

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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

Report Nos.: 50-250/98-10 and 50-251/98-10

Licensee: Florida Power and Light Company

Facility: Turkey Point Units 3 and 4

Location: 9760 S. W. 344 Street
Florida City, FL 33035

Dates: August 23 - October 3, 1998

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Enclosure

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EXECUTIVE SUMMARY
Turkey Point Units 3 and 4
NRC Inspection Report 50-250/98-10, 50-251/98-10

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a six-week period (August 23 to October 3, 1998) of resident inspection. In addition, the report includes announced inspections by regional inspectors, including a Reactor inspector and a Senior Reactor Analyst, as well as other visiting resident inspectors.

Operations

- The receipt inspection of new fuel for Unit 3 was carefully performed by knowledgeable individuals. TS and procedural requirements were satisfied during fuel movement. (Section O1.1)
- The licensee's preparations for potential hurricane force winds and flooding caused by Hurricane Georges were excellent. Emergency Plan procedures were well developed and provided detailed guidance to plant personnel. Operations training prior to the hurricane was prudent. Equipment and facilities were properly secured and essential plant personnel were available to provide continuous coverage during the hurricane. (Section O1.3)
- Monthly surveillance testing of the Standby Steam Generator Feedwater Pumps was conducted in accordance with procedures. Personnel were knowledgeable of system and procedural requirements. Active involvement by the system engineer was noted. (Section O1.4)
- Changes in core flux profiles during the lengthy operating interval resulted in substantial inaccuracy in intermediate range nuclear instrumentation indications during a plant shutdown. An intermediate range trip bistable did not reset at the expected power level. Control-room supervisory oversight did not ensure that the bistable reset as the power decrease was continued. An unplanned automatic reactor trip occurred. (Section O1.5)
- Containment ambient temperature monitoring instrumentation was appropriately included in the scope of the maintenance rule and complied with environmental qualification requirements. NRC inspectors identified that an error had been made during implementation of a procedure change to address a previously identified problem. (Section O3.1)
- Licensee management was very self-critical and the inspectors noted strong focus on nuclear safety in presentations at the Turkey Point monthly status meeting. (Section O7.1)



Maintenance

- Maintenance and surveillance activities were performed in a quality manner. Procedures were in place and were adhered to by qualified maintenance personnel. Interface between maintenance and operations personnel was good. Applicable FME controls, M&TE controls, PMT requirements, and QC hold points were properly accomplished. (Section M1.1)
- The emergency diesel generator 4A surveillance test was satisfactorily performed. Emergency diesel generator material condition was very good. The test procedure was clear, highly detailed, and easy to use. Operators' use of the procedure was professional and accurate. Continuous engineering support and supervisory oversight were provided for the test. (Section M1.2)
- The weekly diesel-driven fire pump operability test was carefully performed by a knowledgeable operator. Observation of current pump performance and review of past pump data indicated satisfactory pump performance with no negative trends. The engine driven fire pump was in good condition. (Section M1.3)
- Inservice Inspection (ISI) activities were being performed in accordance with requirements with strong licensee direction and oversight of contract personnel. Overall, the licensee's ISI program was considered to be a strength. (Section M1.4)
- A detailed Flow Accelerated Corrosion (FAC) program was in place and was being implemented in accordance with procedural requirements by knowledgeable licensee personnel. (Section M1.5)

Engineering

- The licensee has adequately monitored, trended, and initiated corrective actions for problems related to the Intake Cooling Water/Turbine Plant Cooling Water isolation valves. (Section E2.1)

Plant Support

- Two announced fire drills conducted by the licensee were performed by knowledgeable fire team members. Donning of bunker gear, knowledge of fire location, use of fire fighting equipment, and execution of standard fire fighting practices were proper. At the post drill critique, the issue that some fire team member did not have radios to communicate with the team leader was addressed as an area needing improvement (Section F1.1)



• The security force demonstrated good response during drills. Simulated intruders were apprehended prior to reaching the planned objective. However, lessons learned from the drill had not been communicated to the security force. The licensee promptly initiated corrective actions to ensure lessons learned on future drills would be promptly communicated to the security force (Section S5.1).

Report Details

Summary of Plant Status

Unit 3 began the period operating at 100 percent reactor power and had been on-line since February 19, 1998. On September 19, 1998, the licensee began a coastdown in preparation for a scheduled refueling outage. On September 21, 1998, Unit 3 tripped from approximately 8 percent power due to an indicated high flux on one-out-of-two intermediate range channels (Section O1.5). The refueling outage started on September 21, 1998.

Unit 4 operated at or near full power until September 24 when Unit 4 power was reduced to approximately 50 percent power due to hurricane force winds from Hurricane Georges expected to make landfall near the Turkey Point Nuclear Station. On September 25, 1998, the licensee escalated power and resumed full power operation. Unit 4 has been on-line since October 14, 1997.

I. Operations

O1 Conduct of Operations

O1.1 Unit 3 New Fuel Receipt

a. Inspection Scope (71707)

The inspectors observed the inspection and transfer of new fuel from the new fuel storage room to the spent fuel pool.

b. Observations and Findings

On August 28 and 31, 1998, the inspectors observed receipt of new fuel. The inspectors found that applicable Technical Specifications (TS) for fuel movement in the spent fuel pit were satisfied. Workers carefully followed controlling procedures for the evolution, including the fuel handling data sheet, which tracked movement of the fuel to the correct location in the spent fuel pool. The inspectors found that radiological work practices and foreign material exclusion practices in the spent fuel pool area were proper. The inspectors verified that preventive maintenance on the cranes and other equipment used for the fuel movement was performed prior to the fuel movement. The inspectors also reviewed the criteria for fuel inspection and discussed them with the reactor engineer who performed the inspection. The engineer was knowledgeable of inspection requirements and carefully inspected the fuel for defects.

c. Conclusions

The receipt inspection of new fuel for Unit 3 was carefully performed by knowledgeable individuals. TS and procedural requirements were satisfied during fuel movement.



O1.2 Review of Technical Specification 3.3.1 Entry (71707)

On September 3, 1998, while performing a routine surveillance on the Reactor Protection System (RPS), a steam flow square root converter was found out of calibration. Also, two square root converters for feedwater flow responded erratically during troubleshooting activities. These deficiencies resulted in the system being declared inoperable and TS 3.3.1 was entered. The inspectors discussed the required TS actions and the RPS system logic with a senior reactor operator (SRO). The inspectors also independently verified that the correct bistables were properly placed in the tripped condition to meet TS requirements. The inspectors found that the SRO was knowledgeable of the system logic and the required TS actions. The system was repaired on September 5, 1998, and returned to its normal configuration. The inspectors verified that TS 3.3.1 requirements were satisfied.

O1.3 Hurricane Georges

a. Inspection Scope (71707, 93702)

Resident and region-based inspectors responded to the Turkey Point Nuclear station and the Turkey Point Emergency Operations Facility to provide continuous coverage of plant activities due to the approach of Hurricane Georges toward the South Florida coast. The inspectors completed risk-informed inspections of licensee facilities and procedures in preparation for potential hurricane force winds and flooding.

b. Observations and Findings

Due to the approach of Hurricane Georges toward the Florida coast, the National Hurricane Center in Miami, FL issued a Hurricane Warning at 5:00 a.m. on September 24, 1998 for certain areas of Monroe, Dade and Broward counties. Residents were instructed to evacuate. Following issuance of the Hurricane Warning, the licensee declared an Unusual Event for Units 3 and 4 in accordance with Emergency Plan Implementing Procedure (EPIP) 20101, Classification 12, Natural Phenomena. The NRC was notified of the Unusual Event at 5:26 a.m. The hurricane was projected to reach the South Florida coast on the morning of September 25, 1998. Unit 3 was in MODE 4 (Hot Shutdown) for scheduled refueling outage and Unit 4 was operating at approximately 100 percent power.

On September 23, 1998, the licensee had decided to suspend all outage and non-outage maintenance activities. The licensee implemented Off-Normal Operating Procedure O-ONOP-103.3, Severe Weather Preparations and Emergency Plan Implementing Procedure O-EPIP-20106, Natural Emergencies, for preparing and controlling the plant in the event the hurricane made landfall in the vicinity of Turkey Point Nuclear Station.

On September 24, 1998 the licensee placed both plants in preferred configurations to maintain plant safety. Unit 3 was maintained in MODE 4 at approximately 300°F and 250 PSIG and Unit 4 power was reduced to approximately 50 percent power to address the potential blockage of intake cooling water system strainers due to grass intrusion in the intake canal following the forecasted heavy rain. The inspectors provided



continuous control room coverage during the Unit 4 power reduction, reviewed licensee procedures, and performed detailed walkdowns of plant facilities and equipment in preparation for high winds and potential flooding. The inspectors confirmed that the licensee had performed the following actions:

- Staged diesel-driven pumps for flooding,
- Checked communications systems,
- Checked operability of vital diesel-driven equipment,
- Filled fuel and water storage tanks
- Conducted facility walkdowns and secured exposed equipment,
- Installed drain plugs and positioned sand bags,
- Verified that the nitrogen bottles for the Main Steam Isolation Valves (MSIVs), atmospheric steam dumps and Auxiliary Feedwater (AFW) control valves were full,
- Released non-essential personnel and arranged for sufficient emergency response personnel (approximately 230 volunteers) on site to provide continuous coverage for several days, and
- Trained operations crews on the simulator for Loss of Offsite Power (LOOP), loss of Intake Cooling Water, and loss of instrument air

On the morning of September 25, 1998, Hurricane Georges reached Category 1 status having wind speeds near 95 miles per hour (mph) with hurricane force winds extending approximately 45 miles from the center of rotation. The hurricane made landfall approximately 100 miles from the Turkey Point facility near Key West, FL. Maximum sustained wind speeds recorded at the facility did not exceed 60 mph. For personnel safety, on several occasions, the licensee suspended certain specific physical security activities in accordance with 10CFR50.54x. The NRC was properly informed of these actions. On September 25, 1998, at approximately 8:00 a.m., the national hurricane center downgraded the hurricane warning for the areas north of Florida City, FL. The licensee exited the Unusual Event at 11:30 a.m.

c. Conclusions

The licensee's preparations for potential hurricane force winds and flooding from Hurricane Georges were excellent. Emergency Plan Procedures were well developed and provided detailed guidance to plant personnel. Operations training prior to the hurricane was prudent. Equipment and facilities were properly secured and essential plant personnel were available to provide continuous coverage during the hurricane.

O1.4 Standby Steam Generator Feed Pump

a. Inspection Scope (71707 and 61726)

The inspectors completed a walkdown of the standby steam generator feed pumps (SSFP) and observed the performance of the monthly TS required surveillance.



b. Observations and Findings

The SSFP system valve line up was verified with system prints. The licensee used operations surveillance procedure 0-OSP-074.3, Standby Feed Pump Availability Test, to demonstrate operability of the SSFP system. The inspectors reviewed portions of the procedure with the operator performing the surveillance and later reviewed the completed procedure in its entirety. The operator was well versed with the procedure and test requirements. Good procedure adherence was noted throughout the surveillance. The responsible system engineer was present during the surveillance and he also performed a system walkdown. The inspectors also reviewed portions of the system with the systems engineer and noted that he was very familiar with the system and its operation. The systems engineer described some of the activities that were planned to address minor issues in the system. During the surveillance, the system engineer identified several material condition items which were later addressed by maintenance. Housekeeping in the area was adequate. The inspectors independently verified that the gages used for the surveillance acceptance criteria were within their calibration periodicity.

c. Conclusions

Monthly surveillance testing of the Standby Steam Generator Feedwater Pumps was conducted in accordance with procedures. Personnel were knowledgeable of system and procedural requirements. Active involvement by the system engineer was noted.

O1.5 Unit 3 Automatic Reactor Trip During Shutdown for Refueling

a. Inspection Scope

The inspectors reviewed available control room information, attended licensee briefings, and interviewed licensee personnel to evaluate operator and equipment performance following an automatic Unit 3 reactor trip during shutdown for refueling.

b. Observations and Findings

On September 21, 1998, during a scheduled shutdown for the Unit 3 Cycle 17 refueling outage, an automatic reactor trip occurred from approximately 8 percent reactor power. The trip occurred when the 1 out of 2 Nuclear Instrumentation System (NIS) Intermediate Range High Flux Reactor Trip logic was satisfied. This reactor trip, normally blocked during power operation above 10 percent, was automatically unblocked when reactor power was reduced below the P-10 interlock permissive reset value (8% reactor power as indicated on 3 of 4 NIS Power Range channels). This automatic reactor trip provides protection against reactivity excursions from a subcritical or low power condition. The Intermediate Range channels provide a relative indication of reactor power in amperes. Licensee actions to prevent recurrence of similar events will be documented in Licensee Event Report (LER) 50-250/98-04: Automatic Reactor Trip During Planned Shutdown for Refueling.



The inspectors reviewed available alarm recorder printouts and discussed the reactor trip with licensee personnel. The inspectors noted that the IR channel N35 bistable did not reset as expected during the power reduction. The expected reset value for the IR N35 channel was approximately 19 percent reactor power. The licensee completed troubleshooting activities and determined that the N35 channel and associated detector was operating properly; however, the established amperes equivalent correlation no longer agreed with actual reactor power. The licensee determined that changes in the core flux profile caused the IR channels to see a larger neutron flux at the end of core life resulting in a higher indicated amperes equivalent power level. The licensee concluded that this was the primary cause of the reactor trip.

The inspectors also examined operator response during the shutdown evolution and subsequent reactor trip. The inspectors noted that the operating crews had discussed the consequences of IR channel malfunctions during previous training and were fully aware of the N35 channel behavior during the shutdown; however, no one considered the behavior unusual or specifically ensured that the IR trip bistable reset prior to reaching the P-10 reset value. The licensee concluded that this performance by the operating crew was a contributor to the event.

The inspectors reviewed the controlling procedure being utilized for the reactor shutdown. Discussions were held with Operations management regarding expectations of procedural compliance. The licensee supplemented corrective action program documentation to address procedural compliance aspects of the incident. The operating crew performed the applicable portion of the procedure in accordance with licensee management's expectations and in the same manner as during simulator sessions. The licensee plans to revise the procedural guidance to provide for more positive controls regarding the intermediate range reset. The inspectors agreed with the licensee's conclusion that control room oversight of the instrumentation (after the problem was identified) should have been stronger.

The inspectors also noted that following the reactor trip, IR N36 channel current did not decrease to the P-6 interlock permissive value. Operators manually defeated the N36 channel allowing energization of the source range detectors. The trip bistable for NIS Power Range channel N41 did not reset to the untripped condition when reactor power was reduced below the P10 interlock permissive reset value. These component performance issues have been addressed and will be corrected prior to Unit 3 restart from the current refueling outage.

c. Conclusions

Changes in core flux profiles during the lengthy operating interval resulted in substantial inaccuracy in intermediate range nuclear instrumentation indications during a plant shutdown. An intermediate range trip bistable did not reset at the expected power level. Control room supervisory oversight did not ensure that the bistable reset as the power decrease was continued. An unplanned automatic reactor trip occurred.

O3.1 Containment Temperature Monitors

a. Inspection Scope (71707 and 37551)

The inspectors reviewed the licensee's containment ambient temperature monitors to evaluate licensee adherence to related Maintenance Rule guidelines and Technical Specification and Environmental Qualification (EQ) requirements.

b. Observations and Findings

Three resistance temperature detectors (RTD) are used to measure normal and abnormal containment ambient temperature. Additionally, during normal operation, when an RTD is out of service, the licensee can use up to three thermocouples (TC) to measure containment ambient temperature. Through review of procedures, prints, and containment ambient temperature logs, and discussions with control room operators, the inspectors verified compliance with Technical Specifications. Containment ambient temperature is used in the licensee's Emergency Operating Procedures (EOP) and therefore the RTDs were included in the scope of Maintenance Rule. The RTDs met EQ requirements as described in the FSAR and in Regulatory Guide 1.97. The TCs were not environmentally qualified, nor were they included in the scope of the maintenance rule. The inspectors independently verified that all RTDs for Unit 3 and 4, and the TC recorders were in a calibration program and were within the calibration periodicity.

Two condition reports (CR) and one Licensee Event Report (LER) describing issues on containment temperature measurements were reviewed; CR98-0631, CR96-1559, and LER 96-012. During the independent verification of the completed corrective actions, the inspectors identified that Operations had not accurately completed one of the corrective actions. In Condition Report 96-1559, Engineering had concluded that using the TC recorders would introduce an approximate 2°F higher inaccuracy than temperature measurements using the RTDs. In the evaluation portion of the CR, it was concluded that it was acceptable to use the TC recorders if the increased inaccuracy was taken into consideration in complying with limits of the TS action statements. TS 3.6.1.5 requires in part, "Primary containment average air temperature shall not exceed 125°F and shall not exceed 120°F by more than 336 equivalent hours during a calendar year." Corrective actions described in the CR included changes to procedure 3/4-OSP-201.1, RCO Daily Logs, to take into account the 2°F higher inaccuracy. Specifically, the TS action statements would be entered at 118°F and 123°F instead of at 120°F and 125°F, respectively, when measuring the containment ambient temperature using the TC recorder.

Through review of the RCO Daily Logs and discussions with control room supervisors and operators, the inspector found that the procedure change had not been completed properly. Although the procedure required the operators to refer to Attachment 11 if containment temperature was 118°F, the attachment described actions to be taken if the containment ambient temperature measured 120°F or 125°F. Additionally, questioning of CR operators indicated that many were not aware that the EQ RTDs were to be used during emergency conditions. The inspectors noted that the EOPs specified use of the qualified RTDs but some other procedures did not.



The licensee acknowledged that the procedure revision was not completed properly and initiated corrective actions. These included:

- An on-the-spot-change (OTSC) to procedure OSP-201.1, attachment 11, describing actions to be taken at 118°F and 123°F when measuring containment ambient temperature with the TC recorders,
- An Operations night order was written which described the procedure changes made to 3/4-OSP-201.1, RCO Daily Logs procedure, and
- Training brief #751 was written to describe the actions to be taken at various temperature limits when measuring containment ambient temperature using RTDs verses TC recorders. This training brief also described the appropriate use of the environmentally qualified instruments, such as the RTDS, to be used (if available) during abnormal operations.

The inspector reviewed the containment ambient temperature for the past year for Units 3 and 4. No TS operability issues were identified. Temperature had not reached 118°F.

c. Conclusions

Containment ambient temperature monitoring instrumentation was appropriately included in the scope of the maintenance rule and complied with environmental qualification requirements. NRC inspectors identified that an error had been made during implementation of a procedure change to address a previously identified problem.

O7.1 Turkey Point Self Assessment (71707 and 40500)

On September 3, the resident inspectors attended the licensee's August 1998 Plant Status Meeting. A purpose of this meeting was for upper management to communicate to the site vice president and the FPL Nuclear Division President the status of various Turkey Point organizations. The meeting agenda also included a presentation by the Work Control organization on the forthcoming Unit 3 Outage. Upper management from St. Lucie was present and participated on discussions and shared lessons learned from that site. Openness in the critiques and a strong focus on nuclear safety was noted throughout the presentations. Each area presented lessons learned, significant accomplishments, present challenges and future plans. The inspectors noted that licensee management was self-critical and concluded that the licensee demonstrated good self-assessment.



II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707 and 61726)

The inspectors observed maintenance and surveillance activities for selected components to evaluate the effectiveness of the licensee's maintenance program for equipment important to safety.

b. Observations and Findings

During observations, the inspectors evaluated procedure use, assignment and performance of Quality Control (QC) hold points, foreign material exclusion (FME) controls, measuring and test equipment (M&TE) controls, post-maintenance testing (PMT) and qualification of maintenance personnel. The applicable revisions of procedures were in place and were conscientiously followed by qualified maintenance personnel. Personnel had procedure or work order requirements clarified before proceeding with the activity. Maintenance supervision was closely involved with monitoring in-process maintenance work. Good interface between maintenance and operations personnel was observed. Applicable FME controls, M&TE controls, PMT requirements, and QC hold points were properly accomplished. The inspectors also observed that work activities were properly documented and problems encountered during the performance of the work activities were appropriately resolved.

c. Conclusions

Maintenance and surveillance activities were performed in a professional manner. Procedures were in place and were adhered to by qualified maintenance personnel. Interface between maintenance and operations personnel was good. Applicable FME controls, M&TE controls, PMT requirements, and QC hold points were properly accomplished.

M1.2 Emergency Diesel Generator 4A Surveillance Test

a. Inspection Scope (61726)

Using Inspection Procedure 61726, the inspectors observed the performance of operations surveillance procedure 4-OSP-023.1, Diesel Generator Operability Test, conducted on September 9, 1998. The inspectors also reviewed associated documentation.



b. Observations and Findings

The inspectors observed that a licensed operator was assigned as the lead single point-of-contact for the test. The pre-job planning and briefing were thorough and sufficiently detailed to prepare the participants for the test. The involved individuals were experienced and knowledgeable of the test. The inspectors observed Operations supervision providing direct oversight and system engineers monitoring diesel performance. The inspectors noted that the surveillance test procedure was clear and concise, acceptance criteria were clearly defined, and a comprehensive list of other normal operating parameters was included. The procedure steps and enclosures were arranged and sequenced well. Communications between operators and with engineers were adequate, although occasionally informal. The inspectors observed that the diesel operated satisfactorily, meeting all acceptance criteria. The inspectors reviewed the condition and configuration of the diesel and support equipment as well as the other three diesels, and found them to be in extremely good material condition. There were very few open work request tickets, equipment configuration was clear and consistent, no notable fluid leaks were observed, and housekeeping of the diesel buildings was excellent. The inspectors verified that the test procedure fully restored the diesel to the standby condition via a detailed enclosure completed by the operators. The inspector did not identify any equipment performance or condition concerns. Operations' supervisory reviews of the completed test paperwork were completed promptly.

c. Conclusions

The emergency diesel generator 4A surveillance test was satisfactorily performed and diesel generator material condition was very good. The test procedure was clear, highly detailed, and easy to use. Operators' use of the procedure was professional and accurate. Continuous engineering support and supervisory oversight were provided for the test.

M1.3 Diesel Driven Fire Pump Test

a. Inspection Scope (61726)

The inspectors observed performance of the diesel-driven fire pump operability test and reviewed historical pump performance data.

b. Observations and Findings

On August 31, 1998, the inspectors observed the weekly diesel-driven fire pump test. The operator carefully followed the procedure and monitored the fire pump properly during its operation. The inspectors independently checked pump performance data and verified that the acceptance criteria of the test were satisfied. The inspectors also checked overall condition of the engine during operation and found that there were no unusual noises or leaks. The inspectors discussed various aspects of the test with the operator, including the system flowpath and normal operation of the fire protection system. The operator was knowledgeable of the fire protection system. The inspectors



also reviewed past pump performance test data to determine if any negative trends were evident. No problems were found.

c. Conclusions

The weekly diesel-driven fire pump test was carefully performed by a knowledgeable operator. Observation of current pump performance and review of past pump data indicated satisfactory pump performance with no negative trends.

M1.4 Inservice Inspection

a. Inspection Scope (Unit 3) (73753)

The inspectors evaluated implementation of the licensee's inservice inspection (ISI) program by observing in-process work activities and review of selected procedures and records. The observations, procedures and records were compared to the technical specifications (TS), the final safety analysis report (FSAR), and the applicable code (ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, with no Addenda).

b. Observations and Findings

The inspectors observed the following in-process ISI nondestructive examinations:

- Liquid Penetrant (PT) examination of the following welds:
 - Zone 3-042, Weld Nos. 2"-SI-1303-21 and 2"-SI-1303-26
 - Zone 3-043, Weld Nos. 2"-SI-1305-5, 2"-SI-1305-6, 2"-SI-1305-7, 2"-SI-1305-8, and 2"-SI-1305-9
 - Zone 3-028, Weld Nos. 2"-RC-1303-1 and 2"-1303-5
- Visual (VT) examination of Zone 3-036 Pipe Support 3-RCH-12
- VT examination of pressure boundary bolting for Chemical Volume and Control System Valves CV-3-200B, CV-3-200C, CV-310A, CV-3-311, MOV-3-750, 3-876B, 3-304 and 3-304F
- Ultrasonic (UT) examination of the following welds:
 - Zone 3-081, Weld Nos. 10"-SI-2304-2 and 10"-SI-2304-3
 - Zone 3-039, Weld No. 10"-SI-1303-8
 - Zone 3-085, Weld No. 8"-Si-2301-1

During observation of the above in-process ISI activities, the inspectors found that detailed instructions and procedures were in place and were being followed by knowledgeable and qualified inspection personnel; approved and calibrated inspection equipment was being used; inspections were being performed in accordance with applicable Code requirements; program changes, including appropriate approval of code relief requests, were being controlled; and examination results were being properly evaluated and corrective actions taken as required. Plans and schedules for the current



inspection period were in accordance with the approved ISI program. Qualified and knowledgeable licensee personnel provided strong direction and oversight of contract personnel performing ISI examinations.

In addition to the above observations, the inspectors reviewed the following assessments and audits and verified that the ISI program was audited on a periodic basis and that audit findings were corrected:

- Component, Support and Inspection Audit Report QAS-CSI-97-1 dated September 18, 1998
- Quality Assurance Audit Number QAO-PTN-97-007 dated March 1998
- Turkey Point Units 3 and 4 Auxiliary Feedwater (AFW) Self Assessment Report dated July 30, 1998

c. Conclusions

ISI activities were being performed in accordance with requirements with strong licensee direction and oversight of contract personnel. Overall, the licensee's ISI program was considered to be a strength.

M1.5 Flow Accelerated Corrosion (FAC)(Unit 3) (49001)

The inspectors reviewed the FAC program procedures and observed UT thickness measurements for the following components:

- Feedwater System FB-P-8
- Steam Generator Blowdown Component BC-E-2

Compliance with program procedure requirements, including evaluation and disposition of inspection results, was verified. The inspectors found that a detailed FAC program was in place and was being implemented in accordance with procedural requirements by knowledgeable licensee personnel.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Material Condition and Housekeeping Observations (62707)

During inspection of in-process maintenance activities, the inspectors observed plant material condition and housekeeping in the turbine and auxiliary buildings. In general, housekeeping and material condition were good.



III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Review of Intake Cooling Water to Turbine Plant Cooling Water Isolation Valves

a. Inspection Scope (37551)

The inspector reviewed the maintenance history, the licensee's performance trending, and the corrective actions associated with the Intake Cooling Water/Turbine Plant Cooling Water (ICW/TPCW) isolation valves.

b. Observations and Findings

The ICW/TPCW isolation valves, power operated valves (POVs) 3/4-4882/4883, were designed to automatically close on a safety injection (SI) actuation to isolate ICW from the TPCW system and thus maximize ICW flow to the component cooling water (CCW) system. The valves have a maximum Inservice Testing (IST) stroke time acceptance criteria of 180 seconds + or - 30 seconds. This is to ensure that the CCW system temperature does not exceed 125° F on a design basis event.

The inspectors reviewed the failure history of the valves and concluded that the failures since January 1996 have been attributed to a variety of causes, including; 1) corrosion between the yoke and valve housing, 2) corrosion on relay contacts, 3) relay failures, and 4) inadequate lubrication. The component engineer had tracked these valve failures and several condition reports (CR) were written documenting valve problems. Engineering has also trended valve IST stroke times. That data was useful in predicting when a valve may fail its stroke time acceptance criteria and is used to schedule valve overhaul dates. The inspectors were informed by the component engineer that all four valves were overhauled in 1996 based on the vendor's recommendation of a five year overhaul interval.

The inspectors verified that POVs 4882/4883 are included in the licensee's IST program and that they are monitored under the licensee's maintenance rule program required by 10 CFR 50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. Presently, none of the four valves have a failure frequency which would require monitoring under section (a)(1) of 10 CFR 50.65.

During the previous and current inspection periods, the licensee overhauled two valves, POVs 3-4882 and 4-4883, on August 4, 1998, and September 18, 1998, respectively, based on declining valve performance. Additionally, as a corrective action to CR 98-0663, the licensee developed and began implementing Temporary Procedure (TP) 98-033, Diagnostic Testing of TPCW Isolation Valves, which is used to determine if the increase in stroke times were due to increased valve/actuator friction. The diagnostic testing will be performed on a six month frequency.



c. Conclusions

The licensee has adequately monitored, trended, and initiated corrective actions for problems related to the Intake Cooling Water to Turbine Plant Cooling Water isolation valves.

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) LER 50-250/97-05-00: Reactor Coolant Pump Oil Collection System Outside Design Basis. The licensee had identified a problem with the oil collection system in that it was not designed to collect leakage from all potential leakage sites. The problem was previously discussed in NRC Inspection Report 50-250,251/97-11 and identified as NCV 50-250,251/97-11-03. The associated Licensee Event Report (LER) was left open pending completion of modification to the oil collection system on each unit during a refueling outage. The inspectors reviewed completed documentation for Plant Change/Modification (PC/M) 97-027 to verify that the modification had been installed on Unit 4 during the October 1997 outage. For Unit 3, the inspectors reviewed issued modification package PC/M 97-046 and verified it was included in the scope of the refueling outage scheduled to commence September 21, 1998. The modification addressed all of the identified oil collection deficiencies from the LER. The inspectors also verified that the modification was being tracked in the licensee's commitment tracking system, and, that a separate tracking item existed for the extra spare Reactor Coolant Pump (RCP) motor, which was scheduled to be installed on Unit 3 in this refueling outage. The inspectors considered the licensee's completed actions and tracking of the planned actions sufficient to address the original concern. This item is closed.

E8.2 (Closed) Unresolved Item 50-250, 251/96-11-02: Reactor Coolant System Leakage Detection. This unresolved item was identified pending NRC review of the leakage detection criteria for the R-11 and R-12 radiation monitors. The NRC review was completed to determine if the recommendations of Regulatory Guide (RG) 1.45 were applicable to Turkey Point. The NRC determined that the containment radiation monitoring system described in the Turkey Point Units 3 and 4 FSAR is not fully consistent with the recommendations of Regulatory Position C.5 of RG 1.45. However, Turkey Point Units 3 and 4 are not required to meet RG 1.45, only the criteria of Generic Letter (GL) 84-04. Since the sensitivity requirements for the particulate and gaseous radiation monitors at Turkey Point meet the criteria of GL 84-04, they are acceptable. This URI is closed.

IV. Plant Support

F1.1 Announced Fire Drills for Main Turbine Area

a. Inspection Scope (71750)

The inspectors observed two announced fire drills conducted in the main turbine area. The inspectors also attended a drill pre-brief and a drill critique.



b. Observations and Findings

On August 24 and 26, 1998, announced fire drills were conducted by the licensee which simulated a lube oil fire around the main turbine deck and at lower secondary plant elevations. The inspectors observed that fire team members were familiar with donning their bunker gear and were aware of the fire location. The inspectors also observed that there was proper use of fire fighting equipment and execution of standard fire fighting tactics. The inspectors noted that support personnel (i.e., first aid team, plant security, and extra operators) were available to assist the fire team. During both drills, the inspectors observed that some fire team members did not have radios for direct communications with the fire team leader. This issue was discussed by those individuals in the post-drill critique as a concern. At the critique, the lack of radios was addressed as an area of needed improvement.

c. Conclusions

Two announced fire drills conducted by the licensee were performed by knowledgeable fire team members. Donning of bunker gear, knowledge of fire location, use of fire fighting equipment, and execution of standard fire fighting practices were proper. At the post drill critique, the issue that some fire team member did not have radios to communicate with the Team Leader was addressed as an area needing improvement.

S5.1 Security Drill

a. Inspection Scope (71750)

The inspector observed security drills and reviewed the drill critiques and lessons learned.

b. Observations and Findings

On September 17, the licensee conducted two security drills. The first drill was held on the day shift and the 2nd on the night shift. An officer simulated an intruder entering the protected area and attempted to reach a vital area. In both drills, the security force responded and apprehended the intruder prior to him reaching vital plant equipment. The licensee considered the drills acceptable.

Prior to the drills, the inspectors reviewed the drill scenario with security management and also attended the drill briefings. Good planning, field supervision, and controller coverage was noted for the drill to ensure personnel safety. Personnel safety was strongly emphasized by management to ensure no one was injured during the drill. Appropriate communications with the control room and notifications to the security force and plant personnel was completed prior to the start of the drill. The inspectors observed the drill and watched as the intruder was stopped and apprehended.

As required by the licensee's security procedures, a drill critique had been completed for each drill and the findings had been documented on a security drill report. The inspectors reviewed the drill critique with the licensee. The licensee had identified areas where good response and practices were noted. The licensee had also identified some



areas for improvement. The inspector questioned whether these findings had been communicated to the entire security force. The licensee stated that the security supervisors were expected to brief their crews on the drill findings. However, during subsequent independent verification, the inspectors noted that none of the seven security force members interviewed had been briefed on the drill findings. This issue was communicated to the licensee management and immediate actions were taken to ensure that the drill findings were properly communicated to the security force. A condition report was written to address this issue and ensure that future drill findings would be promptly communicated to the security force.

c. Conclusions

The security force demonstrated good response during drills. Simulated intruders were apprehended prior to reaching the planned objectives. However, lessons learned from the drills had not been effectively communicated to the security force. The licensee promptly initiated corrective actions to ensure lessons learned on future drills would be promptly communicated to the security force.

V. Management Meetings

X1 **Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on October 8, 1998. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.



PARTIAL LIST OF PERSONS CONTACTED.Licensee

T. V. Abbatiello, Quality Assurance Manager
G. E. Hollinger, Licensing Manager
R. J. Hovey, Site Vice-President
D. E. Jernigan, Plant General Manager
T. O. Jones, Acting Operations Manager
J. E. Kirkpatrick, Protection Services Manager
R. J. Kundalkar, Vice President, Engineering and Licensing
M. L. Lacal, Training Manager
C. L. Mowrey, Licensing Specialist
M. O. Pearce, Maintenance Manager
R. E. Rose, Work Control Manager
W. A. Skelley, Plant Engineering Manager
E. A. Thompson, Site Engineering Manager
D. J. Tomaszewski, Systems Engineering Manager
J. C. Trejo, Health Physics/Chemistry Supervisor
G. A. Warriner, Quality Surveillance Supervisor

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 49001: Inspection of Erosion/Corrosion Monitoring Program
IP 61726: Surveillance Observations
IP 62707: Maintenance Observations
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 73753: Inservice Inspection
IP 92903: Followup - Engineering
IP 93702: Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSEDClosed

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|---------------------|-----|---|
| 50-250,251/97-05-00 | LER | Reactor Coolant Pump Oil Collection System Outside Design Basis. (Section E8.1) |
| 50-250-251/96-11-02 | URI | Reactor Coolant System Leakage Detection. (Section E8.2) |

Discussed

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| 50-250,251/97-11-03 | NCV | RCP Oil Collection Systems did not Meet Appendix R Requirements. (Section E8.1) |
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