

# UNITED STATES NUCLEAR REGULATORY COMMISSION

REGION II 245 PEACHTREE CENTER AVENUE NE, SUITE 1200 ATLANTA, GEORGIA 30303-1257

November 26, 2018

Mr. Daniel Stoddard Senior Vice President and Chief Nuclear Officer Innsbrook Technical Center 5000 Dominion Boulevard Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION - NRC PROBLEM IDENTIFICATION AND

RESOLUTION INSPECTION REPORT 05000280/2018012 AND

05000281/2081012

Dear Mr. Stoddard:

On October 18, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Surry Power Station Units 1 and 2. On that date, the NRC inspectors discussed the results of this inspection with Mr. Rob Garver, Director of Nuclear Safety and Licensing, and other members of your staff. On November 15, 2018, the inspectors conducted another exit via telephone with Mr. Fred Mladen and other members of your staff. The results of this inspection are documented in the enclosed inspection report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No NRC-identified or self-revealing findings were identified during this inspection. However, inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <a href="http://www.nrc.gov/reading-rm/adams.html">http://www.nrc.gov/reading-rm/adams.html</a> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

David H. Hardage, Acting Chief Reactor Projects Branch 4 Division of Reactor Projects

Docket Nos.: 50-280, 50-281 License Nos.: DPR-32, DPR-37

Enclosure:

IR 05000280/2018012 and 05000281/2018012

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SUBJECT: SURRY POWER STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000280/2018012 AND 05000281/2018012 November 26, 2018

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# U.S. NUCLEAR REGULATORY COMMISSION REGION II

Docket Nos.: 50-280, 50-281

License Nos.: DRP-32, DPR-37

Report Nos.: 05000280/2018012, 05000281/2018012

Enterprise Identifier: I-2018-012-0012

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 and 2

Location: 5850 Hog Island Road

Surry, VA 23883

Dates: September 24 through October 18, 2018

Inspectors: P. Niebaum, Senior Project Engineer, Team Leader

C. Read, Resident Inspector

J. Steward, Resident Inspector (Brunswick)

A. Patz, Resident Inspector (Harris)

Approved by: David Hardage, Acting Chief

Reactor Projects Branch 4 Division of Reactor Projects

#### **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Biennial Problem Identification and Resolution Inspection at Surry Power 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 <a href="https://www.nrc.gov/reactors/operating/oversight.html">https://www.nrc.gov/reactors/operating/oversight.html</a> for more information. A licensee-identified non-cited violation is documented in this report.

#### **List of Findings and Violations**

No NRC-identified or self-revealing findings of more than minor significance were identified.

#### **INSPECTION SCOPE**

This inspection was conducted using the appropriate portions of the NRC's inspection procedure 71152, Problem Identification and Resolution issued on February 26, 2015. The inspectors reviewed selected procedures and records, observed activities, conducted plant walk downs, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

#### **REACTOR SAFETY**

#### 71152B - Problem Identification and Resolution

#### Biennial Team Inspection (1 Sample)

The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment. The assessment is documented below.

- 1) Corrective Action Program Effectiveness: Problem Identification, Problem Prioritization and Evaluation, and Corrective Actions – The inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. The inspectors conducted a detailed review of condition reports and corrective actions associated with the following risk significant systems:
  - a) Auxiliary Feedwater
  - b) Emergency Diesel Generators
  - c) DC Distribution/Batteries
- 2) Operating Experience and Self-Assessments and Audits The team evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that station's processes for the use of industry and NRC operating experience information and for the performance of audits and self-assessments were effective and complied with all regulatory requirements and licensee standards. The implementation of these programs adequately supported nuclear safety.
- 3) Safety Conscious Work Environment The team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews, the team found no evidence of challenges to your organization's safety-conscience work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of several means available.

#### **INSPECTION RESULTS**

Corrective Action Program Effectiveness Observations	71152 – Biennial Team	
	Inspection	

Based on the samples reviewed, the team determined that the licensee's corrective action program (CAP) complied with regulatory requirements and self-imposed standards. The licensee's implementation of the CAP adequately supported nuclear safety.

Effectiveness of Problem Identification: The inspectors determined that the licensee was effective in identifying problems and entering them into the CAP and there was a low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating Condition Reports (CRs) as described in licensee procedure PI-AA-200, "Corrective Action," and management's expectation that employees were encouraged to initiate CRs for any reason. Additionally, site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

Based on reviews and walkdowns of accessible portions of selected systems, the inspectors determined that deficiencies were being identified and placed in the CAP.

A minor violation was identified by the inspectors in this area regarding transient combustible material left in the plant.

Effectiveness of Prioritization and Evaluation of Issues: Based on the review of CRs sampled by the inspection team during the onsite period, the inspectors concluded that problems were generally prioritized and evaluated in accordance with the CR significance determination guidance in procedure PI-AA-200. The inspectors determined that in general, adequate consideration was given to equipment operability and associated plant risk.

The inspectors determined that plant personnel had conducted cause evaluations in compliance with the licensee's CAP procedures and these cause determinations were appropriate, and considered the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used to evaluate CRs depending on the type and complexity of the issue consistent with the applicable cause evaluation procedures.

A minor violation was identified by the inspectors regarding an issue with a fire door that was not properly evaluated and corrected.

Effectiveness of Corrective Actions: Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence. The team reviewed performance indicators, CRs, and effectiveness reviews, as applicable, to verify that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

A licensee identified violation was documented by the inspectors in this area regarding implementation of maintenance rule requirements.

#### Licensee Identified Non-Cited Violation

71152 – Biennial Team Inspection

This violation of very low safety significant was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a Non-Cited Violation, consistent with Section 2.3.2 of the Enforcement Policy.

Violation: 10 CFR 50.65(a)(2), Requirements for monitoring the effectiveness of maintenance at nuclear power plants required in part, monitoring as specified in paragraph (a)(1) of this section is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventive maintenance, such that the structure, system, or component remains capable of performing its intended function.

Contrary to the requirement, the licensee failed to place the low level vacuum priming instrument air compressor, 1-IA-C-3 in (a)(1) status and monitor as required when performance of the air compressor indicated that it was not being effectively controlled through appropriate preventive maintenance. Specifically, since September 2017, there have been seven (7) maintenance rule (MR) functional failures with five (5) of those determined to be maintenance preventable functional failures (MPFF) of this air compressor. The licensee's current MR program performance criteria for this air compressor is two (2) maintenance preventable functional failures. The second MPFF occurred on January 1, 2018 and the third MPFF occurred on June 14, 2018. This air compressor is classified as non-safety related, but it is included in the maintenance rule scope because it is considered risk significant. This is because the loss of the compressed air system can lead to the loss of vacuum priming and opening of the vacuum breakers for the circulating water piping, which can result in a rapid decrease in canal level and, barring rapid restoration of instrument air by operators, a trip of both units.

Significance: The inspectors reviewed Exhibit 1 – Initiating Event Screening Questions of IMC 0609 Appendix A, The Significance Determination Process (SDP) for findings at Power and determined this finding was of very low safety significance, Green, because the finding would not lead to an initiating event and affect mitigation equipment.

Corrective Action Reference: CR 1107649

#### Minor Violation

71152 – Biennial Team Inspection

The NRC-identified a minor violation of Technical Specification (TS) 6.4, Unit Operating Procedures and Programs, for the failure to follow the facility fire program in procedure CM-AA-FPA-101, "Control of Combustible and Flammable Materials."

On September 28, 2018, the NRC performed an inspection of the Unit 2 Auxiliary Feedwater (AFW) system and identified a 480V electrical extension cable near the turbine driven AFW pump in the Unit 2 main steam valve house. The transient combustible permit for this cable expired on June 29, 2018. Upon identification, the licensee promptly removed the cable.

TS 6.4.E, requires that the facility fire protection program and implementing procedures which have been established for the station be implemented and maintained. The facility fire protection program is partially implemented by procedure CM-AA-FPA-101. Attachment 9 to this procedure states that the Unit 2 safeguards and main steam valve house, Fire Zone 20,

shall not have transient combustibles. Contrary to this requirement, the extension cable did not have a valid permit and was considered transient combustible material.

Screening: This violation was considered minor as the transient combustible loading in this fire zone was maintained less than the maximum allowed combustible loading. Additionally, a credible scenario in which the cable could affect AFW pump operation could not be identified.

Enforcement: This failure to comply with TS 6.4 E constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. The licensee entered this issue into their CAP as CR 1106069.

#### Minor Violation

71152 – Biennial Team Inspection

The NRC identified a minor violation of Technical Specification (TS) 6.4, Unit Operating Procedures and Programs, for the failure to follow the requirements of licensee procedure CM-AA-FPA-100, "Fire Protection/Appendix R (Fire Safe Shutdown) Program", Rev. 13.

TS 6.4.E, required that the facility fire protection program and implementing procedures which have been established for the station be implemented and maintained. The facility fire protection program was implemented by licensee procedure CM-AA-FPA-100. Section 3.11.12 of Attachment 2, "Corrective Action" of this procedure required in part, measures to ensure that conditions adverse to fire protection such as deviations and non-conformances are promptly identified, reported and corrected. Contrary to this requirement, non-conforming fire door 1-BS-DR-8 was not corrected (compensatory measure established, evaluated and/or repaired) from July 21, 2017 until October 18, 2018 following identification of the issue by the NRC inspectors.

Screening: This violation was considered minor because the inspectors determined that this issue was isolated to a single fire door in the turbine building, was not indicative of a programmatic problem at the station, and a postulated fire in this area would not impact the ability of Unit 1 to achieve safe shutdown.

Enforcement: This failure to comply with TS 6.4.E constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. The licensee entered this issue into their CAP as CRs 1107942 and 1107946.

#### **EXIT MEETINGS AND DEBRIEFS**

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

 On October 18, 2018 and again on November 15, 2018, the inspectors presented the problem identification and resolution inspection results to Mr. Rob Garver, Director of Nuclear Safety and Licensing, and Mr. Fred Mladen, Site Vice President, respectively and other members of the Surry staff.

#### **DOCUMENTS REVIEWED**

#### Procedures:

0-MPM-1900-01, Periodic Inspection of Flood and Spill Protection Dikes, Dams, and Expansion Joint Shields, Rev. 14

CM-AA-FPA-101, Control of Combustible and Flammable Materials, Rev. 10

DOM-QA-1, Nuclear Facility Quality Assurance Program Description, Rev. 27

EC-AA-110, Identifying and Addressing Nuclear Safety and Quality Concerns, Rev. 1

ER-AA-AMP-10, License Renewal Aging Management Program, Rev. 4

GMP-013, Removal and Installation of Flood Protection Dikes and Placing MER 3 in Extended Access. Rev. 26

LI-AA-700 Fatigue Management and Work Hour Limits for Covered Workers, Rev. 13

NO-AA-102, Internal Audit and Millstone Inspection, Rev. 2

NO-AA-110, Matrix of Organizational titles to QA Program Descriptions and Technical Specifications, Rev. 9

NO-AA-IAP-101, Internal Audit Program, Rev. 1

OP-AA-100, Conduct of Operations, Rev. 37

OP-AA-102, Operability Determination, Rev. 15

OP-AA-102-1001, Development of Technical Basis to Support Operability Determination, Rev. 11

PI-AA-100 Performance Monitoring, Rev. 11

PI-AA-100-1003, Self Evaluation and Trending, Rev. 24

PI-AA-100-1004, Self-Assessments, Rev. 14

PI-AA-100-1007, Operating Experience Program, Rev. 17

PI-AA-200, Corrective Action, Rev. 34

PI-AA-300, Cause Evaluation, Rev. 16

PI-AA-300-3001, Root Cause Evaluation, Rev. 13

PI-AA-300-3004, Cause Evaluation Methods, Rev. 7

PI-AA-300-3007, Level of Effort Evaluation, Rev. 0

MA-AA-102, Foreign Material Exclusion, Rev. 22

0-SP-FP-006, Monthly Fire Door Inspection, Rev. 25

ER-AA-MRL-100, Implementing Maintenance Rule, Rev. 12

ER-AA-MRL-10, Maintenance Rule Program, Rev. 6

CM-AA-FPA-100, Fire Protection/Appendix R (Fire Safe Shutdown) Program, Rev. 13

#### Audits:

17-05, Corrective Action, Independent Reviews and License Commitments, Aug. 10, 2017

17-01 Security, March 20, 2017

17-02, Emergency Preparedness, April 11, 2017

17-04, Fire Protection and SPS Refueling, July 20, 2017

18-02, Emergency Preparedness, April 16, 2018

18-05, Design Control and Engineering Programs, Aug. 27, 2018

18-11, Nuclear oversight – Independent Auditor

18-04, Radiological Protection Process Control Program and Chemistry, July 10, 201

#### Self-Assessments:

PIR 1067515, 2018 Pre PIR/CAP Self Assessment

PIR 1041866, Pre-PI&R CAP Self-Assessment for 2017 PI&R Inspection, Nov. 23, 2016

#### **Condition Reports:**

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1090755, 1090506, 1090395, 1090273, 1073817, 1073821, 1072394, 1068682, 1069573, 1060458, 1061291, 1061418, 1090846, 1101722, 1100337, 1100434, 1098665, 1103211, 1096874, 1097984, 1088080, 1101618, 1099767, 1096408, 1098623, 1102590, 1086207, 1100867, 1097894, 1090088, 1096801, 1098187, 1097564, 1096150, 1097075, 1090496, 1097741, 1096706, 1097676, 1098502, 1097148, 1094452, 1093040, 1080297, 1084989, 1087238, 1084587, 1085505, 1081560, 1077335, 1074455, 1064184, 1077489, 1078633, 1063310, 1063677, 1071129, 1070217, 1061204, 1066439, 1063737, 1065174, 1065753, 1074474, 1062893, 1105964, 1105960, 1099218, 1105977, 1107889, 1045035, 1071366, 1071642, 1085020, 1071999, 1072024, 1091105, 1074001, 1070573, 1073637, 1073605, 1077472, 1092981, 1077423, 1090952, 1085015, 1071612, 1077126, 1061977, 1060442, 1095384, 1077126, 1091963, 1077007, 1077684, 1079173, 1061451, 1061682, 1106413, 1106069, 1106041, 1106057, 1063390, 1074071, 1078481, 1097541, 1075806, 1068725, 1107649, 1099694, 1107942, 1107946
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#### **Corrective Action Documents:**

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3059324, 3143691, 7355048, 3061994, 3061996, 3058929, 3143734, 7307395, 7304882, 7356701, 7263575, 7263573, 7263569, 7263568, 7303410, 1068357, 3067522, 3057635, 3057495, 3060275, 3067567, 1067791, 1069872, 1067825, 1103686, 1098390, 1097304, 1058899, 1074848, 1090303, 1096058, 1100189, 1063297, 1074705, 1088232, 1096894, 1096152, 1095996, 1100714, 1089830, 1070950, 1074933, 1075404, 1095837, 1097842, 1103262, 1090045, 1090047, 1096365, 4099434, 1070952, 1058061, 1092843, 1095614, 1100305, 1094713, 1074705, 1074933, 1074848, 1090625, 1058043, 1097029, 1101859, 1105183, 1101437, 1075902, 1064246, 1096094, 1100714, 1096365, 1058697, 1100977, 1094758, 1106897, 1105916, 1096169, 1097940, 1095123, 1075404, 1076027, 1075449, 3050726, 3050730, 3050732, 7279259, 7267600, 3163340, 1105945, 1105985, 3064969, 3057511, 3065361, 3064467, 3064464, 3064463, 3064470, 3067576, 3052986, 3052980, 3046545, 3046546, 3050720, 3060983, 7346589, 7423984, 7423985
```

#### **Cause Evaluations:**

ACE CA3070632, MER 5 Flood Dike Loose Bolting (CR 1083839)

ACE CA3061805, NRC identified NCV for the installation of MER 5 flood barrier with inadequate procedures (CR 1073373)

ACE 3050718, Service Water Valve Pit Flood Dikes (CR 1060189)

ACE CA3053710, Inadvertent Closure of 1-MS-GOV-3 and Downpower

ACE CA3154218, MER 3 Service Water Pipe Lacks Barrier (CR 1091963)

ACE CA3102000, Loss of 1J Bus Due to Opening 15J3A Fuse Drawer (CR 1088080)

ACE CA3064969, Perform Apparent Cause Evaluation 1-SS-HCV-101C leakage (CR1075404)

ACE CA3163340, 2018 Ops ATV Team Identified Finding in Objective 3 (CR1092843)

ACE CA7279259, ACE to Operations for Missed Technical Specification surveillance (CR1098390)

ACE CA7267600, ACE to OPS to include a review of procedure related attributes (CR1097304)

#### Documents:

Performance Improvement Reports (PIR) 1079994, 1089720, 1089720,

PAs: 3152210, 3152213, 3056849, 3140937, 3129466,

OR-GL-02, Organizational Effectiveness CRT Guidelines, Rev. 13

Corrective Action Assignment Review Team (CAART) package Sept. 26, 2018

Condition Report Review Team (CRT) package Sept. 26, 2018

Corrective Action Assignment Review Team (CAART) package Sept. 27, 2018

Condition Report Review Team (CRT) package Sept. 27, 2018

Corrective Action Assignment Review Team (CAART) package Oct. 17, 2018

Condition Report Review Team (CRT) package Oct. 17, 2018

Corrective Action Assignment Review Team (CAART) package Oct. 18, 2018

Condition Report Review Team (CRT) package Oct. 18, 2018

Maintenance Rule Expert Panel (MREP) meeting minutes from Aug. 2, 2018

Station Performance Improvement Meeting minutes from July 18, 2018

Station Performance Improvement Report, Surry Power Station, Jan 1, 2018 to May 31, 2018

Radiological Protection Department Self Evaluation Meeting (DSEM), 2018

Training DSEM, 2018

Operations DSEM, 2018

Engineering DSEM, 2018

Maintenance DSEM, 2018

ER-AA-MRL-10, Maintenance Rule Program, Rev. 6

SDBD-SPS-AFW, System Design Basis Document for Auxiliary Feedwater System, Rev. 24

#### Work Orders:

38102230316, 38103673281, 38204179215, 38103746487, 38102944216, 38103280343,

38103394175, 38103394179, 38103727443, 38103590961, 38103727442, 38103484103,

38103670852, 38204187497, 38103434326, 38102861020, 38103673619, 38204179215,

#### Other:

ETE-SU-2017-0042, Design Basis for Flood Barriers at the Service Water Valve Pits, dated July 31, 2017

ETE-SU-2017-0044, Evaluation of MER5 Flood Wall Installation Design, dated June 8, 2017 Engineering Department Logs on 2-VS-FDMP-8 and Battery Room Foam Inserts, dated September 27, 2018

Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) Technical Inquiry Response on 2-VS-FDMP-8, dated October 15, 2018

Drawing No. 11548-FE-1G, 125V DC One Line Diagram, Surry Power Station (SPS) Unit 2, Rev. 37

Drawing No. 11448-FE-1G, 125V DC One Line Diagram, SPS - Unit 1, Rev. 42

Drawing No. 11448-FB-4C, Yard Fuel Oil Lines Surry Power Station Unit 1, Rev. 13

Drawing No. 11448-FAR-206, Sheet 3 of 11, Equipment Location-Appendix R Service Building Part Plan EL.27'-0" SPS - Unit 1 Virginia Power, Rev. 15

Drawing No. 11548-FE-1S, Technical Support Center Electrical One Line Diagram SPS - Unit 2, Rev. 24

Drawing No. 11548-FE-1R, One Line Diagram Technical Support Center SPS - Unit 2, Rev. 26 Specification No. NUS 9148, Stationary Batteries and Battery Racks, dated October 2, 1985 Scaffold Order No. 38204187497, Routine Maintenance to perform freshening charge on Battery 2-EPD-B-2A

System Health Reports for EDGs 2Q2017, 4Q2017, and 2Q2018

Unit 1 and Unit 2 Aggregate Impact Lists dated 9/27/2018

Unit 1 and Unit 2 Abnormal Status Report Dated 9/27/2018

Organizational Effectiveness Survey, July 5, 2017

Organizational Effectiveness Survey, July 18, 2018

Standing Order SO-18-001, Oct. 23, 2018