RHR SW System Leakage Test  | 06/22/2022                      |
|                      |   | SM-188-104       | 48 Monthly Div I 1D650-250VDC Battery Discharge Test  | 04/04/2020                      |
|                      |   | SO-116-A02       | Quarterly RHR SW Valve Exercising Division I  | 04/08/2020                      |
|                      |   | SO-116-A03       | Quarterly Residual Heat Removal Service Water (RHR SW) System Flow Verification Division I      | 06/22/2022                      |
|                      |   | SO-116-A04       | Residual Heat Removal Service Water (RHR SW) System Comprehensive Flow Verification Division I  | 09/22/2021                      |
|                      |   | SO-116-B03       | Quarterly Residual Heat Removal Service Water (RHR SW) System Flow Verification Division II     | 04/08/2022<br>and<br>06/14/2022 |
|                      |   | SO-116-B04       | Residual Heat Removal Service Water (RHR SW) System Comprehensive Flow Verification Division II | 09/16/2021                      |
|                      |   | SO-152-004       | Quarterly HPCI Valve Exercising   | 06/06/2022                      |
|                      |   | SO-152-006       | High Pressure Coolant Injection Comprehensive Flow Verification                                 | 12/16/2020                      |
|                      |   | SUS-ISTPLN-100.0 | SSES Unit 1 Inservice Testing Program   | 9                               |
|                      | Procedures  | DC-FLEX-010      | 4160 VAC Connection to E DG and ESS Buses   | 8                               |
|                      |   | IP-ENG-001       | Standard Design Process   | 1                               |
|                      |   | MFP-QA-5250      | Control Structure PLRT and Reactor Building NLRT Boundary Breaches and Penetration Seals        | 18                              |
|                      |   | N-DAP-QA-0343    | Time Critical and Time Sensitive Operator Actions   | 5                               |
|                      |   | NDAP-QA-0409     | Door, Floor Plug and Hatch Control  | 21                              |
|                      |   | NDAP-QA-0423     | Station Pump and Valve Test Program   | 38                              |
|                      |   | NDAP-QA-0515     | Control and Calibration of Plant Measuring and Test Equipment (M&TE)                            | 16                              |
|                      |   | NDAP-QA-1218     | Temporary Changes   | 21                              |
|                      |   | ON-LOOP-101      | Unit 1 Loss of All Offsite Power  | 5                               |
| ON-LOOP-201          | Unit 2 Loss of All Offsite Power                        | 5                |   |                                 |
| OP-024-004           | Transfer and Test Mode Operations of Diesel Generator E | 38               |   |                                 |
| OP-116-001           | RHR Service Water                                       | 60               |   |                                 |
| OP-149-002           | RHR Shutdown Cooling                                    | 85               |   |                                 |

| Inspection Procedure | Type        | Designation | Description or Title | Revision or Date |
|----------------------|-------------|-------------|----------------------|------------------|
|                      |             | OP-152-001  | HPCI System          | 66               |
|                      | Work Orders | 1256448     |                      |                  |
|                      |             | 1413955     |                      |                  |
|                      |             | 1862427     |                      |                  |
|                      |             | 1887276     |                      |                  |
|                      |             | 1906956     |                      |                  |
|                      |             | 1919129     |                      |                  |
|                      |             | 1984180     |                      |                  |
|                      |             | 1992666     |                      |                  |
|                      |             | 2040721     |                      |                  |
|                      |             | 2114861     |                      |                  |
|                      |             | 2130256     |                      |                  |
|                      |             | 2183390     |                      |                  |
|                      |             | 2197505     |                      |                  |
|                      |             | 2197657     |                      |                  |
|                      |             | 2198398     |                      |                  |
|                      |             | 2212723     |                      |                  |
|                      |             | 2222772     |                      |                  |
|                      |             | 2274265     |                      |                  |
|                      |             | 2277134     |                      |                  |
|                      |             | 2279019     |                      |                  |
|                      |             | 2299854     |                      |                  |
|                      |             | 2301244     |                      |                  |
|                      |             | 2312553     |                      |                  |
|                      |             | 2318398     |                      |                  |
|                      |             | 2335031     |                      |                  |
|                      |             | 2336487     |                      |                  |
|                      |             | 2336487     |                      |                  |
|                      |             | 2341550     |                      |                  |
|                      |             | 2360013     |                      |                  |
|                      |             | 2364432     |                      |                  |
|                      |             | 2366440     |                      |                  |
|                      |             | 2377028     |                      |                  |



| Inspection Procedure | Type | Designation | Description or Title | Revision or Date |
|----------------------|------|-------------|----------------------|------------------|
|                      |      | 2405665     |                      |                  |
|                      |      | 2441817     |                      |                  |
|                      |      | 2471399     |                      |                  |
|                      |      | 2527845     |                      |                  |
|                      |      | 2543385     |                      |                  |
|                      |      | 2544558     |                      |                  |
|                      |      | 2562247     |                      |                  |
|                      |      | 2562501     |                      |                  |