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

Report Nos.: 50-250/86-18 and 50-251/86-18

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: March 23-28 and April 7-11, 1986

Team Leader: C. Julian for F. R. McCoy 7/16/86 Date Signed

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Operational Programs Section
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SUMMARY

Scope: This routine, announced inspection was conducted on site in the areas of the licensee's Phase 1 and Phase 2 selected safety system review, instrument calibration, and selected surveillances.

Results: One violation was identified for four examples of failure to either establish or implement procedures in areas of limitorque maintenance (see paragraph 6) normal valve lineups for Intake Cooling Water (ICW) and Component Cooling Water (CCW) systems (see paragraph 7), and maintenance of the Equipment Out of Service (EOOS) log (see paragraph 7). Another violation was identified for failure to promptly identify and correct deficiencies with respect to control of Component Cooling Water (CCW) flow to the Safety Injection (SI) pumps (see paragraph 6). This item is being considered for escalated enforcement action, therefore, no Notice of Violation for this item is being issued at this time.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*C. M. Wethy, Site Vice President
*C. J. Baker, Plant Manager
*D. D. Grandage, Operations Superintendent
*J. A. Labarraque, Technical Department Supervisor
*J. W. Kappes, Maintenance Superintendent
*R. A. Longtemps, Assistant Superintendent Mechanical Maintenance
*T. A. Finn, Operations Supervisor
*F. H. Southworth, Senior Technical Advisor
*J. Arias, Jr., Regulatory Compliance Supervisor
*J. M. Donis, Site Engineering Supervisor
*D. J. Tomasewski, I&C Supervisor
*L. W. Bladow, Quality Assurance Superintendent
*R. H. Reinhardt, Quality Control Supervisor
*R. J. Earl, Quality Control Mechanical Supervisor
*W. C. Miller, Training Superintendent
*E. Preast, Site Engineering Manager
*D. Haas, Safety Engineering Group Chairman

Other licensee employees contacted included engineers, technicians, operators, mechanics, and office personnel.

NRC Resident Inspectors

T. Peebles
*D. Brewer

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 11, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee identified as proprietary, some of the material provided to or reviewed by the inspectors during this inspection, however, none of that material is contained in this report.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. Five unresolved items were identified during this inspection. These unresolved items involved: the lack of documentation of formal evaluation for resolution of Phase I findings considered by the licensee to be safety concerns (see paragraph 6); the lack of temperature indication on the Refueling Water Storage Tank (RWST) (see paragraph 6); failure to update and maintain instrument index sheets (see paragraph 7); failure to inspect and control the proper use of scaffolding (see paragraph 7); and failure to establish an off-normal procedure for loss of DC power (see paragraph 11).

5. Evaluation of the Phase I and Phase II Selective Systems Review Conducted by the Licensee on Turkey Point Units 3 and 4

As a result of findings from NRC and the licensee's evaluations of the Auxiliary Feedwater System, the licensee committed to review other Turkey Point Units 3 and 4 safety systems in a letter (L-85-439) to the NRC. The licensee's review was to be conducted in two parts designated Phase I and Phase II. Phase I review was to be a limited-scope evaluation of the following Turkey Point safety systems:

Safety Injection (SI)
Residual Heat Removal (RHR)
Component Cooling Water (CCW)
Intake Cooling Water (ICW)
Containment Spray (CS)
Emergency AC Power
Emergency Containment Coolers (ECC)
Emergency Filters
Containment Isolation
Vital DC Power
Main Steam Isolation

The licensee's Safety Engineering Group (SEG) coordinated the Phase I review utilizing personnel experienced in the selected systems from the plant operations, maintenance, technical, engineering, quality control, and quality assurance departments. A "brainstorming" meeting was conducted on each of the selected systems resulting in the identification of problems and concerns with the system. The Phase I evaluation included a review of the following:

- Design basis in FSAR and design documents
- System descriptions used for training purposes
- Current system parameters and procedures against available design bases and Turkey Point Technical Specifications
- System valve alignment, both normal and faulted

- Appropriate main and control power supplies
- Procedures for steps that may impede functional performance
- Partial system walkdowns to check selected valve alignments and material condition
- Uncompleted Plant Work Orders (PWOs)
- Standardized Technical Specifications

In a letter L-86-112 dated March 1986, the licensee communicated to the NRC the completion of the SEG Phase I review and the implementation of the Phase II review. The findings from the Phase I review were evaluated by the SEG and the selected systems were arranged as to priority for the Phase II review with priority being given to the SI, CCW, emergency AC power, instrument air, and ECC systems.

The rest of the systems are to be reviewed after reviews of the above systems are completed. Instrument Air system was added due to its association with the operation of the safety systems during normal operations.

The Phase II review is a more detailed review which builds upon the work completed in the Phase I portion of the assessment. The Phase II review includes the reconstruction of system design basis, complete system walkdown inspections including technical and engineering (T&E) drawings verification, a comprehensive review of the inspections by the SEG, and a review of configuration management document control. At the time of this inspection by NRC personnel, all Phase I reviews were completed, Phase II system walkdowns of ICW and CCW were completed, and other portions of Phase II system reviews were in progress.

The main thrust of this inspection was to determine the extent and successful completion of the Phase I review and gain a better understanding of the Phase II review process. These aims were accomplished through a review of the procedures set forth for the Phase I and Phase II program; review of Phase I checksheets; system walkdowns of ICW, CCW, SI, RHR, and CS systems; and interviews with plant engineers and operators. The inspection team concluded that the actions taken by the licensee in the support of the Phase I review have accomplished what the licensee committed to accomplish during Phase I review, even though some weaknesses in the control and documentation of findings was evident (see paragraph 7). Additionally, the inspection team concluded that the Phase II portion of the overall assessment was in fact underway though still in early stages.

The inspection team concluded that the licensee's review process technique appeared to be adequate for this type of review. The Phase I review appeared to have been an adequate method of consolidating the various individual problems and concerns associated with the selected safety systems from the many sources of documentation used by the licensee into one master

punchlist for each safety system. Further, the inclusion of interviews and the "brainstorming" sessions surfaced other concerns about the operability and maintenance of the systems which were then evaluated and included on the master punchlist. Each concern on the master punchlist was evaluated and assigned to a classification from one to six depending on the safety or operability significance of the concern:

Classification 1 - Safety concern
Classification 2 - Outage work
Classification 3 - Licensing commitment
Classification 4 - Non-outage work
Classification 5 - Requiring engineering evaluation
Classification 6 - Plant enhancement

All items were then reviewed by the SEG and the classification was verified or changed to a more appropriate one. This process insured that items in classifications 1 and 5 were addressed immediately.

6. Review of the Phase I and Phase II Checklists

The inspection team reviewed approximately 85% of all the Phase I open item review sheets and approximately 65% of those Phase II open item review sheets that were completed in a preliminary draft format. The review consisted of inspectors reading each individual review sheet and determining if an adequate licensee evaluation had been conducted on the problem or concern and, if in the inspector's view, the concern had been given the proper classification.

Due to the preliminary nature of the review sheets, many simply referred to concerns by an identification number from other source documents. This required the inspectors to research several of the review sheets back to the original listing source or to the engineer who originated the review sheet. Using the engineers to explain unclear review sheets allowed the inspectors to test the depth of knowledge of the cognizant engineers on the systems. The engineers knowledge of the concerns and problems addressed to them for verification, demonstrated to the inspectors that they were familiar with the systems and knowledgeable of the concerns. It was also evident that licensee management was involved with the reviews and that the SEG group was performing their intended function pertaining to the review.

In the area of the SEG review of the Phase I review sheets, there was no indication that category 1 items were formally evaluated. Additionally, there was no documentation that the current status of these items was satisfactory for unit operation. The inspectors confirmed through interviews that the review process was indeed being completed, however, the inspectors consider that this evaluation should be formal with documented results and with bases for those results. The results of the category 1 formal review and its possible impact on significant events such as startup, should be transmitted to plant management prior to that event. This formal review process should be proceduralized. Resolution of this item is

addressed as an Unresolved Item (250/86-18-01, 251/86-18-01) pending formal confirmation by the licensee that no category 1 items impact Unit 3 operation.

On each of the Phase I review sheets, there is space provided for an engineering evaluation of the identified problem or concern. This engineering evaluation process is also to include a determination as to whether a safety evaluation is required for the item. On all review sheets, the engineering evaluation was completed and the requirement for a safety evaluation was checked either yes or no. Many of the review sheets were obviously not in need of a safety evaluation, however, several were not so obvious. The simple checking of a yes or no box was determined to be inadequate with respect to supporting the need or lack of need of a safety evaluation. Inspectors, through interviews, determined that it is the licensee's intention to ensure that solid supporting data for requiring or not requiring safety evaluations is included on the review sheets prior to the final draft and the signing of the sheet by the system team leader. Inclusion of this supporting data into the final review sheets is identified as an inspector followup item (250/86-18-02, 251/86-18-02).

The licensee's safety system review open item review sheet, CCW-0028, indicated that Unit 3 CCW was being used to cool Unit 4 SI pumps. The description of the item referenced Plant Change/Modification (PC/M) 83-08 as formal documentation of the problem, and was categorized as a category 6 enhancement item. Whenever systems are cross-tied between units, particularly safety systems, and the configuration is contrary to the original design, substantial documentation is required to justify and support the action. More specifically, there should be procedural controls with managerial approval and safety evaluations to ensure that these safety systems will always be able to perform their intended functions under the assumed accident analysis criteria. Because CCW-0028 was identified and classified as an enhancement item, the inspector considered it important to ensure that all of the above actions had been taken and carried out to a sufficient extent to prevent any compromise of component cooling to the SI pumps. The four SI pumps are common to both units and are designed to be cooled by CCW from either unit. The pumps are normally aligned to receive cooling from Unit 3 CCW. Unit 3 has a CCW system configuration that agrees with the design configuration. Beginning with the suction of the CCW pumps, water flows through the pumps, individual heat exchangers, and into either train 'A' or train 'B' supply to CCW suction. This satisfies redundancy for all cooling loads throughout the unit. CCW train 'A' goes to the two 'A' SI pumps and the CCW train 'B' goes to the two 'B' SI pumps after which each train returns to the suction lines for each CCW pump. Unit 4 CCW is consistent with design only up to the point where CCW interfaces with the SI pumps. At this point, train 'B' goes to what should be the discharge of the seal and thrust bearing coolers of the 'B' SI pumps resulting in reverse flow through the heat exchangers. Train 'B' then discharges into the suction of train 'A' CCW pump. Consequently, the 'B' train lines to the SI pumps are reverse connected and cross-train connected. Train 'A' flows through the seal water and thrust bearing coolers in the proper direction but discharges into the suction of train 'B' CCW pump. Consequently, train 'A' lines to the SI pumps are cross-train connected.

The inspectors considered that procedural controls should be required to ensure there was a continuous supply of cooling water to the SI pumps, especially when Unit 3 was shutdown and Unit 4 was operating. These controls are necessary because Technical Specifications do not require Unit 3 CCW to be operable under these conditions. Upon investigation, the inspector found no procedural controls. Additionally, the inspectors found that there had been no 10 CFR 50.59 safety evaluation performed to justify operability of Unit 4 with the known CCW deviations. A review of the CCW procedure OP-030 revealed two procedure changes, one on June 10, 1982, cautioning against using Unit 4 CCW train 'B' for SI cooling and one on October 12, 1984, that precluded altogether the use of Unit 4 CCW for SI pump cooling. There are four instances where the licensee had formally acknowledged the existence of the configuration and lineup, yet neglected to perform an adequate safety evaluation or provide for adequate control of this situation. The procedural changes referenced above were two cases; the other two instances were issuance of PC/M 83-08 dated January 1983, and the Phase I open item review sheet CCW-0028 dated March 1986. Since the configuration of Units 3 and 4 CCW systems has the potential for operability concerns, the inspectors requested that a review be conducted to determine periods of time when Unit 3 CCW was technically inoperable while Unit 4 was operating. This plant configuration would constitute inoperability of all four SI pumps. From August 3, 1981 through September 17, 1981, the 'B' train of Unit 3 CCW was determined inoperable, and from September 21, 1981 through October 22, 1981, the 'A' train was determined to be inoperable. This was indicated by equipment clearance orders 8-3A, 8-47, 8-48, 9-51, 9-52, and 9-71. Technical Specification 3.4.1.b states that during power operation one of four SI pumps may be out of service for 30 days. A second SI pump may be out of service, provided the pump is restored to operable status within 24 hours. If the system is not restored such that all four SI pumps are operable within the time specified, the reactor shall be placed in the hot shutdown condition. During the above periods, all four SI pumps were inoperable due to only one train of CCW being available. The licensee exceeded both the Action Statement and the Limiting Condition for Operation for Unit 4 SI pump cooling. A Westinghouse safety evaluation determined that reverse flow through the seal and thrust bearing coolers was not a serious problem. However, the evaluation stated that thrust bearing cooling was a requirement. The licensee stated orally that with no cooling flow, it was considered that the pump thrust bearings would seize up in under two minutes. The inspectors consider that the licensee failed four times to promptly identify and correct a condition adverse to quality (10 CFR 50, Appendix B, Criterion XVI). This item is a violation. (250/86-18-03, 251/86-18-03).

A review of one of the Phase I review sheets noted that the Refueling Water Storage Tank (RWST) had no installed temperature indication. The review sheets further stated that if the tank temperature needed to be monitored, it would be accomplished through the use of portable instrumentation. Because the RWST is considered a piece of safety equipment and that reference was made to the lack of temperature indication, the inspector requested the design bases for tank temperature and whether these limits had

ever been exceeded. The licensee indicated a lower limit of 39 degrees had been established but had no bases for that temperature. Further, no upper limit was identified and no indication of tracking the tank temperature was produced. The licensee assured the inspector that an upper limit did exist and that they would produce it and the bases for both limits as well as determine if past operation had been inside or outside the envelope of the safety analysis. This item is identified as an Unresolved Item (250/86-18-04, 251/86-18-04) pending determination of plant operation within safety analysis parameters for RWST temperature.

Several review sheets indicated deficiencies with system instrumentation indicating a lack of maintenance and concern about process instrumentation. These review sheets prompted the inspectors to review the status of the calibration program at Turkey Point. This issue will be discussed at length in paragraph 8 of this report. Several other review sheets indicated problems with various pumps, particularly the SI pumps, in the area of noise and vibration. These review sheets prompted an inspection of the pump surveillance program at Turkey Point facility which will be discussed at length in paragraph 9 of this report.

The inspector reviewed numerous Phase I and Phase II open item review sheets for the RHR system and reviewed several Plant Work Orders (PWOs). Review sheet number RHR-030, stated that RHR isolation valves MOV-750 and -751 have had opening and closing problems. These valves are the RHR Loop C suction stop valves and are used as the suction path for the RHR pumps when RHR system is in operation for cooldown. Additionally, the valves must be able to open remotely to provide an alternate charging path for low pressure coolant injection during a LOCA. The inspector reviewed past PWOs to determine if the valves had an opening and closing problem and also to determine if the motor operators had been set properly. The inspector reviewed a MOVATS report on MOV-3-750 and MOV-3-751, dated May 28, 1985. In the report, MOVAT classified each recommendation with a code. Code 1 strongly recommends that the condition noted be corrected immediately in order to assure continued reliable functioning of the valve. MOVs 3-750/751 each had a code 1 recommendation. The closed-to-open switch signature of both MOVs indicated that adjustments of the open bypass switch were required to prevent an inadvertent torque switch trip during valve unseating. MOVATS then stated, the close-to-open thrust and switch signatures indicate that this stroke is lacking a bypass protection margin, however, since LS-8 (close limit switch) and LS-5 (open bypass switch) are located on the same limit switch rotor, adjusting LS-5 would cause LS-8 to open earlier in the valve stroke. This could result in failure of the disc to properly contact the seat. One corrective alternative is to move the open bypass switch to a spare rotor, if available. The inspector considers that an assessment of this condition should be conducted by plant personnel.

The licensee informed the inspector via telephone call on April 28, 1986, that a letter to the technical support department, dated April 2, 1986, requested Bechtel to develop a work plan to correct the MOV problem. The due date of the plan is July 11, 1986. The completion of the work plan and the implementation of the recommended corrective action will be an inspector followup item. IFI (250, 251/86-18-05).

A review of PWO-5680 and PWO-5679 data sheets for MOV-4-750 and MOV-4-751, respectively, indicated that the motor operator (Limitorque) torque switch settings were set at 2.5 to open and 2.0 to close. The Temporary Operating Procedure (TOP) 166, Safety Related Motor Operated Valve (MOV) Maintenance, required a normal torque switch setting of 2.75 and a maximum setting of 4.5 per Appendix B of the TOP. Step 9.12.3.2 of the procedure states: loosen the close setting screw and adjust the edge of the strike to the normal torque settings. Additionally, Step 9.12.5.2 states; loosen the open setting screw and adjust the edge of the stroke to the normal torque settings. The inspector expressed a concern that the torque switches may not have been set properly and that the valves may fail to open when required. The licensee produced the Limitorque bill of material for these valves which specified that the torque switch set positions be 2.0 for normal and 2.5 for the maximum.

The licensee also approved a new procedure for MOV maintenance, O-CME-102.1, but it had not been issued for use yet. This procedure also included the same torque switch settings as the TOP. The licensee was informed that TOP 166 and O-CME-102.1 were inadequate, in that they specify the incorrect torque switch settings recommended by Limitorque. The inspector considers that the licensee set MOVs-4-750/751 torque switches to technically acceptable values but did not revise the procedures prior to accomplishing these actions and consequently performed work contrary to the procedure. This is considered to be an example of violation of Technical Specification 6.8.1 for failure to properly establish and implement procedures (250/86-18-06, 251/86-18-06).

During review of the Phase I and Phase II item evaluations, the inspector identified numerous items dealing with improper thread engagement on safety related bolted connections. Discussions with the licensee determined that they have been aware of thread engagement problems and as a result instituted walkdowns of mechanical bolting on 13 safety related systems for both Units 3 and 4. The licensee's position on proper thread engagement is that as a minimum, the end of the stud or bolt shall be flush with the outer edge of the nut and that there be no evidence of unengaged threads and that whenever practical the guideline of one thread beyond the nut should be utilized. This acceptance criteria is being incorporated into the applicable Turkey Point procedures. The cases identified during the system walkdowns that do not meet the minimum criteria for thread engagement are reviewed on a case-by-case basis to determine acceptability. One of the items reviewed, CCW-150, stated that the Unit 3 CCW Pump A pump casing did

not have full thread engagement and identified that this condition was an operability issue and should be corrected prior to unit startup. The inspector inspected the thread engagement on the pump casing and verified that proper thread engagement had been achieved pursuant to the licensee's acceptance criteria.

The inspector reviewed numerous select system open item review sheets for the ICW system. It was noted that several of these sheets listed corrosion as a major problem. The inspector reviewed the following documentation on ICW corrosion:

- Corrosion/Erosion Evaluation of Above Ground Piping for the Intake Cooling Water System, dated August 19, 1983
- PC/M: 85-38, Inspection and Repair of ICW Piping - Unit 3
- PC/M: 85-48, Repair of ICW Basket Strainers - Unit 3
- PC/M: 85-49, Repair of ICW Pipe Instrument Vent and Drain Connections - Unit 3
- FPL Unit 3 ICW Inspection Report, dated June 18, 1985
- PC/M: 85-151, ICW Piping and Basket Strainer Inspection, Cleaning and Repair - Unit 4
- Bechtel Power Corporation, Intake Cooling Water System Piping Material Alternatives Study, dated January 17, 1986
- Ultrasonic Pipe Inspection of Unit 3 ICW Intake Valve Pit Cross-Tie Header, dated April 10, 1986
- Numerous NCRs on corrosion

The ICW system piping is constructed of cement lined iron pipe. The corrosion problems have occurred at the flanged joints, instrument taps and places where the cement lining had been damaged, exposing the iron piping. The licensee has performed several inspections and initiated and performed a number of PC/Ms to correct the corrosion problems. Additionally, the plant is conducting a piping material study to determine an acceptable replacement material for the cement lined iron piping. It appears the licensee is taking appropriate action to address the ICW corrosion problems.

7. System Walkdowns

Full system walkdowns were performed on the electrical and mechanical portions of the CCW and ICW systems and a partial mechanical walkdown was performed on the SI, RHR, and CS systems.

The inspectors used approved plant drawings to insure the plant technical diagrams were up-to-date, and normal valve lineup procedures for each of the full mechanical system walkdowns were verified. The inspectors also evaluated the material condition of system components and in some cases, operability checks were done to verify satisfactory performance. During the electrical portions of the inspections, the power supplies to the major pieces of equipment were verified and the load shedding and sequencing functions were reviewed.

The full mechanical walkdown of the CCW system covered the system through its interfaces with the SI pump coolers, RHR heat exchangers (HX), CS and RHR pump seal water HXs, Spent Fuel Pit (SFP) HX, and the Emergency Containment Coolers (ECC).

The full mechanical system walkdown of the ICW system covered the system from the pump suctions through its interfaces with the CCW and Turbine Plant Cooling Water (TPCW) systems. The only portion of the ICW system not inspected was that which was underground.

The inspectors verified, with exceptions, the as-built configuration, alignment of valves, components, valve locks, pumps, and the labeling of valves and instrumentation. Drawings 5610-T-E-4510 and 5610-T-E-4512; procedures OP-068, OP-055, and OP-030; and locked valve list AP-103.5 were used for the CCW system walkdown; drawing 5610-T-E-4065 and procedures OP-019, OP-3400.1, OP-3408.1, OP-3404.2, and AP-0103.19 were used for the ICW system walkdown; drawing 5610-T-E-4510 and procedure OP-055 was used for the partial mechanical walkdown of the SI system; drawing 5610-T-E-4510 and procedure OP-068 were used for the partial mechanical walkdown of the CS system; and drawings 5610-T-E-4065, 4512, 1591, 5610-M-311, 5610-E-25, 26, 27, 28 were used for the electrical walkdowns of the ICW and CCW systems.

Three instances of a failure to follow approved procedures were discovered by inspectors during the mechanical system walkdowns. Two of these instances were valves out of required position.

The first instance involved the normal CCW valve lineup specified in OP-030 which requires valve 711B (Surge Tank Makeup Water Isolation) to be open. On a system walkdown conducted on March 25-26, valve 711B was observed to be closed. The inspector was informed by the licensee that valve 711B was shut to isolate a motor operated fill valve (832) which was leaking by its seat. Although the licensee has a procedure to maintain the level in the CCW surge tank (ONOP-030) which would open valve 711B, no procedural control exists to shut valve 711B placing the CCW system in the abnormal alignment it was found in. The licensee should have a means of implementing temporary system configuration changes such as procedure revisions, specific clearance authorization control of the valve to an individual, or other sorts of administrative control.

The second instance involved valve HT-342. During a walkdown of the normal operational valve lineup as required by OP-3400.1 for the ICW system, valve HT-342 (root valve to a pressure indicator) was found open in disagreement with the procedure. There was no documented reason for the valve being open, however, its poor material condition, not allowing it to be moved by hand, could have caused the operator to assume it was closed. The valve was closed during the walkdown by an operator using a breaker bar. This valve is in a non-vital system that supplies the ICW pumps lineshaft bearings with cooling water, however, the poor valve material condition indicates an inadequate valve maintenance program.

The final instance was a failure to fully reinstate the Unit 4 Equipment Out of Service (EOOS) log after returning to a Cold Shutdown condition from a Refueling Shutdown condition as required by AP-0103.2. During the mechanical walkdown of the ICW system, the inspector noted that 4A CCW HX was tagged out, per tagout 86-2-142, with both HX heads removed. Upon completion of the walkdown, the inspector entered the control room and reviewed the Unit 4 EOOS log noting that the 4A CCW HX was not listed as out of service as per AP-0103.2. The inspector questioned the Unit 4 operator as to the status of the HX and the operator stated incorrectly that the HX was inservice.

These are considered to be additional examples of violation 250/86-18-06, 251/86-18-06 for failure to properly establish and implement procedures pursuant to Technical Specification 6.8.1.

In addition to the above stated items, there were the following minor discrepancies:

- Three CCW valves were mislabeled. They were drain or vent valves.
- A reach rod on the RHR system had no label.
- Two PWOs were found to have different valve numbers than the labels of the valves on which they were hung.
- TS-2108 located on the combined discharge of the CCW HXs was missing its cover plate leaving its electrical leads exposed to atmosphere and possible corrosion from moisture and dirt.

The licensee was notified of these discrepancies and responded satisfactorily.

Other discrepancies were as noted on the licensee's review sheets associated with the licensee's walkdown of CCW and ICW systems.

Check valves on the discharge of the ICW pumps have a documented history of slamming when running pumps are secured, causing excessive vibrations and damage to the pumps and check valves. Turkey Point engineering staff determined that an air cylinder arrangement should be installed to cushion the slamming effect of the check valve. The air cylinders were installed, one on each side of each check valve.

A walkdown of the system revealed that:

- Due to the physical location of the check valve air cylinders, they are exposed to leakage of seawater from the valve stem, causing the cylinders and associated piping to corrode.

- Air fittings and the cylinder piston shafts themselves were found covered with paint which could also affect the proper operation of the check valves.

- Air piping to the check valve air cylinders was unrestrained and free to move on the concrete pumping foundation with parts of a disassembled traveling screen resting on top of it.

These conditions gave the inspectors concern that the air system to these valves may not function properly and additionally that the system could not be relied on in an accident condition.

In order to alleviate concerns related to the check valves, the licensee conducted an operational test of the ICW pumps and the check valves with and without air pressure. During the test, it was apparent that the air cylinders force the check valves partially closed during pump operation, and when the pump is stopped, reduces the slamming force of the valve. The test demonstrated that the air cylinders also reduced the amount of vibration experienced by the ICW pumps. The inspectors also consider as a result of the test that the slamming of the check valves without air pressure was not excessive for infrequent operation and consequently, the inspectors consider that the check valves would function satisfactorily during an accident, even if instrument air were lost to the air cylinders.

A concern was raised by inspectors witnessing the operational test of 4C ICW pump about ballooning of the pump expansion joint. Inspectors felt that the expansion joint of the 4C pump swelled excessively when compared to the other pumps operated in the test of the system. The licensee responded to the concern by telling the inspectors that the swelling was normal and did not affect pump operability. The inspectors inquired if the engineer or the manufacturer's representative making that determination had witnessed the operation of 4C ICW pump. The licensee informed the inspectors that neither of those individuals had witnessed the expansion joint swelling but made the determination in phone conversations with each other. The inspectors consider that this method of evaluation of an operational problem was inadequate. The licensee stated that a proper evaluation would be conducted. Pending review of this evaluation and the results of this evaluation, this item is identified as an inspector followup item (250/86-18-07, 251/86-18-07).

During the walkdown of the ICW system, the inspector noted a condition of scaffolding being used improperly. The scaffolding was erected using the discharge piping from the CCW HXs as a means of support instead of the ground. This use of scaffolding could cause undue stress to the piping of a safety system and is an unsatisfactory method of construction. As stated later in this report, procedures do exist for the control of the scaffolding used by the licensee, however, there appears to still be a lack of control related to the inspection of scaffolding. Due to the time constraints of this inspection, the inspector was unable to conclude his investigation into this matter and determine why the scaffolding was improperly installed. Therefore, this item is identified as an unresolved item (250/86-18-08, 251/86-18-08) pending further inspection at a later date.

In response to inspector followup item 250/85-40-08, the licensee stated that a scaffolding permit would be required which involved a review by operations personnel. The construction department utilizes backfit procedure ASP-29 to control scaffolding which uses this permit process. The operations/maintenance departments utilize procedure AP-0103.11 which does not require a permit but instead uses the PWO system to control the construction of scaffolding.

Both procedures are adequate to control scaffolding; and, except for one area noted below, the construction procedure ASP-30 is considered the better of the two. The one area where AP-0103.11 is considered better is that AP-0103.11 requires the Plant Supervisor - Nuclear to approve scaffolding which is suspended in excess of 30 days. ASP-29 does not require this approval and therefore, the construction scaffolding which has been suspended for greater than 30 days has not been approved by Plant Supervisor - Nuclear. The inspectors consider that scaffolding should be controlled by a single process combining the better elements of both programs. This is identified as an Inspector Followup Item (250/86-18-09, 251/86-18-09).

The CCW system walkdown showed that system drawings, procedures, and locked valve lists were not in agreement with one another. More valves were locked than specified by locked valve list AP-0103.5. Specifically, valves -942W and -942V were locked open even though system procedure OP-068 and AP-103.5 only required the valve to be open. The system drawing 5610-T-E-4510, however, did specify the valves as locked. The locked valve list is presently being updated by reviewing FSAR drawings, which are updated annually. The licensee has plans to update the list by reviewing system drawings, identifying discrepancies, and correcting the discrepancies. The inspectors consider that the lock valve list should be updated when the system drawings are changed rather than waiting for FSAR drawings to be updated. Resolution of this concern is identified as an Inspector Followup Item (250/86-18-10, 251/86-18-10).

The electrical walkdown of the ICW system confirmed that the ICW pump motors are supplied AC power from safety-related buses which have appropriate load shedding and sequencing on blackout and SI signal. DC control power is provided by the safety-related batteries.

The three ICW pump motors on Unit 3 are identified as 3A, 3B, and 3C. The motors are supplied electrical power from safety-related 4160 V buses 3A and 3B, which are separated and located in different rooms. Pump motor 3B and 3C are supplied by bus 3B, breaker 17 and 19, respectively. Pump 3A is supplied by bus 3A, breaker 19. These breakers load shed and sequence on blackout and SI signal. The local and remote controls for the ICW pump motors agreed with the ICW electrical drawings. The separation of the ICW pump motors and controls appear to be adequate.

Local and remote ICW instrumentation were examined to verify that they were in reasonable physical condition, agreed with instrument index sheets, were adequately supported, protected, and separated. This inspection revealed no discrepancies with remote instrumentation in the control room, however, several discrepancies were identified with the installations of local instruments. These discrepancies are discussed as follows:

- DPI-3-1400, missing a gage support bracket.

- DPI-3-1402, screw missing from the face plate.

- TS-3-2107, no human factor label, installed instrument is model E5105-2BSB with a range of 30° - 250°F. Instrument index requires a model E-13-86-B with a range of 50° - 150°F.

- TI-3-1420, Installed instrument is 0° - 200°F Ashcroft. Instrument index requires an Ashcroft 0° - 250°F. Also, there is no identification tag.

- TI-3-1412, Instrument index shows Moeller model 4900S12 range 0° - 200°F. As-built instrument is Ashcroft 0° - 200°F.

- TI-3-1413, Gage glass is broken and the instrument index requires Moeller 0° - 200°F type 4900S12. Installed instrument is an Ashcroft 0° - 200°F.

- TI-3-1414, Installed instrument is an Ashcroft 0° - 200°F. Instrument index requires a Moeller 0° - 200°F.

- TI-3-1415, Installed instrument is an Ashcroft 0° - 200°F. Instrument index requires a Moeller 0° - 200°F.

- TI-3-1416, Moisture intrusion into the gage face.

- TI-3-1418, Installed instrument is an Ashcroft 0° - 200°F. Instrument index requires a Moeller 0° - 200°F.

- TI-3-1419, Installed instrument is an Ashcroft 0° - 200°F. Instrument index requires a Moeller 0° - 200°F. Identification tag is missing.

- FI-3-1405, Paint on the gage glass.

- FI-3-1407, Corrosion on the support bracket. Installed instrument is an ITT Barton 0-7800 GPM. Instrument index requires a 1300-9000 GPM Barton. Instrument was noted as reading off scale high by both the mechanical and electrical inspectors.

- FI-3-1408, Corrosion on the support bracket. Installed instrument is an ITT Barton 0-7800 GPM. Instrument index requires a 1300-9000 GPM Barton. Instrument was noted as reading off scale high by both the mechanical and electrical inspectors.

- FI-3-1409, Corrosion on the support bracket. Installed instrument is an ITT Barton 0-7800 GPM. Instrument index requires a 1300-9000 GPM Barton. Instrument was noted as reading off scale high by both the mechanical and electrical inspectors.

- PI-3-1520, Instrument index requires a Robertshaw Aeragage with a range of 0-60 PSIG. An Ashcroft 0-100 PSIG is installed.

- PI-3-1521, Instrument index requires a Robertshaw Aeragage with a range of 0-60 PSIG. An Ashcroft 0-100 PSIG is installed.

- PI-3-1488 and PI-3-1489, Instruments installed are Ashcroft 0-100 PSIG, Instruments are not listed on the instrument index, and have no identification tags, and PI-3-1489 has a cracked mount.

- PI-3-1488, Instrument index requires a Robertshaw Aeragage with a range of 0-60 PSIG. An Ashcroft 0-60 PSIG is installed.

- PI-3-1499, Instrument index requires a Robertshaw Aeragage with a range of 0-60 PSIG. An Ashcroft 0-60 PSIG is installed. The gage isolation valve is missing a handwheel and there is moisture intrusion into the gage face.

- PI-3-1451, Instrument index requires a gage with a range of 0-60 PSIG. A 0-100 PSIG gage is installed.

- PI-3-1452, Instrument index requires a gage with a range of 0-60 PSIG. A 30-0-100 PSIG compound gage is installed.

- PI-4-1450, Instrument index requires a gage with a range of 0-60 PSIG. A 30-0-100 PSIG compound gage is installed.

- PI-4-1452, Instrument index requires a gage with a range of 0-60 PSIG. A 30-0-100 PSIG compound gage is installed.

- PI-4-1451, Instrument index requires a gage with a range of 0-60 PSIG. As-built gage is a 30-0-30 PSIG compound gage.

- SV-3-2201, No identification label and the data plate was painted over.

- PT-3-1619, Spring clip mounting was improperly installed.

- PI-3-1696, Identification tag missing.

- FI-3-1406, Has insufficient mounting.

- PT-3-1620, Root valve 3-50-325 has a corroded handwheel.

- PT-3-1619, Root valve 3-50-313 has a corroded handwheel.

- PI-3-1708, Instrument index requires a U.S. Gauge with a range of 0-30 PSIG. An Ashcroft 0-60 PSIG is installed. No identification tag.

- PI-3-1709, Instrument index requires a U.S. Gauge with a range of 0-30 PSIG. An Ashcroft 0-60 PSIG is installed.

All the above discrepancies have been documented by the licensee on PWOs for appropriate corrective action. Preliminary review of the above findings seems to indicate that the licensee has failed to adequately control the replacement of components on a safety-related system. The inspector discussed the discrepancies with the licensee to determine if indeed the instrument index is considered the as-built configuration and whether it should be updated to reflect changes made in the plant. The licensee responded by saying that the instrument index has not always been updated and that several of the instruments identified on the index were of inferior quality and that they were replaced over several years of plant operation. Additionally, until about 18 months ago, controls were not in place to ensure components were not replaced without an appropriate design review. The inspector requested the licensee provide those records approving the installation of replacement instruments without updating the instrument index sheets. This item is identified, pending review of these records, as an Unresolved Item (250/86-18-11, 251/86-18-11).

The electrical walkdown of the CCW system confirmed that the CCW pump motors are supplied AC power from safety-related buses which have appropriate load shedding and sequencing on blackout and SI signal. The local and remote controls for the CCW pump motors agree with the CCW electrical drawings. Local and remote CCW instrumentation was examined to verify that it was in reasonable physical condition, agreed with instrument index sheets and was adequately supported, protected, and separated.

8. Evaluation of Instrumentation Calibration

Because of the deficiencies noted in the review of Phase I open item review sheets and the mechanical and electrical system walkdowns dealing with instrumentation, a review of the calibration program was added to the inspection. Inspectors reviewed 20 pieces of instrumentation which were considered to be safety-related and which were considered to be of potentially suspect calibration status from other sources. The inspection determined that the suspect instruments were in fact in calibration and that they were on one of the three Turkey Point calibration programs. The inspector did note, however, weaknesses in the control and administration of

the program, the identification of source requirements for calibration as well as justification for not calibrating certain instruments, and the documentation process for calibration. The inspection team reviewed these findings with the licensee and was informed of a special task force instituted by the licensee to reconstitute the instrument calibration program. Resolution of weaknesses and deficiencies in this area is of interest to the NRC and will be inspected at a later date. This is an Inspector Followup Item (250/86-18-12, 251/86-18-12).

9. Surveillance

The inspectors reviewed surveillance procedures and data for various systems. These systems were CCW, ICW, CS, Accumulators, RHR, and SI. The data reviewed consisted of observed parameters from the four previous surveillance cycles for each system.

CCW pumps are tested in accordance with procedure number OP-3104-1. The only Technical Specification requirements are those concerning limits on the pumps being out of service, and operability/startup requirements. The procedure states that the test will be performed every three months, or as a post-maintenance operability determined.

CS pumps are required by Technical Specification 4.6.2 to be tested at every refueling. This is accomplished via operating procedure 4004.1.

ICW pumps are tested by operating procedure 3404.2. The Technical Specifications are similar to those for the CCW pumps.

RHR pumps are tested by operating procedure 3204.1. Technical Specification 4.4.4 states that the pumps must be tested at every refueling outage.

Accumulators are sampled at least every 31 days for Boron concentration. Also, should a tank experience a volume change greater than or equal to 1% of total volume, the test must be performed.

SI pumps are tested at least once a month in accordance with Technical Specification 4.5. These tests are delineated in operating procedure 4104.1.

The inspectors reviewed each procedure for adequacy, clarity, and completeness. The dates of each test were all within Technical Specification surveillance time requirements and data was acceptable.

Additionally, operating procedure 0209.1, valve exercising procedure, was reviewed.

The inspectors asked to review the data generated by operating procedure 0209.1, which tests the MSIV closure times. Results of recent tests were reviewed and reflected that the valves closed in less than five seconds specified by Technical Specification 4.9.

10. Independent Verification

The inspector reviewed the requirements for independent verification as outlined in Turkey Point administrative procedure O-ADM-031, Independent Verification. This procedure defines the plant policy and implementation of the independent verification program. Procedure O-ADM-031 requires independent verification under the following conditions:

a. Removing a component from service

b. Returning a component to service

c. Procedural steps returning a component to its normal position

d. Installing a temporary system alteration

e. Removing a temporary system alteration

f. Component manipulations which remove a component or system from service for surveillance testing or maintenance

g. Component manipulations to restore the normal lineup following surveillance testing.

The inspector verified that the requirements of administrative procedure O-ADM-031 were adequately incorporated into the operating and surveillance procedures for the ICW system, the CCW system, and the CS system.

11. Lack of Procedure for Loss of DC Power

During the licensee's Phase I review, they identified that there was no procedure for a loss of DC power. Discussions with the licensee determined that the need for a loss of DC power procedure was identified approximately a year ago. At the time of this inspection, the licensee was still waiting for engineering input. Technical Specification 6.8.1 requires that procedures shall be established, implemented, and maintained covering the procedures recommended in Appendix A of Regulatory Guide 1.33. Regulatory Guide 1.33 recommends that procedures be established for loss of electrical power. The inspector expressed concern that the need for a procedure had been identified approximately one year earlier and was still waiting on

engineering input. The licensee was unable to specify a date by which a loss of DC power procedure would be issued. This issue will be identified as an Inspector Follow-up Item (250/86-18-13, 251/86-18-13) to verify that this procedure has been issued.