



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

Report Nos.: 50-250/87-45 and 50-251/87-45

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 3 and 4

Inspection Conducted: October 19, - November 23, 1987

Inspectors:	<u></u>	<u>1/11/87</u>
	D. R. Brewer, Senior Resident Inspector	Date Signed
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	J. B. Macdonald, Resident Inspector	Date Signed
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	G. A. Schnebli, Resident Inspector	Date Signed
Approved by:	<u></u>	<u>1/11/87</u>
	Richard V. Crlenjak, Section Chief	Date Signed
	Division of Reactor Projects	

SUMMARY

Scope: This routine, unannounced inspection entailed direct inspection at the site, including backshift inspection, in the areas of annual and monthly surveillance, maintenance observations and reviews, engineered safety features, operational safety, and plant events.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. S. Odom, Vice President
- *F. H. Southworth, Acting Plant Manager-Nuclear
- *D. A. Chaney, Site Engineering Manager (SEM)
- *L. W. Pearce, Operations Superintendent
 - T. A. Finn, Training Supervisor
 - J. D. Webb, Operations - Maintenance Coordinator
 - D. H. Taylor, Operations System Enhancement Coordinator
 - J. W. Kappes, Maintenance Superintendent
- *J. P. Mendieta, Services Manager-Nuclear
 - R. A. Longtemps, Mechanical Maintenance Department Supervisor
 - D. Tomaszewski, Instrument and Control (I&C) Department Supervisor
 - J. C. Strong, Electrical Department Supervisor
- *L. W. Bladow, Quality Assurance (QA) Superintendent
 - E. F. Hayes, Quality Control (QC) Supervisor
- *R. J. Earl, QC Supervisor
- *J. A. Labarraque, Technical Department Supervisor
 - R. G. Mende, Operations Supervisor
- *J. Arias, Regulation and Compliance Supervisor
 - R. D. Hart, Regulation and Compliance Engineer
 - V. A. Kaminkas, Reactor Engineering Supervisor
 - P. W. Hughes, Health Physics Supervisor
- *G. Solomon, Regulation and Compliance Engineer
 - J. Donis, Engineering Department Supervisor
 - D. E. Meils, Chemistry Supervisor

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, mechanics, and electricians.

*Attended exit interview on November 25, 1987.

2. Exit Interview

The inspection scope and findings were summarized during management interviews held throughout the reporting period with the Plant Manager - Nuclear and selected members of his staff. An exit meeting was conducted on November 25, 1987. The areas requiring management attention were reviewed. No proprietary information was provided to the inspectors during the reporting period.

3. Unresolved Items (URI)

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations of



requirements or deviations from commitments. No unresolved items were identified in this report.

4. 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 that the responses were timely and that corrective actions were implemented within the time periods specified in the reply.

(Closed) Violation 250/85-43-01. Failure to implement the requirements of 10 CFR 50, Appendix B, Criteria V and XI. FPL response letter dated August 8, 1986, was reviewed by the inspector and found to be acceptable. In addition, the inspector reviewed the procedures and documents that required modification to resolve this issue. Violation 250/85-43-01 is closed.

(Closed) Violation 250, 251/86-45-02. Failure to take timely corrective action in determining safety significance of non-conformances. FPL response letter dated February 20, 1987, was found to be acceptable (per NRC letter dated March 4, 1987). The licensee instituted a new requirement that an operability assessment be initiated within three days of receipt of a NCR. Violation 250, 251/86-45-02 is closed.

(Closed) Violation 251/86-41-01. Failure to implement post-maintenance testing requirements as per T.S. 3.3.3 and 6.8.1. On October 27, 1986 it was determined that the licensee failed to perform valve post-maintenance testing as required by Administrative and Operating Procedures. Packing adjustments were performed on two containment Phase A isolation valves and on eight other motor operated valves. The NRC has reviewed FPL's response to the violation, dated December 26, 1986, and found it acceptable. The inspectors reviewed the implementation of the corrective actions which includes changes to OP-0209.1 entitled Valve Exercising Procedure and O-ADM-701, entitled Plant Work Order Preparation. The licensee also issued Training Briefs Nos. 185 and 208 concerning TS requirements for valve testing. These changes will help to ensure that valve operability concerns are addressed before valves are removed from service. Violation 86-41-01 is closed.

(Closed) Violation 250, 251/86-39-03. Failure to properly implement 4-OP-065.2, entitled AFW and MSIV Backup Nitrogen Gas Supply System. The licensee issued a response to this violation on January 9, 1987 and this response was determined to meet the requirements of 10 CFR 2.201. The licensee has implemented the corrective action outlined in their response to the violation, which includes counseling for the operator that failed to adequately monitor steam generator water level and also the implementation of 4-OSP-072.2 entitled MSIV Nitrogen Backup Periodic Test. This procedure requires the operator to note the as-left valve line-up to



ensure the correct valve position after the monthly surveillance of the system. Violation 250, 251/86-39-03 is closed.

5. Followup on Unresolved Items (URIs), Inspector Followup Items (IFIs), Inspection and Enforcement Information Notices (IENs), IE Bulletins (IEBs) (information only), IE Circulars (IECs), and NRC Requests (92701) (92703) (92717).

(Closed) IFI 250, 251/86-11-01. Concerning the licensee's long range plans to obtain a more permanent solution for AFW valve problems. The inspector reviewed PCM 86-011 and 86-009 which replaced the AFW steam supply valves with a type more suitable for this application. IFI 250, 251/86-11-01 is closed.

(Closed) IEN 250, 251/85-IN-94. Potential for loss of minimum flow paths leading to ECCS pump damage during a LOCA. The licensee has taken interim corrective actions to mechanically block open the recirculation valves and modified their procedures accordingly. The permanent solution will consist of changing out the existing actuators for a type that will fail open. This item will continue to be tracked in closing out IEB 86-03, which was generated in response to this problem. IEN 250, 251/85-IN-94 is closed.

(Closed) Unresolved Item 250, 251/86-41-03. Evaluate the adequacy of the procedure for calculating estimated critical conditions (ECC). The licensee's investigation into this matter resulted in Westinghouse recommending a change to the methodology for estimating critical conditions. This change was incorporated into OP 1009.1, entitled Estimated Critical Conditions, on January 29, 1987. The ECC's subsequent to the change to the procedure have been very satisfactory. URI 250, 251/86-41-03 is closed.

(Closed) Unresolved Item 250, 251/86-41-02. Evaluate the Results of Radiological Controlled Area Training (RCAT) Program Deficiencies. A partial review of the improvements made in the RCAT Program was completed and documented in Inspection Report 250, 251/87-09. This review was completed in November 1987 during a review of the program as discussed in paragraph 13 of this report.

In January 1987 the licensee developed Administrative Guideline (AG) 012, entitled Guidelines For Administration, Control and Security of Examinations. A revision was made to the procedure in April 1987. The procedure was reviewed and evaluated to determine whether it provided effective controls over examination quality for the RCAT Program. AG-012 adequately addressed NRC concerns in this area.

The Training Department requires that, prior to beginning any examination, the instructor inform the students of acceptable rules of conduct. The rules require that any student suspected of cheating on an examination shall have his exam confiscated along with any other evidence. A report of the incident is sent to the Training Program Supervisor and the student

is subject to immediate disciplinary action. Students must sit as far apart as available classroom space will allow. Table tops must be free of all extraneous material. Only one student may leave the class room at a time when an examination is in progress. All examinations are proctored by an instructor who is continuously present while the exam is in progress and who shall not perform any unrelated activities during the exam.

Additional favorable program requirements include: grading activities shall be done away from students; all initial grading shall be done in red ink; the exam shall be signed by the grading instructor after grading is complete; all regrading shall be done by an instructor other than the initial grader; a minimum of 20 percent of all examinations will receive an independent quality control regrade; all exams with low but passing scores will be regraded by an independent instructor; and all regrading shall be done in green ink.

A monthly report of instructor grading error percentages is sent to the Training Department Superintendent and his Group Supervisors. Error rates for 1987 have been acceptably low and represent a dramatic improvement over those identified in Inspection Report 250, 251/86-41.

These programmatic enhancements are comprehensive and will preclude the recurrence of those problems identified in Inspection Report 250, 251/86-41. Unresolved Item 250, 251/86-41-02 is closed.

(Closed) CAL 250, 251/84-02. On June 18, 1984, Region II issued Confirmatory Action Letter (CAL) 84-02. The CAL required that two licensed reactor operators, who had scored poorly on a senior reactor operator upgrade examination, be removed from all licensed duties until they successfully complete an NRC approved requalification program and pass an NRC approved examination.

The two individuals were removed from shift as required. They subsequently completed the requalification program and passed an NRC approved examination. Their licenses were reinstated and they were returned to licensed duties. In the ensuing years the individuals have chosen career paths in which reactor operator licenses are not required and have opted to allow their licenses to expire. CAL 250, 251/84-02 is closed.

(Closed) IFI 250, 251/86-10-07. Reinspect intake structure area. Discrepancies observed during a walkdown of the ICW system were documented in inspection report 250, 251/86-10. The ICW system was reinspected and the observations documented in inspection report 250, 251/87-06. IFI 250, 251/86-10-07 is closed.

6. Onsite Followup and In-Office Review of Written Reports Of Nonroutine Events (92700/92712)

The Licensee Event Reports (LERs) discussed below were reviewed and closed. 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 that 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.

(Closed) LER 250/86-38. Auxiliary Feedwater Steam Supply valve out of service while other train is out of service. The inspector reviewed the corrective actions and evaluations performed by the licensee. LER 250/86-38 is closed.

(Closed) LER 250/86-37. Minimum degree of redundancy not met for power range neutron detectors. This issue discussed in the LER resulted in the identification of Violation 250, 251/86-45-01. The corrective actions required will be followed as closeout for the violation. LER 250/86-37 is closed.

(Closed) LER 251/86-10. Failure of breakers 4AA20 to close due to breaker position switch 52HH misalignment. The licensee has issued Plant Change/Modification (PC/M) 85-11 and 85-12 for Unit 3 and 4 respectively. The work for PC/M 85-11 was completed during the most recent Unit 3 refueling outage. The PC/M for Unit 4 is planned to be worked during the next refueling outage near the end of 1988. These PC/Ms replace the existing position switch actuator (for switch 52HH) with a redesigned actuator and guide supplied by General Electric. They will also rewire the white indicator light to monitor the operation of position switch 52HH. This modification will improve the reliability of switch 52HH and provide indication when the switch malfunctions. LER 251/86-10 is closed.

(Closed) LER 250, 251/87-30. Design Basis Reconstitution Discovers RHR Recirculation Line Not Designed to Assure Adequate Flow for Each Pump. The licensee generated PC/M's 87-353 and 87-354 for Units 3 and 4 respectively. The Unit 4 modifications have been completed and the Unit 3 modifications will be completed prior to startup. This item is discussed further in paragraph 9. LER 250, 251/87-30 is closed.

7. Monthly and Annual Surveillance Observation (61726/61700)

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



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

- 3/4-OP-003 Vital Instrument AC Selector Switch Operability Test
- 0-OSP-016.23 Diesel Driven Fire Pump Operability Test
- 0-OSP-016.26 Electric Driven Fire Pump Operability Test
- 3-OSP-041.4 Overpressure Mitigation System Nitrogen Backup Periodic Test
- 0-OSP-023.1, Diesel Generator Operability Test

On November 6, 1987, the A Emergency Diesel Generator (EDG) was declared out of service (OOS) due to a missed surveillance. There was some confusion by the operations personnel concerning the missed surveillance. At the time the EDG was taken OOS it had 5 failures in the last 100 valid tests. Turkey Point Technical Specifications (TS) required the diesel to be tested every 30 days. If the EDG has 6 failures in the last 100 valid tests then the testing frequency would be every 14 days per TS. The A EDG had last been tested on October 12, 1987, therefore, in accordance with TS, the diesel was not required to be tested until November 11, 1987. However, on November 5, 1987, new EDG test frequency instructions were implemented and placed in the Shift Technical Advisor's (STA) EDG start logbook. This instruction directed the STA to implement the testing frequencies in accordance with Turkey Point Interim TS. These Interim TS are being used as a guide by the licensee to facilitate the change of the Turkey Point TS to the Standard TS format. The testing frequency per interim TS is 14 days if the number of valid failures in the last 100 valid tests is between 4 and 8. Upon further investigation by the inspectors the A EDG start logbook was found to contain discrepancies. These discrepancies were brought to the attention of the licensee for further evaluation. The licensee determined that the reason for the discrepancies was two fold in that:

- (1) The EDG Log Sheets were updated in format and upon transfer of information from the old log sheet to the new log sheets a test date was left out; and
- (2) The number of failures in the last 100 valid tests was not being reduced until the one-hundred first valid test instead of the one hundredth test interval.

The result of these discrepancies was to determine EDG surveillance testing requirements using a failure number higher than what actually existed. The inspectors expressed a concern with the mistakes in the EDG Start logbook. Although the mistakes were in the conservative direction, confusion with the process of entering EDG Starts could lead to missed EDG surveillances. The licensee indicated that to prevent similar situations from occurring, a procedure is being drafted to formalize specific steps to facilitate the updating and maintenance of the EDG Start logbook.

No violations or deviations were identified within the areas inspected.

8. Maintenance Observations (62703/62700)

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

a. A Emergency Diesel Generator (EDG) Troubleshooting.

On November 6, 1987, the A EDG was declared out of service due to a missed surveillance. The cause of the missed surveillance is discussed in paragraph 7. With the Diesel out of service, the licensee decided to perform monthly and quarterly preventive maintenance (pm) in accordance with O-PMM-022.1 and O-PMM-022.2, respectively. This maintenance includes cleaning the fuel suction strainer and verifying that the fuel priming pressure is at 20 psig or greater. Subsequent to the pm, the operations department attempted to return the A EDG to service by performing O-OSP-023.1, entitled Diesel Generator Operability Test. This test includes priming the fuel oil system and verifying the fuel priming pressure is 25 to 30 psig. The fuel pressure was found to be 21 psig and the operability test was terminated. The vendor (Morrison-Knudsen) recommended fuel priming pressure from 25 to 30 psig. The acceptance criteria was met for the fuel priming pressure in the pm procedure, but the pressure was 4 psig lower than the vendor recommendations. The licensee formed a team of Technical Department engineers to troubleshoot the problem. Numerous possible root causes were analyzed.

The EDG vendor was contacted and specified new acceptable guidelines for fuel priming pressure from 18 psig to 55 psig. The licensee has revised to O-OSP-023.1 which changes the acceptable range for fuel prime pressure to 20 psig to 40 psig. This change will also be made

to operations and maintenance procedures. The A EDG was subsequently tested and returned to service on November 13, 1987.

b. B Emergency Diesel Generator Troubleshooting.

On November 12, 1987, the licensee identified a concern with the lube oil cooler outlet temperature. O-OP-023, entitled Emergency Diesel Generator, requires this temperature to be greater than 115 degrees F. Temperature indicator (TI) 442B was reading 102 degrees F. The system engineer evaluated this condition and determined that the TI-442B was faulty. This determination was based on proper immersion heater operation and the fact that no low temperature alarm or loss of ready to start light was noted. On November 14, 1987, I&C replaced TI-442B and the temperature was still reading low at 105 degrees F. The following shift, the STA took pyrometer reading on the B EDG lube oil piping. These readings apparently supported the fact that the temperature was greater than 115 degrees F. On November 15, 1987, the B EDG was taken OOS for monthly and quarterly preventive maintenance and this also gave the system engineer an opportunity to investigate the lube oil temperature further. The keep warm system was observed for any deficiencies and the following possible root causes were evaluated:

- Immersion heater malfunction
- Faulty instrumentation
- Inadequate oil flow

The troubleshooting for the root causes verified that the oil flow to the lube oil cooler was reduced. The inspectors questioned the system engineer concerning the minimum allowable temperature for the lube oil.

The vendor documentation states that the lube oil temperature switch can be set as low as 85 degrees F without adversely effecting EDG operability. The lube oil temperature switch is set at 100 degrees F. The lube oil temperature did not drop below this setpoint in this instance, therefore, the ready to start light remained illuminated, and there was no operability concern with the B EDG. A similar occurrence concerning low lube oil temperature is discussed in NRC inspection report 250, 251/86-41.

The inspector's previous concern in that matter was that the Plant Supervisor Nuclear (PSN) did not seek the assistance of other plant disciplines when evaluating equipment operability. As a result, in part, of this concern, operations memo PTN-OPS-86-210 was written to all on-shift licensed senior reactor operators directing them to contact the Operations Supervisor, Operations Superintendent and Licensing prior to making a decision on equipment operability. In this most recent occurrence, although the lube oil temperature did not reach the low setpoint of 100 degrees F, the system engineer was notified of the concern. This conservative approach indicates that



the guidelines outlined in the operations memo are being followed in an adequate manner.

c. Major Repairs Since Hurricane Floyd

On October 12, 1987, Unit 4 came off the line due to Hurricane Floyd in accordance with Emergency Procedure (EP) 20106, entitled Natural Emergencies.

The licensee has made numerous equipment repairs during this unplanned outage, including the processing of 1400 work orders. The following is a list of the major repairs performed during this outage:

Repacking of power operated relief valves (PORV) block valves 4-535 and 536

Repair of leak-by on PORV - 456

Retorque Conoseals

Repair purge valve actuator

Replaced Intake Cooling Water (ICW) check valves

Repair of 3A High Head Safety Injection (HHSI) pump flange leak

Repair of valve 4-310A, normal charging to RCS

Reduction of scaffolding from 100 to 12 in the Power Block

Nuclear Instrumentation System Grounding

General plant cleanup

Plant paving

Repair of Seal table leaks

ICW pump motor replacement/overhauls

The plant management indicated that a good number of these maintenance activities were performed as a direct result of FPL's initiative to enhance the physical condition of the plant. The emphasis is no longer being placed on meeting startup schedules at the expense of needed maintenance. The change in philosophy is noticeable. The October outage was extended to accommodate needed maintenance repairs. The inspectors, however, expressed a concern to the licensee with regard to the apparent high number of maintenance items which needed to be re-worked by the Mechanical Maintenance Department.

Examples include:

- PORV block valve 536 had its gland follower installed upside down;
- PORV 456 had a chainfall link break when maintenance personnel tried to lift actuator;
- 3A HHSI pump developed a seal leak after repair of a flange leak; and
- seal table fittings leaked due to stripped threads after tightening.

The Maintenance Superintendent indicated that measures are being implemented to prevent maintenance re-work items. These measures include, but are not limited to, increased first line supervision at the work site and augmented QC coverage.

The resident inspectors will continue to closely monitor the performance of the maintenance activities during the routine monthly maintenance observations. Special emphasis will be placed on evaluating maintenance tasks which were not corrected on the first attempt.

No violations or deviations were identified.

9. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs, conducted discussions with control room operators, observed shift turnovers and confirmed operability of instrumentation. The inspectors verified the operability of selected emergency systems, verified that maintenance work orders had been submitted as required and that 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.

Plant housekeeping/cleanliness conditions and implementation of radiological controls were 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.

Both Units 3 and 4 remain in cold shutdown (Mode 5) with scheduled startup in early December 1987. The inspectors walked down accessible portions of the following safety related systems to verify operability and proper valve/switch alignment:

A and B Emergency Diesel Generators

Control Room Vertical Panels and Safeguards Racks
4160 Volt Buses and 480 Volt Load and Motor Control Centers
Component Cooling Water System (CCW)
Residual Heat Removal System (RHR)
Boric Acid Storage Tanks
Intake Cooling Water Structure

a. RHR Pump Mini - Recirculation Line

During a Select Safety System design basis reconstitution review of the RHR system a concern was identified with the existing design configuration of the minimum recirculation (mini-recirc) line. This original design consists of a common mini-recirc line for both RHR pumps. Under low flow conditions (i.e. RCS pressure greater than pump shutoff head) the potential exists for the pump operating at a higher discharge pressure to deadhead the other pump. This condition could lead to pump failure due to cavitation and subsequent overheating after 10.4 minutes of operation. Considering this potential failure and applying the single failure criteria for the other operating RHR train, a complete loss of RHR system capability could occur. The RHR system is used to remove decay heat during refueling operations and also during long term post accident conditions. One RHR pump is also required to deliver borated water to the cold legs of the reactor coolant system following a large break loss of coolant accident (LOCA).

A complete loss of the RHR system would severely compromise the plants ability to remove decay heat and to mitigate the consequences of accidents analyzed in the Final Safety Analysis Report (FSAR). While the potential for RHR pump damage has existed, no RHR pump damage has occurred. The licensee has implemented interim corrective actions in order to allow plant operation without jeopardizing the integrity of the RHR system. These interim measures included administrative controls and procedure changes.

Plant Change/Modification (PC/M) Nos. 87-353 and 87-354 were subsequently issued for the Unit 3 and 4 RHR pumps, respectively. This design change installs individual dedicated recirc lines for each pump. Each line is designed to provide 300-330 gallons per minute (gpm), which is the same as the current design flow. Although the pump manufacturer recommends 500 gpm flow, this is for long term continuous operation.

The new design flow for the individual mini-recirc lines will allow the pumps to operate at shutoff head for 30 minutes. This is the time it takes for the recirculated water from the containment sump to heat up to vapor pressure. The current Turkey Point Emergency Operating Procedures (EOP) direct the operators to secure the pumps before 30 minutes has elapsed when in this operating mode (i.e. spurious SI, small-break LOCA, etc). At the present time, the licensee has completed the installation and testing required for the



design change on the Unit 4 RHR pumps. The Unit 3 modifications will be completed prior to unit startup. This design change coupled with the existing EOP's provides adequate assurance that the RHR pumps will not sustain damage while operating at the pumps shutoff head for up to 30 minutes. As a result of this licensee identified condition at Turkey Point, the NRC issued Information Notice No. 87-59, entitled Potential RHR Pump Loss, dated November 17, 1987. The NRC staff believes that this issue may be relevant to all water-cooled reactor designs, regardless of the pump application or the nuclear steam supply system (NSSS) manufacturer. This potentially generic issue is under consideration by the NRC staff.

- b. Reactor Vessel Head Voiding at Cold Shutdown on October 21, 1987, with Unit 4 in Mode 5.

Channels A and B of the Unit 4 Qualified Safety Parameter Display System (QSPDS) indicated a void in the reactor vessel head. The void was located at the 1st thermocouple for the Reactor Vessel Level Instrumentation System (RVLIS) which is located approximately 31" below the top of the reactor vessel head. The reactor coolant system (RCS) was filled and vented until the void cleared on the QSPDS and the licensee began an investigation into this matter and initially attributed the void to hydrogen in the RCS.

On October 25, 1987, with Unit 4 still in Mode 5, a void indicated again on both channels of the Unit 4 QSPDS. The RCS was filled and vented to clear the void. The licensee formed an Event Response Team (ERT) to investigate and analyze the reactor vessel head voiding. Unit 4 experienced voids again on October 28, November 1st and 2nd. The suspected cause of the void is nitrogen intrusion into the RCS from the 4C cold leg accumulator and from the volume control tank (VCT). In response to these events, the NRC dispatched inspectors from the Region II, Atlanta office, on November 3, 1987 to followup on the licensee's investigation. The results of the NRC's inspection can be found in inspection report 50-250, 251/87-46.

- c. High Chloride Concentrations in Unit 3 and 4 CCW System

On November 10, 1987, with Units 3 and 4 in Mode 5, the Unit 4 CCW system chloride (Cl) concentration was identified out of specification (spec) high (4.5 ppm) during the weekly chemistry sampling. The sampling frequency was increased in order to trend the Cl level in the CCW system. On November 11, 1987, the sample analysis indicated that the Cl intrusion had stopped. The licensee formed an ERT which would provide immediate support to investigate the incident. One particular concern was the recent change in Cl analysis technique. The weekly Unit 4 CCW sample on November 13, 1987, the Specific Ion Electrode (SIE) method indicated less than 0.1 ppm Cl. During the following weekly analysis, using the mercuric nitrate titration method, the Unit 4 CCW system contained 4.5 ppm Cl. The licensee's initial conclusion is that high chromate corrosion



inhibitor concentrations interferes with the SIE analysis. This indicates that chlorides could have been previously undetected. On November 13, 1987, the Unit 3 CCW system chloride concentrations were identified out-of-spec high (0.5 ppm). The ERT initiated immediate actions to remove the Unit 4 chlorides which involved a closed loop pump-assisted demineralization. The licensee performed a safety evaluation in accordance with 10 CFR 50.59, (JPE-M-87-130, Revision 0). This evaluation was performed so the licensee could install the temporary cleanup loop on the CCW system to remove the chlorides.

The closed loop demineralizer was utilized from November 15-19, 1987, which removed most of the chlorides. The licensee's initial conclusions concerning the source of the chloride intrusion into the CCW system are as follows:

The chlorides in the Units 3 and 4-CCW systems were most likely caused by improper sequencing of CCW heat exchanger isolation valves with tube leaks existing in the heat exchangers. The Intake Cooling Water (ICW) system flows raw water through the CCW tubes, which cools the CCW fluid running through the shell side of the heat exchanger. The CCW system normally operates at a higher pressure than the ICW system. If there are tube leaks in the heat exchanger, then chromated water from the CCW system will leak into the ICW system. Apparently, while isolating a CCW heat exchanger, the CCW was isolated before the ICW system. With tube leaks present, this resulted in ICW salt water intrusion to the shell side of the heat exchanger, thus chlorides entered the CCW system. The licensee is in the process of investigating possible procedural and administrative enhancements which would prevent the situation when the CCW heat exchanger shell pressure is allowed to drop below tube pressure.

The licensee has not yet issued a final report on this issue. The resident inspectors will investigate the final results of the investigation as soon as they are available.

10. Engineered Safety Features Walkdown (71710)

The inspectors performed an inspection to verify the operability of the Unit 4 Safety Injection (SI) and Residual Heat Removal (RHR) systems by performing a walkdown of the equipment located primarily inside the Unit 4 containment building. The following criterions were used, as appropriate, during this inspection:

- a. Systems lineup procedures match plant drawings and the as-built configuration.
- b. Housekeeping was adequate and appropriate levels of cleanliness are being maintained.



- c. Valves in the system are correctly installed and do not exhibit signs of gross packing leakage, bent stems, missing handwheels or improper labeling.
- d. Hangers and supports are made up properly and aligned correctly.
- e. Valves in the flow paths are in correct position as required by the applicable procedures with power available and valves were locked/lock wired as required.
- f. Local and remote position indication was compared and remote instrumentation was functional.
- g. Major system components are properly labeled.

The inspectors reviewed procedure 4-OSP-050.4 entitled RHR System Flowpath Verification While in RHR Cooldown Operation and operating diagram 5610-T-E-4510, Sheet 2, revision 54, on Safety Injection and Residual Heat Removal Systems Inside Containment.

Conditions that were identified by the inspectors and brought to the attention of the licensee included:

- (1) Purge exhaust duct supports were not secured at the bottom and the duct was connected to the 4A main steam line by strapping located about 30 feet above the 58 foot elevation. The licensee investigation into the concern prompted a non-conformance report (NCR) number 87-0251 to be issued. This support could not be found in design documents, therefore, engineering performed an evaluation addressing the operability concerns for the main steam line and the purge exhaust duct. Interim disposition of this NCR indicates that no potential operability problem exists and the unit may operate in any mode. Final disposition of this Plant NCR will be tracked as backfit NCR C-0931-87, which may include removal of the main steam line-purge exhaust duct strapping. The resident inspectors will followup on the final disposition of this NCR during future inspections. The licensee has also secured the purge exhaust duct support which extended through the grating at the 58 foot elevation.
- (2) Support for valve CV-850E was missing grout. The licensee initiated backfit NCR No. C-925-87 as a result of this concern. Support number H-37 for the 3/4" safety injection test line for the 4C cold leg accumulator. An engineering evaluation was made which determined that the support was functional without the grout. However, corrective actions to repair the grout will be completed during the current Unit 4 outage.
- (3) Cold leg Resistance Temperature Devices (RTD) wires were wrapped around valve 4-564A handwheel. This concern is under licensee evaluation and will be followed up by the resident inspectors.

- (4) Paper inside of ventilation supply screen located in the A Reactor Coolant Pump (RCP) cubicle. The licensee has removed the debris found inside the screen which could inhibit the air flow in the RCP cubicle.
- (5) Terminal boxes (TB) 4077 and TB4533 were damaged. The licensee has taken action to correct these deficiencies.
- (6) Two conduit covers were missing in the proximity of valve 4-310A. This concern has been addressed by the licensee and corrective action is complete.
- (7) The inspectors noted housekeeping concerns particularly with boric acid on the floor under valve 4-310A and with debris in the South Recirculation Sump. The licensee indicated that a general containment inspection will be performed prior to Unit 4 startup and these deficiencies will be corrected prior to operation.

No violations or deviations were identified.

11. Summary of International Atomic Energy Agency (IAEA) Activities

In fulfillment of the Safeguards Agreement between the United States and the IAEA, the IAEA selected, on July 19, 1985, Turkey Point Unit 4 for participation in its international safeguards inspection program. A major portion of this program requires the continuous surveillance of the fuel inventory through camera monitoring and seal wire placement. The surveillance program ensures that the fuel inventory does not change between physical audits.

The US/IAEA Safeguards Agreement has been in force since July 31, 1980. The commitments by the U.S. in this treaty, which carries the force of law, are defined in the Code of Federal Regulations, the treaty itself, and the site-specific Facility Attachments. On April 10, 1987, the Commission issued Amendment 117 to the Facility Operating License No. DPR-41 for the Turkey Point Plant, Unit 4. The amendment adds License Condition 3.J regarding implementation of the IAEA Safeguards program for Unit 4.

The NRC inspectors verified, during routine tours of the Unit 4 Spent Fuel Pool (SFP) and the accessible portions of the containment building, that seal wires were in place and intact and that surveillance cameras were operable. Seal wires are placed by IAEA inspectors on the containment equipment access hatch and the reactor vessel head seismic restraints, if accessible. Only the seal wires on the equipment hatch can be observed from outside the containment building. The containment building is not normally entered during power operation. Two surveillance cameras are installed in the Unit 4 SFP. The SFP area is always accessible through locked and alarmed doors.

The IAEA arrived onsite November 22, 1987 to perform a fuel inventory in the Unit 4 SFP. The inspection schedule involved moving fuel in accordance with 4-OP-040.3, entitled Refueling Preshuffle in the Spent Fuel Pit. The inspection was completed on November 25, 1987, with satisfactory results. The IAEA returned on November 27, 1987 to replace the seal for the equipment hatch which was removed to install lead shielding for repair of 4-LCV-460.

12. 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. The licensee plans to issue LERs on each event within 30 days following the date of occurrence.

On October 27, 1987, the licensee made a significant event notification as a result of a potential of degraded recirculation flow for the Residual Heat Removal (RHR) pumps due to a common miniflow recirculation line. This event is discussed further in paragraph 9.

On November 11, 1987, with both Unit 3 and 4 in Mode 5, the licensee made a significant event notification as a result of a security guard leaving a vital area post unattended. The control room door was declared out of service and a security guard was posted for access control. The Assistant Plant Supervisor Nuclear (APSN) was notified that the security guard left his post, and a trainee, unattended for 2-3 minutes to get a drink of water. During the 2-3 minute interval, an individual who has authorized access to the control room carded in and entered. Upon identification of the vital area post being unattended, another security guard was posted at the control room door and security personnel surveyed the control room to verify personnel and activities were authorized. No discrepancies were identified. The security guard in question was terminated. The security department plans to give additional training to security personnel with emphasis on plant security requirements and proper watch relief.

On November 21, 1987, with Unit 4 in Mode 5, the licensee made a significant event notification as a result of automatic starting of the 4B Component Cooling Water (CCW) pump due to low header pressure. The operators were in the process of valving in the 4C CCW pump to temporarily lift a clearance following mechanical seal repair. As the isolation valve was opened an insurge into the empty piping caused a 7% drop in surge tank level and pressure to drop below the 75 psig setpoint. The 4B CCW pump started as designed to maintain CCW header pressure greater than 75 psig.

13. Allegation Followup

On August 20, 1987, an anonymous telephone call was received at the Turkey Point NRC office alleging that six persons had received unauthorized help during radiation protection training examinations in February 1987. The allegor identified the following concerns:

- a. General Employee Training (GET) instructors helped some of the six workers while they were taking tests; and
- b. Some of the workers helped each other during tests.

Six names were provided to the NRC inspector. The allegor indicated that he did not have personal knowledge that examination cheating had occurred. He stated that he had heard rumors of cheating from a reliable source whom he refused to identify. These concerns were assigned allegation followup number RII-87-A-0100.

a. Background

In October 1986 a Training Department instructor improperly graded a radiation protection qualification test for a non-licensed worker, allowing the test score to be recorded as a passing score when, in reality, the worker had failed the test. Due to the serious nature of this occurrence, an immediate independent review of the Radiation Controlled Area Training (RCAT) Program was initiated by the QA Department at the Plant Manager's request. The RCAT consists of three sub-tests:

- (1) General employee Training (GET) - plant orientation - 50 multiple choice questions
- (2) INPO - general health physics practices - 50 multiple choice questions
- (3) Site Specific Training (SST) - PTP health physics practices - 14 multiple choice questions and 6 short answer questions

The passing score for each section is 80%.

Subsequently, a total of 2815 RCAT tests were regraded at the Turkey Point Plant and 294 individuals were denied unescorted access to the RCA because one or more sub-test scores were downgraded from a passing score to a failing score.

FPL's Security personnel also have been conducting an independent investigation of grading practices within the RCAT program. The results of the investigation revealed the following:



- a. The instructor involved in the October 15, 1986 event stated that he had passed individuals who had actually failed the test on more than one occasion;
- b. Instructors would routinely screen answer sheets to detect potential failures and return the test to the testee to allow the individual to rethink certain answers;
- c. No evidence presently exists that indicates these practices exist outside the RCAT program; and
- d. There is no indication the PTP plant management expected or instructed the grading improprieties, or were knowledgeable of the practices.

The results of the QA test regrades, statistical analysis, investigation, root cause and proposed corrective actions are summarized in FPL letter PTN-TRNG-86-617.

The RCAT test results were evaluated by NRC inspectors. It was determined that improper instructor assistance had been given on at least one examination. Additionally, it was determined that grading inaccuracies were excessive, possibly to programmatic and mechanical grading deficiencies. Unresolved item 250-251/86-41-02 was created pending the evaluation deficiencies reviews and the implementation of corrective actions for improving the RCAT Program.

In February 1987, in NRC Inspection Report 250, 251/87-09, the GET Program (also referred to as the RCAT Program) was reviewed to evaluate the status of corrective actions. It was concluded that the programmatic improvements should preclude future difficulties in the control of the testing program.

b. Discussion

Subsequent to the receipt of the allegation the training records for the six identified workers were reviewed by NRC inspectors. The following facts were identified:

- (1) Only two of the six workers were tested in February 1987.
- (2) Both workers tested in February 1987 failed the INPO and SST sub-tests. Both workers subsequently received remedial instruction and were retested in March 1987. One of the two workers passed the retest. The other worker failed the retest and did not again attempt to qualify for access into the RCA.
- (3) Three of the six workers were no longer employed at the site. Each of the three had their employment terminated subsequent to repetitive failures of one or more RCAT sub-tests.

- (4) Three of the six workers were presently badged at the site and provided with access to the RCA. All three had previously failed at least one RCAT sub-test and received remedial instruction prior to passing the sub-test. Each retest was graded independently by two different instructors. The retests were selected such that no worker received the same version of a test he had previously taken.
- (5) Only three of the six workers shared a common instruction class and test date. Two of the three workers failed RCAT sub-tests subsequent to completing the instruction class.
- (6) Examination of each workers test answer sheets revealed no unusual circumstances such as a high percentage of changed answers, stray marks, grading errors or inaccurate grade computations. Many of the tests had been graded twice, once by the principle instructor and again by an instructor serving in a quality control capacity.
- (7) The percentage of instructor grading errors was reviewed for all RCAT examinations taken between February 1987 and September 1987 inclusive. The error rate was acceptably low, fluctuating from a high of 0.07 percent in March to a low of 0.00 percent in both August and September.

c. Conclusion

The allegations were not substantiated for the following reasons:

- (1) It appears unlikely that the workers received help from instructors in passing the tests because they all failed at least one sub-test. Half of the workers failed to pass the test even after taking different versions. These workers were denied access to the RCA and their employment was terminated.
- (2) It appears unlikely that the workers helped each other during the tests. Only three of the workers were in the same instruction class. This class met in March not February, as alleged. Two of the three workers failed the sub-tests. One of the workers had a test version different from the other two.

14. Personnel Changes

Florida Power and Light recently made several management changes at the Turkey Point facility. Mr. L. W. Pearce was selected to fill the Operations Superintendent position. Mr. Pearce was formerly assigned as Operations Supervisor at their St. Lucie facility. In addition, Mr. J. W. Kappes replaced Mr. F. H. Southworth as Maintenance Superintendent.

There have been several management meetings between FP&L and the NRC during the period of this inspection. The first one on November 23, 1987, centered around a visit from Commissioner Rogers. The Commissioner conducted "one-on-one" meetings with upper plant management throughout the morning. The afternoon agenda consisted in a presentation by FP&L concerning current plant status, the addition of new Emergency Diesel Generators, and several status reports from various QIP teams. The visit concluded with a tour of the facility.

The second meeting conducted on November 24, 1987, was attended by Senior Management from FP&L, NRC (both Region II and NRR), and FP&L contract personnel. The items discussed included: NRC Order EA 87-85 concerning the status of the Independent Appraisal and the Management on Shift Program; the status and schedule for the addition of the new Emergency Diesel Generators; the status and intentions of the Integrated Schedule; commitments and schedules in the security area; and an NRC exit on NRC report 87-44. In general the meetings were considered to be beneficial for all parties concerned.