



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

April 30, 2020

Mr. G. T. Powell
President and CEO
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION,
UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000498/2020001
AND 05000499/2020001

Dear Mr. Powell:

On March 31, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at South Texas Project Electric Generating Station, Units 1 and 2. On April 16, 2020, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

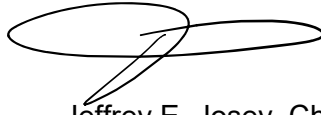
One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

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 IV; the Director, Office of Enforcement; and the NRC Resident Inspector at South Texas Project.

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 IV; and the NRC Resident Inspector at South Texas Project.

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,

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by 'E. Josey'.

Jeffrey E. Josey, Chief
Reactor Projects Branch A
Division of Reactor Projects

Docket Nos. 05000498 and 05000499
License Nos. NPF-76 and NPF-80

Enclosure:
As stated


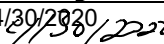
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 INTEGRATED INSPECTION REPORT 05000498/2020001 AND 05000499/2020001 –
 April 30, 2020

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 05000498 and 05000499

License Numbers: NPF-76 and NPF-80

Report Numbers: 05000498/2020001 and 05000499/2020001

Enterprise Identifier: I-2020-001-0012

Licensee: STP Nuclear Operating Company

Facility: South Texas Project

Location: Wadsworth, TX 77483

Inspection Dates: January 1, 2020 to March 31, 2020

Inspectors: B. Baca, Health Physicist
T. DeBey, Resident Inspector
J. Ellegood, Senior Resident Inspector
L. Flores, Project Engineer
J. O'Donnell, Senior Health Physicist
A. Sanchez, Senior Resident Inspector
C. Stott, Resident Inspector

Approved By: Jeffrey E. Josey, Chief
Reactor Projects Branch A
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at South Texas Project, 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 Perform an Operability Determination for the Unit 2 Reactor Containment Building Side Auxiliary Air Lock Door			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000499/2020001-01 Open/Closed	[H.11] - Challenge the Unknown	71111.15
The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" associated with the licensee's failure to follow the operability procedure, 0POP01-ZO-0011, "Operability, Functionality, and Reportability Guidance," Revision 12, and perform an operability determination on degraded equipment. Specifically, the operations personnel failed to assess the operability for the Unit 2 reactor containment building auxiliary air lock door that degraded from exposure to environmental (atmospheric) conditions while performing maintenance on the interlock mechanism. This reactor contain building auxiliary air lock door was relied upon to meet Technical Specification 3.6.1.3 for containment integrity during the maintenance activity.			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On March 13, 2020, Unit 1 commenced a reactor shutdown to begin refueling outage 1RE22 and entered Mode 3. Unit 1 remained in refueling outage 1RE22 for the remainder of the inspection period.

Unit 2 operated at or near rated thermal power for the entire inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/readingrm/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." From January 1–March 19, 2020, the inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week and during that time conducted plant status activities as described in IMC 2515, Appendix D; and observed risk-significant activities when warranted. In addition, resident and regional baseline inspections were evaluated to determine if all or portions of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In the cases where it was determined the objectives and requirements could not be performed remotely, management elected to postpone and reschedule the inspection to a later date."

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures for the following systems:

Unit 2 Essential Cooling Water Intake Structure room temperature control and alarm functions on February 20, 2020

External Flooding Sample (IP Section 03.03) (1 Partial Sample)

- (1) (Partial)
The inspectors evaluated external flooding activities in accordance with Sections 03.03.a, 03.03.b, and 03.03.c as it pertained to the Units 1 and 2 essential cooling water intake structure and all emergency diesel generator flood panel areas on January 29, 2020.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

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

- (1) Unit 1, train D auxiliary feedwater system during train B emergency diesel generator maintenance on February 7, 2020
- (2) Unit 2, train C essential cooling water intake structure during train B essential cooling water maintenance on February 12, 2020
- (3) Unit 1, feedwater booster pumps while the startup feedwater pump maintenance on March 10, 2020

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 2, train C essential cooling water pump room, Fire Area 55, on February 11, 2020
- (2) Unit 1, containment building, Fire Area 63, on March 16, 2020

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

- (1) The inspectors evaluated the onsite fire brigade performance during a simulated fire in the Unit 2 mechanical auxiliary building on January 14, 2020.

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Partial Sample)

- (1) (Partial)
The inspectors evaluated heat sink activities in accordance with Sections 02.01.b and 02.01.d as it pertained to the Unit 1 train B emergency diesel generator 6-year maintenance that opened and inspected the lube oil and jacket water heat exchangers on February 4, 2020.

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed a Unit 1 operating crew during plant shutdown on March 13, 2020, in preparation for a refueling outage 1RE22.

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

- (1) The inspectors observed and evaluated a Unit 2 operations crew in the simulator for a training scenario involving an excessive steam demand, essential cooling water strainer clogging, and a loss-of-coolant accident on February 27, 2020.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Partial Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) (Partial)
The inspectors evaluated the effectiveness of maintenance in accordance with Section 03.01.a as it pertained to the Unit 1 train B emergency generator replacement of K1 relay resulted in miswiring of the relay and failed post-maintenance testing of the emergency diesel generator on February 20, 2020.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (1 Sample 5 Partial Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed. For the five partial samples documented below, the inspectors evaluated risk assessment and management in accordance with Sections 03.01.a, and 03.01.c.

- (1) Unit 1, planned risk due to train C 125Vdc battery and inverter maintenance and use of the Configuration Risk Management Program on January 16, 2020
- (2) (Partial)
Unit 1, unplanned risk due to train B essential cooling water maintenance resulting in entering the Configuration Risk Management Program on February 9, 2020
- (3) (Partial)
Unit 1, unplanned risk due to maintenance on train B emergency diesel generator going longer than expected and resulted in entering the Configuration Risk Management Program on February 17, 2020
- (4) (Partial)
Unit 1, train D 125vdc battery and inverter maintenance that resulted in the planned entry into the Configuration Risk Management Program on February 19–20, 2020

- (5) (Partial)
Unit 1, train A 125vdc battery and inverter maintenance that resulted in the planned entry into the Configuration Risk Management Program on February 26–27, 2020
- (6) (Partial)
Unit 1, train B 125vdc battery and inverter maintenance that resulted in the planned entry into the Configuration Risk Management Program on March 4–5, 2020

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Unit 2, train A sequencer due to sequencer trouble alarm received in control room on January 9, 2020
- (2) Unit 2, auxiliary air lock inner (reactor containment building) door that experienced a significant step change in the allowable leakage during interlock maintenance on January 30, 2020
- (3) Unit 1, train B emergency diesel generator buildup of joint sealant material observed in the wrinkle belly joints in two cylinders on February 4, 2020
- (4) Unit 1, turbine driven auxiliary feedwater pump governor valve corrosion and pitting found on March 19, 2020

71111.19 - Post-Maintenance Testing

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

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

- (1) Unit 2, train A essential chilled water chiller following preventive maintenance between January 6-9, 2020
- (2) Unit 2, train A engineered safeguards feature sequencer testing following replacement of a DC input module opto-isolator on January 10, 2020
- (3) Unit 1, train B emergency diesel generator testing following a 5-year maintenance activity on February 16, 2020
- (4) Unit 2, auxiliary air lock reactor containment building side door following seal replacement due to degradation on February 7, 2020

71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated refueling outage 1RE22 activities in accordance with Sections 03.01.a, 03.01.b, 03.01.c(1), 03.01.c(5), 03.01.c(6), 03.01.c(8), 03.01.c(9), and 03.01.d(2) on March 31, 2020.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples, 2 Partial Samples)

- (1) Unit 1, train B emergency diesel generator monthly surveillance test on January 8, 2020
- (2) Unit 1, train B emergency diesel generator surveillance test on February 16 and 17, 2020

The inspectors evaluated the surveillance testing activities in accordance with Sections 03.01(1), 03.01(2):

- (3) (Partial)
Unit 1, train B residual heat removal pump surveillance test on March 11, 2020
- (4) (Partial)
Unit 1, train C emergency diesel generator surveillance test on March 11, 2020

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors observed the licensee's enhanced emergency plan drill that involved failed fuel, a reactor coolant leak greater than the capacity of one charging pump, a large break loss-of-coolant accident, and a containment breach which exercised all emergency classification levels on March 4, 2020.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated radiological protection-related instructions to plant workers.

Contamination and Radioactive Material Control (IP Section 03.03) (3 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material. The inspectors observed the following activities:

- (1) Radiation protection technicians surveyed items in which workers brought for free release from the radiologically controlled area, as well as items which did not clear the small article monitors. Workers surveyed hand held items with available small article monitors and exiting the radiologically controlled area.
- (2) Radiation protection technician established a High Efficiency Particulate Air (HEPA) unit for control of contamination during maintenance work on a residual heat removal 1A pump valve and reactor vessel water level indicator system probe

removal. In addition, the inspector observed the use of the HEPA units by the technicians and workers for these activities.

- (3) Radiation protection technicians surveyed and controlled the levels of contamination on workers' gloves and equipment during the thimble tube retraction activity.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (4 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities. The inspector observed the following activities with regard to radiological hazard control and work coverage:

- (1) Reactor head lift activities which involved a moving technical specification high radiation area, high contamination levels, and the potential for an airborne area to be generated (Radiation Work Permit 2020-1-0121, "1RE22 - Reactor Head Lift Activities (Locked High Radiation Area (LHRA)) - High Radiological Risk", Revision 0)
- (2) Reactor vessel water level indicator system activities with irradiated components and potentially elevated contamination levels (Radiation Work Permit 2020-1-115, "1RE22 - Maintenance Support For Work in and around Reactor Cavity, Spent Fuel Pool and Transfer Canal (High Radiation Area (HRA)) - Medium Radiological Risk," Revision 0)
- (3) Residual heat removal 1A pump maintenance with discrete high radiation areas within the work area and high contamination level with the system breached (Radiation Work Permit 2020-1-0147, "1RE22 - Repair/Replace Residual Heat Removal (RHR) 1A Pump Seal (HRA) - Medium Radiological Risk," Revision 0)
- (4) Thimble tube retraction activities with high radiation areas from irradiated components and high contamination levels (Radiation Work Permit 2020-1-0123, "1RE22 - Retract/Re-Insert Thimble Tubes (LHRA) - High Radiological Risk," Revision 0)

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (4 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) Unit 1, refuel 22 reactor head lift activities which involved access to the reactor cavity and the reactor head movement
- (2) Unit 1, refuel 22 thimble tube retraction activities
- (3) Unit 1, refuel 22 reactor vessel water level indicator system activities
- (4) Unit 1, mechanical auxiliary building - Letdown Heat Exchanger room, Solid Waste Process Aisle, Chemical and Volume Control System (CVCS) Volume Control Tank room, and Mezzanine to Room 218J

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.02 - Occupational ALARA Planning and Controls

Implementation of ALARA and Radiological Work Controls (IP Section 03.03) (4 Samples)

The inspectors evaluated the licensee's communication of as low as is reasonably achievable ALARA and radiological work controls for the following work activities:

- (1) Radiation Work Permit 2020-1-115, "1RE22 - Maintenance Support For Work in and around Reactor Cavity, Spent Fuel Pool and Transfer Canal (HRA) - Medium Radiological Risk," Revision 0, specifically covering Reactor Vessel Water Level Indicator System probe removal
- (2) Radiation Work Permit 2020-1-0121, "1RE22 - Reactor Head Lift Activities (LHRA) - High Radiological Risk," Revision 0
- (3) Radiation Work Permit 2020-1-0123, "1RE22 - Retract/Re-Insert Thimble Tubes (LHRA) - High Radiological Risk," Revision 0
- (4) Radiation Work Permit 2020-1-0147, "1RE22 - Repair/Replace Residual Heat Removal (RHR) 1A Pump Seal (HRA) - Medium Radiological Risk," Revision 0

Radiation Worker Performance (IP Section 03.04) (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance. The inspectors observed and evaluated the implementation of as low as is reasonably achievable techniques for the following selected work activities:

- (1)
 - Reactor head lift activities
 - Reactor Vessel Water Level Indicator System probe removal
 - Thimble tube retraction activities
 - Residual Heat Removal 1A pump maintenance activities

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

- (1) Unit 1, January 2019 through December 2019
- (2) Unit 2, January 2019 through December 2019

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

- (1) Unit 1, January 2019 through December 2019
- (2) Unit 2, January 2019 through December 2019

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

- (1) Unit 1, January 2019 through December 2019
- (2) Unit 2, January 2019 through December 2019

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

- (1) October 1, 2019 through December 31, 2019

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

- (1) October 1, 2019 through December 31, 2019

71153 – Follow-up of Events and Notices of Enforcement Discretion

Event Follow-up (IP Section 03.01) (1 Sample)

Event Follow-up for Loss of Both the 345kV South Bus and Standby Transformer 2

- (1) On March 24, 2020, while Unit 1 was defueled in refueling outage 1RE22 and Unit 2 was at full rated power, the station experienced a loss of the 345kV south bus and standby transformer 2 at 10:46 a.m. Unit 1 experienced an undervoltage on train A and C engineered safety features (ESF) buses, which resulted in an emergency start of each of the train A and C diesel generators, as designed. Unit 1 also lost one of two trains of spent fuel pool cooling. At the time, time-to-boil in the spent fuel pool was 11 hours with the full core offloaded. Spent fuel pool cooling in Unit 1 was restored in 10 minutes. Unit 1 also had a suspended bundle in the spent fuel pool. The spent fuel pool fuel handling bridge failed in a safe condition and afterward secured the bundle with no issues.

Unit 2 experienced an undervoltage on the train B ESF bus, which resulted in an emergency start of that train's emergency diesel generator as designed. Unit 2 also lost one of two trains of spent fuel pool cooling and the time-to-boil in the spent fuel pool was 45 hours. Unit 2 spent fuel pool cooling was restored within 2 hours. All safety equipment responded as designed without any issues or operator intervention. The lockout relays for both the 345kV south bus and standby transformer two were reset and power restored to those components at 9:07 p.m. All electrical alignments and equipment restorations were completed at 10:05 p.m. for both units.

Due to the COVID-19 pandemic and NRC directives for inspectors to practice social distancing to the maximum extent possible, inspectors monitored and confirmed information via phone and through face-to-face briefings in the outage control center for Unit 1 outage. The inspectors had no concerns for equipment or operator performance during the event. The inspectors also kept abreast of restoration activities throughout the day of the event until full restoration with no concerns. The inspectors also reviewed the initial notification to verify it met the requirements specified in NUREG-1022, "Event Reporting Guidelines," Revision 3.

No findings were identified.

INSPECTION RESULTS

Failure to Perform an Operability Determination for the Unit 2 Reactor Containment Building Side Auxiliary Air Lock Door			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000499/2020001-01 Open/Closed	[H.11] - Challenge the Unknown	71111.15
<p>The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" associated with the licensee's failure to follow the operability procedure, OPOP01-ZO-0011, "Operability, Functionality, and Reportability Guidance," Revision 12, and perform an operability determination on degraded equipment. Specifically, the operations personnel failed to assess the operability for the Unit 2 reactor containment building (RCB) auxiliary air lock door that degraded from exposure to environmental (atmospheric) conditions while performing maintenance on the interlock mechanism. This RCB auxiliary air lock door was relied upon to meet Technical Specification 3.6.1.3 for containment integrity during the maintenance activity.</p>			
<p><u>Description:</u></p> <p>On November 27, 2019, following the Unit 2 refueling outage 2RE20, the auxiliary air lock reactor containment building (RCB) door was tested via a local leak rate test (LLRT) with a 20 sccm leak rate -- well below the acceptance criteria of 7584 sccm. Once every seven days the auxiliary air lock is inspected to determine if the tamper seal is still present, indicating the air lock has not been opened. If the seal is intact, no LLRT surveillance would be required. On January 23, 2020, performance technicians were testing the air lock interlock when the mechanism failed. Condition Report 20-849 was written to document the failure. The air lock was immediately declared inoperable and the licensee met Technical Specification 3.6.1.3.b by ensuring the RCB (inner) side auxiliary air lock door was closed and locked by an equipment clearance order. The yard (outer) side door would be opened to effect repairs on the interlock.</p> <p>One week later, on January 30, 2020, an LLRT was required on both inner and outer doors of the auxiliary air lock. The inner door experienced a step increase in allowable leak rate to approximately 7550 sccm, which was 99.7 percent of the allowable leak rate. Condition Report 20-1205 was written and coded as closed to trend based on requesting that the preventative maintenance activity to replace the O-rings and clean the sealing surfaces "ASAP" following the repair of the interlock. This condition received no operability determination because, although close to the acceptance limit, the licensee determined that it met the surveillance requirement. At this time the residents began asking questions about the sudden and dramatic step change in the LLRT leak rate. In a meeting with engineering on February 6, 2020, the residents discovered that the most likely cause of the change in the LLRT results for the inner air lock door was its exposure to the environmental conditions as a result of having to open the outer auxiliary air lock door while working on the air lock interlock. The residents asked why the inner air lock door, which was being relied on to meet technical specifications, was operable considering that the door continued to be exposed to environmental condition over the balance of the following week. Engineering's answer was that it met its technical specification surveillance test and that the program and procedure was being followed by initiating a condition report and requesting seal replacement after the interlock was repaired.</p>			

Maintenance performed a seal replacement and a cleaning of the sealing areas on the inner auxiliary air lock door. The door was then tested via the LLRT satisfactorily at 20 sccm. The auxiliary air lock and the inner and outer doors were declared operable in accordance with technical specifications. Unit 2 declared the auxiliary air lock door operable and exited all technical specifications on February 7, 2020.

On March 4, 2020, the residents again met with engineering, operations and licensing to review the sequence of events, past LLRTs of the inner and outer auxiliary air lock doors and discussed the potential cause(s) of the RCB door leakage. Again, engineering and licensing took the position that the inner door was operable because it met its surveillance requirements, even if when given that an apparent despite that an apparent degrading mechanism, the environment, was still present on the inner door.

The residents determined that the unexpected step change in the LLRT leak rate for the inner auxiliary air lock door coupled with the most likely cause of the degrading mechanism being the environmental conditions, which were going to continue to exist over the following week to repair the auxiliary air lock interlock mechanism, cast doubt on the reasonable assurance for operability. The licensee failed to recognize that reasonable assurance was lost and failed to enter the operability determination program and procedure. The inspectors determined that Procedure OPOP01-ZO-0011, Operability, Functionality, and Reportability Guidance," Revision 12, contained the following guidance:

- Section 6.1.2 Technical Specification surveillances are performed periodically to verify that SSCs are operable. Satisfactory performance of a surveillance is usually considered sufficient to demonstrate operability. However, IF conformance to the Current License Basis (CLB) criteria requirements are questionable due to a possible degraded or nonconforming condition, AND reasonable expectation of component operability is unclear, THEN performance of the surveillance may be INSUFFICIENT to demonstrate operability.

An example of when a surveillance would **NOT** be sufficient to establish operability is the satisfactory completion of Technical Specification surveillance, but with results that show a degrading trend and indicate that acceptance criteria might **NOT** be met before the next surveillance test. In this case, the surveillance actually identifies the conditions when the SSC will become inoperable and an operability evaluation would be warranted.

- 7.1.2 The Operability Determinations process is entered upon discovering any of the following:

Notification to the Control Room of a condition potentially affecting functionality.

Inspectors determined that the licensee became myopic and only considered the surveillance performance as the input into the operability decision. The inspectors determined that the licensee failed to challenge the circumstances surrounding the significant step change in the inner door's LLRT leak rate and thus recognize that the presumption of operability was compromised by the environmental condition, that was most likely degrading the door, and that the operability determination process should have been entered.

Corrective Actions: The licensee has taken corrective action to enter the issue into the corrective action program, as Condition Report 20-1589, and is in the process of evaluating it. The Unit 2 auxiliary air lock and its inner and outer doors are currently operable, and no immediate safety issue exists.

Corrective Action References: Condition Reports: 2020-1589, 2020-1205, 2020-849

Performance Assessment:

Performance Deficiency: The failure to implement the operability determination procedure for a degraded condition was a performance deficiency. Specifically, on January 30, 2020, the Unit 2 control room operations failed to implement the operability determination procedure, 0POP01-ZO-0011, Operability, Functionality, and Reportability Guidance,” Revision 12 for a degraded condition of the Unit 2 reactor containment building (inner) auxiliary air lock door. This degraded condition represented a loss of reasonable expectation of operability and should have been evaluated for operability. The inspectors determined that the performance deficiency was within the licensee’s ability to foresee and correct.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The performance deficiency was determined to be more than minor because it was associated with the Human Performance attribute of the Containment Barrier Integrity Cornerstone objective and adversely affected the cornerstone objective to provide reasonable assurance that physical barriers protect the public from radionuclide releases caused by accident or events. Specifically, the license failed to enter and use the operability determination procedure for a degraded RCB side auxiliary air lock door while it was being relied upon to meet technical specification for reactor containment boundary while the air lock interlock was being repaired.

Significance: The inspectors assessed the significance of the finding using Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” The inspectors used IMC 0609, Appendix A, Exhibit 3, “Barrier Integrity Screening Questions,” issued December 13, 2019 to determine the finding was of very low safety significance, Green. Specifically, the finding did not represent an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of hydrogen igniters in the reactor containment, therefore screened to Green.

Cross-Cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. Specifically, operations relied on the satisfactory surveillance and did not question the circumstances around the significant step change in LLRT leak rates for the Unit 2 auxiliary air lock inner door and thus did not recognize the operability determination procedure should have been entered.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, 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 those instructions, procedures, or drawings...” The licensee developed procedure, 0POP01-ZO-0011, “Operability, Functionality, and Reportability Guidance,” Revision 12, to comply with determining operability of safety-related, technical specification equipment and to be in compliance with the above stated regulation. Specifically, step 6.1.2 (under Presumption of Operability), states, in part, “...IF conformance

to the Current Licensing Basis (CLB) criteria requirements are questionable due to a possible degraded or nonconforming condition, AND reasonable expectation of component operability is unclear, THEN performance of the surveillance may be INSUFFICIENT to demonstrate operability....and an operability evaluation would be warranted."

Contrary to the above, on January 30, 2020, an activity affecting quality prescribed by procedures of a type appropriate to the circumstances was not accomplished in accordance with procedures appropriate to the circumstances. The licensee failed enter the operability determination process when a condition when the conformance of the current licensing basis requirements was questionable due to a possible degraded or nonconforming condition, and reasonable expectation of component operability was unclear. Specifically, the licensee did not enter the operability determination process when a significant step change in the local leak rate (consumed 99.7 percent of the allowable leakage rate) on the Unit 2 inner auxiliary air lock door was identified and the degrading mechanism, atmospheric environment, remained present for approximately one week while being relied upon to meet technical specifications.

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 confirmed that proprietary information was controlled to protect from public disclosure.

- On March 30, 2020, the inspectors presented the results for the occupational radiation safety 71124.01, 71124.02, and 71151 inspections to Mr. J. Connolly, Executive Vice President and Chief Nuclear Officer, and other members of the licensee staff.
- On April 16, 2020, the inspectors presented the integrated inspection results to Mr. G. Powell, President and Chief Executive Officer, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Corrective Action Documents	CR-YYYY-NNNN	2020-1493 2020-1494 2020-1495 2020-1496 2020-1497 2020-1498 2020-1499 2020-1500 2020-1612 2020-1613 2020-1614	
	Drawings	5R289F05038	P&ID "Essential Cooling Water," Sheet 2	
		5R289F05039	P&ID "Essential Cooling Water," Sheet 1	
		5S141F00024	P&ID "Auxiliary Feedwater," Sheet 1	13
	Procedures	0PGP03-ZM-0016	Installed Plant Instrumentation Calibration Verification Program	30
		0PMP08-ZI-0011	Generic Temperature Switch Calibration	22
		0POP02-AF-0001	Auxiliary Feedwater	52
		0POP02-EW-0001	Essential Cooling Water Operations	82
	Work Orders	Work Authorization Numbers	572373 572367	
71111.05	Corrective Action Documents	CR-YYYY-NNNN	2020-872	
	Fire Plans		20-01-02	
	Procedures	0MAB03-FP-0130	Fire Pre-plan Mechanical Auxiliary Building Service Areas and BRS Recycle Holdup Tanks	5
		0PGP03-ZF-0011	STPEGS Fire Brigade	18
		0PGP03-ZF-0018	Fire Protection System Functionality Requirements	21
		1ECW55-FP-0602	Fire Preplan Essential Cooling Water Intake Structure Pump Room Train C	4
71111.06	Miscellaneous		STPNOC Blue team Combined Functional Drill Scenario Manual	03/04/2020
71111.07A	Procedures	0PMP02-ZG-0004	Bolted Joint Procedure	18
	Work Orders	Work	569663 569664	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Authorization Numbers		
71111.11Q	Miscellaneous	RST 220.16 RCS LOCA to ES12	Simulator Lessons Plan	
	Procedures	0POP03-ZG-0006	Plant Shutdown From 100% to Hot Standby	75
71111.12	Corrective Action Documents	CR-YYYY-NNNN	2020-1854	
	Procedures	0PMP02-NZ-0013	Cable Terminations	32
	Work Orders	Work Authorization Numbers	627615	
71111.13	Corrective Action Documents	CR-YYYY-NNNN	2019-1665 2018-14454 2018-14772 2019-1989 2017-23022 2019-4852 2018-11467 2019-3947 2019-4404 2019-1494	
		CREE-YYYY-NNNN	2019-3905-3 2019-9047-2 2020-1860-1	
	Miscellaneous	LOR 201.07 PRA Refresher Communicating Risk	Licensed Operator Training	
		RictCal Sequence	3546 3560	
		Station log 1/15/20 09:31, 10:31	Logs	
	Procedures	0PGP03-ZG-0091	Configuration Risk Management Program	14
		0POP01-ZO-0011	Operability, Functionality, and Responsibility Guidance	11
		0POP11-DJ-0002	Online Class 1E 125V DC Battery and Inverter Removal from Service and Restoration	15
	Work Orders	Work Activity Risk (WAR)	2768	1 and 2
		Work Authorization Numbers	626074 582691	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Corrective Action Documents	CR-YYYY-NNNN	2020-300 2020-849 2020-1205 2020-1589	
	Procedures	0PGP03-ZO-9900	Operability Determinations and Functionality Assessments Program	8
		0PMP04-ZG-0014A	Auxiliary Air Lock Inspection and Maintenance, RCB End Door	4
		0POP01-ZO-0011	Operability, Functionality, and Reportability Guidance	12
		0POP01-ZO-0011	Operability, Functionality, and Reportability Guidance	13
		0POP09-AN-03M3	Annunciator Lampbox 3M03 Response Instructions	34
		0PSP11-XC-0004	LLRT Penetration: M-91 Auxiliary Door Airlock Door Seals	16
	Work Orders	Work Authorization Numbers	626878 607399	
71111.19	Corrective Action Documents	CR-YYYY-NNNN	2020-1184 2020-1196 2020-1197 2020-1815 2020-1860 2020-1589 2020-1205	
		Work Authorization Numbers	578147 563085 581863 583884 617585 582691 581621 626828 607399	
	Procedures	0PMP04-DG-0023	Standby Diesel Generator Governor Oil Change and Overspeed Trip Test	12
		0PMP04-ZG-0014A	Auxiliary Air Lock Inspection and Maintenance, RCB End Door	4
		0PMP05-CH-0003	York Chiller Inspection and Maintenance 300 Tons	13
		0PSP03-DG-0002	Standby Diesel 12(22) Operability Test	65
		0PSP11-XC-0004	LLRT Penetration: M-91 Auxiliary Door Airlock Door Seals	16
	Work Orders	Work Activity Risk (WAR)	2768	1 and 2
71111.20	Miscellaneous		Shutdown Risk Assessment Group (SRAG) Report, Amendment 1	03/09/2020
			1RE22 Level II Schedule	04/03/2020
			Shutdown Risk Assessment Group (SRAG) Report	02/27/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.22	Procedures	00OI01-OL-0005	Operations Logs – Diesel Generator (Diesel Generator 12 (22) Operating Log Sheet	16
		0PSP03-DG-002	Standby Diesel 12 (22) Operability Test	65
71124.01	Corrective Action Documents	CR-	2019-06705 2019-11422 2019-1209 2019-12400 2019-12590 2019-13299 2019-13305 2020-00270 2020-01410 2020-01857 2020-02910 2020-03096 2020-03188 2020-03214 2020-03377 2020-03768	
	Miscellaneous	WAN 545822	Radioactive Source Surveillance	07/30/2019
		WAN 556980	Radioactive Source Surveillance	01/23/2020
	Procedures	0PGP03-ZR-0050	Radiation Protection Program	14
		0PGP03-ZR-0051	Radiological Access Controls/Standards	43
		0PRP03-ZR-0004	Inventory and Leak Testing of Radioactive Sources	9
		0PRP04-ZR-0013	Radiological Survey Program	39
		0PRP04-ZR-0015	Radiological Postings and Warning Devices	38
		0PRP04-ZR-0019	High Radiation Area Access Controls	0
		Conduct Of Operations for Radiation Protection: Chapter 25	Locked High Radiation Area (LHRA) Unique Locking Mechanisms	0
	Radiation Surveys	108732	1-RCB+068: Shut Down Survey, Ladders Down Posted	03/13/2020
		108756	1-RCB+068-501: Vibration checks on CRDM vent fan motors	03/14/2020
		108884	1-RCB-011-003: Initial Room 003 entry for disconnect of seal table from valve rack and lift valve rack	03/16/2020
		108919	1-RCB-011-003: Thimble Retraction Job Coverage	03/17/2020
		109259	1-RCB+019-201: Routine verification of conditions on walkways after Generators were opened	03/25/2020
		109274	1-RCB+019-201: Routine Survey of B & C bullpen	03/25/2020
		109285	1-MAB+060: Routine Shiftly RCB Egress	03/25/2020
		109286	1-RCB-011: Contamination Survey of RCB-011' ONLY, due to Airborne activity in RCB	03/25/2020
		109287	1-RCB+019: Follow-up survey during period of elevated	03/25/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Radiation Work Permits (RWPs)		airborne radioactivity	
		2019-2-203	2RE20-Remove / Reinstall Reactor Cavity Stairwell (LHRA) - Medium Radiological Risk	5
		2020-1-114	1RE22 - Maintenance Support for Work in And Around Reactor Cavity, Spent Fuel Pool and Transfer Canal (HRA)	0
		2020-1-115	1RE22 - Maintenance Support for Work in And Around Reactor Cavity, Spent Fuel Pool and Transfer Canal (HRA) - Medium Radiological Risk	0
		2020-1-121	1RE22 - Reactor Head Lift Activities (LHRA) - High Radiological Risk	0
		2020-1-123	1RE22 - Retract / Re-Insert Thimble Tubes (LHRA) - High Radiological Risk	0
		2020-1-147	1RE22 - Repair/Replace RHR 1A Pump Seal (HRA) - Medium Radiological Risk	0
71124.02	ALARA Plans	20-812-4	1RE22 Room 003 Activities	3/12/2020
		20-812-5	1RE22 Steam Generator Inspections	3/14/2020
		20-812-7	1RE22 Non-Rapid Refuel	3/13/2020
	Corrective Action Documents	CR-YYYY-NNNN	2018-12157 2018-01339 2019-12668 2019-182339, 2020-00696 2020-01857 2020-01878 2020-02539 2020-03370	
	Miscellaneous	Action Number 19-4004-5	Perform industry peer benchmark on Rad-Worker engagement and accountability for dose projections, performance, and goal in high performing with low source term reactors	10/31/2019
		Action Number 19-8524-1	Determine Gaps in Understanding [ALARA]	02/27/2020
		March 16 - 18, 2020	Daily Operations Report	
	Procedures	0PGP03-ZR-0050	Radiation Protection Program	14
		0PGP03-ZR-0052	ALARA Program	18
		0PRP07-ZR-0010	Radiation Work Permits/Radiological Work ALARA Reviews	40
		0PRP07-ZR-0033	Radiological Briefings	7
		0PRP07-ZR-0034	Radiological Risk Management	5
		Conduct of	ALARA Planning	4

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Operations for Radiation Protection, Chapter 18		
	Radiation Work Permits (RWPs)	2020-1-122	1RE22 - FHB Fuel Transfer Tube Area Entry (LHRA)	0
		2020-1-135	1RE22 - SG-Eddy Current Testing (LHRA) - High Radiological Risk	0