UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

August 8, 2019

Mr. G. T. Powell
President and Chief Executive Officer
STP Nuclear Operating Co.
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT – INTEGRATED INSPECTION REPORT 05000498/2019002 AND 05000499/2019002

Dear Mr. Powell:

On June 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at South Texas Project. On July 11, 2019, 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.

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

If you contest the violations or significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region 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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Jeffrey E. Josey, Chief
Reactor Projects Branch A

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

Enclosure:
As stated

SOUTH TEXAS PROJECT – INTEGRATED INSPECTION REPORT 05000498/2019002 AND 05000499/2019002 – DATED AUGUST 8, 2019

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DOCUMENT NAME: STP2019002-RP-AAS
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■ SUNSI Review By: JEJ | ADAMS: ■Yes ☐ No | ☐ Non-Publicly Available ■Publicly Available | ■Non-Sensitive ☐ Sensitive | Keyword: NRC-002

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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:	05000498/2019002 and 05000499/2019002
Enterprise Identifier:	I-2019-002-0004
Licensee:	STP Nuclear Operating Co.
Facility:	South Texas Project
Location:	Wadsworth, Texas
Inspection Dates:	April 1, 2019 to June 30, 2019
Inspectors:	S. Alferink, Reactor Inspector J. Choate, Resident Inspector S. Hedger, Emergency Preparedness Inspector A. Sanchez, Senior Resident Inspector B. Tharakan, Senior Project Engineer
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 a 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

Inadequate Procedural Guidance for Essential Cooling Water Pump Shaft Seal Leak Off Results in Technical Specification Violation			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000498/2019002-02 Closed	[H.11] - Challenge the Unknown	71153
A self-revealed Green finding and associated non-cited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Revision 2, when the licensee failed to provide adequate procedures for maintenance on safety-related equipment. Specifically, maintenance procedures failed to address actions to take for less than adequate packing leak off following maintenance of the safety-related essential cooling water pumps.			

Failure to Implement Operability Determination Procedure Results in a Technical Specification Violation			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000499/2019002-01 Closed	[H.11] - Challenge the Unknown	71153
The inspectors identified a Green non-cited violation of 10 CFR 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 10, and perform an operability determination on degraded equipment. Specifically, the shift manager failed to ensure that the operability determination addressed NI-46, the actual degraded safety related equipment, and instead declared the operable channel (NI-45) inoperable resulting in both NI channels being inoperable and not within technical specification action statements.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000498/2019-001-00	LER 2019-001-00 for South Texas Project, Unit 1, Condition Prohibited by Technical Specifications Due to Inoperable Essential Cooling Water Pump.	71153	Closed
LER	05000498/2019-001-01	LER 2019-001-01 for South Texas Project, Unit 1, Condition Prohibited by Technical Specifications Due to Inoperable Essential Cooling Water Pump.	71153	Closed
LER	05000499/2018-001-01	Condition Prohibited by Technical Specifications That Could Have Prevented the Fulfillment of a Safety Function Due to Two Inoperable Extended Range Monitors	71153	Closed

PLANT STATUS

Unit 1 operated at rated thermal power for the entire inspection period.

Unit 2 operated at 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/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.02) (1 Sample)

The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of hurricane season for the following systems:

Units 1 and 2 emergency safeguards features transformers
Units 1 and 2 standby transformers

Summer Readiness Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (2 Samples)

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

(1) Unit 2, train A electrical auxiliary building HVAC while train B was out or service for planned maintenance on June 3, 2019

(2) Unit 1, train B emergency diesel generator during turbine-driven auxiliary feedwater pump maintenance on June 10, 2019

71111.04S - Equipment Alignment

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

The inspectors evaluated system configurations during a complete walkdown of the Unit 2 train B emergency diesel generator during train A emergency diesel generator flood panel welding and essential cooling water piping removal and installation on April 30, 2019.

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Unit 1, essential chilled water rooms, Fire Areas 2, 27 and 29 on April 2, 2019
(2) Unit 2, train C emergency diesel generator, Fire Area 36 on April 30, 2019
(3) Unit 2, train D battery and inverter rooms, Fire Area 02 on June 26, 2019
(4) Unit 2, train B battery and inverter rooms, Fire Area 03 on June 26, 2019

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

The inspectors observed and evaluated a Unit 2 operating crew during a scenario involving a seismic event, loss of all component cooling water systems, large break loss of coolant accident, and a failure of containment integrity on June 4, 2019.

71111.12 - Maintenance Effectiveness

Quality Control (IP Section 02.02) (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance activities:

Unit 2, train B essential chiller auxiliary oil pump mechanical seal failure on June 20, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

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

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Unit 1, elevated risk due to unplanned troubleshooting and investigation of the train B emergency diesel generator following the discovery of a crack in the exhaust manifold on April 4, 2019

(2) Unit 2, elevated risk due to emergent maintenance to repair the train B essential chiller auxiliary oil pump mechanical seal which required entry into the Configuration Risk Management Program on April 18, 2019

(3) Unit 2, planned risk due to train A essential cooling water and essential chilled water maintenance the week of April 29, 2019

(4) Unit 1, elevated risk due to planned maintenance longer than planned and a human performance error that resulted in train A and B emergency diesel generators unavailable on May 23, 2019

(5) Unit 2, planned risk due to train A 125Vdc battery and inverter IV-1201 maintenance in which the licensee entered the Configuration Risk Management Program (CRMP) on June 26, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) Unit 1. train C emergency diesel following the discovery of scaffold built and in contact with the lube oil filter housing on March 22, 2019

(2) Unit 1, train B emergency diesel generator following the discovery of an exhaust leak at cylinder 8L and 10L on April 4, 2019

(3) Units 1 and 2, Diesel Fuel Oil Testing Program to determine if fuel oil received and used at the site met acceptance criteria in Technical Specification 6.8.3.i to have "a clear and bright appearance with proper color," on June 5, 2019

(4) Unit 2, train C electrical auxiliary building air handling unit smoke purge inlet damper framework was rusting and splitting at top of frame on June 6, 2019

(5) Units 1 and 2, steam generator feedwater pumps due to the discovery of the wrong model of overspeed trip low pressure switch on June 26, 2019

71111.19 - Post-Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post maintenance tests:

(1) Unit 1, train A high head safety injection pump following discovery of excess seal leakage on April 1, 2019

(2) Unit 1, train B emergency diesel generator following troubleshooting of an exhaust manifold leak on April 6, 2019

(3) Unit 2, train C component cooling water valve CC-0183 replacement following a failed local leak rate test on April 18, 2019

(4) Unit 2, train A emergency diesel generator following welding and sealing activities on the knockout panel on May 1, 2019

(5) Unit 2, train A centrifugal charging pump following engineering contaminated system leakage testing on May 29, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

Unit 2, train C local leak rate test on component cooling water valve CC-0183 to residual heat removal heat exchanger on April 16, 2019

Inservice Testing (IP Section 03.01) (1 Sample)

Unit 2, train C essential chilled water inservice test on April 18, 2019

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

(1) Unit 2, train A essential cooling water surveillance test on May 2, 2019

(2) Unit 1, train B emergency diesel generator surveillance test on May 3, 2019

(3) Unit 1, train A emergency diesel generator 24-hour surveillance test and hot re-start on June 18, 2019

(4) Unit 2, train A 125Vdc Class 1E battery discharge surveillance on June 26, 2019

71114.04 - Emergency Action Level and Emergency Plan Changes

Inspection Review (IP Section 02.01-02.03) (1 Sample)

The inspectors evaluated South Texas Project Electric Generating Station emergency plan, Change ICN 20-21, submitted on March 12, 2019. The evaluation was performed in-office from April 22, 2019 to June 4, 2019. This evaluation does not constitute NRC approval.

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (2 Samples)

(1) The inspectors observed the licensee's emergency response combined functional drill simulating a large break loss of coolant accident and resulting radiological release on April 24, 2019

(2) The inspectors evaluated the licensee's emergency response combined functional drill that involved high reactor coolant system activity (alert declaration), steam generator tube rupture (site are emergency declaration), and a failed open steam generator power-operated relief valve (general emergency declaration) on June 12, 2019

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

(1) Unit 1, April 1, 2018 - March 31, 2019
(2) Unit 2, April 1, 2018 - March 31, 2019

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

(1) Unit 1, April 1, 2018 - March 31, 2019
(2) Unit 2, April 1, 2018 - March 31, 2019

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (2 Samples)

(1) Unit 1, April 1, 2018 - March 31, 2019
(2) Unit 2, April 1, 2018 - March 31, 2019

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (1 Sample)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issue:

Unit 1, turbine driven auxiliary feedwater trip and throttle valve connecting rod detaching from rod end assembly, Condition Report 19-975. Inspectors observed the event, reviewed maintenance practices and vendor recommendations, and interviewed licensee personnel

Semiannual Trend Review (IP Section 02.02) (1 Sample)

The inspectors reviewed the licensee’s corrective action program for potential adverse trends in circuit card failures that might be indicative of a more significant safety issue.

71153 - Followup of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following licensee event reports (LERs):

(1) LER 05000498/2019-001-00, "Unit 1 Condition Prohibited by Technical Specification Due to Inoperable Essential Cooling Water Pump," on April 29, 2019.

(2) LER 05000499/2018-001-00 and 05000499/2018-001-01, "Unit 2 Condition Prohibited by Technical Specifications That Could Have Prevented the Fulfillment of a Safety Function Due to Two Inoperable Extended Range Monitors," on May 24, 2018.

INSPECTION RESULTS

Observation: Semi-Annual Trend Review	71152

The inspectors reviewed the licensee's corrective action program entries, NRC generated condition reports, system health reports, corrective action documents, and issues that challenge operators in performing their duties. The inspectors saw an increase in circuit card failures in 2017 and 2018 as the number of circuit card failures were the highest they had been since 2012. The inspectors reviewed the 25 documented circuit card failures in 2017 and 2018 and noted the following events caused by these failures:

- In January 2017 the Unit 2 pressurizer master controller card failed causing the pressurizer heaters to energize. The reactor coolant system began to pressurize above normal operating pressure which resulted in reactor power increasing above 100 percent before operators were able to take manual action to control the transient. The licensee documented this event in Condition Report (CR) 17-658.

- In June 2017 the Unit 2 train C steam generator normal feedwater control valve failed closed while in automatic mode due to a failed control card. The train C steam generator water level dropped to 52.8 percent before operators took manual control of the feedwater control valve during which time reactor thermal power decreased to 99.1 percent. The licensee documented this event in CR 17-17659.

- In June 2018 the Unit 1 main steam pegging valve control card failed causing the main steam pegging valves to open, admitting steam to the deaerator tank and lifting the relief valve. The increase in steam demand caused reactor power to increase to 102.9 percent and operators responded immediately to reduce reactor power. Ultimately, operators had to reduce reactor power to less than 50 percent to meet Technical Specification requirements. The licensee documented this event in CR 18-7925.

The inspectors verified that all issues concerning circuit card failures were addressed within the scope of the corrective action program and planned corrective actions appeared to be appropriate to reduce the impact of random circuit card failures. The inspectors did not identify any trends or concerns that might be indicative of a more significant safety issue.

Inadequate Procedural Guidance for Essential Cooling Water Pump Shaft Seal Leak Off Results in Technical Specification Violation			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000498/2019002-02 Closed	[H.11] - Challenge the Unknown	71153

A self-revealed Green finding and associated non-cited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Revision 2, when the licensee failed to provide adequate procedures for maintenance on safety-related equipment. Specifically, maintenance procedures failed to address actions to take for less than adequate packing leak off following maintenance of the safety-related essential cooling water pumps.

Description:

The essential cooling water (ECW) pumps at South Texas Project are designed to use the water moved by the pump to cool the pump packing along the shaft. Step 5.17.2 of post-maintenance test procedure, 0PMP04-EW-0001A, "Essential Cooling Water Pump Maintenance (Product-Lubricated Bearing Design)," Revision 7, states, in part, with the pump in "Operate" mode, ensure that shaft packing is not binding and has proper leak-off, approximately ¼ gallons per minute (gpm). On February 18, 2019, the licensee was performing a post-maintenance test of the Unit 1 train B ECW pump following replacement of the ECW pump when maintenance in the field identified a lack of leak-off from the ECW pump packing. Operations secured the ECW pump and reattempted the post-maintenance test with maintenance providing additional water to cool the outside of the pump packing. This method of cooling had been previously approved by engineering but was not provided in procedure 0PMP04-EW-0001A nor was it provided in the vendor maintenance manual. Maintenance was then able to adjust the packing leak-off per procedure and operations secured the pump on February 19, 2019 and declared the pump operable following approximately 15 hours of operation, the pump was secured for pump rotation. The train B ECW pump was started on February 27, 2019 for pump rotation and discovered the pump packing had no leak-off, causing the packing to heat-up and begin smoking. Operations secured the pump and declared it inoperable. On February 28, 2019 maintenance replaced the packing and operations performed a 24-hour post-maintenance test of the Unit 1 train B ECW pump. Operations declared the pump operable on March 1, 2019.

On May 6, 2019 the licensee completed their cause evaluation and determined the maintenance procedure did not provide sufficient warning or guidance to address packing tolerances to ensure leak-off upon startup or actions to take for a less than adequate packing leak-off.

Corrective Actions: The licensee has an outstanding action to update procedure 0PMP04-EW-0001A to address maintenance actions if no leak-off is obtained upon start-up. On April 29, 2019, the licensee submitted Licensee Event Report 2019-001-00, "Unit 1 Condition Prohibited by Technical Specifications Due to Inoperable Essential Cooling Water Pump," for exceeding the Technical Specification 3.7.4 allowed outage time of 7 days.

Corrective Action References: Condition Reports 2019-1954 and 2019-2357

Performance Assessment:

Performance Deficiency: The failure to provide adequate procedures for maintenance on safety-related equipment was a performance deficiency. Specifically, maintenance procedures failed to address actions to take for less than adequate packing leak off. As a result, maintenance used engineering endorsed methods outside of their maintenance procedure and work instructions to develop adequate leak-off flow through the newly installed Unit 1 train B ECW pump packing. While these methods allowed the ECW pump to pass its post-maintenance test, it did not ensure successful repeated operation of the ECW pump with the minimum required packing leak-off flow

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone. Specifically, the lack of leak-off flow and following heat-up of the ECW pump packing had the potential to degrade the packing and cause leak-off flow exceeding the internal flooding limits for the ECW intake structure outlined in Appendix 9A of the STP Updated Final Safety Analysis Report (UFSAR).

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power."

Cross-Cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. The inspectors determined that the finding had a crosscutting aspect in the area of human performance associated with challenge the unknown. Specifically, both maintenance and engineering personnel failed to stop when faced with conditions not described in their procedures and work instructions. Maintenance and engineering failed to challenge unanticipated results and failed to stop work when the procedures and work instructions could not be performed as written.

Enforcement:

Violation: Technical Specification 6.8.1.a, requires, in part, that written procedures shall be established, implemented, and maintained in accordance with Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Section 9.a of Appendix A to Regulatory Guide 1.33, Revision 2, requires that "maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances." The licensee established procedure 0PMP04-EW-0001A, "Essential Cooling Water Pump Maintenance (Product-Lubricated Bearing Design)," Revision 7, to meet the Regulatory Guide 1.33 requirement. Step 5.17.2 of procedure 0PMP04-EW-0001A states to "ensure that shaft packing is NOT binding and has proper Leak-off, approximately 1/4 GPM." Contrary to the above, on February 18, 2019, maintenance that can affect the performance of safety-related equipment was not performed in accordance the procedures appropriate to the circumstances. The licensee did not ensure that shaft packing was not binding and had proper leak-off. Specifically, the procedure did not include actions to address inadequate leak-off and the licensee failed to ensure that the Unit 1 train B essential cooling water (ECW) pump was capable of supplying adequate leak-off to cool its pump packing during operation. As a result, from February 19, to March 1, 2019, operations determined the Unit 1 train B ECW pump to be inoperable, exceeding the Technical Specification 3.7.4 allowed outage time of 7 days.

Enforcement Action: This violation is being treated as an non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Implement Operability Determination Procedure Results in a Technical Specification Violation			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000499/2019002-01 Closed	[H.11] - Challenge the Unknown	71153

The inspectors identified a Green non-cited violation of 10 CFR 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 10, and perform an operability determination on degraded equipment. Specifically, the shift manager failed to ensure that the operability determination addressed NI-46, the actual degraded safety related equipment, and instead declared the operable channel (NI-45) inoperable resulting in both NI channels being inoperable and not within technical specification action statements.

Description:

The extended range nuclear instrumentation (NI) system is comprised of two complete, independent excore channels (NI-45 and NI-46) whose main function is to monitor for inadvertent return to criticality in Modes 3, 4 and 5. On March 25, 2018, Unit 2 was in Mode 3 and shutting down for refueling outage 2RE19. During an operator channel check, nuclear instrumentation NI-45 and NI-46 failed to meet channel check criteria. NI-45 was reading approximately 10 counts per second, while NI-46 was reading approximately 90,000 counts per second. The shift manager, believing that the NI-45 must not been reading correctly because it was at 10 counts per second, declared NI-45 inoperable. Operations entered Technical Specification (TS) 3.3.1, action 5a, which requires restoration within 72 hours or immediately suspend all operations involving positive reactivity changes. Troubleshooting and calibration on NI-45 channel determined that NI-45 was operable and that the inoperable channel was NI-46. The licensee determined that this was a failure to implement the actions of TS 3.3.1, action 5b from March 25, 2018 at 9:16 a.m. until 3:27 p.m. (6 hours and 11 minutes), since both channels were inoperable. Action in this TS requires operators to immediately suspend all positive reactivity changes, AND within 15 minutes isolate unborated water flow paths from the reactor water makeup water system to the reactor coolant system, AND perform one of the following: restore one channel to operable within one hour OR within 2 hours secure each unborated water flow path to the reactor coolant system AND within 4 hours and once every 12 hours after that, verify shutdown margin is within limits in that no actions were taken in accordance with the action statement. None of these TS actions were taken, and operations would not have been able to detect a potential unmonitored return to criticality due to an inadvertent RCS dilution event with these two NI channels. The control room did have at least one source range NI channel available that would give operators an indication of increasing neutron population (approach to criticality). The licensee issued Licensee Event Reports 05000499/2018-001-00 and 01, "Unit 2 Condition Prohibited by Technical Specifications That Could Have Prevented the Fulfilment of a Safety Function Due to Two Inoperable Extended Range Monitors," dated May 24, and June 22, 2018.

The licensee's apparent cause evaluation identified a lack of technical knowledge of the extended nuclear instrumentation system as the apparent cause. The licensee further determined that operations failed to reach out to engineering while attempting to determine which nuclear instrumentation channel was reading correctly when making the immediate operability determination.

Following a review of the apparent cause evaluation and the event, the inspectors determined that operations failed to properly implement the station's operability determination procedure, 0POP01-ZO-0011, "Operability, Functionality, and Reportability Guidance," Revision 10. Specifically, the shift manager failed to ensure that the operability determination addressed NI-46, the actual degraded safety related equipment, and incorrectly declared the operable channel (NI-45) inoperable.

Corrective Action References: Condition Reports 2018-3967 and 2019-7535

Performance Assessment:

Performance Deficiency: The Licensee failed to adequately implement the station's operability determination procedure. Specifically, on March 25, 2017, operations failed to implement procedure, 0POP01-ZO-0011, "Operability, Functionality, and Reportability Guidance," Revision 10, step 3.2.6, which states that the shift manager is responsible for ensuring that operability determination sufficiently address what equipment is degraded or nonconforming, the safety function(s) performed by the equipment and criteria required by this procedure. 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 Mitigating Systems cornerstone. Specifically, the failure to implement the operability procedure resulted in removing the operable extended range NI channel from service, leaving Unit 2 without any operable extended range nuclear instrumentation channels.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power."

Cross-Cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. The inspectors determined that the finding had a crosscutting aspect in the area of human performance associated challenging the unknown, individuals stop when faced with uncertain conditions and risks are evaluated and managed before proceeding. Specifically, the operators should have recognized their lack of knowledge of the extended range NI system, not assumed that the low reading channel was the inoperable channel, and that with only two channels, an incorrect call on operability could result in not having detection of inadvertent criticality [H.11].

Enforcement:

Violation: Title 10 CFR 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 10 to comply with determining operability of safety-related, technical specification equipment and to be in compliance with the above stated regulation. Specifically, step 3.2.6, which states that the shift manager is responsible for "Ensuring that operability determination sufficiently address what equipment is degraded or nonconforming, the safety function(s) performed by the equipment and criteria required by this procedure." Contrary to the above, on March 25, 2018, 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 to ensure that the operability determination sufficiently address what equipment was degraded or nonconforming, the safety function(s) performed by the equipment and criteria required by this procedure. Specifically, the shift manager failed to ensure that the operability determination addressed NI-46, the actual degraded safety related equipment, and declared the operable channel (NI-45) inoperable.

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

EXIT MEETINGS AND DEBRIEFS

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

- On July 11, 2019, the inspectors presented the quarterly resident inspection results to G. T. Powell and other members of the licensee staff.

- On June 4, 2019, the inspectors presented the Emergency Plan Revision In-Office Review to Scott Korenek, Emergency Planner, Emergency Response and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	CR-YYYY-NNNN	2019-5898, 2019-3163	
71111.01	Miscellaneous		South Texas Project Electric Generating Station Owner's Communication Plan	1
71111.01	Procedures	0PGP03-XS-0001		7
71111.01	Procedures	0PGP03-ZV-0001	Severe Weather Plan	21
71111.01	Procedures	0POP01-ZA-0021	AC Electrical Notes and Precautions	18
71111.01	Procedures	0POP01-ZO-0002	345 kV Switchyard Switching and Clearance Guidelines	7
71111.01	Procedures	0POP03-ZG-0002	STP Coordinator Operations	6
71111.01	Procedures	0POP04-AE-0005	Offsite Power System Degraded Voltage	15
71111.01	Procedures	0PSP03-EA-0002	ESF Power Availability	38
71111.01	Procedures	WCG-0011	Summer Peak Period Readiness	3
71111.01	Procedures	ZV-0029	Site Preparation for Tropical Storm or Hurricane	1
71111.04	Corrective Action Documents	CR-YYYY-NNNN	2013-8382	
71111.04	Miscellaneous	Calculation M-6256	Sizing of SDG FOST	6
71111.04S	Drawings	5Q159F00045#2	Pipe & Instrumentation Diagram Standby Diesel Generator Fuel Oil Storage & Transfer System	33
71111.04S	Drawings	5Q159F22540#2	Piping & Instrumentation Diagram Standby Diesel Jacket Water	22
71111.04S	Drawings	5Q159F22542#2	Piping and Instrumentation Diagram Standby Diesel Lube Oil	19
71111.04S	Drawings	5Q159F22544#2	Piping & Instrumentation Diagram Standby Diesel Starting Systems & Alarms	1
71111.04S	Drawings	5R289F05038#2	Piping and Instrumentation Diagram Essential Cooling Water System Train 2B	21
71111.04S	Procedures	0PGP04-ZA-0212	Master equipment & Parts List Databases	16
71111.04S	Procedures	17441-1	Wylie Laboratories Qualification Plan	08/09/1984
71111.04S	Procedures	2POP02-DG-0002	Emergency Diesel Generator 12(22)	78
71111.05Q	Corrective Action	CR-YYYY-NNNN	2019-7101, 2019-7102	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents			
71111.05Q	Drawings	7Q279F05053#1	Piping and Instrumentation Diagram Mechanical Electrical Aux. Bldg. Fire Protection	28
71111.05Q	Procedures	0DGB36-FP-0500	Fire Preplan for Diesel Generator Building, Train C	3
71111.05Q	Procedures	0DGB36-FP-0512	Fire Preplan Diesel Generator Building Diesel Air Intake/Exhaust, Train C	3
71111.05Q	Procedures	0EAB02-FP-0002	Fire Preplan Electrical Auxiliary Building Channel II Batter Room	3
71111.05Q	Procedures	0EAB03-FP-0043	Fire Preplan Electrical Auxiliary Building Channel III Battery and Distribution Room	3
71111.05Q	Procedures	0MAB02-FP-0128	Mechanical Auxiliary Building CCW Pump and Chiller, Train A	4
71111.05Q	Procedures	0MAB02-FP-0139	Mechanical Auxiliary Building CCW Pump and Chiller, Train C	4
71111.05Q	Procedures	0MAB02-FP-0140	Mechanical Auxiliary Building CCW Pump and Chiller, Train B	3
71111.05Q	Procedures	OEAB02-FP-0001	Fire Preplan Electrical Auxiliary Building Channel II Distribution Room	4
71111.06	Corrective Action Documents	CR-YYYY-NNNN	2019-6590, 2019-6637, 2019-6506, 2019-6503, 2019-6527, 2019-6505	
71111.06	Procedures	0ERP01-XV-TS01	TSC Manager	
71111.06	Procedures	0ERP01-ZV-IN01	Emergency Classification	
71111.06	Procedures	0ERP01-ZV-IN02	Notifications to Offsite Agencies	
71111.06	Procedures	0ERP01-ZV-IN04	Assembly and Accountability	
71111.06	Procedures	0ERP01-ZV-SH01	Shift Manager	
71111.06	Work Orders	Work Authorization Number (WAN)	577684, 577175, 568557	
71111.11Q	Procedures	0POP04-CC-0001	Component Cooling Water System Leak	
71111.11Q	Procedures	0POP04-CC-0002	Loss of Component Cooling Water	
71111.11Q	Procedures	0POP04-SY-0001	Seismic Event	
71111.11Q	Procedures	0POP05-EO-000	Reactor Trip or Safety Injection	
71111.11Q	Procedures	0POP05-EO-E10	Loss of Rector or Secondary Coolant	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.11Q	Procedures	0POP05-EO-ES13	Transfer to Cold Leg Recirculation	
71111.11Q	Procedures	0POP05-EO-FRP1	Response to Imminent Pressurized Thermal Shock Condition	
71111.11Q	Procedures	0POP05-EO-FRZ1	Response to High Containment Pressure	
71111.11Q	Procedures	ERP01-ZV-IN01	Emergency Classification	
71111.11Q	Procedures	ERP01-ZV-IN02	Notification of Offsite Agencies	
71111.12	Corrective Action Documents	CR-YYYY-NNNN	2018-6033, 2019-4472, 2013-9251, 2002-12397	
71111.12	Miscellaneous	VTD-Y018-0031	Compressor Oil Pump/Motor Assembly Service Instructions	1
71111.12	Procedures	0PGP03-ZP-0014	Safety/Quality Classification and Dedication of Parts	5
71111.12	Procedures	0PMP05-CH-0003	York Chiller Inspection & Maintenance 300 Tons	13
71111.12	Work Orders	Work Authorization Number (WAN)	610395, 533530, 587991	
71111.13	Calculations		3412, 3360, 3370, 3375, 3389	
71111.13	Corrective Action Documents	CR-YYYY-NNNN	2019-7044	
71111.13	Procedures	0PGP02-ZA-0003	Comprehensive Risk Management Program	14
71111.13	Procedures	0PGP03-ZG-RMTS	Risk-Managed Technical Specifications Program	2
71111.13	Procedures	0PGP03-ZO-0055	Protected Components	13
71111.13	Procedures	0POP01-ZO-0006	Risk Management Actions (RMAs)	27
71111.13	Procedures	0POP11-DJ-0002	Online Class 1E 125V DC Battery and Inverter Removal from Service and Restoration	15
71111.15	Corrective Action Documents	CR-YYYY-NNNN	2019-5924, 2010-3585, 2002-3766, 2001-18780, 2019-5498, 2015-11647, 2012-27311, 2019-3905, 2018-8867, 2019-3172, 2019-3135, 2010-26875, 2011-2398	
71111.15	Procedures	0PCP04-ZP-0017	Determination of Free Water and Particulate Contamination in Fuel Oil – Clear and Bright Pass/Fail Method	4
71111.15	Procedures	0PGP03-ZO-9900	Operability Determinations and Functionality Assessments	8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Program	
71111.15	Procedures	0PGP04-ZA-0002	Condition Report Engineering Evaluation	21
71111.15	Procedures	0POP01-ZO-0011	Operability, Functionality, and Reportability Guidance	11
71111.15	Procedures	0POP02-DG-0002	Emergency Diesel Generator 12(22)	78
71111.15	Procedures	0PSP03-DG-0002	Standby Diesel 12(22) Operability Test	64
71111.15	Work Orders	Work Authorization Number (WAN)	514776, 572075, 572077, 574047	
71111.18	Corrective Action Documents	CR-YYYY-NNNN	2019-4588	
71111.18	Miscellaneous	T0-19-3125-1	Temporary Fire Pump for Fire Protection System Discharge Relieve Valve Replacement	0
71111.18	Procedures	0PGP03-ZF-0018	Fire Protection System Functionality Requirements	21
71111.18	Procedures	0PTP03-FP-0106	Fire Protection Water System Functional Test	20
71111.18	Work Orders	Work Authorization Number (WAN)	608652, 608653, 608654, 608655, 608656	
71111.19	Corrective Action Documents	CR-YYYY-NNNN	2019-3576, 2017-14068, 2017-12897, 2019-3905, 2019-6034, 2019-6017	
71111.19	Miscellaneous	Calculation CC05038	Leakage through Knockout Panels	1
71111.19	Procedures	0PGP03-ZI-0007	Confined Space Entry Program	22
71111.19	Procedures	0PMP04-SI-0002	High Head Safety Injection Pump Maintenance	23
71111.19	Procedures	0PMP04-XG-0001	Removal and Reinstallation of Diesel Generator Building Removable Panels	7
71111.19	Procedures	0POP01-ZA-0001	Plant Operations Department Administrative Guidelines	50
71111.19	Procedures	0POP02-DG-0002	Emergency Diesel Generator 12(22)	78
71111.19	Procedures	0POP02-ZM-0001	Mechanical Auxiliary Building Valve Pit Lineup	7
71111.19	Procedures	0PSP03-DG-0002	Standby Diesel 12(22) Operability Test	64
71111.19	Procedures	0PSP03-SI-0004	High Head Safety Injection Pump 1A(2A) Inservice Test	18
71111.19	Procedures	0PSP11-CC-0011	LLRT: M-37 CCW to RHR HX and Pump 1C/2C	16
71111.19	Procedures	0PSP15-CH-0001	Essential Chilled Water System Pressure Test	6

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.19	Work Orders	Work Authorized Number (WAN)	609128, 561440, 561441, 561442, 590240, 64535	
71111.22	Corrective Action Documents	CR-YYYY-NNNN	2019-4472, 2018-2921, 2013-9934, 2014-17073, 2019-7055, 2019-7086, 2019-6576	
71111.22	Procedures	0PGP03-AZ-0010	Performing and Verifying Station Activities	40
71111.22	Procedures	0PMP07-DG-0001	Standby Diesel Recording M&TE Installation	5
71111.22	Procedures	0POP02-DG-0001	Emergency Diesel Generator 11(21)	70
71111.22	Procedures	0POP02-EW-0001	Essential Cooling Water Operations	81
71111.22	Procedures	0PSP03-CH-0003	Essential Chilled Water Pump 11C(21C) Inservice Test	22
71111.22	Procedures	0PSP03-DG-0001	Standby Diesel 11(21) Operability Test	60
71111.22	Procedures	0PSP03-DG-0016	Standby Diesel 11(21) Twenty-Four Hour Load Test	48
71111.22	Procedures	0PSP03-DG-0017	Standby Diesel 12(22) Twenty-Four Hour Load Test	55
71111.22	Procedures	0PSP03-EW-0017	Essential Cooling Water System Train A Testing	40
71111.22	Procedures	0PSP03-EW-0019	Essential Cooling Water System Train C Testing	56
71111.22	Procedures	0PSP06-DJ-0007A	Train A - 125 Volt Class 1E Battery Modified Performance Surveillance Test	3
71111.22	Procedures	0PSP06-DJ-0007A	Train A – 125 Volt Class 1E Battery Modified Performance Surveillance Test	3
71111.22	Procedures	0PSP11-CC-0011	LLRT: M-37 CCW to RHR HX and Pump 1C/2C	16
71111.22	Work Orders	Work Authorization Number (WAN)	610395, 56907, 613624	
71114.04	Corrective Action Documents	CR-YYYY-NNNN	2019-06149	
71114.04	Miscellaneous		South Texas Project, Units 1 and 2 – Issuance of Amendments RE: Emergency Response Organization Time Augmentation and Staffing Changes to the Emergency Plan (CAC No. MG0024 and MG0025; EPID L-2017-LLA-0265)	07/19/2018
71114.04	Miscellaneous	Form 1, Screen	STPEGS Emergency Plan ICN 20-21, Updated Attachment	12/11/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Evaluation Form	1, NUREG-0654 Cross Reference for Changes Made in Section C	
71114.04	Miscellaneous	Form 1, Screen Evaluation Form	STPEGS Emergency Plan ICN 20-21, Changes to Section C and G Associated with Implementation of LAR for Changes to ERO Augmentation Times	12/05/2018
71114.04	Miscellaneous	Form 1, Screen Evaluation Form	STPEGS Emergency Plan ICN 20-21, Changes to Section C and Attachment 2 to Remove References to the Severe Accident Management Guidelines (SAMG's)	12/05/2018
71114.04	Miscellaneous	Form 2, Effectiveness Evaluation Form	STPEGS Emergency Plan ICN 20-21, Changes to Section C and Attachment 2 to Remove References to the Severe Accident Management Guidelines (SAMG's)	12/05/2018
71114.04	Miscellaneous	NOC-AE-16003406	South Texas Project Units 1 and 2, Docket Nos. STN 50-498; STN 50-499; License Amendment Request for Revision to Staffing and Staff Augmentation Times in the South Texas Project Electric Generating Station Emergency Plan	07/31/2017
71114.04	Miscellaneous	NOC-AE-18003541	South Texas Project Units 1 and 2, Docket Nos. STN 50-498; STN 50-499; Response to Request for Additional Information for the License Amendment Request for Revision to Staffing and Augmentation Times in the South Texas Project Electric Generating Station Emergency Plan (TAC Nos. CAC MG0024, MG0025)	02/12/2018
71114.04	Miscellaneous	NOC-AE-19003633	South Texas Project Units 1 and 2, Docket Nos. STN 50-498; STN 50-499; Changes to the South Texas Project Electric Generating Station Emergency Plan	03/12/2019
71114.04	Miscellaneous	ZV-0023	10 CFR 50.54(q) Screening Reference Document	0
71114.04	Procedures	0PGP03-ZT-0139	Emergency Preparedness Training Program	23, 24
71114.04	Procedures	0PGP05-ZV-0010	Emergency Plan Change	17
71114.04	Procedures	0PGP05-ZV-0017	Severe Accident Management	4, 5
71152	Corrective Action Documents	CR-YYYY-NNNN	2017-777, 2018-3504, 2018-4068, 2017-7177, 2018-12546, 2017-14348, 2017-17659, 2017-17996, 2018-4199, 2018-4874, 2018-4995, 2018-7925, 2018-3366, 2014-16486, 2016-6495	
71152	Miscellaneous	SEG-0008	Printed Circuit Board Maintenance and Replacement Guideline	2