UNITED STATES NUCLEAR REGULATORY COMMISSION REGION II 101 MARIETTA STREET, N.W., SUITE 2900 ATLANTA, GEORGIA 30323
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Report Nos.: 50-335/87-06 and 50-389/87-06
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: March 9-13, 1987
Inspector: 4/1/87 J. J. Lenahan Date Signed
Approved by: F. Jape, Section Chief Engineering Programs Branch Division of Reactor Safety Approved by: Y2/8/ Date Signed

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of followup on licensee action on previous inspection findings, the snubber surveillance program, and followup on licensee identified items (LER).

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- J. H. Barrow, Operations Superintendent
- W. Brannan, Civil Engineer
- J. Chapman, Civil Engineer
- *T. Geissinger, Backfit QC Supervisor
- *K. N. Harris, Vice President
- *P. W. Heycock, Inservice Inspection (ISI) Coordinator
- K. Hughes, Civil Engineer
- *J. Krumins, Site Engineering Supervisor
- *C. A. Pell, Technical Supervisor *N. G. Roos, Quality Control (QC) Supervisor
- *R. Symes, Quality Assurance (QA) Supervisor
- D. A. Sager, Plant Manager

NRC Resident Inspector ·

*H. Bibb

*Attended exit interview

2. Exit Interview

> The inspection scope and findings were summarized on March 13, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. Nodissenting comments were received from the licensee. 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) Violation Item (335/85-29-01), Inadequate Procedure for a. Removal of Upper Guide Structure.

The licensee's corrective actions for this violation are stated in the licensee's letter (number L-86-23), dated January 20, 1987, to NRC Region II. This violation occurred due to a procedural inadequacy, in that the procedure for the removal of the upper guide structure (UGS) did not contain acceptance criteria to assure full thread engagement of the UGS lift bolts. This resulted in a failure of one of the three UGS lifting bolts during removal of the UGS on November 6, 1985, which caused the 45 ton UGS to be suspended in a tilted position over the reactor vessel and fuel assemblies. After

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the UGS was stabilized and removed, the licensee's corrective action for this violation was to revise Procedure 1-M-0015, Reactor Vessel Maintenance, Sequence of Operations, to provide acceptance criteria to assure full thread engagement of the UGS lifting bolts. The inspector examined procedure 1-M-0015 and verified that the procedure was revised to incorporate the UGS thread engagement acceptance The inspector reviewed portions of procedures 1-M-0015 criteria. completed during the current outage and verified that the steps pertaining to UGS thread engagement (Steps 9.7, 9.13 and Table 7) were completed and signed-off prior to lifting the UGS. The inspector also reviewed Unit 2 Procedure Number 2-M-0036, Reactor Vessel Maintenance, Sequence of Operations, and verified that the licensee revised the Unit 2 procedure to incorporate acceptance criteria for UGS thread engagement. The inspector reviewed Procedure 2-M-0036 which was completed during the April 1986 refueling outage and verified that the steps pertaining to thread engagement were completed and signed off prior to lifting the Unit 2 UGS. Violation Item 335/85-29-01 is closed.

b. (Closed) Unresolved Item (335/87-01-01), Non-seismic Block Walls Adjacent to Safety-Related Equipment. In response to IE Bulletin 80-11, the licensee identified, analyzed, and modified, as necessary, masonry block walls located in the proximity of safety-related equipment. This work was completed in 1981. In March 1986, as part of an in-house safety system review, the licensee's Power Plant Engineering Department implemented a review of the masonry wall program. As a result of this review, the licensee identified 23 additional walls which needed to be reclassified as seismic (i.e., additional walls which were in the proximity of safety-related equipment). The licensee re-analyzed these 23 walls and determined that 13 walls met seismic design requirements, while the remaining ten walls required modifications to meet seismic design requirements. The re-analysis was completed on January 23, 1987.

On January 23, 1987 the licensee implemented modifications to the ten walls and reported to NRC Region II that the ten walls required modifications. This was reported as Licensee Event Report 335-87-01. The inspector's review of the wall modifications is discussed in Paragraph 7.b of this inspection report.

The inspector examined the licensee's design re-evaluation program which resulted in this LER. This review, and discussions with licensee engineers, disclosed that the need to reclassify the 23 walls was primarily the result of field routed changes installed under NUREG 0737, TMI Action Plan Requirements. The changes did not result in attachments to the block walls but were the result of field routing of instrumentation or electrical control cables in the proximity of the walls. The problem was primarily caused by deficiencies in the licensee's and EBASCO's (licensee's architect engineer) engineering design procedures which resulted in



installation of electrical and instrumentation modifications without regard to design classification of the masonry walls. After review of the licensee's re-evaluation program, discussions with licensee engineers, and review of the licensee's response to IEB 80-11, the inspector concluded that this problem was not a violation of NRC regulations or a deviation from a licensee commitment to NRC. Therefore, Unresolved Item 335/87-01-01 is closed.

- (Closed) Unresolved Item (389/82-71-02), Seismic Analysis Overlay c. During review of the licensee's actions to Modeling Technique. comply with IEB 79-14 (Seismic Analysis of As-Built Safety-Related Piping System), a Region II inspector noted that an overlap modeling technique was used in analysis of piping stress problems SI-2407 and In order to further evaluate this problem, Region II SI-2412. requested that the Office of Nuclear Reactor Regulation (NRR) evaluate the licensee seismic analysis of these stress problems. NRR evaluated the licensee's analytical techniques and concluded that they are acceptable. NRR issued a Safety Evaluation Report related to the Seismic Analysis Procedure of Safety Injection Piping, dated March 13, 1987, to document this review. Unresolved Item 389/82-71-02 is closed.
- 4. Unresolved Item

Unresolved items were not identified during the inspection.

5. Independent Inspector Effort (92706)

The inspector walked down portions of the Unit 1 reactor containment building and examined the condition of protective coatings on the containment liner plate and concrete surface. This examination disclosed that the coatings had failed in some areas, but the licensee has an ongoing maintenance program to repair the damaged coatings. The corrective actions taken by the licensee to repair the damaged coatings appear to be adequate to assure that the coatings would not fail during a LOCA. During the walkdown, the inspector also examined the condition of connections on the reactor building structural platform steel. Except for a missing nut on one bolt in a stair thread, no discrepant conditions were noted. The missing nut does not pose a safety problem since the remaining three bolts/nuts were properly installed and would more than adequately support the stair thread during a seismic event.

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

6. Snubber Surveillance Program - Units 1 and 2 (Module 61729)

The inspector reviewed procedures and quality records related to the Units 1 and 2 snubber surveillance program and inspected safety-related snubbers installed on selected Unit 2 piping systems. Acceptance criteria utilized by the inspector appear in Unit 1 Technical Specification 3/4.7.10 and Unit 2 Technical Specification 3/4.7.9.



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a. Review of Snubber Surveillance Procedures

The inspector examined the following procedures which control snubber surveillance and inspection activities:

- (1) FP&L quality instruction number QI 10-PR/PSL-6, Control, Inspection, and Monitoring of Mechanical and Hydraulic Shock Arrestors (Snubbers)
- (2) Paul Munroe procedure QSS-QAP 2.4, Qualification of Technicians
- (3) Paul Munroe procedure QSS-QAP 9.1-1, Removal and Reinstallation of Mechanical Shock Arrestors
- (4) Paul Munroe procedure QSS-QAP 9.3-1, Procedure for Disassembly of PSA Mechanical Shock Arrestors
- (5) Paul Munroe procedure QSS-QAP 10.2-1, Limited Functional Examination (VT-4) of Mechanical Shock Arrestors
- (6) Paul Munroe procedure QSS-QAP 10.4-1, Visual Exam of Hydraulic Snubber
- (7) Paul Munroe procedure QSS-QAP 11.1-1, Functional Testing of PSA Mechanical Shock Arrestors
- (8) Paul Munroe procedure QSS-QAP 12.1-1, Control of Measurement and Test Equipment
- b. Inspection of Snubbers
 - The inspector performed a visual inspection of Unit 2 mechanical snubbers listed below and verified that the proper size snubbers were installed and that attachments to the supporting structure were secure. Snubbers examined were as follows:
 - (1) Snubber numbers 2-241 through 2-244, 2-246, 247, 318, 319, and 323 on the main steam system piping
 - (2) Snubber numbers 2-229, 240, 268, 269, 316, and 317 on the feedwater system piping
 - (3) Snubber numbers 2-321, 322, 324, and 325 on the steam supply piping to auxiliary feedwater pump 2C

During inspection of the above snubbers, the inspector noted that snubber number 2-323 appeared to rotate excessively. This indicated that the telescoping tube may have been unstaked from the cylinder end cap. The licensee removed this snubber from service and reinstalled a new snubber in its place. The inspector witnessed



performance of a functional test on the removed snubber. The functional test results were acceptable, that is drag and activation met test acceptance criteria. The licensee will disassemble and inspect the snubber to determine the cause of excessive rotation between cylinder end cap and telescoping tube. All other snubbers listed above which were inspected were found to be acceptable.

The inspector also witnessed functional testing of Unit 1 snubber number 1-207 (mechanical snubber) and number 1-017.(hydraulic snubber installed on reactor coolant pump 1A1). The functional test results for these snubbers met acceptance criteria.

c. Review of Quality Records

The inspector reviewed quality records documenting visual inspection and functional testing of Unit 1 and 2 snubbers. Records examined were as follows:

- (1) Results of visual inspection performed during the current refueling outage (February - March 1987) on the 20 hydraulic snubbers installed on the Unit 1 steam generators (numbers 1-001 through 1-016) and on the Unit 1 reactor coolant pump motors (numbers 1-017 through 1-020). The licensee identified some minor leakage from fittings in tubing connecting snubber valve blocks to reservoirs on the steam generator for snubbers. However, the reservoirs were still approximately one-half full, thus, operability of the snubbers was not affected. These problems were documented on deficiency reports and dispositioned by replacing the fittings.
- (2) Results of visual inspections performed on Unit 1 mechanical snubber numbers 1-021, and 1-023 through 1-035 during the current outage.
- (3) Results of functional tests performed during the current outage on hydraulic snubber numbers 1-009 and 1-010 installed on Unit 1 steam generator 1B and snubber numbers 1-017, 1-019, and 1-020 installed on reactor coolant pump motors. The results met functional test acceptance criteria.
- (4) Results of functional tests performed during the current outage on Unit 1 mechanical snubber numbers 1-021, 1-022, 1-027, 1-031, 1-043, 1-049, 1-062, 1-065, 1-066, 1-069, 1-072, 1-076 through 1-078, 1-083, 1-086, 1-089, 1-090, 1-097, 1-101, 1-102, 1-104, 1-107, 1-109, 1-111, 1-144, 1-145, 1-155. All results met functional test acceptance criteria except for number 1-031 (2.6% drag vs 2.0% allowable), and 1-069, 1-076 and 1-101 (activation exceeded 0.02 g). These failures were documented on deficiency reports. New snubbers were installed to replace the failed snubbers. The licensee indicated that additional

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snubbers would be tested per requirements of Technical Specification 4.7.10.c for each functional test failure. This additional testing was in progress.

- (5) Results of visual inspection performed on Unit 2 mechanical snubbers during the November - December 1984 refueling outage.
- Results of functional tests performed on Unit 2 mechanical (6) snubbers during the November - December 1984 and April 1986 refueling outages. The licensee reported to NRC Region II that 19 mechanical snubbers failed to meet function test acceptance criteria during the 1984 outage (LER 389-84-10). Three of the functional test failures were the result of damaged capstan springs which were scheduled to be replaced in accordance with PSA Service Bulletin 1801-01. Due to the large number of functional test failures, the licensee performed functional tests on more than 120 snubbers during the 1984 outage. One hundred percent of the PSA size 1, 3, and 10 snubbers were functionally tested. This is in accordance with requirements of Technical Specification 4.7.9.e which requires increase in functional test sample size when snubbers do not meet functional test acceptable criteria. During review of the April 1986 functional test data, the inspector verified that snubbers installed in locations where functional test failures were recorded during 1984 outage were retested during the next (1986) outage in accordance with T.S. 4.7.9.e. Two of the snubbers were repeat failure, i.e., they failed to meet functional test acceptance criteria during the retest in the 1986 outage. These snubbers were both size PSA-1/4. The licensee is evaluating replacing some of the PSA 1/4 snubbers in both units with another type or size due to high failure rater being experienced with some of the PSA 1/4 snubbers. However, evaluations performed by licensee engineers indicate that the snubber failures do not present a significant safety problem since the majority of functional test failures only slightly exceeded the manufacturer's acceptance criteria.

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

- 7. Licensee Event Report Followup (92700)
 - a. (Closed) LER (389-84-10): ISI Snubber Inspector Failures. This LER was reported to NRC Region II on December 19, 1984. The licensee submitted a written report on December 26, 1984 (Letter number L-84-381). During the first Unit 2 refueling outage, the



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functional test Technical Specification 4.7.9 surveillance requirements were performed on the Unit 2 snubbers. As a result of this testing, 19 mechanical snubbers were declared inoperable since the test results for these snubbers did not meet the acceptance criteria. The inspector reviewed the licensee's corrective actions to resolve the problem during this inspection (see paragraph 6.c, above). The inoperable snubbers were replaced with new snubbers. In some cases, snubbers of a different size or type were installed in locations where the inoperable snubbers were located. The licensee performed functional testing of snubbers in all locations where failures were encountered in the November - December 1984 outage during the April 1986 outage. This testing was independent of the 10 percent sample required by TS 4.7.9. LER 335-84-10 is closed.

- Non-seismic Masonry Walls Adjacent to b. (Open) LER (335-87-01): Safety-Related Equipment. This LER was reported to NRC Region II on January 23, 1987. A written report was submitted to NRC Region II in a letter, dated February 23, 1987. The licensee's Power Plant Engineering staff conducted a review of masonry walls as part of an in-house safety system review. As a result of this review, the licensee identified 23 additional walls which needed to be reclassified as seismic. The need to reclassify the walls was primarily the results of field routed changes installed under NUREG 0737, TMI Action Plan Requirements. The changes did not result in attachments to the block walls but were the result of field routing of instrumentation or electrical control cables in the proximity of the walls since the completion of IEB 80-11 walkdowns. An analysis of the 23 walls showed that 13 walls met seismic design requirement while the remaining 10 walls required minor modifications. The modifications were initiated under Plant Change/Modification (PCM) number 186-139. The inspector reviewed the PCM documents, examined the completed wall modifications, reviewed quality records documenting inspection of the wall modifications, and examined the licensee's corrective actions to prevent recurrence of this problem. Details of the inspection of this LER are discussed •below:
 - (1) Review of Design Documents

The inspector reviewed the following documents which implemented the Masonry wall modifications:

- Drawing numbers BCS-139-186-3000, Sheets 1, 2, and 3, Masonry Wall Modifications
- Field Change Notices (FCN) 139-186-4221, through -4223, -4226 through -4233, and -4258
- PCM 186-139



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(2) Inspection of Completed Wall Modifications

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The inspector examined the walls which required modifications under PCM 186-139 to upgrade the walls to seismic design requirements. The inspector verified that the modifications were completed in accordance with design requirements. Walls examined were as follows:

- Wall numbers 38 (both sides) and 39 (south side only) on elevation -0.5
- Wall numbers 78 (south side only), 71 (both sides), 56 (south side only), 57 (both sides) and 51 (east side only) on elevation 19.5
 - Wall numbers 171, 172, and 173 on elevation 43.0
- (3) Review of Quality Records Relating to Masonry Wall Modifications

The inspectors examined the following quality records relating to the masonry wall modifications:

- Weld inspection reports number M 87-0285, -0298, -0320, for visual inspection of welds on modifications for wall numbers 51, 56 and 172.
- Inspection reports for installation of concrete expansion anchors on modifications for wall numbers 56, 171, and 173.
- Inspection reports for installation of thru-bolts on wall numbers 38, 39, 51, 56, 57, 71, 78, and 172.
- Inspection report for grouting (repairs to fire barriers) performed while installing modification on wall numbers 38 and 39.
- Deficiency Report 1784 M.
- (4) Review of Licensee's Corrective Action to Prevent Recurrence of Problem

The licensee's corrective actions to prevent recurrence of this problem include changes of design procedures to insure that the design classification of masonry walls is considered when installing safety related equipment in their proximity. These changes were in the process of being incorporated into the licensee's design control procedures during the inspection. The licensee has initiated a review of completed design changes (PCM) to assure that similar problems had not occurred with other Unit 1 non-seismic walls. The licensee also conducted a review of Unit 2 masonry walls design procedures to verify that a similar problem had not occurred with the Unit 2 masonry. This review is documented in an FP&L memo, dated February 20, 1987, St. Lucie Unit 2 Masonry Block Walls. The licensee is currently conducting an evaluation of PCM's issued since the last Unit 2 field verification walkdown was conducted in 1985 to assure that safety-related equipment had not been installed in proximity of Unit 2 non-seismic masonry walls.

LER 335-87-01 will remain open pending completion of the licensee's corrective actions.

Within the area inspected, no violation or deviations were identified.



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