UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-250/95-08 and 50-251/95-08

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 Plant Units 3 and 4

Inspection Conducted: March 20-24, 1995

Inspector: W Rogers 4/20/95
Walter G. Rogers, Team Leader Date Signed

Accompanying Personnel: L. King, Reactor Inspector
L. Mellen, Reactor Inspector
D. Prevatte, Powerdyne

Approved by: T A Peebles 4/20/95
for Paul J. Kellogg, Chief Date Signed
Operational Programs Section
Operations Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced Service Water System Self-Assessment Inspection (first part) was conducted on March 20-24, 1995, according to NRC inspection module 40501. Temporary Instruction 2515/118 for Service Water Inspections was also used as the reference to determine the adequacy of the licensee's self-assessment of Service Water Systems.

Results:

In the areas inspected, violations or deviations were not identified. The NRC Temporary Instruction for Service Water Inspections, Safety Issues Management System item Temporary Instruction 2515/118, was not closed. Further NRC inspection will be necessary to assure the licensee has taken adequate actions to respond to Generic Letter 89-13, "Service Water System Problems Affecting Safety Related Equipment."

Enclosure

REPORT DETAILS

1. Inspection Background, Scope and Objectives

Numerous problems identified at various operating plants in the country have called into question the ability of service water systems (SWSs) to perform their design function. These problems have included the following: inadequate heat removal capability, biofouling, silting, single failure concerns, erosion, corrosion, insufficient original design margin, lapses in configuration control or improper 10 CFR 50.59 safety evaluations, and inadequate testing. NRC management concluded that an in-depth examination of SWSs was warranted based on the identified deficiencies. Consequently, Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," was issued to all license holders directing a comprehensive review of SWSs and heat exchanger performance monitoring upgrades.

As a follow-up to the Generic Letter, Temporary Instruction (TI) 2515/118, "Service Water System Operational Performance Inspection," was issued to perform an NRC SWS team inspection of select facilities. Subsequent to the TI, a pilot program was initiated by the NRC to conduct a limited-scope, in-depth inspection as an alternative to the full-scope TI inspection. The reduced scope inspection would allow the NRC to minimize regulatory impact upon the licensee and more efficiently use NRC resources. Use of the reduced scope inspection was contingent upon a number of factors including past licensee performance and the licensee conducting a SWS self-assessment encompassing all the inspection elements of TI 2515/118. This reduced scope inspection would be performed in two parts. The first part would be to observe the licensee's SWS self-assessment and determine where extensive inspection resources would not be expended during the second part of the inspection. The second part would be after the licensee issued their self-assessment report. This part would confirm that adequate corrective actions to the self-assessment report were being taken and would independently inspect those areas deemed necessary to ensure that the intent of the generic letter and the TI were met.

In a letter dated October 4, 1993, and in subsequent correspondence, the licensee requested the NRC conduct a reduced scope SWS inspection at Turkey Point. In a letter dated August 10, 1994, the NRC granted the licensee's request.

The primary objectives of the first part of the reduced scope inspection were to:

* review the qualifications of the individuals assigned to the licensee's Service Water System Operational Performance Assessment (SWSOPA) to ensure there was the necessary credentials and experience to perform a technically creditable self-assessment,

* review the scope of the SWSOPA plan to ensure its scope and depth was at least equivalent to those specified in TI 2515/118,

* witness the SWSOPA and determine whether the self-assessment team was adhering to the established plan, maintaining an objective view and preserving independence from the rest of the organization, and

* independently evaluate the licensee's capability to response to the SWSOPA findings.

The team's observations are described in sections 3 through 6 of this report. Personnel contacted and those who attended the exit on March 24, 1995, are identified in Attachment A.

2. System Description

As discussed in the licensee's licensing and training material, the intake cooling water (ICW) system is designed to provide sufficient heat rejection during accident conditions to accommodate any active component failure and still successfully function. Each unit's ICW system consists of three pumps, two strainers, the tube side of three component cooling water (CCW) heat exchangers, the tube side of two turbine plant cooling water heat exchangers and the necessary piping and valves. The piping is arranged into two redundant, 100 percent capacity safety-related headers, but the headers are normally crosstied. These headers can be isolated from the nonsafety-related turbine plant heat exchangers by air operated valves that fail closed on an accident signal. Any of the three pumps can supply either or both safety-related headers. The pumps are located at the intake structure along with the nonsafety-related circulating pumps, screen wash pumps, and traveling screens. After passing through the CCW heat exchangers, the headers combine into a single line to the facility's discharge canals.

3. SWSOPA Qualifications

The NRC team reviewed the qualifications and composition of the self-assessment team. All assessor resumes were reviewed, all assessors were interviewed during the SWSOPA. The SWSOPA team's composition was evaluated as to whether there was diversity in backgrounds and independence from decisions affecting the present SWS design. The findings were as follows:

a. This team was composed exclusively of members from Florida Power & Light. However, one of the team members had extensive prior experience with an architect engineering company. The team composition met the standards set forth in TI 2515/118.

b. Professional qualifications and experience level met the standards set forth in TI 2515/118. The team members were generally knowledgeable of their assessment area as determined through interviews.

4. SWSOPA Scope and In-Progress Observations

The NRC team reviewed the assessment plan prepared by the licensee. The NRC team evaluated the implementation of the SWSOPA in the second to last week of the planned assessment by reviewing select assessor observation write-ups, interviewing the assessors, observing assessor interactions with each other at daily meetings, and observing interactions between the assessors and other licensee personnel. Select SWS equipment was independently walked down. Also, independent reviews of select licensing and technical materials, as well as, interviews of key personnel involved in SWS testing, operation, and corrective actions were performed. The observations were as follows:

a. The scope and objectives of the licensee's inspection essentially duplicated the objectives of TI 2515/118 as follows:

- Assessment of the plan and actions taken in response to Generic Letter 89-13,
- Verification that the ICW system was capable of fulfilling its thermal and hydraulic performance requirements and was being operated in accordance with its design bases, and
- Assessment of the operational controls, maintenance, surveillance, testing, and personnel training to ensure the system was operated and maintained so as to perform its safety-related functions.

b. The SWSOPA was being conducted during the period March 3, 1995, through March 31, 1995, with a briefing of the findings to licensee management planned for March 31st. The SWSOPA members were functioning as a team. This was apparent in their discussions and integration of efforts. Appropriate objectivity and independence was being maintained as indicated by their findings and interactions with the rest of the organization.

c. SWSOPA implementation had identified a number of issues including:

- The existence of extensive pitting on the 4C and 4B ICW pump shafts at the upper bearing and just below the packing.
- In early March, the ICW system (design and procedures) was unable to withstand extensive algae intrusion into the intake structure without plugging the strainers. The extent of this strainer plugging was so great that even with maintenance crews continuously and repeatedly cleaning one strainer and then the other in each division, the flow in both divisions was reduced to less than allowable for system operability, and the plant was forced to enter a Technical Specification Section 3.0.3 condition.

- The lack of procedural controls did not prohibit pump runout when two pumps were in operation and one tripped.

- The individual plant examination was based on invalid out of service times for the ICW system, especially for strainer cleaning/backwashing.

However, SWSOPA implementation in terms of depth and scope had not fully enveloped the intended scope in select areas. Review of the CCW system revealed numerous questionable areas that had not been identified by the SWSOPA (subsequent to the exit, the licensee informed the team leader that an additional week in May would be added to the SWSOPA focusing exclusively on CCW). The SWSOPA identified a noncritical ICW valve out of position but did not evaluate how this mispositioning integrated with past site performance. Independent NRC review of condition adverse to quality reports indicated some historical problems in maintaining proper equipment configuration. Finally, heat exchanger testing acceptability was based on a family of curves associated with flow and temperature. Benchmarking of the curves was done without measuring CCW shell side flow, and the incorporation of instrument error into the curves was not apparent. Additional NRC review into these areas will occur during a follow-up inspection after the licensee's self-assessment report is issued.

d. Housekeeping appeared satisfactory. Material conditions were consistent with a salt water environment with corrosion observed on a pump shaft and a check valve removed from the system for maintenance.

6. Capability to Respond to Findings

The NRC team reviewed the licensee's ability to deal with SWSOPA findings to determine whether the present backlog of corrective actions, future activities, or the current corrective action process would significantly deter from proper evaluation and disposition of these findings. A record review of the condition adverse to quality report backlog was performed. Personnel involved in the condition adverse to quality system were interviewed. Corrective action documents initiated as a result of the SWSOPA were reviewed. All other findings associated with the SWSOPA were reviewed. Personnel involved in the SWSOPA response effort were observed interfacing with the SWSOPA team, and some of them were interviewed by the NRC team. Findings were as follows:

a. No significant impediment to resolution of the SWSOPA findings either due to backlogged items or future activities was identified.

b. A response team had been assembled from diverse parts of the organization to help facilitate the response to the SWSOPA issues. However, organizational response to the service water issues was occasionally less than optimum. Some issues which had been initiated early in the assessment had yet to be fully responded to.

c. The corrective action system appeared viable, but final determination of its adequacy will be performed in a follow-up inspection after the licensee's self-assessment report is issued. The sampling base will be how well the SWSOPA findings have been dispositioned. Final review and evaluation of the licensee's disposition of the SWSOPA findings is considered Inspector Follow-up Item (IFI) 50-250/251-95-08-01, "SWSOPA Findings Disposition."

7. Exit Interview

The team conducted an exit meeting on March 24, 1995, at the Turkey Point Nuclear Power Station to discuss the major areas reviewed during the inspection, the strengths and weaknesses observed, and the inspection results. Licensee representatives and NRC personnel attending at this exit meeting are documented in Attachment A of this report. The team also discussed the likely informational content of the inspection report. The licensee did not identify any documents or processes as proprietary. There were no dissenting comments at the exit meeting.

ITEM NUMBER	STATUS	PARAGRAPH	DESCRIPTION
95-08-01	Open	6.c	IFI - SWSOPA Findings Disposition

Persons Contacted at Turkey Point Nuclear Power Plant

* T. Abbatiello, Site Quality Manager
* W. Bohlke, Nuclear Engineering and Licensing Vice President
W. Bryan, Engineering Assessor
T. Coste, Quality Assurance Assessor
C. Couture, Operation Assessor
D. Culpepper, Self-Assessment Team Leader
T. Dillard, Maintenance Assessor
R. Gouldy, Licensing Engineer
* R. Heisterman, Maintenance Manager
* P. Higgins, Outage Manager
* G. Hollinger, Training Manager
* D. Jernigan, Plant General Manager
* H. Johnson, Operations Manager
T. Jones, Nuclear Plant Supervisor
S. Khurana, Engineering assessor
* J. Knorr, Regulation and Compliance Specialist
* R. Kundalkar, Engineering Manager
* H. Paduano Jr., Licensing and Special Projects Manager
* T. Plunkett, Vice President
W. Prevatt, Operations Response Team Member
* R. Rose, Materials Manager
G. Salamon, Self-Assessment Assistant Team Leader
D. Stoia, ICW System Engineer
* E. Thompson, Project Engineer
* D. Tomasewski, Acting Technical Manager
* E. Weinkam, Licensing Manager

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* T. Johnson, Turkey Point Senior Resident Inspector
* L. King, Reactor Inspector
* L. Mellen, Reactor Inspector
* D. Prevatte, Powerdyne Corporation
* W. Rogers, Team Leader
* T. Peebles, Operations Branch Chief

* Indicates those present at the exit meeting on March 24, 1995