UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

April 15, 2019

Mr. Mano Nazar
President and Chief Nuclear Officer
Nuclear Division
Florida Power & Light Co.
Mail Stop: EX/JB
700 Universe Blvd.
Juno Beach, FL 33408

SUBJECT: TURKEY POINT NUCLEAR GENERATING STATION – NUCLEAR REGULATORY COMMISSION PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000250/2019010 AND 05000251/2019010

Dear Mr. Nazar:

On March 1, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Turkey Point Units 3, 4 and discussed the results of this inspection with Mr. Robert Coffey, Southern Regional Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

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

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

NRC inspectors documented three findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements.

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 II; the Director, Office of Enforcement; and the NRC resident inspector at Turkey Point.

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 II; and the NRC resident inspector at Turkey Point.

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/

Randall A. Musser, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-250, 50-251
License Nos.: DPR-31, DPR-41

Enclosure:
Inspection Report 05000250/2019010 and 05000251/2019010

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SUBJECT: TURKEY POINT NUCLEAR GENERATING STATION – NUCLEAR REGULATORY COMMISSION PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000250/2019010 AND 05000251/2019010 April 15, 2019

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**REGION II**

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| Docket Number(s): | 05000250 and 05000251 |
| License Number(s): | DPR-31 and DPR-41 |
| Report Number(s): | 05000250/2019010 and 05000251/2019010 |
| Enterprise Identifier: | I-2019-010-0018 |
| Licensee: | Florida Power & Light Company (FPL) |
| Facility: | Turkey Point Nuclear Generating Station, Units 3 and 4 |
| Location: | 9760 SW 344th Street<br>Homestead, FL 33035 |
| Inspection Dates: | February 11, 2019 through March 1, 2019 |
| Inspectors: | Wesley Deschaine, Project Engineer (Team Leader)<br>John Dymek, Reactor Inspector<br>Dave Dumbacher, Senior Operations Engineer<br>Roger Reyes, Resident Inspector |
| Approved By: | Randall A. Musser, Chief<br>Reactor Projects Branch 3<br>Division of Reactor Projects |

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a problem identification and resolution inspection at Turkey Point Units 3 and 4 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

## List of Findings and Violations

| Preconditioning of safety-related check valves prior to retesting | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
| Mitigating Systems | Green<br>NCV 05000250/2019010-02<br>Open/Closed | [H.9] - Training | 71152B |
| The NRC identified a green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, in that the licensee failed to comply with procedure 0-ADM-502, In-Service Testing Program, when preconditioning of safety related check valves was conducted prior to retesting. | | | |

| Failure to comply with the ASME OM code during safety-related check valve testing | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
| Mitigating Systems | Green<br>NCV 05000250/2019010-03<br>Open/Closed | [P.1] - Identification | 71152B |
| The NRC identified a green, NCV of 10 CFR 50.55a(f)(4), when the licensee failed to declare safety-related valves inoperable and failed to take corrective action after a failed in-service test (IST) as required by the ASME OM code. | | | |

| Inadequate Maintenance Procedures to Ensure Flood Protection for the 4A and 4B RHR trains | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
| Mitigating Systems | Green<br>NCV 05000251/2019010-01<br>Open/Closed | [H.11] - Challenge the Unknown | 71152B |
| The NRC identified a green, NCV of Technical Specification 6.8.1, for the licensee's failure to establish, implement and maintain written procedures to prevent foreign material from potentially degrading the residual heat removal (RHR) pump room sump pumps. | | | |

## Additional Tracking Items

None

## INSPECTION SCOPES

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

## OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

02.04 Biennial Team Inspection (1 Sample)

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

- Corrective Action Program Effectiveness – The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems.

- Operating Experience, Self-Assessments and Audits – The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.

- Safety Conscious Work Environment – The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

## INSPECTION RESULTS

| Assessment | 71152B |
|---|---|
| Corrective Action Program Effectiveness<br><br>Based on the samples reviewed, the team determined that the licensee's corrective action program (CAP) complied with regulatory requirements and self-imposed standards. The licensee's implementation of the CAP adequately supported nuclear safety.<br><br>Effectiveness of Problem Identification: The inspectors determined that the licensee was effective in identifying problems and entering them into the CAP and there was a low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating Action Requests (ARs) as described in licensee procedure PI-AA- | |

104-1000, “Condition Reporting,” and management’s expectation that employees were encouraged to initiate ARs for any reason. Additionally, site management was actively involved in the CAP and focused appropriate attention on significant plant issues. Based on reviews and walkdowns of accessible portions of selected systems, the inspectors determined that deficiencies were being identified and placed in the CAP.

Effectiveness of Prioritization and Evaluation of Issues: Based on the review of ARs sampled by the inspection team during the onsite period, the inspectors concluded that problems were generally prioritized and evaluated in accordance with the AR significance determination guidance in procedure PI-AA-104-1000. The inspectors determined that in general, adequate consideration was given to system or component operability and associated plant risk. The inspectors determined that plant personnel had conducted root cause and apparent cause analyses in compliance with the licensee’s CAP procedures and cause determinations were appropriate, and considered the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used to evaluate ARs depending on the type and complexity of the issue consistent with the applicable cause evaluation procedures.

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

| Assessment | 71152B |
|---|---|

Use of Operating Experience, Self-Assessments and Audits

The inspectors examined the licensee's program for obtaining and using industry operating experience. This included review of procedure PI-AA-102-1002, "Internal Operating Experience", selected corrective program action requests, and the licensee’s operating experience (OE) database to assess the effectiveness of how external and internal OE data was handled at the plant. Additionally, the inspectors selected OE documents such as NRC generic communications, licensee event reports, vendor notifications, and plant internal OE items which had been issued since January 2016 to verify whether the licensee had appropriately evaluated each notification for applicability to the Turkey Point Nuclear plant, and whether issues identified through these reviews were entered into the CAP.

The team determined that station’s processes for the use of industry and NRC operating experience information and for the performance of audits and self-assessments were effective and complied with all regulatory requirements and licensee standards. The implementation of these programs adequately supported nuclear safety. The team concluded that operating experience was adequately evaluated for applicability and that appropriate actions were implemented to address lessons learned as needed. The inspectors determined that the licensee was effective at performing self-assessments and audits to identify issues at

a low level, properly evaluated those issues, and resolved them commensurate with their safety significance.

| Assessment | 71152B |
|---|---|

Safety Conscious Work Environment

Based on a sample size of approximately 20 people interviewed from a cross-section of plant employees, the team found no evidence of challenges to a safety-conscious work environment. Employees interviewed appeared willing to raise nuclear safety concerns through at least one of the several means available.

| Preconditioning of safety-related check valves prior to retesting | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
| Mitigating Systems | Green<br>NCV 05000250/2019010-02<br>Open/Closed | [H.9] - Training | 71152B |

The NRC identified a green, NCV of 10 CFR 50, Appendix B, Criterion V, in that the licensee failed to comply with procedure 0-ADM-502, In-Service Testing Program, when preconditioning of safety related check valves was conducted prior to retesting.

Description:

The inspectors reviewed ARs associated with the most recent surveillance testing on Unit 3 chemical and volume control system (CVCS) valves 312A, 312B and 312C. These 3-inch check valves are classified as safety-related Class 1 and provide a reactor coolant pressure boundary function. The valves are tested per the ASME OM code and the licensee's in-service test (IST) program as described in 0-ADM-502, In-Service Testing Program every 36 months during refueling outages. On October 12, 2018, valve 312C failed its IST with a leak rate of 220,000 standard cubic centimeters per minute (sccm). AR 2285407 described the acceptance criteria as no greater than 17,600 sccm. The licensee exited the test procedure, decided to back flush and seat the check valve and then performed a satisfactory IST retest. On October 14, 2018, valves 312A and 312B, failed their IST. Both valves had back flow leakage greater than the 12 gallons per minute (GPM) acceptance criteria. The licensee exited the test procedure and mechanically agitated the valve bodies with a brass hammer. A subsequent retest was satisfactory on both valves. The final disposition in associated AR 2285745 concluded that it was acceptable to apply additional forces to the valves to get them to re-seat. The inspectors noted that mechanically agitating valves 312A and 312B, and back flushing 312C were used to influence the performance of the "follow-up" test due to the unacceptable results of the IST "initial" tests. The licensee's IST program document 0-ADM-502, Section 5.1.1, item 11, states in part: "Preconditioning pumps and valves in the IST program shall be avoided. Preconditioning is the alteration, manipulation, or adjustment of the physical condition of an SSC before In-Service Testing for the expressed purpose of returning acceptable test results and masking action As Found conditions." The inspectors determined that during the Unit 3 refueling outage (PT3-30) valves 312A, 312B, and 312C were

preconditioned prior to “follow-up” tests.

The inspector’s review of the two previous ISTs on valves 312A and 312B identified additional examples of preconditioning. On October 16, 2010, valve 312A failed an initial IST. At that time the plan of record IST was a radiograph to verify the check was seated. AR 0587621 stated that “the use of mechanical agitation to ensure the disc was loose and not stuck in place is acceptable for this evolution.” The valve was mechanically agitated (hit with a brass hammer) and a new test method using a backflow leakage test criteria was performed to satisfy the IST. The retest obtained satisfactory IST results. The inspectors concluded this was an example of preconditioning. AR 2075864 described that on September 23, 2015, just before the 2015 Unit 3 refueling outage (PT3-28), the licensee identified that in dispositioning the 2010 issue they did not comply with the ASME OM code after the initial failure of 312A. The AR also discussed potential preconditioning, however no follow-up actions regarding preconditioning were taken. On October 7, 2015 a prompt operability determination was completed and valve 312A was determined to be operable but non-conforming. On October 31, 2015, during PT3-28 valves 312A and 312B failed the backflow IST. The test procedure was then revised to include an Air Operated Double Diaphragm (AODD) pump installed on the upstream side of the valve in an attempt to seat the check prior to re-performing the backflow tests. The inspectors concluded that the AODD pump preconditioned the valves. On November 1, 2015, valve 312B passed but valve 312A failed the retest. Radiography on November 1, 2015, confirmed that 312A was not fully seated. The radiograph performed on November 1, 2015, was similar to the October 16, 2010, radiograph results. Valve 312A disassembly revealed internal valve component critical clearances being exceeded due to vibration/oscillation induced wear of the disk post, disc arm post hole and hinge pin hole/bushings, and hinge pin. The sum total of the increased clearances allowed the outer diameter edge of the upper disc seat surface to lodge below the inner diameter edge of the upper body seat surface. In all the inspectors identified six examples of preconditioning which is prohibited by licensee’s IST program document.

Corrective Actions:

The licensee acknowledged the unacceptable preconditioning issues and entered them into the CAP. As corrective actions the licensee is planning to address acceptable and unacceptable preconditioning by implementing revisions to Operations, Maintenance, and Work Order Planning procedures and training for the Operations, Maintenance and Engineering departments.

Corrective Action References: ARs 2300895, 2303966, 2301832

Performance Assessment:

Performance Deficiency: Preconditioning safety-related valves 3-312A, 3-312B and 3-312C, after the initial IST failures and prior to the IST retest to obtain satisfactory test results, was a performance deficiency that was within the licensee’s ability to foresee, correct, and prevent.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, preconditioning the check valves could mask conditions indicative of degradation occurring in each valve. These conditions, if left uncorrected, could result in the failure of the valve to perform its safety function during plant operation.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, “Significance Determination of Reactor Inspection Findings for At - Power Situations”. Using IMC 0609, Appendix A, Exhibit 2, the inspectors determined the issue was of very low safety significance (Green) because it did not represent a loss of system or train function. The licensee conducted a past operability review and determined that each valve was currently operable but non-conforming.

Cross-cutting Aspect: H.9 - Training: The organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, the licensee did not provide adequate training to ensure a knowledgeable organization on the subject of preconditioning.

Enforcement:

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

IST program requirements and restrictions applicable to safety-related check valves 3-312A, 312B and 312C are provided in procedure 0-ADM-502, In-Service Testing Program. 0-ADM-502, Step 5.1.1, item 11, states that preconditioning pumps and valves in the IST program shall be avoided. Preconditioning is the alteration, variation, manipulation, or adjustment of the physical condition of a system, structure, or component (SSC), before in-service testing for the expressed purpose of returning acceptable test results and masking actual As Found conditions.

Contrary to the above, six examples of preconditioning were identified on the CVCS:

- On October 16, 2010, after the initial IST failure and prior to the IST retest, check valve 312A was preconditioned by mechanical agitation (hit with a brass hammer) to seat the check.
- On October 31, 2015, after the initial IST failures and prior to the IST retest, check valves 312A and 312B were preconditioned by installing a sandpiper pump to seat the check on each.
- On October 12, 2018, after the initial IST failure and prior to the IST retest check valve 312C was preconditioned by back flushing the valve to seat the check
- On October 14, 2018 after initial IST failures and prior to the IST retests, check valves 312A and 312B were preconditioned by mechanical agitation (hit with a brass hammer) to seat the check.

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

| Failure to comply with the ASME OM code during safety-related check valve testing | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |

| | | | |
|---|---|---|---|
| Mitigating Systems | Green<br>NCV 05000250/2019010-03<br>Open/Closed | [P.1] - Identification | 71152B |

The NRC identified a green, Non-cited Violation (NCV) of 10 CFR 50.55a(f)(4), when the licensee failed to declare safety-related valves inoperable and failed to take corrective action after a failed IST as required by the ASME OM code.

Description:
The inspectors reviewed ARs associated with the most recent surveillance testing on Unit 3 CVCS valves 312A, 312B and 312C. These 3-inch check valves are classified as safety-related Class 1 and provide a reactor coolant pressure boundary function. The valves are tested per the ASME OM code and the licensee's IST program as described in 0-ADM-502, In-Service Testing Program every 36 months during refueling outages.

On October 12, 2018, valve 312C failed its IST with a leak rate of 220,000 standard cubic centimeters per minute (sccm). AR 2285407 described the acceptance criteria as no greater than 17,600 sccm. The licensee exited the test procedure, decided to back flush and seat the check valve and then performed a satisfactory IST retest.

On October 14, 2018, valves 312A and 312B, failed their IST. Both valves had back flow leakage significantly greater than the 12 gallons per minute (GPM) acceptance criteria. The licensee exited the test procedure and decided to mechanically agitate the valve bodies with a brass hammer. A subsequent retest was satisfactorily on both valves.

The inspectors determined that after the initial test failures for all three valves the licensee did not comply with the ASME OM code requiring the valves to be declared inoperable and for corrective actions to be implemented prior to retest.

The inspector's review of the two previous ISTs on valves 312A and 312B identified additional examples of non-compliance with the ASME OM code.

AR 0587621 described that on October 16, 2010, valve 312A failed an initial IST. The valve was mechanically agitated (hit with a brass hammer) and a new test method using a backflow leakage test criterion was performed to satisfy the IST. The retest obtained satisfactory IST results.

On October 31, 2015, during PT3-28 valves 312A and 312B failed the initial backflow IST. The test procedure was then revised to include an AODD pump installed on the upstream side of the valve in an attempt to seat the check prior to re-performing the backflow tests. The valves were not declared inoperable prior to this re-test. On November 1, 2015, valve 312B passed but valve 312A failed the retest. Radiography on November 1, 2015, confirmed that 312A was not fully seated. The radiograph performed on November 1, 2015, was similar to the October 16, 2010, radiograph results. Valve 312A disassembly revealed internal valve component critical clearances being exceeded due to vibration/oscillation induced wear of the disk post, disc arm post hole and hinge pin hole/bushings, and hinge pin. The sum total of the increased clearances allowed the outer diameter edge of the upper disc seat surface to lodge below the inner diameter edge of the upper body seat surface. A past operability review was completed on 312A for the period of concern from October 16, 2010 to November 7, 2015 and concluded that the valve was operable but degraded.

The inspectors determined that after the initial test failures for 312A in 2010, and 312A and 312B in 2015 the licensee did not comply with the ASME OM code requiring the valves to be declared inoperable and for corrective actions to be implemented prior to retest.

Corrective Actions:
The licensee acknowledged that they failed to follow the ASME OM code requiring IST valves that fail their initial IST to be declared inoperable and for corrective actions to be implemented prior to retest and entered them into the CAP.

Corrective Action References: ARs 2300895, 2303963

Performance Assessment:

Performance Deficiency: The licensee's repeated failures to declare safety-related valves 312A, 312B and 312C inoperable after a failed IST and failure to complete corrective actions prior to retest, as required by the ASME OM code, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, failing to declare safety-related valves inoperable after a failed IST and completing corrective actions prior to retest, as required by the ASME OM code could mask conditions indicative of degradation occurring in each valve. These conditions, if left uncorrected, could result in the failure of the valve to perform its safety function during plant operation.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations". Using IMC 0609, Appendix A, Exhibit 2, the inspectors determined the issue was of very low safety significance (Green) because it did not represent a loss of system or train function. The licensee conducted a past operability review and determined that each valve was currently operable but non-conforming because the safety related function of the valve to open and provide a boration flow path to the RCS was maintained.

Cross-cutting Aspect: P.1 - Identification: The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program. The finding was determined to be reflective of present licensee performance from the period of October 2010 through October 2018, in that the license failed to identify issues completely, accurately, and in a timely manner in accordance with the IST program requirements. Specifically, multiple ARs were entered into the CAP after each failed IST but the licensee repeatedly failed to identify additional compliance requirements with the ASME OM code after each test failure.

Enforcement:

Violation: 10 CFR 50.55a(f)(4) requires, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that were classified as ASME Code Class1, Class 2 and Class 3 must meet the in-service test requirements set forth in the ASME OM Code. The ASME OM Code of record for Turkey Point Unit 3 was 2004 Edition through the 2006 Addenda. Subsection ISTC-5224, Corrective Action, described the required actions to be taken as a result of a test failure and states in part "If a check valve fails to exhibit the required change of obturator position, it shall be declared inoperable. A

retest showing acceptable performance shall be run following any required corrective action before the valve is returned to service."

Contrary to the above, six examples of non-compliance with the ASME OM code subsection ISTC-5224 were identified on the CVCS system where after initial failure of the IST the licensee did not declare the valves inoperable and did not take corrective actions as required by the code. The specific dates were:

- On October 16, 2010 after the IST failure of valve 312A.
- On October 31, 2015, after the IST failures of valves 312A and 312B.
- On October 12, 2018, after the LLRT failure of valve 312C.
- On October 14, 2018, after the IST failures of valves 312A and 312B.

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

Inadequate Maintenance Procedures to Ensure Flood Protection for the 4A and 4B RHR trains

| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
|---|---|---|---|
| Mitigating Systems | Green<br>NCV 05000251/2019010-01<br>Open/Closed | [H.11] - Challenge the Unknown | 71152B |

The NRC identified a green, NCV of Technical Specification 6.8.1, for the licensee's failure to establish, implement and maintain written procedures to prevent foreign material from potentially degrading the RHR pump room sump pumps.

Description:

Previously in 2016, the NRC had issued NCV 05000251/2016003-01, Failure to provide adequate flood protection, for the 4A RHR train due to debris that could potentially degrade the room's sump pumps. On February 15, 2019, NRC inspectors discovered debris in both the Unit 4 RHR pump rooms. Insulation material in open, unsecured, clear plastic bags was staged on the floor of both pump rooms near the sumps per Work Order 40570457. The licensee performed an immediate operability evaluation as part of AR 02302239 which concluded the RHR pumps remained operable because the sump pumps have an alarm and that the open bags containing the insulation material would have been prevented or slowed from migrating to the sump pumps. The NRC inspectors reviewed the AR 02302239 and concluded that any degradation caused by the loose insulation or the bags would occur slowly enough that the alarm function would allow operator action to preserve the safety function of the RHR pumps in the rooms. Also the likelihood of a flood initiating in both rooms simultaneously was very low, thus it was not deemed credible to have a total loss of the RHR function. Turkey Point documented design and licensing basis requirements in RHR DBD 5610-050-DB-001 and Licensing commitment N0056 credited measures to mitigate flooding in the RHR pump rooms. The flood protection device referred to was the two sump pumps in each room.

Corrective Actions: The licensee took immediate corrective actions to secure the bagged insulation in the 4A and 4B RHR pump rooms and initiated a past-operability review.

Corrective Action Reference: AR 02302239

Performance Assessment:

Performance Deficiency: The failure to have adequate maintenance procedures to control foreign material from potentially affecting the performance of the RHR pump rooms' flood mitigating equipment is a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the licensee's failure to maintain written procedures or documented instructions required by Regulatory Guide 1.33 that address maintenance activities in the RHR pump rooms led to an unnecessary potential flood mitigation challenge to both the 4A and 4B RHR pumps.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "Significance Determination of Reactor Inspection Findings for At - Power Situations". Using IMC 0609, Appendix A, Exhibit 4, the inspectors determined the issue was of very low safety significance (Green) because the finding was related to RHR pumps and did not result in an associated total loss of any safety function.

Cross-cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. This finding was assigned a cross-cutting aspect in the human performance area because the licensee staff failed to stop when the WO required the insulation to be removed but it didn't direct were to store the material and risks, such as flooding, were not evaluated and managed before proceeding.

Enforcement:

Violation: Technical Specification 6.8.1 requires written procedures specified by the Quality Assurance Topical Report (QATR) to be established, implemented, and maintained. The QATR requires procedures for maintenance listed in section 9a of Appendix A of NRC Regulatory Guide 1.33, Quality Assurance Program Requirements, Revision 2, dated February 1978. Regulatory Guide 1.33 requires, in part, that maintenance activities that can affect the performance of safety-related equipment be performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, from February 15, 2019 to present, the licensee did not have guidance that was established, implemented, and maintained to preclude maintenance activities from introducing materials that could affect the function of the Unit 4A and 4B RHR pumps in a flooding event. Specifically work order 40570457 titled "Remove insulation in 4A RHR pump room" did not reference a governing procedure or provide specific instructions to ensure that removed insulation was properly stored so that it would not clog the sump pumps used to mitigate flooding concerns. The licensee took immediate corrective actions to secure the bagged insulation in the 4A and 4B RHR pump rooms and initiated a past-operability review.

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 March 1, 2019, the inspector presented the inspection results to Mr. Robert Coffey, Regional Vice President – Southern Region and other members of the licensee staff.

## LIST OF DOCUMENTS REVIEWED

Procedures
0-ADM-225 Online Risk Assessments
0-ADM-532, ASME Section XI Repair / Replacement Program, Revision 1
3-NOP-040.02, Refueling Core Shuffle, Revision 21
3-NOP-040.03, Fuel Handling and Insert Shuffle in the Spent Fuel Pit, Revision 18
3-OSP-055.1, Emergency Containment Cooler Operability Test
AD-AA-103, Nuclear Safety Culture Program
EN-AA-203-1001, Operability Determinations / Functionality Assessments, Revision 32
MA-AA-100-1008, Station Housekeeping and Material Control, Revision 13 dated 09/08/2016
MA-AA-100-1008, Station Housekeeping and Material Control, Revision 20 dated 02/08/2019
MA-AA-100-1022, Insulation Removal, Installation for Maintenance Activities
OP-AA-108-1000, Operator Challenges Program Management
OP-AA-108-1000-F01, Revision 2, Operator Challenge Assessment Sheet
PI-AA-100-1005, Root Cause Analysis
PI-AA-100-1005-F04, Effectiveness Review Form
PI-AA-102, Operating Experience Program, Revision 16
PI-AA-102-1001, Operating Experience Program Screening and Responding to Incoming Operating Experience
PI-AA-102-1002, Internal Operating Experience, Revision 10
PI-AA-104-1000, Condition Reporting
AD-AA-103, Nuclear Safety Culture Program, Revision 12
ER-AA-100-2002-10000, Maintenance Rule Activity Guidance, Revision 2
ER-AA-100-2002, Maintenance Rule Program Administration, Revision 7
ER-AA-101, Equipment Reliability, Revision 9
ER-AA-201-2001, System and Program Health Reporting, Revision 14
ER-AA-201-2002, System Performance Monitoring, Revision 6
ER-AA-201, Detection Process for Equipment Performance, Revision 5
NA-AA-200-1000, Employee Concerns Program, Revision 2
PI-AA-01, Corrective Action Program and Condition Reporting, Revision 4
PI-AA-02, Self-Assessment, Revision 0
PI-AA-03, Operating Experience, Revision 1
PI-AA-04, Human Performance, Revision 0
PI-AA-05, Change Management, Revision 2
PI-AA-100, Condition Assessment and Response, Revision 11
PI-AA-100-105, Condition Assessment and Response, Revision 18
PI-AA-100-106, Common Cause Evaluation, Revision 16

PI-AA-100-107, Issue Investigation, Revision 21
PI-AA-100-108, Condition Evaluation, Revision 09
PI-AA-101, Assessment and Improvement Program, Revision 26
PI-AA-104-1000, Condition Reporting, Revision 20
PI-AA-203, Action Tracking Management, Revision 12

0-ADM-016.4, Fire Watch Program, Revision 11A
0-NCAP-027, Calibration and Operation of the Benchtop pH/Conductivity/TDS Meter, Revision 1
OGMP-102.21, Installation and Maintenance of Thermo-lag Fire Barrier Systems, Revision 2
EN-AA-213-1000-F01, Engineering Product Risk and Consequences Assessment, Revision 4
MM-AA-100, Conduct of Maintenance, Revision 8
MM-AA-100-1008, Housekeeping and Material Control, Revision 19
MM-AA-101-1000, Foreign Material Exclusion, Revision 22
0-ADM-502, In-service Testing (IST) Program
0-ADM-531, Containment Leakage Rate Testing Program
0-ADM-539, In-service Testing – Condition Monitoring of Check Valves
3-OSP-047.1D, Charging Line Isolation and Check Valve Test
3-OSP-047.2, 3-312A and 3-312B In-service Test
3-OSP-051.5, Local Leak Rate Tests
4-OSP-051.5, Local Leak Rate Tests
ER-AA-100-2002, Maintenance Rule Program Administration
ER-AA-113-1000, In-service Testing Procedure
MA-AA-203-1000, Maintenance Testing
MA-AA-203-1001, Work Order Planning
TP-15-006, 3-312A and 3-312B Closure Test

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2146943, 2180657, 2220785, 2235484, 2239149, 2241062, 2246906, 2248895, 2262955, 2264188, 2301504, 2302239, 2216800, 2155629, 2123851, 2129632, 2155318, 2239149, 2042744, 2056905, 2147487, 2155881, 2170347, 2181184, 2181350, 2187711, 2188672, 2192198, 2194260, 2194720, 2206181, 2212152, 2214729, 2222270, 2224143, 2224218, 2249535, 2261216, 2261941, 2264782, 0587621, 1728305, 2075864, 2087510, 2088888, 2095982, 2152029, 2155621, 2180643, 2180974, 2187392, 2212379, 2212385, 2213443, 2218834, 2220993, 2283013, 2285407, 2285537, 2285745, 2287548, 2287883, 2288068, 2228814, 2285407, 2285745, 2296174, 2300895

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PT3-29 Plant Readiness for Operations 2202133

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Other Documents
Quality Assurance Topical Report, (FPL-1), Revision 21
Turkey Point Unit 3 – Key PRA Results, Revision 11
OWA, Burdens, CRD, Compensatory Actions, NSO Top Ten challenge and Temp modifications lists, current 2/11/19
Drawing 5614-M-3064, Safety Injection Accumulator System inside Containment
TR-AA-230-1000 Training Analysis Worksheet for ASME Section XI potential knowledge gaps
RHR DBD 5610-050-DB-001, Revision 11 dated 11/30/2007
Licensing commitment N0056, dated September 4, 1979
AT-01.01 AR Report (All Security Related AR's 1/1/2017 to 12/31/2018)
Control Room Report-Fire Protection Impairment List, 2/19/2019
Mentoring Guide Fire Protection Program Owner, Revision 2
Root Cause Evaluation for AR 2192198 High Energy Arc Fault Event of 3/18/2017
Notifier Fire Detection System Manual VTM V001049
Work Package 40559449, Unit 4 SG Main Feed-water Flow Control Valve Trouble Shooting
CN-2.29 Specification for Electrical Conduit and Cable Tray Supports PTN Unit 3 & 4, Revision 2
Licensee Event Report (LER) 2017-001-00, Phase to Ground Flashover from Thermo-Lag

Work orders
40570457, 40538300, 40538199, 40550272, 40407132, 40546401, 40578200, 406244