

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

July 29, 2020

Mr. Don Moul Vice President, Nuclear Division and Chief Nuclear Office Florida Power & Light Company Mail Stop: NT3/JW 15430 Endeavor Drive Jupiter, FL 33478

SUBJECT: ST. LUCIE UNITS 1 & 2 – INTEGRATED INSPECTION REPORT 05000335/2020002, 05000389/2020002, AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION (ISFSI) 07200061/2020001

Dear Mr. Moul:

On June 30, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at St. Lucie Units 1 & 2. On July 13, 2020, the NRC inspectors discussed the results of this inspection with Mr. Dan DeBoer and other members of your staff. The results of this inspection are documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <u>http://www.nrc.gov/reading-rm/adams.html</u> 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,

/**RA**/

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

Docket Nos. 05000335, 05000389 and 07200061 License Nos. DPR-67 and NPF-16

cc w/ encl: Distribution via LISTSERV®

D. Moul

SUBJECT: ST. LUCIE UNITS 1 & 2 – INTEGRATED INSPECTION REPORT 05000335/2020002, 05000389/2020002 AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION (ISFSI) 07200061/2020001 dated July 29, 2020

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ADAMS ACCESSION NUMBER: ML20212L728

Xs	SUNSI Review	X Non-Sensitive Sensitive		X Publicly Availab	ole vailable
OFFICE	DRP	DRP	DRP	DRP	
NAME	T. Morrissey	S. Roberts	L. Pressley	R. Musser	
DATE	7/27/2020	7/28/2020	7/28/2020	7/29/2020	

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U.S. NUCLEAR REGULATORY COMMISSION Inspection Report

Docket Numbers:	05000335, 05000389 and 07200061
License Numbers:	DPR-67 and NPF-16
Report Numbers:	05000335/2020002, 05000389/2020002 and 072600061/2020001
Enterprise Identifier:	I-2020-002-0059 and I-2020-01-0019
Licensee:	Florida Power & Light Company
Facility:	St. Lucie Units 1 & 2
Location:	Jensen Beach, FL 34957
Inspection Dates:	April 01, 2020 to June 30, 2020
Inspectors:	T. Morrissey, Senior Resident Inspector S. Roberts, Resident Inspector R. Taylor, Senior Project Engineer
Approved By:	Randall A. Musser, Chief Reactor Projects Branch 3 Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at St. Lucie Units 1 & 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

Туре	Issue Number	Title	Report	Status
			Section	
LER	05000389/2020-001-00	LER 2020-001-00 for St. Lucie, Unit 2, Turbine Loss of Load Trip Found Outside Technical Specification Allowable Range Due to Unspecified Legacy M&TE or Calibration Deficiencies	71153	Closed
NOV	05000335,05000389/ 2019004-03	NOTICE OF VIOLATION - (EA-18-066)	92722	Closed

PLANT STATUS

Both Unit 1 and 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/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.

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 conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portion 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 some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

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

(1) The inspectors evaluated the licensee's readiness for seasonal extreme weather conditions prior to the onset of hurricane season, on May 30, 2020, for the following systems:

Unit 1 and Unit 2 emergency diesel generator (EDG) systems Unit 1 and Unit 2 auxiliary feedwater (AFW) systems

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

(1) The inspectors evaluated that flood protection barriers, mitigation plans, procedures, and equipment were consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) Unit 1, 1B low pressure safety injection (LPSI) train while the 1A LPSI pump was out of service (OOS) for planned maintenance, on April 2, 2020
- (2) Unit 2, 2B AFW train while 2A AFW train was OOS for planned maintenance, on April 9, 2020
- (3) Unit 1, 1A and 1C charging pump trains while the 1B charging pump was OOS for planned maintenance, on April 30, 2020
- (4) Unit 2, 2B intake cooling water (ICW) train and 2B component cooling water (CCW) train while the 2A CCW heat exchanger (HX) was OOS for planned maintenance, on May 12-14, 2020

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

(1) The inspectors evaluated system configurations during a complete walkdown of the Unit 1 ICW system, on June 11, 2020.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 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 1, cable spreading room, on April 7, 2020
- (2) Unit 2, diesel oil storage tank building, on April 13, 2020
- (3) Unit 1, 'A' emergency core cooling system (ECCS) fire zone (1A LPSI, 1A high pressure safety injection (HPSI), and 1A containment spray pumps), on May 5, 2020
- (4) Unit 1, 1A EDG room, on June 17, 2020
- (5) Unit 2, charging pump cubicles & hallway, on June 23, 2020

71111.06 - Flood Protection Measures

Cable Degradation (IP Section 03.02) (1 Sample)

The inspectors evaluated cable submergence protection in:

(1) Unit 1, Manholes M129 and M130 containing safety related cables associated with the 1A and 1B EDG systems, on May 11, 2020

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated readiness and performance of the 2A CCW HX, by verifying that periodic maintenance was conducted according to appropriate guidelines, on May 12-14, 2020.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

(1) On June 8, 2020, the inspectors observed a simulator-based licensed operator requalification training emergency plan evaluation on the control room simulator.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 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) Unit 1, control room ventilation system (System 25b)

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (6 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;

- (1) Unit 1, elevated risk while the 1A LPSI pump was OOS for emergent maintenance, on April 2, 2020
- (2) Unit 1, elevated risk while the 1C ICW, 1A charging pump, and 1A HPSI header valve (HCV-3647) were OOS for planned maintenance, on April 9, 2020
- (3) Unit 1, elevated risk while the 1B charging pump was OOS for planned maintenance, on April 30, 2020
- (4) Unit 2, elevated risk while the 2A CCW HX was OOS for planned maintenance, on May 12-14, 2020
- (5) Unit 1, elevated risk while the 1B trains of ICW, CCW, HPSI and LPSI were OOS for planned maintenance, on May 26-28, 2020
- (6) Unit 1 and Unit 2, elevated risk while the 1A and 2A startup transformers were OOS for planned maintenance, on June 1-11, 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 1, Action Request (AR) 2350797, 1A LPSI pump suction pipe check valve weld through-wall leak, on April 8, 2020
- (2) Unit 1, AR 2353122, 1B ICW pipe through-wall leak downstream of flow element FT-21-9B, on April 21, 2020
- (3) Unit 1, AR 2354805, 1B ICW header through-wall leak downstream of valve SB21212, on May 7, 2020

(4) Unit 1, AR 2357878, ICW pipe CW-72 restraint CW-1000-11 has material wastage, (rust), on May 28, 2020

71111.18 - Plant Modifications

<u>Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02)</u> (3 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 1, Engineering Change (EC) 294791, "Unit 1 CW-68 Spool Piece Installation," (Temporary modification to isolate leaking 1B ICW piping)
- (2) Unit 1, EC 294834, "ICW CW-78 Drain Line Repair"
- (3) Unit 1, EC 294845, "1B ICW CW-13 leak repair"

71111.19 - Post-Maintenance Testing

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

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

- (1) Unit 1, WO 40713673, 1C ICW pump did not turn off when control switch taken to stop, on April 14, 2020
- (2) Unit 1, WO 40622502, 1B LPSI pump, perform motor inspection/breaker inspection, on April 15, 2020
- (3) Unit 1, WO 40641250, 1B charging pump excessive leakage, on May 6, 2020
- (4) Unit 2, WO 40628553, 2A CCW HX critical maintenance management (CMM) outage, on May 15, 2020
- (5) Unit 1, WO 40716390, 1A EDG, 18-month inspection preventative maintenance, on June 18, 2020

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

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

- (1) Unit 2, 2-SMI-09.43A, "Auxiliary Feedwater Actuation System Functional Test Channel A," on April 16, 2020
- (2) Unit 1, 1-SMI-09.06, "AFAS Battery Failure Bypass Test," on May 7, 2020
- (3) Unit 1, 1-OSP-66.01, "Control Element Assembly Exercise," on May 19, 2020
- (4) Unit 2, 2-SMI-63.02A, "RPS-Monthly Functional Test Channel A," and
- 2-SMI-63.02B, "RPS-Monthly Functional Test Channel B," on June 24, 2020

Inservice Testing (IP Section 03.01) (1 Sample)

(1) Unit 2, 2-OSP-09.01A, "2A Auxiliary Feedwater Pump Code Run," on May 5, 2020

71114.06 - Drill Evaluation

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

(1) On July 21, 2020 the inspectors evaluated an emergency response drill that included a loss of off-site power, loss of the 2A EDG, and a cyber-attack on station computers.

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

(1) On June 8, 2020, the inspectors observed a licensed operator requalification training evaluation on the control room simulator.

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, 2019 through March 31, 2020
- (2) Unit 2, April 1, 2019 through March 31, 2020

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

- (1) Unit 1, April 1, 2019 through March 31, 2020
- (2) Unit 2, April 1, 2019 through March 31, 2020

71152 - Problem Identification and Resolution

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

(1) The inspectors reviewed the licensee's corrective action program (CAP) for potential adverse trends that might be indicative of a more significant safety issue.

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

(1) AR 2350797, V07000 Follow-up exam shows boric acid at valve elbow

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

Event Report (IP Section 03.02) (1 Sample)

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

 Licensee event report (LER) 05000389/2020-001-00, "Turbine Loss of Load Trip Found Outside Technical Specification Allowable Range Due to Unspecified Legacy M&TE or Calibration Deficiencies," (Agency Documents Access and Management System (ADAMS) Accession No. ML20113E977). The inspectors determined that the cause of this event was a result of a licensee performance deficiency. The regulatory significance of this LER is documented under the Inspection Results Section of this report. This LER is closed.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants (1 Sample)

(1) The inspectors evaluated the licensee's activities related to long-term operation and monitoring of their independent spent fuel storage installation, on April 27, 2020.

<u>92722 - Follow Up Inspection For Any Severity Level I or II Traditional Enforcement Violation</u> (<u>1 Sample</u>)

(1) The inspector evaluated the licensee's root cause evaluation and corrective actions associated with a Severity Level II violation (EA-18-066). The NRC determined that a contract employee's work assignment was cancelled, at least in part, for raising a nuclear safety concern via the submission of a condition report. The cancellation of the contract employee's work assignment was a violation of 10 CFR 50.7, "Employee Protection." The subsequent Notice of Violation (NOV) was issued on September 12, 2019, (ADAMS Accession No. ML19234A332).

The inspector's review included but was not limited to: 1) assurance that the causes of the violations were understood, 2) that the extent of condition and extent of cause for the violations were identified, 3) that both completed and proposed corrective actions for the violations were appropriate and sufficient to address the causes, and 4) the licensee's evaluation of the contribution of safety culture to the escalated traditional enforcement violation was appropriate.

The inspectors reviewed the licensee's response to the NOV (ADAMS Accession No. ML19283C899) and determined that the reason, corrective actions taken and planned to address recurrence, for this violation were adequately addressed and captured on the docket. This NOV (05000335, 05000389/2019004-03) is closed.

INSPECTION RESULTS

Observation: PIR Trend review	71152		
The inspectors as well as the licensee identified a trend associated with recent pi	pe through-		
wall leaks on the Unit 1, 1B intake cooking water (ICW) system. Over the course	of several		
weeks, leaks were identified on a coupling connection to the ICW discharge head	ler, a branch		
line from the supply header, and on the supply header. The licensee implemente	d corrective		
actions to repair the leaks. During the last refueling outage, the licensee impleme	ented an		
ICW pipe replacement project that was scheduled to be completed over several refueling			
outages. The specific leaking pipe sections described above had not yet been re	placed at		
the conclusion of this inspection. This trend was placed in the licensee's CAP as	AR		
2356956.			

Minor Violation - LER 05000389/2020-001-00 71153 Minor Violation: On September 1, 2018, with Unit 2 shutdown (Mode 6) for a refueling outage, the licensee completed Technical Specification (TS) Surveillance Requirement (SR) 4.3.1.1 to perform a channel check and channel functional test of reactor protection instrumentation Functional Unit 15, "Loss of Load (Turbine Hydraulic Unit Pressure – Low)" in accordance with the licensee's surveillance frequency control program. The TS required surveillance was completed using preventative maintenance procedure 2-PMI-22.08. PS-22-95A/B/C/D, "Turbine Loss of Load to RPS Cabinet Calibration," revision 2. During performance of 2-PMI-22.08, the as-found setpoints of the four pressure switches for turbine loss of load, which were used to generate inputs to the reactor protection system (RPS), were found at 1,400 to 1,600 pounds per square inch gauge (psig). The procedure specified a 1,000 psig setpoint however the as-found setpoints were within TS acceptance criteria of greater than 800 psig. The technicians noted the higher than expected as-found setpoints in the work order and adjusted each pressure switch setpoint to approximately 1,000 psig.

On February 22, 2020, during the next scheduled performance of 2-PMI-22.08, the as-found pressure switch setpoints were determined to be 414 to 542 psig, which were 458 to 586 psig below the 1,000 psig desired setpoint and below the minimum required by TS Table 2.2-1, "Reactor Protection Instrumentation Trip Setpoint," for Function Unit 15 of 800 psig. Therefore, with the pressure switch setpoints outside of the TS Table 2.2-1 Functional Unit 15 allowable value the TS 3.3.1 minimum operable number of 3 RPS channels in Mode 1 as defined in Table 3.3-1 was not met.

The licensee's investigation was unable to determine the actual cause of the lower than TS allowed pressure switch setpoints. However, the licensee's investigation did determine that the issue was not indicative of instrument drift and the most likely cause was either an issue with legacy measuring and test equipment (M&TE) or a calibration issue related to the performance of 2-PMI-22.08, on September 1, 2018.

The inspectors reviewed the LER and the licensee's investigation (AR 2345682) to determine if the corrective actions were appropriate and whether the issue involved a performance deficiency. The inspectors concluded that the adjustment of the pressure switches on September 1, 2018, which resulted in lowering the four pressure switch setpoints below the TS required minimum setting, was a performance deficiency. The cause of; either an issue with M&TE; or an improperly performed calibration, was reasonably within the licensee's ability to foresee and correct. The setpoints of the pressure switches did not have a history of drifting more than 100 psig. When all four pressure switches were found with setpoints of 400 to 600 psig greater than the procedure desired setting of 1,000 psig, the licensee should have placed the issue in the corrective action program for review prior to lowering the setpoints. It is likely an investigation would have determined the cause.

The inspectors concluded that had the turbine tripped during the previous operating cycle, the four turbine loss of load pressure switches would have actuated and provided inputs to RPS and would have tripped the reactor. However, the reactor trip would have been delayed by the amount of time for the turbine digital electro-hydraulic (DEH) emergency trip pressure to decay from the TS minimum setpoint of 800 psig to the lower pressure switch settings. The maximum delay would have been 3 seconds which was the bounding time for the turbine DEH emergency trip pressure to decay from approximately 2,000 psig to 80 psig upon a turbine trip. The actual delay of the trip would be closer to 1 second using the inspectors judgement based upon the time for the DEH pressure to drop from 800 psig (minimum TS

pressure setpoint) to the minimum as-found setpoint (414 psig). In addition, the Updated Final Safety Analysis Report (UFSAR) section 7.2.2.4.4, "Turbine Trip," stated that; "A reactor trip on turbine trip (Section 7.2.1.2.h) has been provided as an equipment protective feature and is not required for reactor protection." The basis for TS 2.2.1, "Reactor Trip Setpoints," stated, in part, that no credit was taken in the safety analysis for operation of this trip.

This minor violation was associated with LER 389-2020-001-00, "Turbine Loss of Load Trip Found Outside Technical Specification Allowed Range Due to Unspecified Legacy M&TE or Calibration Deficiencies."

Screening: The inspectors determined the performance deficiency was minor. The performance deficiency was minor because it could not be reasonably viewed as a precursor to a significant event; if left uncorrected, it would not have the potential to lead to a more significant safety concern; and it was not associated with a cornerstone attribute listed at the end of Inspection Manual Chapter 0612, Appendix B.

Enforcement: This failure to maintain the required minimum number of RPS instrumentation channels as required by TS 3.3.1 and within the allowable minimum setpoint pressure specified in TS Table 2.2-1 for Functional Unit 15, "Loss of Load (Turbine Hydraulic Unit Pressure – Low)," constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. The licensee entered this issue in the CAP as AR 2345682.

EXIT MEETINGS AND DEBRIEFS

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

- On July 13, 2020, the inspectors presented the integrated inspection results to Mr. Dan DeBoer and other members of the licensee staff.
- On May 7, 2020, the inspectors presented the IP 92722 inspection results to Mr. Dan DeBoer and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Туре	Designation	Description or Title	Revision or Date
71111.07A	Miscellaneous	NP-7552	Electric Power Research Institute (EPRI) HX monitoring guideline	
71111.12	Corrective Action Documents	2352989	MRFF Evaluation Discrepancy - Unit 1 Control Room Air Conditioning	April 18, 2020