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

Report Nos: 50-250/83-11 and 50-251/83-11

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33101

Docket Nos: 50-250 and 50-251

License Nos: DPR-31 and DPR-41

Facility Name: Turkey Point 3 and 4

Inspection at Turkey Point site near Homestead, Florida

Inspector: Frank Jape for P. T. Burnett — 6/8/83 Date Signed

Approved by: Frank Jape — 6/8/83 Date Signed
F. Jape, Section Chief
Engineering Programs Branch
Division of Engineering and Operational Programs

SUMMARY

Inspection on April 25 - 28, 1983

Areas Inspected

This routine, unannounced inspection involved twenty-four inspector-hours on site in the areas of followup of licensee events and control of heavy loads.

Results

Of the areas inspected, one violation was identified in one area - paragraph - 5.e. and two deviations in the other area - paragraph 6.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*H. E. Yaeger, Site Manager
J. K. Hays, Plant manager - Nuclear
*J. P. Mendieta, Maintenance Superintendent - Nuclear
*J. P. Lowman, Assistant Superintendent - Mechanical Maintenance
*J. W. Kappes, I&C Supervisor
J. A. Labarraque, Technical Department Supervisor
*V. A. Kaminskas, Reactor Engineering Supervisor
P. W. Hughes, Health Physics Supervisor
E. A. Suarez, Technical Support Supervisor
B. G. Wymer, Outage Management
P. A. Roach, Technical Support Engineer
R. Earl, Maintenance GEMS Planner
F. Martone, Maintenance GEMS Planner

Other licensee employees contacted included two technicians and two operators.

NRC Resident Inspectors

R. Vogt-Lowell, Senior Resident Inspector
J. A. Agles, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 28, 1983, with those persons indicated in paragraph 1 above. The following items were discussed with the licensee in a telephone conversation on June 6, 1983.

250/251/83-11-01, IFI - Corrective action for fuel handling - paragraph 5.d.

250/83-11-02, Violation - Failure to follow procedure - paragraph 5.e.

250/83-11-03, 251/83-11-02, Deviation - Implement ANSI B30.2 - paragraph 6.

250/83-11-04, 251/83-11-03, Deviation - Incomplete response to NUREG-0612 - paragraph 6.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Response to Licensee Event Reports

a. Introduction

The inspection was conducted in response to three recent events involving fuel handling or fuel handling equipment. Those events were:

(1) The dropping of a fuel assembly in the spent fuel pool on April 5, 1983 (LER 251/83-002).

(2) A fuel assembly fell over within the core impacting at least two others on April 17, 1983 (LER 251/83-003).

(3) On April 20, 1983, a twenty-five-ton fuel cask was improperly lifted in the Unit 3 spent fuel pool resulting in damage to the lifting yoke (No LER had been issued at the time of the inspection).

b. Documents Reviewed

The following documents were reviewed in the course of the inspection.

(1) Maintenance Procedure 0736, Heavy Load Handling, approved 10/15/81.

(2) Operating Procedure 16000.1, Limitations and Precautions for Handling Fuel Assemblies, approved 6/14/79.

(3) Operating Procedure 160026, Preparations and Precautions for Refueling Fuel Shuffle, approved 10/21/82.

(4) Off Normal Operating Procedure 16008.1, Accident Involving New Fuel, Approved 10/31/75.

(5) Off Normal Operating Procedure 16008.2, Accident Involving Spent Fuel, Approved 1/14/82.

(6) Operating Procedure 16200, Manipulator Crane - Operating Instructions, approved 3/11/82.

(7) Operating Procedure 16204.1, Manipulator Crane and RCC Change Fixture - Periodic Tests, approved 8/20/81.

(8) Operating Procedure 16700, Cask Crane - Operating Instructions, approved 10/28/82.

(9) Maintenance Procedure 16701.1, Gantry Crane Inspection and Preventative Maintenance, approved 6/11/81.

(10) Operating Procedure 16702.3, Spent Fuel Transfer (NAC-1 and NFS-1 Shipping Cask), approved 7/16/81.

(11) FPL Interoffice Correspondence: "Unit 4 Fuel Assembly Problems," (preliminary, dated April 19, 1983).

(12) FPL Interoffice Correspondence: "Spent Fuel Transfer Cask (Yoke Incident)," (preliminary, dated April 27, 1983).

c. LER 251/83-002

The details of this event and related enforcement action are addressed in the resident inspector's report for this period. Nevertheless some additional comment is appropriate.

The fuel assembly dropped as a result of a classic two-blocking accident resulting from failures of the upper limit switches on the spent fuel bridge hoist. Since that hoist does not lift objects heavier than a fuel assembly and handling tool combination, it was exempted from consideration under NUREG-0612, Control of Heavy Loads at Nuclear Power Plants. However, nothing precluded the licensee from following the guidance of ANSI B30.2-1976, Overhead and Gantry Cranes, (see item 2-2.1.2.a.2) or the requirements of the OSHA Regulations (see 29 CFR 1910.179(n)(4)). These references require that at the beginning of each operator's shift that the upperlimit switch of each hoist be tried out under no load. Had that simple test been performed, none of the later events discussed in this report would have occurred, since all transpired from the need to replace the fuel assembly dropped in this event.

d. LER/251-83-003

Following event 251/83-002 it was necessary to redesign the core. Since only the central area of the core was to be reconfigured, the licensee staff developed an approved core loading sequence that started with fuel being loaded on the core perimeter first and subsequently spiraling inward. With that procedure fuel loading could commence while the central core configuration was being determined.

The spiral loading sequence provided only one or two adjacent surfaces, fuel or baffle plate, to guide the assembly being inserted. The in-vessel shuffle usually performed by the licensee provided four surrounding surfaces to guide the assembly being inserted.

The licensee's preliminary evaluation of the event is that a small maladjustment of fuel handling bridge position (one-quarter to one-half inch) coupled with some fuel-assembly bow (less than three-eighth inch) led to placing twice-burned fuel assembly X-04 on the lower core support plate astraddle of one of the two locating pins in position N-6. It is considered unlikely that the fuel assembly fell over when unlatched from the gripper. It is more probable that the insertion of fuel assembly Z-23 in core position P-7 bumped X-04 and caused it to fall over. The lighting in the vessel was such that the leaning assembly was not noticed until four additional assemblies had been loaded, approximately one hour after the presumed fall. There was no evidence of release of fission products at any time.

The inspector's review of the fuel loading data for five assemblies preceding X-04 and the five that followed showed no record of difficulty in inserting any of the fuel. The elapsed time between bundle insertions ranged from thirteen to seventeen minutes with the times for X-04 and Z-23 not indicating any difficulty in loading either assembly. There were no log book entries indicating loading problems until the entries reporting fuel assembly X-04 to be leaning.

The licensee has proposed corrective action appropriate for future refuelings for which the fuel being inserted is not guided by four surrounding surfaces. Those actions include improved lighting in the vessel, use of a submersible TV camera to verify proper assembly seating and increased use of binoculars. The licensee's actions in this subject area will be tracked as inspector followup item 250/251/83-11-01: Corrective action for fuel handling.

Following discussion of the event, records and interoffice correspondence with licensee personnel, the inspector had no further questions.

e. Spent Fuel Cask Handling

On April 21, 1983, the licensee informed the resident inspector that a twenty-five ton fuel cask was lifted in the Unit 3 spent fuel pool with only one of two yoke arms supporting the load. As a result the load-bearing arm was deformed. The deformation was observed after the cask had been lifted approximately two feet from the pool floor. The cask was immediately put down without further incident. The entire yoke was replaced by a new assembly, and the remaining transfer activities carried out as planned. Subsequently, the licensee made the determination that the event was not reportable under Technical Specification 6.9.2, 10 CFR 50.72(a) or 10 CFR 20.403.

OP 16702.3 in step 8.2.7 states in part, "The yoke moveable lift arm must then be locked in place using the attached Ball-loc pin." In the absence of the Ball-loc pin, which was one-inch in diameter, a five-eighth-inch threaded rod, held-by-nuts was substituted. No procedure

change was processed to authorize the substitution or initiate a review of it.

The licensee's post-event evaluation concluded that the three-eighth-inch clearance at the pin produced 2-3/4 inch travel at the arm-trunion interface. If the hook then picked up the yoke slightly off-center, usually a matter of no consequence, there was then enough freedom of movement for the moveable arm to slide against the cask and the fixed arm to rotate off the trunion as the yoke picked up the load.

The failure to follow procedure and install the Ball-loc pin has been identified as a violation of Technical Specification 6.8.1 (VIO 250/83-11-02: Failure to follow procedure for cask yoke operation).

6. Handling of Heavy Loads

The misadventures discussed in paragraph 5 led to a review of the licensee's implementation of some of the commitments made in response to NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," which was published in July 1980.

One of the licensee's responses to NUREG-0612 was letter L-81-382 dated September 4, 1981. In an attachment to the letter the licensee made the response and commitment below:

VI. Crane Inspection, Testing and Maintenance

Section 2.1.3(e) of Enclosure 3 of the NRC generic letter requests verification that ANSI B30.2-1976 Chapter 2-2 has been invoked with respect to crane inspection, testing and maintenance.

The Turkey Point Units No. 3 and 4 plants have an established program for inspection, testing and maintaining cranes. The requirements of ANSI B30.2-1976 and the recommendations of Nuclear Mutual Limited's Property Loss Prevention Standard on Cranes and Rigging (issued for trial use in February 1980) are being reviewed to develop a single policy on crane inspection, testing and maintenance. We expect to resolve this issue by the end of August and prepare and implement a revision to the existing procedure before the end of this year.

ANSI B30.2 Chapter 2-2, addresses crane inspection, testing and maintenance. The standard provides specific guidance on rope inspection including criteria for replacing the rope based upon the number of broken wires, wear of the outside wires, reductions on rope diameter, distortion of the rope structure or evidence of heat damage. The licensee's entire guidance for crane rope inspection is limited to one step in MP16701.1:

9.9 Inspect main and auxiliary hoist cables for frayed or broken strands.

The standard requires frequent inspection for cracked and deformed hooks by measuring throat opening and degree of twist (2-2.1.2.a.4). No requirement for this inspection was found in plant procedures.

In discussions with maintenance personnel responsible for crane inspections no one was found to be familiar with the details of ANSI B30.2-1976, nor was a copy of the standard on hand for reference. Among those interviewed, there seemed to be a wide spread but unsupported belief that inspections performed by the crane vendor prior to each refueling outage provided a polar crane inspection in conformance to ANSI B30.2-1976.

From the foregoing it appears that the licensee has failed to implement their commitment for crane inspection, testing and maintenance. The failure is a deviation (250/83-11-03, 251/83-11-02).

The yoke on the spent fuel cask (the subject paragraph 5.e) appears not to have been included in the licensees response to NUREG-0612 with respect to special lifting devices (the yoke is clearly in violation of item 5.1.5.2 of ANSI N14.6-1978, American National Standard for Special Lifting Devices for Shipping Containers Weighing 10,000 pounds or more for Nuclear Materials, in that the load limit is not clearly marked on the yoke).

Failure to address the spent fuel cask yoke in response to NUREG-0612 is a deviation from the requirements of generic letter 81-07(250/83-11-04, 251/83-11-03).