



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

Report Nos.: 50-250/91-07 and 50-251/91-07

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

Docket Nos.: 50-250 and 50-251 License Nos.: DPR-31 and DPR-41

Facility Name: Turkey Point Units 3 and 4

Inspection Conducted: February 2 through March 1, 1991

Inspectors:	<u><i>R. C. Butcher</i></u>	<u>3/22/91</u>
	R. C. Butcher, Senior Resident Inspector	Date Signed
	<u><i>G. A. Schnebli</i></u>	<u>3/22/91</u>
	G. A. Schnebli, Resident Inspector	Date Signed
	<u><i>L. Trocine</i></u>	<u>3/22/91</u>
	L. Trocine, Resident Inspector	Date Signed
	<u><i>F. Jape</i></u>	<u>3/22/91</u>
	F. Jape, Section Chief Test Programs Section Division of Reactor Safety	Date Signed
Approved by:	<u><i>M. V. Crlenjak for</i></u>	<u>3/22/91</u>
	R. V. Crlenjak, Section Chief Division of Reactor Projects	Date Signed

SUMMARY

Scope:

This routine resident inspector inspection entailed direct inspection at the site in the areas of monthly surveillance observations, monthly maintenance observations, operational safety, and plant events. Also, a followup inspection of Design Verification Inspection open items was conducted.

Results:

Within the scope of this inspection, the inspectors determined that the licensee continued to demonstrate satisfactory performance to ensure safe plant operations. No violations or deviations were identified.



## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

T. V. Abbatiello, Quality Assurance Supervisor  
J. Arias, Jr., Technical Assistant to Vice President  
L. W. Bladow, Quality Manager  
\*R. J. Earl, Quality Control Supervisor  
T. A. Finn, Assistant Operations Superintendent  
R. J. Gianfrancesco, Assistant Maintenance Superintendent  
K. Greene, Civil Engineering Supervisor, Juno  
\*S. T. Hale, Engineering Project Supervisor  
\*D. M. Hall, Health Physics Supervisor  
K. N. Harris, Senior Vice President - Nuclear Operations  
E. F. Hayes, Instrumentation and Controls Supervisor  
R. G. Heisterman, Assistant Superintendent of Electrical Maintenance  
\*V. A. Kaminskis, Operations Superintendent  
J. E. Knorr, Regulatory Compliance Supervisor  
J. A. Labarraque, Senior Technical Advisor  
G. L. Marsh, Reactor Supervisor  
H. Johnson, Operations Supervisor  
I. Pabst, Manager, Design Basis Program, Juno  
\*\*L. W. Pearce, Plant Manager - Nuclear  
T. F. Plunkett, Site Vice President  
\*J. A. Porter, Engineering Supervisor  
\*\*D. R. Powell, Superintendent - Plant Licensing  
K. L. Remington, System Performance Supervisor  
\*R. E. Rose, Design Control Supervisor  
C. V. Rossi, Quality Assurance Supervisor  
\*G. Salamon, Licensing Supervisor  
\*G. M. Smith, Service Manager - Nuclear  
R. N. Steinke, Chemistry Supervisor  
J. C. Strong, Mechanical Department Supervisor  
F. R. Timmons, Site Security Superintendent  
M. B. Wayland, Maintenance Superintendent  
J. D. Webb, Assistant Superintendent Planning and Scheduling  
A. T. Zielonka, Technical Department Supervisor

Other licensee employees contacted included construction craftsman, engineers, technicians, operators, mechanics, electricians, and administrative personnel.

#### NRC Resident Inspectors

R. C. Butcher, Senior Resident Inspector  
\*G. A. Schnebli, Resident Inspector  
\*L. Trocine, Resident Inspector



### Other NRC Personnel

**\*\*F. Jape, Section Chief, Test Programs Section, Division of Reactor Safety**

\*Attended exit interview on March 1, 1991

\*\*Attended exit interview on February 26, 1991

Note: An alphabetical tabulation of acronyms used in this report is listed in paragraph 11.

## 2. Plant Status

Both units are still defueled with the dual unit outage ongoing. Outage progress remains on schedule with the following major work either accomplished or in progress at the end of this inspection period:

- The control room floor and board modifications are on-going. Installation of the underfloor cable tray and raceway is complete. Four of six main control board modifications are complete.
- Bulk cable pulling is in progress to support subsystem turnovers and is on schedule with about 50% completed. The first long pulls on 1250 MCM lead shielded cable in the underground duct banks are in progress.
- Installation of the new load sequencers continues with all four in place, and disconnection of the old sequencers is in progress on two of the four.
- The new A and C load center transformers for both units have been tested, energized, and turned back over to operations. The new B and D transformers are currently being installed.
- The 4A DC bus outage continues on schedule. The battery charger, DC isolation cabinets, and bus extensions are projected to be turned over for startup testing approximately one week early. Preparations are in progress to take the 4B DC bus out of service for modifications.
- Phase I preoperational testing for the 4A EDG has been completed. Phase II testing is presently scheduled to commence in June 1991.
- Phase I preoperational testing for the 4B EDG will continue early this month. The load testing portion has been completed.
- The Security System upgrade continues, with the vital area barrier steel grating about 40% completed, 3 of 18 zones of the ported coaxial cable installed, 40 of 50 CCTV towers erected, and 21 cameras installed.
- Installation of the new RTD system (removal of bypass loops) continues on schedule.



- Inspection and repair of the intake structure bays is also in progress. The 3B1 intake structure is being upgraded this outage.

### 3. Followup on Items of Noncompliance (92702)

A review was conducted of the following noncompliances to assure that corrective actions were adequately implemented and resulted in conformance with regulatory requirements. Verification of corrective action was achieved through record reviews, observation, and discussions with licensee personnel. Licensee correspondence was evaluated to ensure the responses were timely and corrective actions were implemented within the time periods specified in the reply.

- a. (Closed) VIO 50-250,251/90-30-01; Failure to Incorporate Revised Instrument Setpoints into Calibration Data Sheets.

This issue was responded to by the licensee in letter L-90-362 dated October 16, 1990, and in LER 50-251/90-007. The causes of this event were personnel error and inadequate administrative controls to ensure revised setpoints were incorporated into the appropriate data sheets. The event was discussed with responsible licensee personnel, and the applicable plant procedures were revised. This issue is closed.

- b. (Closed) VIO 50-250,251/89-203-10. This violation combined original URIs 50-250,251/89-203-10, 14, and 18; CCW Heat Exchanger Fundamental Frequency, CCW Relief Valve Replacement, and CCW Pipe Support Calculations.

A Notice of Violation, issued February 27, 1990, involved original unresolved items 50-250,251/89-203-10, 14, and 18. The licensee responded on March 28, 1990. An NRC acknowledgement letter, accepting the licensee's response, was sent to FPL on April 12, 1990. The inspector verified, through discussion with licensee nuclear engineering personnel, that the corrective actions have been completed and that actions to prevent recurrence have been implemented. This action closes VIO 50-250,251/89-203-10 and URIs 50-250,251/89-203-10, 14, and 18.

### 4. Followup on Inspector Followup Items (92701)

Actions taken by the licensee on the items listed below were verified by the inspector.

- a. (Closed) IFI 50-250,251/90-40-03; Blackstart Diesel Generator Starting Battery Failures

Following an internal inspection by the vendor of the most recently failed battery, it was determined that the failure resulted from the manufacturing process at the time (pre-1987). This process used two different alloys for the negative plates (calcium) and the bridges (antimony) versus a common alloy for both. As a result of this





manufacturing defect, the licensee opted to replace all of the batteries with batteries utilizing a common alloy (antimony) for both the plates and the bridges. This action was completed on December 5, 1990, per PWOs 3077 and 3078. A new set of readings was also taken, and the voltage on one cell was determined to be marginally acceptable. As a precautionary measure, the battery containing this cell was replaced on February 6, 1991. (Refer to paragraph 9.) This item is closed.

- b. (Closed) IFI 50-250,251/89-203-03; Implementation of the Residual Heat Removal Valve Replacement and Emergency Diesel Generator Air Start Modifications

The original RHR butterfly valve 3-887 had experienced excessive leakage during plant operation. A globe valve was installed, under PC/M 89-336, to provide throttling capability required during refueling operations. The inspector physically inspected and reviewed Unit 3 documentation showing that butterfly valve 3-887 has been replaced with an eight-inch globe valve. For Unit 4, PC/M 88-249, Replacement of RHR heat Exchanger to RWST Valve 4-887, has been approved and is currently being implemented. Replacement of the original eight-inch butterfly valve with an eight-inch globe valve will provide a leak-tight isolation flow path which is required during performance of the alternate Low Head Safety Injection test and will provide improved throttling capability during refueling operations. Both of these valve changes were reviewed under the provisions of 10 CFR 50.59 and the licensee concluded the change could be implemented without NRC approval since the change did not involve an unreviewed safety question. The review of this modification by the licensee included such considerations as fire protection, ALARA, human factors, failure modes and effects, seismic loads, pipe support loads, and high energy line break. Plans have been initiated to update the FSAR to reflect both of these changes.

The second part of this item involves adding an additional set of air start motors to the existing emergency diesel generators. This modification is intended to upgrade the EDG air start system by providing four air start motors versus two on the original arrangement. The inspector observed this modification being installed in the field. Work is scheduled to be completed by the end of the dual unit outage. This modification was reviewed by the licensee in accordance with 10 CFR 50.59 and it was concluded that the change could be made without prior NRC approval. The change does not involve an unreviewed safety question and does not require a change to the technical specifications. The existing five horsepower air compressors have been replaced with 15 horsepower compressors to accommodate the increase in starting air volume. Two of the four existing air receiver tanks will be connected to each set of air motors. New ASCO solenoid valves have been installed, rated for 90-140Vdc, for the existing and new air start motors. The piping and air compressors are supported seismically and are classified as



Quality Related. In consideration of the above, IFI 50-250,251/89-203-03 is closed.

- c. (Closed) IFI 50-250,251/89-203-09; Review of the Control of Vendor Manuals

One of the tasks initiated by FPL in the 1984 Performance Enhancement Program (PEP) was to Establish and Implement Criteria to Control Non-Drawing Documentation, for example Vendor Manuals. An FPL QA audit conducted in May 1989 identified several negative findings. Corrective actions have been taken and the items corrected. The inspector reviewed the Vendor Manual control program and implementation. The overall program appears complete, current, and controlled and is in agreement with regulatory requirements. FPL has approved two basis procedures to control Vendor Manuals, QI 6.4, Control of Vendor Manuals, and QP 6.7, Control of Vendor Manuals and Vendor Technical Information. Both of these procedures were revised in August 1990 to resolve findings of Quality Assurance Audit QAS-IPN-89-2. The inspector reviewed these documents and discussed the matter with nuclear engineering and QA personnel and concluded that the program is acceptable. IFI 50-250,251/89-203-09 is closed.

- d. (Closed) IFI 50-250,251/89-203-08; Completion of Small Bore Pipe Support Upgrade Program

The two inch and smaller piping and instrument tubing was originally designed and supported using generic standards, but the original installation documents did not identify the actual installation locations of the pipe supports. Several cases of improperly supported small diameter piping and instrument tubing were identified by FPL. These cases were evaluated found to meet the operability requirements. However, a concern was raised regarding the long-term adequacy of these issues. FPL agreed to walk down all systems to identify discrepancies. This was completed and corrective action for each discrepant item was prepared. This resulted in a number of PC/Ms to be issued to replace, repair, or modify supports. In some cases, the discrepant items were analyzed and determined to be acceptable as installed.

Implementation of the PC/Ms has begun. In some cases the work is finished, some work is partially complete, and some of the work is scheduled for a future refueling outage. In all cases, the PC/Ms have been issued. The work has progressed sufficiently to close this item. FPL has committed to the NRC, as part of the Selected System Review Program, to complete implementation of this upgrade program. IFI 50-250,251/89-203-08 is closed.

- e. (Closed) IFI 50-250,251/89-203-05; Resolution of the DBD Verification Open Items



As part of the PEP established in 1986, the licensee had committed to a program to develop Design Basis Documents. At the time, it was assumed that open items would be identified as DBDs were developed, but the program to resolve the open items had not yet been determined.

Open items are characterized as comments, improvements, or corrections to misstatements. They may be classed as indeterminate or a potential difference between the DBD and plant documents which may require further evaluation. Inconsistencies between DBD and plant documents can be addressed through a more thorough verification of the issue, a revision to plant drawings or procedures, or a revision to the DBD. Two procedures have been prepared to address this issue. The first is Procedure for Verification of Select Systems Design Basis, dated March 18, 1988, Rev. 0. The second is Procedure for Disposing Verification Items, dated April 10, 1989, Rev. 0.

The number of outstanding open items is currently around 159, which is down from over 230 items. A review of 15 items resolved indicates that the process is working. Each open item is discussed and a conclusion is given for resolving the item. This closes IFI 50-250,251/89-203-05.

f. (Closed) IFI 50-250,251/89-203-06; Verification of Breaker List

FPL has initiated action to assure the accuracy of selected drawings used in the control room for operation of the facility. This activity included a walkdown of plant electrical panels to provide as-built verification of the breaker list. Discrepant items identified during the walkdowns were recorded by "red-lining" the drawings and operability assessments were performed. These drawings were for operations' use until a formal revision to the breaker list was completed. PC/M 88-530 was issued to accomplish the final drawing correction process. Subsequent issuance of PC/Ms 89-253 and 89-323 completed the as-built verification of safety-related panels as committed to the NRC as part of the PEP project. Currently, the work is ongoing and is scheduled for completion by the end of the dual unit outage. Sufficient work has progressed to consider this item closed.

5. Onsite Followup and In-Office Review of Written Reports of Nonroutine Events and 10 CFR Part 21 Reviews (90712/90713/92700)

The Licensee Event Reports and/or 10 CFR Part 21 Reports discussed below were reviewed. The inspectors verified that reporting requirements had been met, root cause analysis was performed, corrective actions appeared appropriate, and generic applicability had been considered. Additionally, the inspectors verified the licensee had reviewed each event, corrective actions were implemented, responsibility for corrective actions not fully completed was clearly assigned, safety questions had been evaluated and



resolved, and violations of regulations or TS conditions had been identified. When applicable, the criteria of 10 CFR Part 2, Appendix C, were applied.

(Closed) P2189-12; Potential Limitorque Common Mode Failure of SMB-000 and SMB-00 Cam Type Torque Switches due to Loose Screws

The licensee evaluated this concern in Engineering Evaluation JPN-PTN-89-4902 dated October 24, 1989. The evaluation recommended the plant inspect/replace the torque switches on the valves identified as a result of this P21. This action was completed for Unit 3 during the last refueling outage in early 1990 and is currently in progress for Unit 4 during this outage. This issue is closed.

#### 6. Monthly Surveillance Observations (61726)

The inspectors observed TS required surveillance testing and verified that the test procedure conformed to the requirements of the TS; testing was performed in accordance with adequate procedures; test instrumentation was calibrated; limiting conditions for operation were met; test results met acceptance criteria requirements and were reviewed by personnel other than the individual directing the test; deficiencies were identified, as appropriate, and were properly reviewed and resolved by management personnel; and system restoration was adequate. For completed tests, the inspectors verified testing frequencies were met and tests were performed by qualified individuals.

The inspectors witnessed/reviewed portions of the following test activities:

- 0-OSP-016.23, Diesel Driven Fire Pump Operability Test;
- 0-OSP-016.26, Electric Driven Fire Pump Operability Test; and
- OP 0204.2, Periodic Tests, Checks, and Operating Evolutions, Section 8.4.11 (inspection of safety-related 120-volt AC distribution panels DP-312A and DP-412A).

The inspectors determined that the above testing activities were performed in a satisfactory manner and met the requirements of the TS. Violations or deviations were not identified.

#### 7. Monthly Maintenance Observations (62703)

Station maintenance activities of safety-related systems and components were observed and reviewed to ascertain they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and in conformance with TS.

The following items were considered during this review, as appropriate: LCOs were met while components or systems were removed from service;

approvals were obtained prior to initiating work; activities were accomplished using approved procedures and were inspected as applicable; procedures used were adequate to control the activity; troubleshooting activities were controlled and repair records accurately reflected the maintenance performed; functional testing and/or calibrations were performed prior to returning components or systems to service; QC records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were properly implemented; QC hold points were established and observed where required; fire prevention controls were implemented; outside contractor force activities were controlled in accordance with the approved QA program; and housekeeping was actively pursued.

The inspectors witnessed/reviewed portions of the following maintenance activities in progress:

- repair of electric driven fire pump discharge check valve 10-637,
- troubleshooting Unit 3 CCW heat exchanger tube failures, and
- removal and replacement of Unit 3 SI/CS piping in the RHR room due to leakage.

On February 7, 1991, the licensee performed an alloy analysis on leaking tubes removed from the 3C CCW heat exchanger. The tubes were removed for further inspection because they exhibited signs of erosion, corrosion, and cracking. The results of the analysis matched the chemical composition for Admiralty Brass material. The design material for the heat exchangers is Aluminum Brass. The Unit 3 heat exchangers were declared out of service due to the suspect tube material; however, they were determined to be functional for the unit's current defueled condition. The removed tubes and other tubes in the heat exchangers that exhibited similar deficiencies were determined to be tubes that were replaced during the previous Unit 3 refueling outage in early 1990. The licensee concluded that the Admiralty Brass tubes were installed at that time. The licensee formed an ERT to determine the root cause for the installation of the non-conforming material in the heat exchangers and to provide corrective actions. Initial indication is that the Admiralty Brass tubes were supplied to the licensee by the vendor. The ERT is currently ongoing, and the RIs will continue to follow this issue.

On February 19, 1991, during the performance of an ISI hydrostatic test per AP 0190.90, ASME Section XI, Pressure Test for Quality Group A, B, and C Systems/Components, a series of pin-hole leaks were identified. The leaks were found on a 10-inch, 304 SS, Schedule 10S pipe and elbow that serves as low pressure suction piping for the RHR, SI, and CS systems. The leaks, approximately ten pin-holes, were located on the bottom side of a horizontal run of piping about 3 inches on each side of a weld that connects the elbow to a straight run of piping. The leakage was discovered during the 4-hour hold at hydrostatic test pressure of 250 lbs. The licensee removed the elbow and a short portion of the straight piping





for analysis. The removed section was penetrant tested, and a piece of the section containing the worst PT indication was cut out for further analysis. The crack was stress corrosion cracking and was definitely OD initiated. This evaluation is still in progress and the RIs will follow the results and the final replacement of the removed piping.

For those maintenance activities observed, the inspectors determined that these activities were conducted in a satisfactory manner and that the work was properly performed in accordance with approved maintenance work orders. Violations or deviations were not identified.

#### 8. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs, conducted discussions with control room operators, observed shift turnovers, and monitored instrumentation. The inspectors verified proper valve/switch alignment of selected systems, verified maintenance work orders had been submitted as required, and verified followup and prioritization of work was accomplished. The inspectors reviewed tagout records, verified compliance with TS LCOs, and verified the return to service of affected components.

By observation and direct interviews, verification was made that the physical security plan was being implemented. The implementation of radiological controls and plant housekeeping/cleanliness conditions were also observed.

Tours of the intake structure and diesel, auxiliary, control, and turbine buildings were conducted to observe plant equipment conditions including potential fire hazards, fluid leaks, and excessive vibrations. In addition, the inspectors walked down accessible portions of systems which are currently required to be operable/functional in order to verify proper valve/switch alignment.

The licensee conducted a safety evaluation to define control of the plant configuration during the dual unit emergency power system enhancement project. Procedure TP-645, Defueled Operations Without Emergency Diesel Generators, was issued to proceduralize the requirements determined in the safety evaluation to be in effect from the time both units enter the defueled condition and both EDGs are removed from service. Also, portions of the revised TSs became effective when both units entered the defueled condition.

As a result of routine plant tours and various operational observations, the inspectors determined that the general plant and system material conditions were satisfactorily maintained, plant security program was effective, and that the overall performance of plant operations was good. In addition, the inspectors verified the critical electrical system lineup and verified the availability of the required number of black start diesel generators. The availability of the minimum number of ICW and CCW pumps was also verified. Violations or deviations were not identified.



## 9. Plant Events (93702)

The following plant events were reviewed to determine facility status and the need for further followup action. Plant parameters were evaluated during transient response. The significance of the event was evaluated along with the performance of the appropriate safety systems and the actions taken by the licensee. The inspectors verified that required notifications were made to the NRC. Evaluations were performed relative to the need for additional NRC response to the event. Additionally, the following issues were examined, as appropriate: details regarding the cause of the event; event chronology; safety system performance; licensee compliance with approved procedures; radiological consequences, if any; and proposed corrective actions.

- a. At 10:00 a.m. on February 6, 1991, with blackstart diesel generator No. 2 out of service because its breaker was being utilized for the 4A and 4B EDG testing, the remaining four blackstart diesel generators were taken out of service for battery and common control system work. During the testing of new batteries for the blackstart diesel generators per PWO 3078 (refer to the closure of IFI 50-250,251/90-40-03 in paragraph 4), cell 24 was determined to be slightly below the acceptable criteria (2.11 volts versus 2.3 volts). The actual failure limit is 1.75 volts. As a precautionary measure, the battery containing this marginally acceptable cell was replaced. All of the blackstart diesel generators, with the exception of No. 2, were returned to service at 11:00 a.m. on the same day.
- b. At 4:27 a.m. on February 7, 1991, a fire alarm from alarm point 37 (North/South Breezeway) was received. Upon investigation, it was discovered that the fire suppression system in the Auxiliary Building Breezeway had actuated, but there was no evidence of a fire. The system was isolated, and a continuous fire watch was posted per TS 3.7.8.2. In attempting to reset the suppression system, the deluge valve did not require resetting. When system alignment was checked, a normally closed alarm test valve was found to be open, and a temporary junction box was leaning against the handle. With this valve open, water by-passed the deluge valve and caused water flow to the sprinkler heads thereby simulating an actuation. Additionally, no activities which could have actuated the system from personnel contact were witnessed in or around the affected locations. Therefore, this system actuation was determined to have resulted from the inadvertent opening of the alarm test valve when the temporary junction box fell from its original location, struck the alarm test valve handle, and turned it to the open position. It was also concluded that components associated with possible causes for actuation functioned properly.

Violations or deviations were not identified.



## 10. Exit Interview (30703)

The inspection scope and findings were summarized during management interviews held throughout the reporting period with plant management and selected members of the staff. Exit meetings were conducted on February 26 and March 1, 1991. The areas requiring management attention were reviewed. Violations or deviations were not identified. No proprietary information was provided to the inspectors during the reporting period. Dissenting comments were not received from the licensee.

## 11. Acronyms and Abbreviations

AC	Alternating Current
ALARA	As Low As Reasonably Achievable
a.m.	ante meridiem
AP	Administrative Procedures
ASME	American Society of Mechanical Engineers
CCW	Component Cooling Water
CCTV	Closed Circuit Television
CFR	Code of Federal Regulations
CS	Containment Spray
DBD	Design Basis Document
DC	Direct Current
DP	Distribution Panel
EDG	Emergency Diesel Generator
ERT	Event Response Team
FSAR	Final Safety Analysis Report
ICW	Intake Cooling Water
IFI	Inspector Followup Item
IR	Inspection Report
ISI	In-Service Inspection
JPN	Juno Plant Nuclear
lbs	Pounds
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MCM	Thousand Circular Mils
NRC	Nuclear Regulatory Commission
OD	Outside Diameter
OP	Operating Procedure
OSP	Operations Surveillance Procedure
P21	10 CFR Part 21
PC/M	Plant Change/Modification
PEP	Performance Enhancement Program
PT	Penetrant Test
PTN	Plant Turkey Nuclear
PWO	Plant Work Order
QA	Quality Assurance
QC	Quality Control
RHR	Residual Heat Removal
RI	Resident Inspector
RTD	Resistance Temperature Detector



RWST	Raw Water Storage Tank
SI	Safety Injection
SS	Stainless Steel
TP	Temporary Procedure
TS	Technical Specification
URI	Unresolved Item
VIO	Violation