



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II

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

November 1, 2017

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

**SUBJECT: SURRY POWER STATION – NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT 05000280/2017003 AND
05000281/2017003**

Dear Mr. Stoddard:

On September 30, 2017, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2. On October 11, 2017, the NRC inspectors discussed the results of this inspection with Mr. F. Mladen and other members of your staff. The inspectors documented the results of this inspection in the enclosed inspection report.

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

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/

Anthony D. Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure:
IR 05000280/2017003, 05000281/2017003
w/Attachment: Supplemental Information

cc: Distribution via ListServ

D. Stoddard

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INTEGRATED INSPECTION REPORT 05000280/2017003 AND
05000281/2017003 November 1, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281

License Nos.: DPR-32, DPR-37

Report No: 05000280/2017003, 05000281/2017003

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 and 2

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: July 1, 2017 through September 30, 2017

Inspectors: P. McKenna, Senior Resident Inspector
C. Jones, Resident Inspector
A. Butcavage, Reactor Inspector (1R07)

Approved by: Anthony D. Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000280/2017003, 05000281/2017003; 07/01/2017-09/30/2017; Surry Power Station, Units 1 and 2: Routine Integrated Inspection Report.

The report covered a three-month period of inspection by resident inspectors and a region-based inspector. No NRC-identified or self-revealing findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near rated thermal power (RTP) from the beginning of the inspection period until August 8, 2017 when RTP was reduced to 30 percent to identify reactor coolant system (RCS) leakage in the "C" reactor coolant loop room. On August 9, 2017, Unit 1 was shutdown for a forced maintenance outage to repair the RCS leakage. It remained offline until August 11, when the main turbine was synchronized to the grid. On August 12, the unit reached RTP and operated there for the remainder of the inspection period.

Unit 2 operated at or near RTP throughout the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

External Flooding

a. Inspection Scope

The inspectors performed an inspection of the external flood protection measures for Surry. The inspectors reviewed Technical Specifications (TS), procedures, design documents, and the Updated Final Safety Analysis Report (UFSAR) which depicted the design flood levels and protection areas containing safety-related equipment to identify areas that may be affected by external flooding. The inspectors conducted a site walkdown of the common low level intake structure, including doors, flood protection barriers, penetrations, and the integrity of the perimeter structure to ensure the licensee erected flood protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to determine if the licensee planned or established adequate measures to protect against external flooding events. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial Walkdown

a. Inspection Scope

The inspectors conducted four equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, with the other train or system inoperable or out of service. The inspectors reviewed the functional systems descriptions, UFSAR, system operating procedures, and TS to determine correct system lineups for the current plant conditions. The inspectors performed

walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system. Documents reviewed are listed in the Attachment.

- Emergency diesel generator (EDG) fuel oil system prior to #3 EDG planned maintenance
- Machinery equipment room (MER) 3 main control room (MCR) chillers after 'A' MCR return to service following planned maintenance
- Unit 1 containment spray (CS) pumps during Unit 2 CS pump performance test
- Diesel driven fire pump after control panel replacement

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Fire Protection Reviews

a. Inspection Scope

The inspectors conducted tours of the five areas listed below that are important to reactor safety to verify the licensee's implementation of fire protection requirements as described in fleet procedures CM-AA-FPA-100, "Fire Protection/Appendix R (Fire Safe Shutdown) Program," Revision 13, CM-AA-FPA-101, "Control of Combustible and Flammable Materials," Revision 8, and CM-AA-FPA-102, "Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process," Revision 8. The reviews were performed to evaluate the fire protection program operational status and material condition and the adequacy of: (1) control of transient combustibles and ignition sources; (2) fire detection and suppression capability; (3) passive fire protection features; (4) compensatory measures established for out-of-service, degraded or inoperable fire protection equipment, systems, or features; and (5) procedures, equipment, fire barriers, and systems so that post-fire capability to safely shutdown the plant is ensured. The inspectors reviewed the corrective action program to verify fire protection deficiencies were being identified and properly resolved. Documents reviewed are listed in the Attachment.

- Unit 1 and 2 Cable Tray Rooms
- Emergency Service Water (ESW) Pump Room
- #2 Emergency Diesel Generator Room
- Unit 1 Emergency Switchgear Room (ESGR)
- Unit 2 ESGR

b. Findings

No findings were identified.

1R06 Flood Protection Measures

Annual Review of Electrical Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manholes 1-EP-MH-1, 1-EP-MH-2, and 1-EP-MH-3 to assess the condition of electrical cables located inside the underground manholes. The inspectors verified by direct observation and review of the associated inspection documents that the cables, splices, support structures, and sump pumps located within the manholes appeared intact, and that the cables were not being impacted by water. In addition, the inspectors reviewed several past periodic licensee inspection results and the licensee's corrective action plan (CAP) database for each of the above mentioned manholes to ensure that any degraded conditions identified were appropriately resolved.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Triennial Review of Heat Sink Performance

a. Inspection Scope

Heat Exchangers (Recirculation Spray and Emergency Service Water Pump Heat Exchanger)

The inspectors reviewed completed surveillances, vendor manual information, associated calculations, performance test results, and cooler inspection results associated with the Unit 2 "B" and "C" Recirculation Spray (RS) heat exchangers and the "A" Emergency Service Water (ESW) pump (1-SW-P-1A) and oil cooler 01-SW-E-8-HTEXCH. These heat exchangers/coolers are both directly cooled by the service water system and were chosen based on their risk significance in the licensee's probabilistic safety analysis, and their important safety-related mitigating system support functions.

For the RS heat exchangers, the inspectors reviewed documentation to determine whether testing and monitoring of biotic fouling and macrofouling programs were adequate to ensure required cooling water flow was achieved during flow tests. This was accomplished by assessing whether the test method used was consistent with accepted industry practices or equivalent, the test conditions were consistent with the selected methodology, and that the test acceptance criteria were consistent with the accident condition design basis values. The inspectors also evaluated whether the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values, and that test results considered test instrument inaccuracies and differences.

The inspectors also examined whether the operation of the RS heat exchangers was consistent with design assumptions in heat transfer calculations and as described in the final safety analysis report and that operating parameters were consistent with plant TS and control room operating procedures. This included determining whether the number of plugged tubes was within pre-established limits based on vendor design specification data sheets. In addition, recently completed flow testing results were reviewed to determine if adequate flow was achieved during the test in order to provide reasonable assurance that calculated required flows to support accident analysis assumptions could be achieved during flow testing. Inspectors also reviewed existing plant procedures in order to verify that intake canal minimum water levels used in operating procedures were consistent with the design calculations and TS requirements.

For the ESW pump diesel generator oil cooler, the inspectors reviewed the methods and results of heat exchanger inspections and post maintenance pump testing. The inspectors assessed whether the methods used to inspect, clean or replace the heat exchanger were consistent with as-found conditions identified, expected degradation trends and that the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry and vendor standards. The assessment also verified that as-found results were recorded, evaluated, and appropriately dispositioned so that the as-left condition met procedure requirements. Post-maintenance testing results of the pump performance test were reviewed in order to verify that established pump acceptance criteria was met during the performance test. Inspectors also performed a walkdown of the pump location and intake structure that provides the suction water source for the ESW pumps in order to verify that the general pump condition, intake bay, and screens were maintained consistent with industry standards and plant procedures.

For the ESW Pump 1-SW-P-1A heat exchanger, the inspection results were reviewed to verify the heat exchanger was inspected, cleaned and appropriately returned to service. Inspectors also reviewed the post maintenance pump testing associated with the 1-SW-P-1A pump to verify testing results were being trended by the system engineer. ESW pump start time critical action validation and verification test results were also reviewed in order to provide reasonable assurance that actual maximum start time in the field were within the required evaluated accident condition start time assumptions in the accident analysis. A sample of an ESW pump refurbishment package was also reviewed in order to provide assurance that planned maintenance was being performed on a periodic basis and in accordance with applicable requirements of the stations' ASME Section XI Repair Replacement Program. Inspectors also observed an over-speed trip test of the mechanical governor on the diesel engine associated with the 1-SWP-1A pump to verify established trip parameters were in accordance with the test procedure acceptance criteria.

Ultimate Heat Sink (Intake Canal and River Intake Structure)

The inspectors reviewed documentation to determine whether the performance of ultimate heat sink (UHS), and associated subcomponents such as piping, intake screens, pumps, valves, etc., was appropriately evaluated by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems.

The inspectors reviewed the licensee's inspection of the UHS intake canal to determine if the inspection was thorough and of sufficient depth to identify degradation of the intake

canal for loss of structural integrity. This included a field walkdown in order to determine whether vegetation present along the slopes was trimmed, maintained, and was not adversely impacting the embankment. Walkdowns also included inspection for visible signs of leakage at random locations along the length of the canal. The inspectors reviewed existing condition reports (CRs) on the intake canal and compared the dispositions to actual field conditions. Potential differences between as-found field conditions and existing CR dispositions were discussed with the responsible engineering organization. Additional CRs were generated and entered into the corrective action process to address any potential differences identified. These CRs are listed in the Documents Reviewed section of the Attachment.

The inspectors also reviewed the results of the licensee's bathymetric survey of the river bed leading to the circulating water pump and emergency service water pump screen house intake area, in order to determine if the river bed approach to the intake area was adequately maintained.

The inspectors performed a walkdown of the intake bay traveling screen area. This inspection was completed in order to identify any potential indicators of degradation of the traveling screen support structures that had the potential to impact operation of the emergency service water pumps. Any identified conditions were discussed with station personal and entered into the corrective action process.

The inspectors reviewed the licensee's operation of the service water system and UHS with respect to required minimum intake canal level requirements during abnormal operating conditions. The operations procedure 0-AP-12.01, Loss of Intake Canal Level, Revision 36, was reviewed to determine if it included steps to provide the required canal level in order to ensure adequate head to the recirculation spray system; which in turn provides reasonable assurance that required service water flow will be provided to the RS heat exchangers during design basis accident scenarios. In addition, inspectors discussed intake screen bio-fouling and canal silting maintenance and its impact on system flow testing with the service water system engineer, in order to determine if it was being properly monitored, trended, and controlled by the licensee to prevent clogging.

The inspectors also reviewed a sample of CRs related to service water heat sink performance issues to determine whether the licensee had an appropriate threshold for identifying issues of concern, and to evaluate the effectiveness of the corrective actions.

These inspection activities constituted four heat sink inspection samples as defined in IP 711111.07.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors observed and evaluated a licensed operator simulator exercise given on August 29, 2017. The inspectors observed the crew's performance to determine whether the crew met the scenario objectives; accomplished the critical tasks; demonstrated the ability to take timely action in a safe direction and to prioritize, interpret, and verify alarms; demonstrated proper use of alarm response, abnormal, and emergency operating procedures; demonstrated proper command and control; communicated effectively; and appropriately classified events per the emergency plan. The inspectors observed the post training critique to determine that weaknesses or improvement areas revealed by the training were captured by the instructor and reviewed with the operators. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Resident Inspector Observation of Control Room Operations

a. Inspection Scope

During the inspection period, the inspectors conducted observations of licensed reactor operator activities to ensure consistency with licensee procedures and regulatory requirements. For the following activities, the inspectors observed the following elements of operator performance: 1) operator compliance and use of plant procedures including technical specifications; 2) control board component manipulations; 3) use and interpretation of plant instrumentation and alarms; 4) documentation of activities; 5) management and supervision of activities; and 6) control room communications.

- On August 9, Unit 1 reactor shutdown to hot shutdown for a forced outage
- On August 10, Unit 1 reactor startup from a forced outage

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the three equipment issues described in the condition reports listed below, the inspectors evaluated the effectiveness of the corresponding licensee's preventive and corrective maintenance. The inspectors performed a detailed review of the problem history and associated circumstances, evaluated the extent of condition reviews, as required, and reviewed the generic implications of the equipment and/or work practice problem(s). Inspectors performed walkdowns of the accessible portions of the system, performed in-office reviews of procedures and evaluations, and held discussions with

system engineers. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65), station procedures ER-AA-MRL-10, "Maintenance Rule Program," Revision 6, and ER-AA-MRL-100, "Implementing Maintenance Rule," Revision 11. Documents reviewed are listed in the Attachment.

- CR1072928, Unit 2 "B" steam generator (SG) level control failure
- CR1076127, Through wall leak on flex hose for 'B' ESW pump
- Maintenance Rule Periodic a(3) Review 07/01/2015 to 01/01/2017

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, the four activities listed below for the following: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and, (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of 10 CFR 50.65(a) (4) and the data output from the licensee's safety monitor associated with the risk profile of Units 1 and 2. The inspectors reviewed the corrective action program to verify deficiencies in risk assessments were being identified and properly resolved. Documents reviewed are listed in the Attachment.

- On July 31, Unit 1 and Unit 2 risk while #2 EDG was in a three-day maintenance outage and the station Alternate AC (AAC) EDG was declared non-functional.
- On August 9, Unit 1 and Unit 2 risk while conducting Unit 1 shutdown to RCS leakage from 1-SS-HCV-101C.
- On August 25, Unit 1 and Unit 2 risk while the "2C" SW header was out of service (OOS) for cleaning; the "B" ESW pump was OOS for suction bowl cleaning and the "E" MCR chiller was OOS for testing.
- On September 15, Unit 2 risk while opening one of the Unit 2 main generator output breakers to take 500KV line 567 out of service.

b. Findings

No findings were identified.

1R15 Operability Evaluationsa. Inspection Scope

The inspectors reviewed the four operability evaluations listed below, affecting risk-significant mitigating systems, to assess as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered; (4) if compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation and the risk significance. The inspectors' review included verification that operability determinations were made as specified in OP-AA-102, "Operability Determination," Revision 15. The inspectors reviewed the licensee's corrective action program to verify deficiencies in operability determinations were being identified and corrected. Documents reviewed are listed in the Attachment.

- CR 1072525, Very loose battery connection on #3 EDG battery
- CR 1072622, 2-MS-FI-2494 (Channel III Steam Flow for 'C' SG) had a step change downward
- Oil Replacement on EDG#2 during maintenance package
- CR1074888, Opening in ESW pump house floor due to removal of abandoned fuel line

b. Findings

No findings were identified.

1R18 Plant ModificationsTemporary Modificationsa. Inspection Scope

The inspectors reviewed two temporary modifications to verify that the modifications did not affect system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the temporary modification was in accordance with CM-AA-TCC-204, "Temporary Configuration Changes," Revision 5, and for the related work package, that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems. Documents reviewed are listed in the Attachment.

- SU-17-00130, 1-SS-HCV-101C, Unit 1 "C" hot leg sample valve tubing repair
- TM S2-17-156, Unit 2 Loss of Load Protection for 567 500KV Line Out of Service

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed seven post-maintenance test procedures and/or test activities for selected risk-significant mitigating systems listed below, to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform in accordance with VPAP-2003, "Post Maintenance Testing Program," Revision 14. Documents reviewed are listed in the Attachment.

- 1-OPT-FW-003, "Turbine Driven Auxiliary Feedwater (AFW) Pump 1-FW-P-2 Performance Test," Revision 52, on the Unit 1 Turbine Driven AFW pump after planned maintenance.
- 0-OPT-SW-001, "Emergency Service Water Pump 1-SW-P-1A Performance Test," Revision 63, on the 'A' ESW Pump after a maintenance package.
- 0-OSP-VS-012, "High Flow Flush of SW Strainers and Piping in MER 3 and MER 4," Revision 6, after a "B" MCR Chiller maintenance package and replacement of 01-SW-PCV-100B, "B" MCR chiller condenser SW outlet pressure control valve positioner.
- 2-OPT-EG-009, "Number 2 Emergency Diesel Generator Major Maintenance Operability Test," Revision 55, after #2 EDG major maintenance package.
- 0-ECM-0103-02, "Station Battery UPS System Maintenance," Revision 33, after Unit 1A uninterruptible power supply (UPS) card replacement.
- 1-OPT-SI-005, "LHSI Pump Test," Revision 33, after the replacement of the 1-SI-RV-1845B relief valve.
- 0-OPT-VS-008, "Control Room Air Conditioning System Pump and Valve In-service Testing (MER 5 Chillers)," after the replacement of the "E" MCR chiller heat exchanger.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the four surveillance tests listed below, the inspectors examined the test procedures, witnessed testing, or reviewed test records and data packages, to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable, and that the surveillance requirements of TS were met.

The inspectors also determined whether the testing effectively demonstrated that the systems or components were operationally ready and capable of performing their intended safety functions. Documents reviewed are listed in the Attachment.

Surveillance Testing:

- 1-PT-8.5, "Consequence Limiting Safeguards Logic (Hi-Hi Train)," Revision 28
- 1-OPT-CH-001, "Charging Pump Operability and Performance Test for 1-CH-P-1A," Revision 60
- 0-PT-8.8, "Intake Canal Level Logic Testing," Revision 13
- 1-OP-RX-002, "Control Rod Overstepping," Revision 16

b. Findings

No findings were identified.

1EP6 Drill Evaluation

Emergency Preparedness (EP) Drill

a. Inspection Scope

On September 19, 2017, the inspectors reviewed and observed a licensee EP drill involving a dropped control rod, fuel element failure, a large break loss of coolant accident (LOCA), and a flange leak on the inlet to a low head safety injection (LHSI) pump which leads to a general emergency declaration. The inspectors assessed the licensee emergency procedure usage, emergency plan classifications, notifications, and protective actions recommendation development. The inspectors evaluated the adequacy of the licensee's conduct of the drill and post-drill critique performance. The inspectors verified that the drill critique identified drill performance weaknesses and entered these items into the licensee's CAP. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems (MSs), Barrier Integrity, Emergency Preparedness, Public Radiation Safety, and Occupational Radiation Safety

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors performed a periodic review of the four following Unit 1 and 2 PIs to assess the accuracy and completeness of the submitted data and whether the performance indicators were calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspection was conducted in accordance with NRC Inspection Procedure 71151,

“Performance Indicator Verification.” Specifically, the inspectors reviewed the Unit 1 and Unit 2 data reported to the NRC for the period July 1, 2016 through June 30, 2017. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

- Unit 1 Auxiliary Feedwater MSPI
- Unit 2 Auxiliary Feedwater MSPI
- Unit 1 Emergency AC Power MSPI
- Unit 2 Emergency AC Power MSPI

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Reviews of items Entered into the Corrective Action Program

a. Inspection Scope

As required by NRC Inspection Procedure 71152, “Identification and Resolution of Problems,” and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee’s CAP. This review was accomplished by reviewing daily CR report summaries and periodically attending daily CR review team meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee’s corrective action program documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors’ review was focused on repetitive equipment and corrective maintenance issues, but also considered the results of daily inspector corrective action program item screening discussed in Section 4OA2.1. The review included issues documented outside the normal correction action program in system health reports, corrective maintenance work orders, component status reports, site monthly meeting reports, and maintenance rule assessments. The inspectors’ review nominally considered the six-month period of January through June, 2017, although some examples expended beyond those dates when the scope of the trend warranted.

The inspectors compared and contrasted their results with the results contained in the licensee’s latest integrated quarterly assessment report. Corrective actions associated with a sample of the issues identified in the licensee’s trend report were reviewed for adequacy. Documents reviewed are listed in the Attachment.

b. Assessment and Observations

No findings of significance were identified. The inspectors did observe that there continued to be material problems with main feedwater pump (MFP) mechanical seals documented in CRs during this period. In March, 2017, the licensee completed a root cause evaluation (RCE) (3047153) after Unit 1 was ramped to 60 percent power on December 15, 2016, due to the failure of the "A" MFP outboard mechanical seal. During this integrated report inspection period there were two operational decision making (ODM) checklists in place for MFP mechanical seal leaks. CA3043265 ODM was in place for the Unit 2 "B" MFP inboard mechanical seal due to leakage and CA3046804 ODM was in place for the Unit 1 "B" MFP inboard and outboard mechanical seals due to leakage. The Unit 2 "B" MFP inboard mechanical seal leakage subsequently stopped during this inspection period. It is too soon to evaluate if the corrective actions and the corrective actions to prevent recurrence from RCE 3047153 will be effective.

In general, the licensee has identified trends and has addressed the trends with their corrective action program. No new adverse trends were identified this period that had not already been identified by the licensee.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153 – 1 Sample)

Unit 1 Shutdown to Repair RCS leakage from 1-SS-HCV-101C

a. Inspection Scope

On August 9, 2017, the licensee conducted a Unit 1 reactor plant shutdown to hot shutdown to repair a RCS leak on 1-SS-HCV-101C, the "C" RCS hot leg loop sample line. The license implemented a design change to cap the sample line until a permanent repair can occur during the next refueling outage (RFO). The licensee started up the reactor plant and synchronized the main generator to the grid on August 11. The inspectors reviewed the station's work schedule and risk plan for the Unit 1 forced maintenance outage. The inspectors confirmed that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The inspectors observed the shutdown and the startup of the reactor plant. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA5 Other Activities

Independent Spent Fuel Storage Installation (ISFSI) Inspections (IP 60855.1)

a. Inspection Scope

The inspectors reviewed reported changes made to the licensee's procedures and programs for the Independent Spent Fuel Storage Installations (ISFSI) to verify the changes made were consistent with the license and Certificate of Compliance (CoC);

and did not reduce the effectiveness of the program. The inspectors, through direct observation and independent evaluation, verified cask loading activities were performed in a safe manner in compliance with approved procedures. Based on direct observation and review of selected records, the inspectors verified the licensee had properly identified each fuel assembly and insert placed in the ISFSI had recoded the parameters and characteristics of each fuel assembly and insert, and had maintained a record of each as a controlled document. Inspection activities were associated with casks DOM-32PTH-064D, DOM-32PTH-065D, and DOM-32PTH-066D. Activities observed include: transport and storage of cask DOM-32PTH-065D, loading of spent fuel in cask DOM-32PTH-064D and 065D, drying and seal welding activities on DOM-32PTH-064D, and the heavy lift to remove DOM-32PTH-064D from the spent fuel pool.

The inspectors reviewed the design limitations for each dry shielded cask (DSC) and compared the specified cask loading to the cask's loading limitations and TS requirements. The inspectors verified limitations for heavy load lifts in and around the spent fuel pool were adhered to and incorporated into the licensee's procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

40A6 Meetings, Including Exit

Exit Meeting Summary

On October 11, 2017, the inspection results were presented to Mr. F. Mladen and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Philpot, Manager, Training
B. Garber, Manager, Station Licensing
M. Haduck, Manager, Outage and Planning
J. Henderson, Acting Director, Station Engineering
L. Jones, Acting Manager, Protection Services
R. Johnson, Manager, Operations
K. Longston, Acting Manager, Emergency Preparedness
F. Mladen, Site Vice President
L. Ragland, Manager, Radiological Protection and Chemistry
J. Rosenberger, Acting Director, Station Safety and Licensing
R. Scanlan, Manager, Nuclear Organizational Effectiveness
R. Simmons, Plant Manager
D. Wilson, Manager, Maintenance

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Condition Reports

1074888

Other Documents

DC SU-15-01083, 01-SW-P-1A/B/V Diesel Foundation Replacement Project, Rev. 13
Dominion Flooding Hazard Reevaluation Report for Surry Power Station Units 1 and 2, Rev. 1
ETE-CEP-2012-0005, Design and Licensing Basis Review of the Surry Seismic and Flooding Requirements Related to the March 12, 2012, NRC 50.54(f) Request for Information, Rev. 2
LER 05000280, 05000281/2009-002-00, Emergency Service Water Pumps Potential Flooding Due to Inadequate Procedure, 11/23/09
Task 670-09, Internal Flooding Design Basis Surry Power Station, 06/30/92
Technical Evaluation of Susceptibility of Safety-Related Systems to Flooding Caused by the Failure of Non-Category 1 Systems for Surry Units 1 and 2, 12/80

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- 0-MCM-0703-01, Emergency Service Water Pump Diesel Engine Service and Inspection,
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- 0-NSP-CW-003, Engineering Surveillance Procedure, Surry Station Bathymetric Survey
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- CR1073491, Evaluate Performance of an Intake Canal Bathymetric Survey, 7/13/17
- CR1073816, NRC Observation during Tri-Annual Ultimate Heat Sink Inspection, 7/18/17
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- CR1039460, 1B-ESW Diesel Cooling Line Inoperable Prior to Discovery, 5/11/16
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38103614674, Unit-1, PM, Low Level Intake, Clean Trash Rack, 2/10/16

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38103706791, Unit-2, Preventative Maintenance (PM) Semi Annual Inspection & Lubrication of Low Level Screens, 3/8/17

38103707861, Unit-1, PM of Low Level Intake, Clean Trash Rack, 11/16/16

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