



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30303

Report No. 50-389/82-19

Licensee: Florida Power and Light Company
 P. O. Box 529100
 Miami, FL 33152

Facility Name: St. Lucie

Docket No. 50-389

License No. CPPR-144

Inspection at St. Lucie site near Fort Pierce, Florida

Inspectors: B. R. Crowley 5/26/82
 B. R. Crowley Date Signed

for J. W. York 5/26/82
 J. W. York Date Signed

Approved by: Nick Economos 5/26/82
 Nick Economos, Acting Section Chief
 Engineering Inspection Branch
 Division of Engineering and Technical Programs Date Signed

SUMMARY

Inspection on April 26-30, 1982

Areas Inspected

This routine, unannounced inspection involved 56 inspector-hours on site in the areas of preservice inspection (PSI), safety related structures outside containment, previous inspection findings, and licensee identified (50.55e) items.

Results

No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *B. J. Escue, Site Manager
- N. T. Weems, Assistant Manager QA-PSL
- G. E. Crowell, Site Engineering Supervisor
- *J. L. Parker, Project QC Supervisor
- *P. W. Heycock, PSI Site Supervisor-PNS
- *R. A. Symes, Supervising QA Engineer
- *W. F. Jackson, Welding Superintendent
- F. T. Carr, NDE Supervisor, PNS
- *P. P. Carrier, Licensing
- *E. W. Sherman, QA Engineer
- *J. W. Adams, QA Engineer
- *J. R. Luke, QA Engineer
- W. H. Black, QA Engineer

Other licensee employees contacted included construction craftsmen, QC inspectors, NDE examiners, security force members, and office personnel.

Other Organizations

- *D. L. Jones, NDE Engineering Consultants, Inc.
- *J. C. Orlowski, CE-Licensing

NRC Resident Inspector

- *S. Elrod

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 30, 1982, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below.

(Open) Inspector Followup Item 389/82-19-01, Issue of FP&L PSI Program and Plan Descriptions - paragraph 7.b.

(Open) Inspector Followup Item 389/82-19-02, Disposition of UT Indications in Welds RC-112-1, RC-123-1 and RC-121-6 - paragraph 9.d.

(Open) Unresolved Item 389/82-19-03, Clarification of Weld Metal Records - paragraph 10.b.

3. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item 389/81-07-08, Welder Not Qualified to WPS Specified on Weld Traveler. This item pertained to an incident where a welder was qualified to WPS 006, withdrew welding material to WPS 006 and welded a weld requiring the use of WPS 050. Although the records did not indicate the welder to be qualified to WPS 50, in actuality, he was qualified for the portion of the weld he welded. WPS 050 and WPS 006 are identical except for the root. The welder in question did not weld the root. However, review of this item revealed that control procedures do not clearly define responsibilities for verification of welder qualification. The licensee agreed to investigate this problem and make any necessary procedure changes.

(Closed) Violation 389/82-07-02, Failure to Follow NDE Procedures. Florida Power and Light Company's (FP&L) letter of response dated April 20, 1982, has been reviewed and determined to be acceptable by Region II. Based on examination of corrective actions as stated in the letter of response, the inspectors concluded that FP&L had determined the full extent of the subject violation, performed the necessary survey and followup actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 10.b.

5. Inspector Followup Items

- a. (Closed) Inspector Followup Item 389/82-07-01, Clarification of Qualification Requirements for PSI Site Supervisor. FP&L position description for "Nuclear Energy Plant Coordinator PSI Site Supervisor (Coordinator)" has been issued and was reviewed by the inspectors. There are no further questions on this matter.
- b. (Closed) Inspector Followup Item 389/82-13-04, Revision of MT Procedure to Identify Yoke Calibration Requirements. FCN 00071 to procedure NDE 2.1 has been issued to specify yoke calibration requirements. There are no further questions on this matter.
- c. (Closed) Inspector Followup Item 389-82-13-06, Revision of Procedure NDE 5.2 to Clarify Transducer Size. FCN 00070 to procedure NDE 5.2 has been issued to clarify transducer size requirements for 20" diameter pipe. There are no further questions on this matter.
- d. (Closed) Inspector Followup Item 389/81-10-01, Repair of RT Indication in Loop Weld 115-06. The inspectors reviewed weld repair records consisting of the following:

Weld Repair Report (WRR) 4329

"Radiographic Test and Inspection Report" dated 6/27/81, view 20-30

"Visual-Liquid Penetrant-Magnetic Particle Inspection Report" dated 6/26/81 for VT and MT

"Visual-Liquid Penetrant-Magnetic Particle Inspection Report" dated 6/26/81 for MT of cavity

Weld Repair RT Film

PSI UT report after repair.

There are no further questions on this matter.

6. Licensee Identified Items (LII)

Prior to this inspection, the licensee identified the following items under 10 CFR 50.55(e):

- a. (Open) Item 389/81-10-02, CDR 81-001, Linear Indication in RC Pump Shell. On June 10, 1981, Florida Power and Light Company notified RII of a potential 50.55(e) item concerning linear indications in the 2A1 RC pump shell area next to weld RC-112-004. Interim reports were issued on 7/14/81, 8/28/81, and 10/27/81. A final construction deficiency report was issued on January 12, 1982. Review of the report revealed that the possibility of similar defects in the other pumps had not been addressed in the report. The licensee agreed to supplement the report by May 21, 1982 to address the other pumps. This item remains open pending receipt and review of the supplemental information.
- b. (Closed) Item 389/81-25-09, CDR81-003, Linear Indication in Reactor Coolant Pipe. On June 25, 1981, Florida Power and Light Company notified RII of a potential 50.55(e) item concerning linear indications observed in a reactor coolant system piping weld. An interim report was issued on July 24, 1981. On September 25, 1981, the licensee submitted a final report which stated that the condition had been evaluated and determined not reportable. The justification for considering the item nonreportable was based on the fact that it was discovered during a planned PSI, was repaired using standard site procedures, and did not require any extensive evaluation, extensive repair, or extensive redesign. The inspectors have no further questions on this item.
- c. (Closed) Item 389/81-25-10, CDR81-004, Linear Indications In Reactor Coolant Instrument Line. On September 9, 1981, Florida Power and Light Company notified RII of a potential 50.55(e) item concerning a linear indication in a reactor coolant 3/4 inch 304 SS pipe. On October 8, 1981, the licensee submitted a final report which stated that the

condition had been evaluated and determined nonreportable. The justification for considering the item nonreportable was that the indication was determined to be a seam with maximum depth of .020" which met ASME requirements. The inspectors have no further questions on this item.

- d. (Closed) Item 389/81-25-08, CRDM Motor Housing NDE. On November 24, 1980, Florida Power and Light Company notified RII of a potential 50.55(e) item concerning a missed ASME Section III final NDE step in the manufacture of the CROM housings. On December 23, 1980, the licensee submitted a final report which stated that the condition had been evaluated and determined nonreportable. The justification for considering the item nonreportable was that the omission of the NDE could not reasonably be expected to create a substantial safety hazard. This was based on the NDE performed, analysis of the possibility of defects and their consequences if not detected, and previous inspection history. The missed NDE was performed with no defects. There are no further questions on this item.

7. Preservice Inspection-Review of Program

The inspectors reviewed the licensee's preservice inspection (PSI) program as described below to determine whether regulatory requirements were being met. The PSI is being performed in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1977 edition with addenda through S78 as modified by 10 CFR 50.55a.(g). The inspection is being performed using FP&L program and procedures with Nuclear Energy Services (NES) furnishing the examination personnel.

- a. The inspectors reviewed the following documents:

- (1) "Florida Power and Light Company St. Lucie Unit #2 Preservice Inspection Program Description", PNS-CIG-002-4 (Draft)
- (2) Program Plan Description, PNS-CIG-002-3 (Draft)
- (3) Inspection Plan, PNS-CIG-002-1 (Draft)
- (4) "Control of Special Processes-Nondestructive Examination (NDE)" PRN-QI 9.2, revision 0
- (5) "Preservice Inspection (PSI)" QI 10 PR/PSL-2, revision 1
- (6) FP&L PSI Implementing Instructions -
 - #1 "Preparation and Approval of PSI Implementing Instructions", revision 0
 - #2 "Control and Distribution of PSI Procedures, Instructions, Plans and Drawings", revision 1
 - #3 "Approval and Revision of PSI Inspection Plan", revision 1

- #4 "Receipt Inspection and Control of Nonconforming Materials During PSI
- #5 "Field Changes to NDE Procedures", revision 0
- #6 "Corrective Action", revision 1
- (7) "Qualification of QA Audit, QC Inspection, and Construction Test Personnel", QP 2.9, revision 4
- (8) "Conduct of Quality Assurance Department Quality Audits", QP 18.1, revision 5
- (9) "Quality Assurance Records", QI 17-PR/PSL-1, revision 4
- (10) "Scheduling of Quality Assurance Department Audit Activities", QI 18 QAD 3, revision 0
- (11) Audit check list No. QAO-PSL-82-04-242 "Unit #2 PSI Program"
- (12) "Nondestructive Examination Personnel Qualification and Certification", PRN-QI 9.3, revision 0

These documents were reviewed to assure that procedures and plans had been established (written, reviewed, approved and issued) to control and accomplish the following activities:

- Audits including procedures, frequency, and qualification of personnel
- Control of processes including suitably controlled work conditions, special methods, and use of qualified personnel
- Corrective action
- Document control
- Control of examination equipment
- Quality records including documentation of indications and NDE findings, review of documentation, provisions to assure legibility and retrievability, and corrective action
- Scope of the inspection including description of areas to be examined, examination category, method of inspection, extent of examination and justification for any exception
- Qualification of NDE personnel
- Controls for generation, approval, custody, storage and maintenance of NDE records

- b. As noted in RII report 50-389/82-07, after the PSI started, FP&L decided to terminate their contract with Combustion Engineering (CE) and perform the PSI themselves under their own program and procedures. The program description, inspection plan description and the inspection plan were in the process of being changed from CE documents to FP&L documents at the time of the 50-389/82-07 inspection. During the current inspection, the inspector noted that the program description and plan description were still in draft form. Although the CE program and plan descriptions are technically acceptable, the licensee agreed that the FP&L documents should be issued. The licensee stated that the FP&L documents will be issued by May 19, 1982. This matter is identified as Inspector Followup Item 389/82-19-01, Issue of FP&L PSI Program and Plan Descriptions.

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

8. Preservice Inspection - Review of Procedures

The inspectors reviewed the PSI procedures as described below to determine whether the procedures were consistent with regulatory requirements. See paragraph 7 above for the applicable Code.

Liquid Penetrant (PT) inspection procedure NDE 3.1, revision 1, FCN 00005, "Liquid Penetrant Examination Visible Dye Technique" was reviewed for technical content relative to:

- a. Method consistent with ASME code
- b. Specification of brand names of penetrant materials
- c. Specification of limits for sulfur and total halogens for materials
- d. Pre-examination surface preparation
- e. Minimum drying time following surface cleaning
- f. Penetrant application and penetration time
- g. Temperature requirements
- h. Solvent removal
- i. Method of surface drying
- j. Type of developer and method of application
- k. Examination technique
- l. Technique for evaluation
- m. Acceptance standards

n. Requalification requirements

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

9. Inservice Inspection - Observation of Work and Work Activities

The inspectors observed the ISI activities described below to determine whether these activities were being performed in accordance with regulatory requirements and licensee procedures. See paragraph 7 above for the applicable code.

a. In-process ultrasonic (UT) inspection, including "Cal-out", for the 0° inspection of weld 210-111-6-SW-1, Zone 44 was observed and compared with applicable procedures in the following areas:

- (1) Availability of and compliance with approved NDE procedures
- (2) Use of knowledgeable NDE personnel
- (3) Use of NDE personnel qualified to the proper level
- (4) Recording of inspection results
- (5) Type of apparatus used
- (6) Extent of coverage of weldment
- (7) Calibration requirements
- (8) Search units
- (9) Beam angles
- (10) DAC curves
- (11) Reference level for monitoring discontinuities
- (12) Method for demonstrating penetration
- (13) Limits for evaluating and recording indications
- (14) Recording significant indications
- (15) Acceptance limits

b. In-process liquid penetrant (PT) inspection was observed for welds 113-2A-SW-1 and 113-2A-SW-3 in Zone 43 and compared with applicable procedures in the areas of:

- (1) Availability of and compliance with approved NDE Procedures
- (2) Use of knowledgeable NDE personnel
- (3) Use of NDE personnel qualified to the proper level
- (4) Recording of inspection results
- (5) Method consistent with procedure
- (6) Penetrant materials identified and consistent with ASME Code
- (7) Certification of sulfur and halogen content for penetrant materials
- (8) Surface preparation
- (9) Drying time following surface temperature
- (10) Penetrant application and penetration time
- (11) Examination surface temperature
- (12) Penetrant removal
- (13) Drying of surface prior to developing
- (14) Developer type, application and time interval after penetration removal

- (15) Time interval between developer application and evaluation
- (16) Evaluation technique
- (17) Reporting examination results

c. The inspectors reviewed the repair records described below relative to repairs made as a result of PSI inspection.

<u>WELD</u>	<u>RECORDS REVIEWED</u>
RC-112-001	WRR 4339 RT report dtd. 6/24/81 VT report dtd. 6/23/81 MT report dtd. 6/23/81 PSI UT report dtd. 12/15/81 and 12/19/81
RC-112-004	NCR 2033 Weld Traveler 83749 VT report dtd. 8/17/81 RT report dtd. 8/19/81 PT report dtd. 8/17/81
RC-124-003	WRR 4470 VT report dtd. 7/21/81 MT report dtd. 7/21/81 RT report dtd. 7/23/82 PSI UT report dtd. 1/15/82 and 12/11/82
RC-121-003	WRR 4350 VT report dtd. 7/11/81 MT report dtd. 7/11/81 RT report dtd. 7/13/81 PSI UT report dtd. 12/22/81
RC-124-002	WRR 4093 VT report dtd. 6/20/81 MT report dtd. 6/20/81 RT report dtd. 6/23/81 PSI UT report dtd. 12/17/81

The records were reviewed in the areas of:

- (1) Completed weld meeting visual examination acceptance standards
- (2) Examination of completed weld by qualified personnel using approved procedures
- (3) Performance of PSI after repairs.

- d. During a previous inspection (see report 50-389/82-13) RII inspectors, using RII equipment, identified two UT indications in reactor coolant (RC) loop weld RC-112-1. Based on calculations made on site at the time the indications were found, the indications were thought to be acceptable. Further evaluation by FP&L after conclusion of the inspection, using standard ASME Section XI sizing and calculation techniques, showed the indications to be rejectable. In addition, at about the same time, FP&L identified a total of 8 (3-weld RC-121-6, 3-weld RC-112-6, and 2-weld RC-123-1) other indications rejectable using standard ASME Section XI sizing and calculation techniques.

FP&L excavated all but 2 (one in weld RC-123-1 and one in weld RC-121-6) of the eight indications identified by FP&L. These six indications were near the O.D. surface and were removed without violating minimum wall thickness. In order to better define the location and size of the indications, prior to excavation, four of the indications were located and sized using a 70°, 5.0 MHz transducer. In addition, for all six of the indications, FP&L made a beam spread correction to the original 45°/60° results using the beam spread plots developed in accordance with ASME Section V, Article 4. The beam spread corrected 45°/60° results and the 70° results indicated that the indications were located deeper from the O. D. surface and had less thru-wall thickness than indicated with the uncorrected 45°/60° inspections. The six indications were excavated by closely monitoring the grinding and carefully measuring the actual depth and thru-wall thickness of the defects. FP&L noted good correlation between the actual defect dimensions (depth and thru-wall) and the dimensions predicted with the 70° inspection and the beam spread corrected 45°/60° inspections.

Based on the above results, FP&L applied beam spread correction data to the results for the two indications identified by NRC in weld RC-112-1 and the indications not excavated in welds RC-123-1 and RC-121-6. In addition, the indications in welds RC-123-1 and RC-121-6 were evaluated using the 70° method. Using these methods of evaluation, FP&L considers all four indications to be acceptable. However, since the beam spread correction method of sizing indications is not covered in the ASME Code, disposition of indications using this method will require further NRC evaluation. This matter is identified as inspector followup item 389/82-19-02, Disposition of UT Indications in Welds RC-112-1, RC-123-1, and RC-121-6.

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

10. Safety-Related Structures (Unit 2)

The inspectors reviewed the quality records for both welding and non-welding activities for safety-related structures outside containment. The records for the structural support for Pump 2B in the Low Pressure Safety Injection System and the Refueling Water Storage Tank were reviewed to determine whether applicable code and procedure requirements were being met. The

applicable code for the installation of the pump support is the American Welding Society, Structural Welding Code, D1.1-74, and for the fabrication of the Refueling Water Storage Tank is the ASME Boiler and Pressure Vessel Code, Section III, Subsection NC, 1974 Edition with addenda through summer 1975.

a. Review of Non-Welding Quality Records

The quality records for pump 2B support and the storage tank were reviewed for the following:

(1) Material

- (a) Material test reports/certification records
- (b) Vendor manufacturing and inspection records/certifications
- (c) Receiving inspection reports
- (d) Nonconformance reports
- (e) Tests on structural steel

(2) Installation/Erection

- (a) Construction/erection specifications adhered to
- (b) Components installed and located as required
- (c) Testing requirements met

(3) Inspection (QC) Records

- (a) Records of inspection activities were complete, legible and readily retrievable
- (b) Qualification records of inspection personnel were current and reflect adequate qualifications for activities performed.

Within these areas, the following quality records provided by the licensee and subcontractor (Precision Metals) were reviewed:

(1) Pump 2B Support

- (a) Material Test Reports for ASTM A-36, Heat Nos. J53633 and H46358

(b) Material Test Reports for ASTM A-490 Bolting, Heat Nos. 172P0879 and 578C7079

(2) Storage Tank

(a) Material Test Reports for ASME SA 240-75A, Heat Nos. F80225 and F 80223

b. Review of Welding Quality Records

The welding quality records for both the pump support and the storage tank were reviewed for the following:

- (1) Inspection records covering visual and dimensional inspection
- (2) Weld history records
- (3) Heat treatment records covering preheat and interpass temperature, post weld control, stress relief and total time at temperature, as applicable
- (4) NDE records covering evaluation of quality of welds (by RT, MT, etc.), including correlation of records to specific weld
- (5) Weld repair records covering defect removal technique used, defect removal verification, nondestructive examinations, heat treatment, and final acceptance of repairs, as appropriate
- (6) Welding material control records (welding rod, flux, electrode and gas)
- (7) Welder qualification records
- (8) Inspector qualification records relative to welding activities

Pump 2B support was partially fabricated by Precision Metals and completed by the licensee. Quality records from both sources were reviewed. The following listing is a sample of the records reviewed for clarity, completeness and accuracy:

- (1) Inspection Report Nos. C79-3244, C79-3383 and C79-2276
- (2) Nonconformance Report No. 756C
- (3) Field Change Request Nos. 2-1071 and 2-1152
- (4) Welder Qualification Records for four welders
- (5) Weld Metal Certifications for E70S-6

The weld metal certifications for the E70S-6 weld wire listed seven (7) serial numbers and gave typical (not specific) chemistry and mechanical properties. The inspector was unable to determine which heat or serial number of wire was used for fabrication of the pump support welds and the specific chemistry and mechanical properties of that wire. This will be Unresolved Item No. 389/82-19-03, Clarification of Weld Metal Records.

The Refueling Water Storage Tank was fabricated and erected at St. Lucie Unit 2 by the Pittsburg-Des Moines Steel Company. Quality records for the following five welds were reviewed:

- (1) Vertical Weld Seam No. 1V1
- (2) Vertical Weld Seam No. 2V2
- (3) Horizontal Weld Seam No. 1H1
- (4) Vertical Weld Seam No. 4V5
- (5) Horizontal Weld Seam No. 4H5

In addition, quality records were reviewed for ten (10) weld repairs performed on the storage tank.

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