



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

Report Nos.: 50-335/86-25 and 50-389/86-24

Licensee: Florida Power and Light Company
 9250 West Flagler Street
 Miami, FL 33102

Docket Nos.: 50-335 and 50-389

License Nos.: DPR-67 and NPF-16

Facility Name: St. Lucie 1 and 2

Inspection Conducted: November 17-21, 1986

Inspector: *George H. Peterson* 12/17/86
 for B. R. Crowley Date Signed

Approved by: *J. J. Blake* 12/17/86
 J. J. Blake, Section Chief Date Signed
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of maintenance/ modification welding (Units 1 and 2), Inservice Testing (IST) Program for ASME Classes 1, 2 and 3 pumps and valves (Units 1 and 2), and inspector followup items (Units 1 and 2).

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. A. Sager, Plant Manager
*L. W. Pearce, Operations Supervisor
*N. G. Roos, Quality control (QC) Supervisor
*S. C. Sanders, FP&L Welding Supervisor-Plant
*P. D. Waldrop, FP&L Welding Supervisor-Construction
*D. M. Stewart, Lead Test and Performance Engineer
*E. B. Carlile, Project Field Engineering Representative
*P. W. Heycock, ISI Coordinator
A. B. Johnson, Assistant Plant Engineer
J. L. Lyster, QC Engineer
R. L. Miller, Quality Control

Other licensee employees contacted included construction craftsmen, engineers, technicians, security force members, and office personnel.

NRC Resident Inspector

*R. V. Crlenjak, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 21, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new items were identified during this inspection.

(Open) Inspector Followup Item 335/86-25-01, 389/86-24-01, Review of Revised Welding Program - paragraph 5.

(Open) Inspector Followup Item 389/86-24-02, Revision to Valve Stroke Testing Frequency Requirements - paragraph 6.b.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 335/85-04-03, Testing of Category "C" Relief Valves. This item raised a question relative to the fact that originally, relief valves in systems other than the pressurizer and main steam systems were not in the licensee's IST program. Based on differing opinions and interpretations, it is not clear when the valves should have been added to the IST program. The valves have now been included in the program and are being tested in accordance with code requirements. Procedure QI 11-PR/PSL-7, Revision 1 covers testing of relief valves.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Maintenance/Modification Welding (55050 and 55100) (Units 1 and 2)

The inspector examined the welding activities described below relative to maintenance/modification to determine whether applicable code and regulatory requirements were being met. In general, the licensee controlling documents are:

- Modification (Backfit) - FP&L Welding Control Manual, Revision 21
- Maintenance - General Maintenance (GM) Procedure M-0400, Revision 8, Welding Manual
- Parts of the Welding Control Manual Implemented by GM Procedure M-0400

In accordance with these licensee documents, the following codes apply:

- ASME Boiler and Pressure Vessel (B&PV) Code, Section XI, 1980 Edition, W81 Addenda
- ASME B&PV Code, Section III, 1980 Edition, W80 Addenda
- AWS Structural Welding Code D1.1, 1983 Edition

a. Welding Material Control

The inspector verified that the filler materials used for the welds observed (see paragraph 5.d.) were the correct materials specified by the Welding Procedure Specification (WPS) and that in general, filler materials specified on WPS were compatible with specified base materials.

The inspector performed the following verifications related to control and handling of welding material:

- That the licensee had established procedures for purchasing receiving, storing, disbursing, and handling of welding materials. The applicable procedures are:

WTS-3, Revision 3, Weld Material Control

GM Procedure M-0028, Revision 2, Welding Electrode and Filler Metal Control

QP-4.1, Revision 18, Control of Procurement Originated by Operating Plant Personnel

QP-4.4, Revision 18, Review of Procurement Documents for Items and Services Other Than Spare Parts

QP-7.1, Revision 8, Receipt Inspection of Materials, Parts, and Components at the Plant Site

QI-4.1, Revision 8, Procurement Document Control

Construction Administrative Procedure ASP-6, Revision 5, Welding Control

Engineering Department Specifications - MN Series

- That receiving operations were conducted in accordance with applicable procedures. Purchasing and receiving records for the welding materials listed below were reviewed.
- That welding material storage and handling procedures contained requirements for environmental control and that actual practice followed these requirements. The backfit rod issue station was inspected and weld material control observed during observation of welding (see paragraph 5.d below).
- That there were effective procedures for maintaining identification of welding materials and that procedures are enforced. Identification control was inspected during observation of welding (see paragraph 5.d below).
- That the welding material control system met the requirements for the most restrictive application and personnel involved were knowledgeable of the system.
- That the method of disbursement of welding materials was effective and controlled in accordance with approved procedures.

- That required ASME Code tests were performed on each lot of welding material. The purchasing, receiving inspection and material certification documentation were reviewed for the following welding materials used for the welds listed in paragraph 5.d below.

<u>Size</u>	<u>Type</u>	<u>Ht. No.</u>	<u>P.O. No.</u>
3/32"	E7018	77871	90865-3884
3/32"	E7018	33043	90865-79478B
1/8"	E70S-2	065472	90865-65398
1/8"	E70S-2	065415	90865-77385W
3/32"	E70S-2	065433	90865-79937
1/8"	ER316	L1861	43921-56890
1/8"	ER308	98520	SL74-294
3/32"	ER308	09735	SL75700
3/32"	ER4043	3809	22279-23010
3/32"	RCuAL	G-7139	02471-79697A

b. Welding Procedures

The inspector determined if procedures had been established for preparation, qualification, approval/certification and revision of WPSs.

The applicable procedures are:

- WTS 6, Revision 2, Weld Procedure Qualification Requirements
- WTS 1, Revision 0, Processing Change Requests To the Welding Control Manual
- ASP-6, Revision 5, Welding Control

c. Welder Performance Qualification

(1) The inspector verified that procedures had been established for qualification and maintaining qualification status of welders and welding operators in accordance with ASME Code requirements. The applicable procedures are:

- WTS 5, Revision 1, Welding Performance Qualification Requirements
- ASP-6, Revision 5, Welding Control

- (2) The inspector reviewed a sample of the qualification and qualification status records for the below listed welders relative to the welds listed in paragraph 5.d below.

Welder

LMAH
LMAF
LMAE
LMAJ
LFHQ
LFOS
LFMV

- (3) Welder LMAD was observed in the process of welding a test assembly to qualify for WPS 36.
- (4) Completed and accepted radiography (RT) film for the following welder qualifications were reviewed:

<u>Welder</u>	<u>WPS</u>
LMAD	WPS 89
LMAD	WPS 9
LMAD	WPS 5
LMAD	WPS 43

d. Production Welding

The inspector observed in-process welding and reviewed in-process records for the following welds:

<u>Weld</u>	<u>Size</u>	<u>Category</u>
2F-9-FP-0155-005-A	6" x .280"	8Y*
2F-9-FP-0155-008	6" x .280"	8Y*
Traveler 86-859 2"-FP-62	2" sch. 40	8*

*Category 8 welds were observed since no higher class welds were available for observation and all categories are welded to the same requirements.

Since no other welds were available for observation, the inspector reviewed completed records for the following welds:

<u>Weld</u>	<u>Size</u>	<u>Category</u>
2F-2-SI-0652-001	3" x .216"	3A
2F-2-SI-0652-002	3" x .316	3A

Traveler 86-779	-	3
Traveler 86-778	-	3
Traveler 86-777	-	3
Traveler 86-695	-	2
Traveler 86-696	-	3
FW-1, 2, 3, 4, 5 and 6		
Traveler 86-780	-	3
Traveler 86-782	-	3
Traveler 86-645	-	3

The welding was observed and the records reviewed to determine whether:

- Work was conducted in accordance with a document which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval
- Weld identification and location were as specified
- Procedures, drawings, and other instructions were at the work station and readily available
- WPS assignment was in accordance with applicable code requirements
- Welding technique and sequence were specified and adhered to
- Welding filler materials were the specified type and traceable to certifications
- Weld joint geometry was in accordance with applicable procedure and was inspected
- Alignment of parts was as specified
- Preheat and interpass temperatures were in accordance with procedures
- Electrodes were used to positions and with electrical characteristics specified
- Shielding gas was in accordance with the welding procedure
- Welding equipment was in good condition
- Interpass cleaning was in accordance with applicable procedures
- Temporary attachments were removed in accordance with applicable procedures
- Gas purging, if specified, was used in accordance with applicable procedures

- Process control system had provisions for repairs
- Welders were qualified
- No peening performed on root and surface layers
- Weld inspection personnel were qualified

Examination of the welding program, as detailed in the above paragraphs, revealed the following weaknesses in the program:

- Welding Material Control - Backfit was working to procedure WTS 3 of the Welding Control Manual. Maintenance was working to General Maintenance Procedure M-0028. The following problems were identified with procedure M-0028:
 - o Paragraph 9.2.3 addresses exposure times for types E-7016, 7018, 8016, 8018, 9016 and 9018 electrodes. Exposure times for other coated electrodes are not addressed.
 - o Paragraph 9.2.4 is not clear. It appears that part of the paragraph has been left out.
 - o Paragraph 9.2.7 does not specify any controls for portable rod ovens.
 - o Paragraph 9.2.6 does not provide definitive instructions for use of the "Welding Rod Control Log."
 - o Based on discussion with the Welding Supervisor, return of unused welding material is not allowed. The procedure indicates that unused material is to be returned.
 - o Material traceability - Procedure is not clear about how material identification is maintained and transferred to the traveler.
 - o Procedure has few definitive requirements.
- Welder Qualification - Both backfit and maintenance are working to procedure WTS 5 of the Welding Control Manual. The following problems were identified with procedure WTS 5:
 - o The procedure refers to WTSs 9.2, 9.3 and 9.6. It appears these documents were never issued.
 - o Paragraph 6.0 details a computerized system for maintaining welder qualifications current. Backfit is using the system. However, maintenance is using an informal manual log. The

log has inconsistencies since it is informal. Without the use of the informal log, it is not possible to verify for certain that a welder has maintained his qualification.

- ° In paragraphs 6.6 through 6.9, the terms "Weld Currency Report" and "Welders Performance Qualification Report" are not clear. The frequency for issue of these two reports is not specified. Maintenance is not using these two reports.
- ° There is very little detail on the qualification process. ASME Section IX is referenced for details of testing, i.e. test assembly details, required NDE or mechanical testing, etc. Based on discussions with welding supervision, it is up to the welding supervisor to specify the details of testing. The inspector pointed out that this method of operation leads to inconsistencies and errors. Some welding supervisors that are more experienced will be able to interpret code requirements for testing, while less experienced welding supervisors might not.
- ° The procedure does not contain requirements for positive identification of welders.
- ° Details for qualification renewal when a welder does not weld in the required three or six months (when welding with another process) are not clear. Requirements, including test assembly to be welded and how it is to be tested, need to be clarified.
- Weld Traveler - For Maintenance, process control is covered by Maintenance Procedure M-0400. Instructions for processing Traveler need to be added to procedure.
- Welding Procedures - Welding Procedure qualification is covered by procedure WTS 6 of the Welding Control Manual. Processing of WPS is not clearly covered by Procedure WTS 6.

Although a significant number of weaknesses were identified in the welding program, the inspector did not identify any code or procedure violation in observation of welding or review of completed records. In addition, discussions with welding supervisor revealed that the licensee had identified weaknesses (many similar to those identified by the inspector) in the welding program and had initiated steps to correct the weaknesses prior to the current inspection. A Quality Improvement Team (QIP), for improvement of procedures and a Welding Improvement Team, for improvement of the welding program, had been formed. The purpose of the Welding Improvement Team was to correct known weaknesses in the welding program and to formulate a welding

program suitable for all FP&L entities, i.e., St. Lucie Maintenance, St. Lucie Backfit, Turkey Point, etc. The inspector reviewed internal licensee correspondence documenting formation of the Welding Improvement Team, the agenda for the team, and some identified welding program problems to be resolved by the teams. Inspector Followup Item 335/86-25-01, 389/86-24-01, Review of Revised Welding Program, is opened pending review of the revised program to verify correction of known weaknesses.

Within the areas inspected, no violations or deviations were identified.

6. Inservice Testing (IST) Program For ASME Classes 1, 2, And 3 Pumps And Valves (Units 1 And 2)

The inspector examined the IST activities described below to determine whether regulatory and code requirements were being met. In accordance with the pump and valve program (submitted by FP&L letter L-80-136, dated May 1, 1980) and the Safety Evaluation Report (SER), dated April 2, 1985, the applicable code for Unit 1 is the ASME B&PV Code, Section XI, 1974 Edition S75 Addenda. In accordance with the pump and valve program (submitted by FP&L letter L-83-644, dated October 6, 1983) and the SER dated January 13, 1986, the applicable code for Unit 2 is the ASME B&PV Code, Section XI, 1980 Edition, W80 Addenda.

See RII Reports 50-335/85-04, 50-389/85-04, 50-335/85-14 and 50-389/85-14 for documentation of previous inspections in this area. For the current inspection, only changes to documents since the last inspection were reviewed.

The IST Programs are implemented by the following St. Lucie Administrative Procedures:

- 0010132, Revision 7, "ASME Code Testing of Pumps and Valves"
- 1-0010125, Revision 67, "Schedule of Periodic Tests, Checks and Calibrations"
- 2-0010125, Revision 18, "Schedule of Periodic Tests, Checks and Calibrations"
- QI 11-PR/PSL-7, Revision 1, "Control of Code Safety and Relief Valves"
- a. The above programs and administrative procedures and the below listed Quality Instructions (QIs) were reviewed for general content and to the extent necessary to verify that the licensee had assigned responsibilities for: preparation, review and approval of IST procedures; scheduling of IST; performance of test functions; performance of maintenance; and performance of calibrations.
 - QI 6-PR/PLS-1, Revision 11, "Document Control"

- QI 5-PR/PSL-1, Revision 29, "Preparation, Revision, Review, Approval of Procedures"

- b. The inspector reviewed procedures 1-0010125 and 2-0010125 and discussed scheduling with responsible personnel to verify that tests are scheduled at required frequencies. The inspector found that Data Sheet 8 of procedure 0010125, used to schedule testing of valves to be stroke tested quarterly, has a "built-in" possibility of allowing the surveillance interval for an individual valve to exceed the Technical Specification requirements. The Unit 2 Technical Specifications defines the ASME Section XI three month test frequency as 92 days and allows a 25 percent extension on the interval. In accordance with Data Sheet 8, valves are tested during the months of February, May, August, and November. The date an individual valve is tested is not recorded - only the completion date of Data Sheet 8. Therefore, if a particular valve is tested at the beginning of the month for one quarter and at the end of the month the next quarter, the 92 day plus 25% surveillance interval will be exceeded by approximately one week. However, based on informal logs kept by QC and discussions with QC relative to the tight controls QC maintains over insuring that required schedules are maintained, it is unlikely that surveillance intervals have been violated. The licensee agreed that the procedures need to be revised to insure procedurally that surveillance intervals are not exceeded. Pending review of revised procedures, Inspector Followup Item 389/86-24-02, Revision to Valve Stroke Testing Frequency Requirements, is opened. This problem is unique to Unit 2 in that the Unit 1 Technical Specifications do not define surveillance intervals specified by ASME Section XI.
- c. The inspector reviewed the control room "Pump and Valve Summary" as listed below to verify that status lists were maintained and reflected properly scheduled tests.
- | | | |
|--------|---|---|
| Unit 1 | - | Data Sheet 8 - 1986 |
| | | Data Sheet 9 - 1986 |
| | | Data Sheet 10 - 1986 |
| | | Data Sheet 11 - 1986 |
| | | Routine Pump Test Summary - 1986 |
| Unit 2 | - | Data Sheet 8 - 2nd, 3rd, 4th Qtrs., 1986 |
| | | Data Sheet 9 - 2nd, 3rd, 4th Qtrs., 1986 |
| | | Data Sheet 10 - 1986 |
| | | Routine Pump Test Summary - 2nd, 3rd, 4th Qtrs., 1986 |
- d. Based on a number of problems in the industry with check valves, a question has been raised relative to the need for testing check valves in both directions. St. Lucie Unit 1 pump and valve program SER states that when a check valve has two functions important to safety - to open under certain conditions and close under others, the exercising test must verify movement to the positions necessary to satisfy both of

these functions. ASME Section XI requires exercising to the position required to fulfill the valve function. During the current inspection, the question was discussed with licensee's engineering personnel. The following summarizes the discussion:

- (1) FP&L was not aware of any check valves that require exercising in both directions to fulfill their safety function.
- (2) FP&L considers that the function of each valve should be reviewed and, in addition to performing the required code tests, attempts should be made to perform any other testing/monitoring considered warranted from a safety/reliability standpoint.
- (3) The inspector questioned the licensee relative to the following instances where the need to test check valves in both directions has been questioned. The questions and the licensee's responses are included.
 - The Auxiliary Feedwater Pump (AFW) have check valves that are tested to open to fulfill their function. The valves need to close to prevent hot water/steam from over heating the AFW pumps under certain conditions. The licensee pointed out that temperature of piping upstream of the check valves is monitored on a periodic basis to detect a heatup problem.
 - The discharges to the Safety Injection (SI) Tanks have two valves in series whose safety function is to open. The valves are closed and isolate the lower pressure SI tanks from the higher pressure reactor coolant during normal operations. Therefore, performance of the valves in the closed direction is important to prevent over pressurization of the SI tanks. The licensee pointed out that to protect from overpressurization:
 - There is an alarmed pressure monitor between the two check valves
 - There is an alarmed level monitor in the tank
 - The valves are leak checked per Technical Specification requirements.
 - HPSI and LPSI system pumps in parallel trains take suction from a common line and discharge into a common line. The pump discharge lines have check valves that open to fulfill their safety function. If the pump in only one train is operating and the check valve in the parallel non-operating line is not closed or has excessive leakage, the recirculation back through the non-operating check valve might cause

insufficient flow for the system to fulfill its function. The licensee pointed out that in addition to check valves, each discharge line has an isolation valve. Also, since the flow rate in each train is tested separately, in effect check valves are being checked for excessive backflow in that if the backflow through the non-operating train is excessive, the flowrate in the system will not be acceptable and the test will fail.

7. Inspector Followup Items (IFIs) (Units 1 and 2)(92701)

- a. (Closed) Inspector Followup Item 335, 389/85-14-01, Valve Stroke Times. This item pertained to the fact that valve stroke times related more to system performance requirements rather than to verifying the operational readiness of the valves. The licensee has re-examined valve stroke times and revised the program to specify more realistic valve stroke time.
- b. (Closed) Inspector Followup Item 389/83-26-03, Augmented ISI of RCP to Pump Welds. This item pertained to reference in the SSER of the possibility of augmented ISI being evoked during initial review of the ISI program for reactor coolant loop to pump welds that could not be inspected 100% to ASME Section XI during Preservice Inspection. Relief Request No. 5 to the initial ISI program requested relief from code requirement for these welds. The SER dated October 10, 1986 approved the relief request without augmented inspection.