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Licensee: Florida Power & Light Co.

Facility: St. Lucie Nuclear Plant, Units 1 & 2

Location: 6351 South Ocean Drive
Jensen Beach, FL 34957

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EXECUTIVE SUMMARY

St. Lucie Nuclear Plant, Units 1 & 2
NRC Inspection Report 50-335/98-06, 50-389/98-06

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection. In addition, it includes the results from inspection of the licensee's corrective action and self-assessment program as well as identifying completion of the implementation of Generic Letter 89-10, "Safety-Related Motor-Operator Valve Testing and Surveillance."

Operations

- Three equipment clearance errors occurred during this report period and represented multiple errors that have occurred since January 1997. Previous corrective action had not been adequate to arrest the problem. Additional corrective actions were planned in response to these three errors. This issue was identified as a repetitive violation. (Section 01.2)

- An inspector walkdown of the Unit 1 waste gas system identified only minor discrepancies that were addressed by the licensee. A Non-Cited Violation was identified because of a licensee-identified noncompliance with the Technical Specification 4.11.2.5.1 requirement for continuous monitoring of oxygen in the in-service waste gas decay tank. This Technical Specification for both units had previously been revised and administrative errors made as part of the revision resulted in the specification being inadequate. At the close of the report period the licensee was in the process of submitting another Technical Specification amendment request. (Section 02.1)

- The inspector concluded that reactor operator trainees were not spending an appropriate amount of time performing control room duties under the direction of a licensed operator. Discussion with the licensee training staff and management indicated that the reactor operator on-shift training program was not being implemented as designed. The licensee took action to ensure the required amount of On the Job Training was provided. (Section 05.1)

- The Corrective Action, Operating Experience Review, Quality Assurance and Self-Assessment programs were reviewed in accordance with Inspection Procedure 40500. Favorable trends were noted in site activities. Problem identification was effective and on-site/off-site safety review committees provided effective safety oversight. (Section 07.1)

- The corrective action program lacked a focus on correction of problems. Several examples of recent Condition Reports indicated that timely corrective action for a 1997 Quality Assurance audit was not effective. The inspectors identified a violation with three examples in the area of corrective actions. The examples were: 1) untimely implementation of corrective action, 2) inadequate corrective action, and 3) root cause evaluations not performed as required by controlling procedures. (Section 07.6)

- The inspector considered the operator performance of a surveillance of control element assemblies to be excellent. The control room was quiet with little other activities or traffic. Oversight of operators in training during this evolution was also excellent. (Section O8.1)

Maintenance

- The inspector concluded that the licensee's method of Work Order planning was adequate, but placed a heavy reliance on the skill of the maintenance worker and supervisory oversight. The inspector did not identify examples where this reliance resulted in inadequate work. In addition, the inspector concluded that procedure GMP-21 provided an excellent tool for developing work instructions and controlling troubleshooting of equipment problems. (Section M1.1)

- The experience and thoroughness of the maintenance and operations personnel helped identify a procedural error involving the testing of safety components on Unit 2 during performance of an Engineered Safeguards Actuation System test. The inspector concluded that the correct actions were taken when the error was identified and were properly performed. (Section M1.2)

Engineering

- The NRC staff review of the Generic Letter 89-10 program at St. Lucie was closed based on the completed and scheduled work, including the actions identified in the Plant Manager's Action Items. The completion of the commitments in the Plant Manager's Action Items and the closure of the remaining items will be tracked as an Inspector Follow-up Item. (Section E1.1, E8.1)

- Upon identification, the System and Component Engineer actively worked toward correcting deficiencies with the Unit 1 Sodium Hydroxide tank level indication. The inspector noted good communications between the System and Component Engineer and Chemistry in determining the problem and corrective actions. A weakness was identified when Operations and I&C failed to inform Chemistry or the System and Component Engineer about the results of work performed on the level instrument. (Section E2.1)

- The licensee has adequately controlled, in a timely manner, the safety-related information in the Total Equipment Database. The licensee's new updating process was adequate and facilitated a more timely resolution of non-safety-related setpoints and other design information issues as they are found in the Total Equipment Database. The licensee was allocating substantial engineering effort to resolve the problems with the Total Equipment Database and to improve the support for the I&C group maintenance setpoint and calibration program. (Section E2.2)

Plant Support

- An NRC inspection of the fire protection water system identified that the maintenance and material condition of the system components and fire pumps was good. There was not a high backlog of open work orders associated with the fire protection water system components or the fire pumps. The number of open Condition Report deficiencies identified as part of the station problem evaluation process associated with the fire protection water system components or the fire pumps was small. The licensee's corrective action dispostioned for resolution of fire protection system problems was being properly scheduled. (Section F2.1)

Report Details

Summary of Plant Status

Both units operated at essentially full power for the entire report period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O1.2 Equipment Clearance Order Problems

a. Inspection Scope (71707, 92901)

The inspector evaluated three Equipment Clearance Order (ECO) problems identified by the licensee from February 19 through March 31. The inspector reviewed the root cause analyses, the corrective actions taken, and the generic implications.

b. Observations and Findings

From February 19 through March 31, the licensee identified three significant ECO errors. The licensee generated condition reports and performed root cause analyses for each occurrence.

On February 19, the licensee was preparing Unit 1 for operations following a Reactor Coolant Pump (RCP) seal replacement. While removing the ECO (ECO 1-98-01-202S) for the 1B2 RCP, the Non-licensed Operator (NLO) informed his supervisor that he had accessed the 1B1 RCP to release the clearance. Then, the supervisor and NLO discovered that the clearance had been inadequate in that seal injection to the wrong pump had been isolated.

The licensee's investigation identified the following sequence of events. On February 5, the Clearance Center originated the ECO. This version of the clearance correctly isolated the 1B2 seal injection line. When the unit was brought off line on February 16, the clearance was printed and prepared for hanging. The next day, the Operations Supervisor reviewed the clearance and suggested that the valve upstream of the one identified in the clearance should be used to isolate seal injection. The Clearance Supervisor agreed to change the ECO. The clearance writer inadvertently entered V20302 as the seal injection isolation for the 1B2 RCP. The correct valve number was V30303. The computer system accurately entered the remainder of the descriptor as the isolation for the 1B1 RCP seal injection. The supervisor failed to

note this on the clearance form and highlighted the correct valve on the 11x17 print.

The supervisor reviewing and authorizing the clearance failed to note the discrepancy on the ECO form. His review of the highlighted valves on the print showed that the proper valves were going to be manipulated. The field operator selected to hang the clearance, correctly hung the tags on the valves. The operator was concurrently involved in hanging hoses for seal bleed off on all RCPs. He, therefore, did not recognize that tagging the seal injection valves for the 1B1 RCP was inappropriate. The on-shift Assistant Nuclear Plant Supervisor (ANPS) waived the independent verification due to ALARA concern, although the area was not a high radiation area.

At no time in the Maintenance walkdowns of the clearance was this discrepancy thought to be a problem. Three different Maintenance foremen held the clearance and numerous journeymen worked on the pump. At least one journeyman noticed the 1B1 RCP valve on the clearance, but did not pursue the reason.

The licensee's root cause analysis for the RCP clearance error suggested that scheduling pressures, inadequate clearance center staffing, and excessive congestion in the clearance center contributed to the problem. However, the licensee identified personnel error, particularly by the reviewer, hanger, and authorizer, as the prime cause of the error. The licensee's corrective actions were diverse, in that they provided correction to most identified weaknesses. However, they did not provide any mechanism to track the correction of inadequate staffing.

On March 30, the licensee identified that a grounding device was installed in the 2C intake cooling water (ICW) pump breaker cubicle for planned maintenance. However, the grounding device was never documented in the supporting ECO, 2-98-03-005, as required by procedure ADM 09.04, Revision 3, "In-Plant Equipment Clearance Orders." The licensee determined that the Electrical Maintenance Department's guidance on installation of ground test devices was not fully compatible with the ECO procedure in that the guideline did not specify that a jumper/grounding device should be identified on a clearance. The licensee's corrective action was to revise the guidelines to ensure that the Work Control Supervisor was aware of the grounding device.

On March 31, the licensee identified an inadvertent gas release from the waste gas system to the Reactor Auxiliary Building (RAB). During maintenance of the 2B Waste Gas Compressor, the Maintenance Crew removed the filter cover of the compressor and noted that pressurized gas was escaping into the Reactor Auxiliary Building. At first, they believed that the gas was residual gas being released. When the NLO arrived, he shut the inlet and outlet valves to the compressor to secure the release. The licensee determined that the Clearance request did not identify that the maintenance required breaking into the system. Therefore, only the compressor's breaker was tagged.

The inspectors reviewed the licensee's recent performance in the area of Clearance Control and noted that similar personnel problems kept recurring. The table below summarizes the findings.

VIO Number	Event Description	Corrective Actions
97-01-01 VIO	Two lifted leads were incorrectly identified and then mistagged. Personnel error	1. Clearance procedure changed to add requirements to seek help from other groups to read Electrical Drawings. 2. Discussed in requalification training need to pay attention to the details. 3. Maintenance Training on attention to detail.
97-03-01 NCV	Charging pump discharge seal tank leak caused by vent valve tagged open with a tag that had been removed from the clearance form. Personnel error	1. Procedural enhancements. 2. Operator training.
97-04-01 VIO	1. Circulating Water Pump worked with the breaker NOT tagged: 2. Diesel lube oil pump untagged with an open Work Order in place. 3. Clearance being hung for Thermolag work. Wrong Motor Control Center tagged. 4. Clearance for reactor drain down not adequate. Spilled 500 gallons in Reactor Auxiliary Building. Personnel error	1. Clearance Center scheduling enhancements. 2. Plan of the Day upgrades. 3. Procedure enhancements. 4. Operator, Planner, and Maintenance personnel training. 5. Made field size drawings available.
97-06-01 NCV	1. Low Pressure Safety Injection suction check valve work started before clearance hung. Cognitive error	1. Operations briefing. 2. Clearance stop work order issued. 3. All clearances in field verified. 4. Management Independent Verification of all new clearances hung.
97-14-03 VIO	1. Volume Control Tank hydrogen line drain left open. Personnel error 2. Tagless clearance violated when Reactor Coolant System level raised too high. Process error Personnel error	1. Procedure change controlled clearance changes better. 2. Licensee updating clearance computer software. 3. Procedure change put better control on tagless clearances.

VIO Number	Event Description	Corrective Actions
98-06-01 VIO	1. Tagged wrong Reactor Coolant Pump seal injection. Personnel error 2. Grounding device for 2C ICW pump breaker not shown on clearance. Process error Personnel error 3. Inadequate waste gas system tagout resulted in gas release. Personnel error	1. Planned to remodel the Work Control Center to reroute traffic patterns. 2. Assigned extra licensed personnel to perform clearance tasks. 3. Stand down meetings.

The licensee identified an unsatisfactory trend in ECO implementation in their 1996 Fourth Quarter Condition Report Trend. On July 25, 1997, the licensee completed their root cause analysis and issued a report listing all identified causal factors and generic weaknesses. The licensee revised the ECO procedure. However, only eight of the 30 recommended corrective actions were carried out. The licensee determined that the remaining actions would not be effective from a cost-benefit analysis. None of the recommended actions to address generic implications nor any measures to evaluate the effectiveness of the corrective actions were done. The inspector noted that the latest ECO problems were similar in nature to those cited in VIO 97-04-01. The corrective actions that were suggested attempted to ensure that all personnel involved in the clearance process were fully aware of all requirements, and that there was more control on the up front clearance planning process.

Technical Specification 6.8.1 requires the licensee to establish, implement, and maintain the applicable procedures recommended in Appendix A of Regulatory Guide 1.33. Equipment Control (e.g., tagging and locking) is covered by this Appendix. The licensee's implementing procedure was procedure ADM-09.04, Revision 3, "In-Plant Equipment Clearance Orders." Section 3.8.3 required Electrical Department Personnel to "Verify that any grounding device is documented on the Equipment Clearance Order Form as a step with no tag." Section 6.8.4.A required the Nuclear Plant Supervisor (NPS), Assistant NPS (ANPS), the Work Control Center-ANPS, or the Nuclear Watch Engineer (NWE) "shall verify . . . the adequacy of the information contained in the request section of the ECO Control Form." Section 6.9.2.C required the Reactor Control Operator (RCO) to "Verify [the] boundary using controlled documents. . . ." Section 6.11.1.A required the NPS, ANPS, NWE, WCC-ANPS, or a Senior Reactor Operator licensed RCO to "Verify the specified ECO boundary satisfies the requirements specified in the ECO request." Section 6.12.20.A required the ECO Controller to sign the ECO Control Form when they find the ECO acceptable. Section 6.12.20.B stated "Signing the Acceptance Block on the Equipment Clearance Order Form (Figure 1) indicates concurrence that the ECO boundary is adequate for the work to be performed." Finally, Section 6.12.23.A required the workers to perform a "verification of the ECO boundary utilizing available reference materials." For the three examples above, the licensee failed to perform all of the above steps adequately. This is

considered a repeat of VIO 50-389/97-04-01 and is identified as VIO 50-335,389/98-06-01, "Repeat Failure to Implement an Equipment Clearance Order Prior to Beginning Work."

The licensee's response to the repetetiveness of the most recent clearance errors, as addressed in VIO 335,389/98-06-01, was to have the Operations Manager observe the Clearance Center for a week. From this observation, the licensee chose to carry out several significant planned changes. First, the licensee planned to remodel the Work Control Center to reroute traffic patterns. The licensee believed that this would allow the Work Control Personnel to concentrate on their tasks better. Also, the licensee determined that they would assign extra licensed personnel to perform clearance tasks. This would reduce the burden on the remainder of the staff, and, according to the licensee, allow better quality clearances. The licensee continued their stand down meetings with all operations personnel, reiterating the importance of zero defects in clearances.

c. Conclusions

Three equipment clearance errors occurred during this report period and represented multiple errors that have occurred since January 1997. Previous corrective action had not been adequate to arrest the problem. Additional corrective actions are planned in response to these three errors. This issue is identified as a repetitive violation.

02 Operational Status of Facilities and Equipment

02.1 Unit 1 Waste Gas System Walkdown

a. Inspection Scope (71707)

The inspector walked down accessible portions of the Unit 1 waste gas system including the Oxygen Analyzers (O2Y-6601 and O2Y-6602) and reviewed the applicable procedures.

b. Observations and Findings

The inspector reviewed Procedure OP 1-0530020, Revision 31, "Waste Gas System Operation," Drawing 8770-G-078, Sheet 163A, and walked down the system in the field. The inspector found eight valves identified as normally open on the drawings that were actually normally closed. Also, the inspector identified six valves that may not have been aligned by any procedure and a valve in a common drain line that did not appear on any drawing. The valves that were not included in a procedure could not have caused an accidental release of waste gas. Two other minor human factors deficiencies were noted. These discrepancies were forwarded to the System Engineer for resolution.

The inspector verified that the procedure to place a gas decay tank (GDT) in or out of service would work as written. Later, the inspector observed a Non-licensed Operator (NLO) performing this task. The NLO

was knowledgeable of the procedure and secured one tank and placed another in service. The inspector noted that the NLO contacted Health Physics prior to starting the evolution.

The licensee has had recent problems with leakage in the waste gas system. In fact the licensee secured the oxygen (O_2) analyzers several times during the report period in an attempt to isolate leakage. Several minor leaks were identified by the licensee on the O_2 analyzers, but the major source of the leaks was due to valves associated with the waste gas compressors. However, during this time, the licensee identified that a Technical Specification (TS) surveillance required continuous oxygen monitoring for the in service GDT. TS 4.11.2.5.1 required that "The concentration of oxygen in the waste gas decay tank shall be determined to be within the above limits by continuously monitoring the waste gases in the on service waste gas decay tank."

Unit 2 O_2 analyzer, 2-6602, has been out of service since 1989 due to various reasons (parts, procedure upgrades, etc.). On April 30, 2-6601 failed. No gas analyzer was monitoring oxygen levels in the in service GDT. The licensee realized that this was not in accordance with the TS surveillance. Licensing issued a Condition Report (CR) to document the problem and started preparing a Licensee Event Report (LER) to report the condition prohibited by TS. Meanwhile, the licensee gathered information as to the cause of the event. The licensee determined several salient points. First, in December 1995, TS were amended to move all waste gas system references from TS into the FSAR. This was completed with the following revision of the FSAR. At that time TS 4.11.2.5.1 had a note stating if continuous monitoring of GDTs was unavailable, grab samples in accordance with a table was allowed. This table was no longer found in TS, but had been moved to the FSAR. Approximately one year later, an administrative change to TS was made that eliminated the note. Therefore, whenever both O_2 analyzers in a unit were unavailable, the licensee was unable to meet their TS surveillance requirements.

Second, Unit 1 had been in this condition at least once earlier, in April. The licensee had been isolating the gas analyzers in an attempt at finding the gas leaks. The licensee was continuing to research historical records for other examples. Third, up until about a year and a half ago, the licensee did not routinely use their GDTs. Standard procedure was to vent directly to the stack. Although not prohibited by TS, this practice was determined to be undesirable because it could result in higher radioactive release rates.

The licensee determined that a TS amendment was required to return the TS to its original intent and started processing the request. Meanwhile, they have acknowledged that if both O_2 analyzers become out of service on a unit, they would have to vent directly to the stack to avoid violating the current TS requirement. Additionally, the licensee was working on restoring both Unit 2 O_2 analyzers. This non-repetitive, licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B of the NRC Enforcement

Policy, and is identified as NCV 50-335,389/98-06-02, "Failure to Fulfill a Technical Specification Surveillance Requirement to Continuously Monitor Oxygen Concentration in the Gas Decay Tank."

c. Conclusions

An inspector walkdown of the Unit 1 waste gas system identified only minor discrepancies which were addressed by the licensee. An NCV was identified because of a licensee-identified non-compliance with the TS 4.11.2.5.1 requirement. This TS for both units had previously been revised and administrative errors made as part of the revision resulted in the specification being inadequate. At the close of the report period the licensee was in the process of submitting another TS amendment request.

02.2 Shield Building Ventilation System Walkdown (Unit 1)

a. Inspection Scope (71707)

The inspector performed a walkdown of accessible portions of the Shield Building Ventilation System. Additionally, the inspector reviewed recent surveillance records documenting the testing of the filter train and the associated results.

b. Observations and Findings

The inspector reviewed Section 6.3.2 of the Updated Final Safety Analysis Report (UFSAR) and compared it with Technical Specification (TS), Section 3/4.6.6, to verify adequacy. Drawing 8770-G-879, Sheet 2, was used to perform the system walkdown. Also, Procedure 1-NOP-25.01, Revision 0, "Shield Building Ventilation Operation" was reviewed by the inspector to verify the system line up.

The inspector noted a minor discrepancy regarding the procedural requirement for the position of FCV-25-13. Procedure 1-NOP-25.01, Rev. 0, required that the valve be in the position of NORM/OPEN. However, the switch position on the control panel was a "spring return to the mid position". This mid position on the switch had no inscription which could potentially lead to operator confusion. The inspector informed the system engineer of the discrepancy for evaluation.

The inspector reviewed surveillance records for the testing of the shield building ventilation filtering system. The frequency of test performance and the results obtained met the TS requirements.

c. Conclusions

Equipment operability, material conditions, housekeeping, and surveillance records were acceptable.

02.3 Required Postings (71707)

The inspector verified that all information required by 10 CFR 19.11 was posted. The licensee controlled the required postings with procedure AP-0010721 "NRC Required Non-Routine Notifications and Reports," Revision 38. The procedure required NRC Form 3 and four appendices from the procedure be posted in five areas. The inspector verified that all areas were posted and that the posted information met all requirements of Part 19. The licensee met all posting requirements of 10 CFR 19.11.

05 Operator Training and Qualification

05.1 On-shift Training of Reactor Operator Trainees

a. Inspection Scope (71707)

During this report period the inspector reviewed the licensee's on-shift training program for the reactor operator trainees. The inspector reviewed Administrative Procedure 0005721, Revision 17, "Reactor Control Operator Training and Qualification", several On The Job Training (OJT) guides, discussed the program with several trainees and witnessed training during Control Element Assembly (CEA) testing.

b. Observations and Findings

During this report period the inspector often noted that the reactor operator trainees on shift were not working in the control room, but rather were studying elsewhere. The inspector discussed this with many of the trainees and concluded that during the time spent on-shift many requirements had to be completed. OJT guides, consisting of knowledge requirements (questions and answers), activities requirements (locating equipment or reading drawings), and practical requirements (performing or simulating actual equipment manipulations) were to be completed while on shift. Many of the trainees were spending a great deal of time studying procedures and reviewing plant material related to these guides outside of the control room rather than completing the guides under the direction of licensed operators while in the control room. The inspector noted on several occasions, critical activities were completed without affording the trainees the opportunity to get involved. One example occurred on Unit 1 when the plant computer became inoperable. Licensed operators had to perform troubleshooting on the system, but did so without the added benefit of trainee involvement. The inspector reviewed the operator logs to determine when the trainees actually stood watch in the control room and noted that often their names would not appear in the logs.

The inspector reviewed Procedure AP 0005721, Revision 17, "Reactor Control Operator Training And Qualification," and noted that step 8.1.4 stated "a minimum of 13 weeks (65 days) shall be completed as an extra person on shift in training for the RCO position. This training should include all phases of day-to-day operations activities and shall be completed under the direct supervision of licensed personnel." The

inspector verified this to be consistent with existing NRC regulatory guidance. The inspector expressed the concern with both Operations management and Training personnel that these requirements might not be getting satisfied. The licensee stated that the on-shift portion of the training was intended to be conducted with a trainee standing watch under the guidance of a licensed operator in each unit's control room each shift. The other trainees were to witness, perform or simulate various activities in the control room as described in the OJT guides or as plant conditions allowed. Although review of procedures, drawings and other technical manuals was expected to occur outside the control room on occasion, the trainees were meant to spend the majority of their time interacting with licensed operators and their mentor. The licensee reiterated these expectations with the trainees and their mentors.

Toward the end of the report period the inspector noted much improvement in the on-shift training. On April 29, the inspector witnessed trainees performing CEA testing. This is discussed in section 08.1 of this report.

c. Conclusions

The inspector concluded that reactor operator trainees were not spending an appropriate amount of time performing control room duties under the direction of a licensed operator. Discussion with the licensee training staff and management indicated that the reactor operator on-shift training program was not being implemented as designed. The licensee took action to ensure the required amount of OJT was provided.

07 Quality Assurance in Operations

07.1 General Comments (40500)

Using inspection procedure 40500, "Effectiveness of Licensee Controls" in Identifying, Resolving, and Preventing Problems, an inspection was conducted of the licensee's corrective action program, operating experience review, self-assessments and quality assurance (QA), and on-site/off-site safety review committees. Generally, favorable trends were noted in site activities. Problem identification was effective. On-site/off-site safety review committees provided effective safety oversight. However, the corrective action program lacked focus on correction of problems. Several examples of recent Condition Reports (CRs) in 1998 indicated that timely corrective action for a 1997 licensee QA audit concerning corrective action was not effective. This was identified as a corrective action violation.

07.2 Trending Program

a. Inspection Scope (40500)

The inspector reviewed the effectiveness of licensee trend identification and response.

b. Observations and Findings

A list of CRs was reviewed by the inspector. The CRs identified deficiencies in several areas including:

- procedural adequacy, control and adherence
- clearances
- fire protection
- design drawings
- emergency response organizational staffing

The use of initiation codes for the analysis of trends allowed the licensee to tabulate trends in some areas of human performance and equipment related events. Review of the quarterly trend reports for 1997 indicated adequate identification of trends for that quarter, and the trends were consistent with the inspector's findings. The inspector noted that the resolution of significant negative trends identified in previous reports were not consistently reviewed in subsequent reports. Therefore, the effectiveness of actions taken was not evident. Likewise, the inspector noted that action items initiated at the request of management were not consistently reviewed and updated. The second quarter trend report indicated that the results were not presented to management. The licensee stated that the issuance of the trend reports for several quarters in 1997 had not been timely and that management had not always been briefed on the results. One trend report was issued approximately six months after the end of the quarter. The licensee related that a self-assessment was underway to assist in improving the effectiveness of the program.

Discussions with the licensee revealed that the identification of repetitive issues would reside in the trending program as a result of a pending change in the corrective action program. However, the licensee indicated that the administration of the trending program was not covered by any procedural guidance. The inspectors concluded that without procedural guidance the trending program may lack consistency and become less effective.

c. Conclusion

The quarterly trend reports adequately identified site trends. The effectiveness of these reports was diminished by the lateness of report issuance and communication to site supervision. There was a lack of procedural guidance for trending nonconforming issues.

07.3 Problem Identification and Characterization

a. Inspection Scope (40500)

The inspector reviewed CRs for adequacy of problem identification and proper characterization in accordance with the guidance provided in Administrative Procedure AP-0006130, Revision 12, "Condition Reports."

b. Observations and Findings

The inspector reviewed CRs and Plant Manager Action Items (PMAIs) initiated from March 1997 to present. The inspector determined that the CR initiation threshold was sufficient to assure adequate identification of nonconforming conditions. Depending on the source, the condition may be entered into the CR program or PMAI database. Certain items, such as the need for procedural revisions and UFSAR discrepancies changes, could bypass the CR process and be entered directly as a PMAI.

The licensee's program established characterization and set the duration for problem analysis of the issues based on severity level and analysis technique. The severity level was primarily based on reportability and operability. For items requiring reportability or operability assessments, a 3-day level was assigned. Reportability assessments without operability concerns were assigned a 10-day level. Issues that did not require either an operability or reportability assessment were assigned a 30-day level. A fourth level designated as other, included any condition that did not meet the 3-day or 10-day criteria but required resolution in less than 30 days. Typically, the "Other" group consisted of items that were causing Mode escalation holds. The analysis techniques used were essentially either an "investigate and correct" or some form of a root cause analysis.

The inspector reviewed the characterization of selected CRs. The inspector noted that many repetitive issues were not assigned root cause evaluations. Examples of these are as follows:

- CR 98-178 repeated CR 97-383
- CR 98-112 repeated CR 96-2531
- CR 97-2301 was canceled due to corrective actions proposed for CR 97-2287
- CR 97-1229 repeated CRs 97-1091 and 97-395

These are discussed in more detail in paragraph 07.6.

According to AP-0006130, a CR could be closed without completion of the proposed corrective actions. The proposed corrective actions were entered into the PMAI tracking program. Control and scheduling of PMAIs were performed in accordance with Administrative Procedure AP-0006129, Revision 7, "PMAI Corrective Action Tracking Program." The PMAIs prioritization was based on the PMAI completion dates. Most PMAI due dates were provided by the implementor. Procedure changes or creations were not assigned a due date but were required to be completed within 16 months with a priority for completion based on the type of procedure change. Deficiencies related to the timely implementation of procedure related PMAIs are discussed in Section 07.6. The licensee had several different ways that a CR and the resultant actions could be classified. The inspector concluded that the actual significance of issues could not be easily determined using the licensee's method of characterizing all issues as Severity Levels requiring resolution in either 3 days, 10 days or 30 days. For example, CR 98-0029 documented that the security entry

gates did not always open after the hand reader identified a person. Occasionally, the person needed to reperform the entry procedure. CR 98-0053 documented a leaking Safety Injection Tank drain or fill valve causing the Refueling Water Tank return header and the Hot Leg Injection return header to pressurize. Both of these CRs were identified as 30 day severity levels. Unless there was an operability or reportability concern a 30 day Severity Level was assigned.

The inspector reviewed the problem analysis for more than 100 CRs and noted that the quality of the analyses varied. Among CRs requiring root cause analysis, those CRs prepared by individuals who had received some form of root cause training were generally of better quality. The condition descriptions for the CRs reviewed were complete and the cause identified was supported by facts gathered during the investigation.

c. Conclusion

Problem identification was determined to be effective. However, repetitive issues were not consistently assigned root cause evaluations. The Severity Level designation did not necessarily indicate the actual significance of the CR. Although the PMAI process was designed to assign due dates based on significance, the inability to differentiate significance between CRs hindered this process. The inspector considered this a weakness in prioritizing corrective actions for identified problems.

07.4 Adequacy of Corrective Action Program

a. Inspection Scope (40500)

The inspector reviewed the most recent Quality Assurance (QA) audits of the licensee's Corrective Action Program (CAP). The inspector verified that the scope was adequate, the investigation was appropriate, and the conclusions were well founded. Additionally, the inspector reviewed seventeen selected, safety-significant Significant Condition Reports (SCRs) for proper administration, adequacy of analysis and root cause evaluations, and appropriateness of corrective actions.

b. Observations and Findings

The licensee's QA organization completed their audit QSL-CA-96-20, "Corrective Action Functional Audit" on February 14, 1997. The audit identified eight findings that QA stated indicated a continuing weakness in the corrective action program. Overall, the inspector found the audit to be well performed. The findings were documented with substantiating facts, and the scope of the audit was appropriate. The weaknesses identified by QA were limiting the effectiveness of the CAP. Section 07.6 discusses further details of these findings and the licensee's attempt to correct these deficiencies.

The primary method of problem identification was the CR. As defined in Administrative Procedure AP-0006130, Revision 12, "Condition Reports,"

the program allowed any person working within the Florida Power & Light (FPL) Nuclear program to identify any problem or potential problem to the company for resolution. A subset of the CR system was the SCR system. An SCR would be issued in response to a more serious condition that would require a higher level of management's attention (for example off-site notifications, Emergency Plan Activations, Technical Specification required shutdowns, etc.). The events that would require an SCR were defined in both AP-0006130 and ADM-17.02, Revision 13, "Significant Condition Report Summaries."

The inspector reviewed 17 safety significant SCRs. The inspector had the following observations:

- All SCRs reviewed had been appropriately assigned SCR status as defined by the licensee's procedures.
- The Root Cause Evaluations for these 17 SCRs were assigned according to Appendix 2 of AP-0006130.
- Level 1 Root Cause Analyses were well performed, well documented, and appeared to identify all appropriate root and contributing causes.
- Overall, Level 2 Root Cause Analyses were significantly less formal. The inspector had difficulty in ascertaining if all root causes had been identified with a Level 2 Root Cause Analysis. A Level 2 Root Cause did not differ significantly from an "Investigate and Correct" analysis. The licensee stated that they had identified this and stopped performing Level 2 Analyses.
- All corrective actions identified in SCRs were either completed or properly tracked by a PMAI.
- All corrective actions assigned were appropriate for the identified root causes.

Also, the inspector reviewed the licensee's system to identify and correct operator workarounds. The licensee actively tracked all workarounds via the PMAI system. At the time of the report the licensee had seven open items, all of which had been evaluated to correct. Five had work scheduled in the near future. Periodically, the licensee asked the operators to reevaluate their job tasks and determine if a workaround might exist.

c. Conclusions

The SCRs reviewed by the inspectors were appropriately dispositioned. The inspectors noted good Level 1 Root Cause Analyses performed by the licensee's staff. Lower grade evaluations were noted to be mixed in their quality. Corrective actions were appropriate for the identified root causes and the actions were either completed or transferred to PMAIs before closing out the packages. Additionally, the inspector

found the Operator Workaround process effective in identifying and correcting these deficiencies.

07.5 Operating Experience Program

a. Inspection Scope (40500)

The inspector reviewed the licensee's Operating Experience Program, and evaluated the program's effectiveness in receiving, evaluating, and dispersing information for use in the plant.

b. Observations and Findings

The inspector reviewed the procedure ADM-17.03, Revision 11, "Operating Experience Feedback" to determine the licensee's requirements for the program. The inspector found the procedure to be general in nature, but all requirements were being met by the program.

The inspector reviewed the information that the Operating Experience Administrator was putting into the corrective action program and found that it was timely and usually beneficial. The administrator used the personnel resources in the plant effectively to determine the applicability to the facility. The inspector noted that, typically, the administrator accessed Part 21 notifications, Information Notices, Generic Letters and industry information within 24 hours of issuance. The information was processed and filtered for usefulness in a timely manner. In February 1997, QA identified a backlog of items from December 1994 to May 1996 that had not been reviewed for applicability or distributed to the plant. This backlog had been worked off.

The inspector reviewed a sampling of the information forwarded to the plant. Generally, the appropriate divisions were given the information. The division supervision further filtered the information and passed it on to the worker level. The workers felt that most of the information was useful, however, they also believed that there might be more beneficial information available. The workers interviewed believed that the information reached them in a timely fashion. The inspectors also noted a significant population of CR responses included Operating Experience information in them.

c. Conclusions

The Operating Experience Program was effective. Information distributed to the plant was generally timely and useful. The backlog identified by QA in 1997 had been worked off.

07.6 Self-Assessment

a. Inspection Scope (40500)

The inspector reviewed the licensee's self-assessment activities including the site QA assessment activities.

b. Observations and Findings

Self-Assessment

A self-assessment program was started at the site about two years ago. Administrative Procedure ADM-11.05, Revision 0, "Self-Assessment Procedure," provided the guidance for the self-assessment program. This program required that each department perform a quarterly self-assessment.

The inspector reviewed the tracking and assessment system used by the program owner for self-assessments. More recent self-assessments were assigned a grade from zero to 100. Each of the quarterly grades was tracked by department. The quality monitoring of the self-assessment was self-critical. Noteworthy was the review of a third quarter self-assessment done for fire protection which was given a grade of only 20. The assessment was limited in that it only looked at emergency lighting and did not assign corrective action for the findings. The inspector concluded that this program was effective in providing feedback on the quality of the self-assessments.

The inspector noted that the self-assessment procedure did not require an annual or periodic site-wide self-assessment. The last site-wide assessment was performed in 1996. No further site-wide assessment was planned at the time of the inspection.

Quality Assurance

The inspector reviewed an audit conducted by QA of the site corrective action program. This audit started in October 1996 and was completed in February 1997. The inspector reviewed the audit, QSL-CA-96-20, and responses to the audit. This audit identified eight significant noncompliances with corrective action procedures. The audit also discussed that stronger support of the corrective action mechanisms must be provided by the plant management team at all levels.

The audit findings were:

- CR reportability review practices were deficient in that failure to identify two reportable conditions occurred.
- Corrective Action processes did not properly address actions to prevent recurrence of conditions adverse to quality.

- Nonconformances were not being evaluated and classified consistently in CRs.
- A procedural noncompliance resulted in deficient review and approval practices for corrective action documents in a significant number of cases.
- A procedural noncompliance resulted in improperly validated software being used to control mode restriction items on PMAIs.
- A lack of "attention to detail" resulted in corrective action records containing insufficient detail to recreate the actions taken.
- An ineffective management of conditions adverse to quality resulted in delayed evaluations, disposition, and implementation of corrective actions.
- An effective Operating Experience Feedback (OEF) Program had not been implemented at St. Lucie.

This was an effective QA audit identifying substantive issues with the licensee's corrective action program (CAP). It should be noted that improvements to the OEF Program were observed and are discussed in section 07.5 of this report.

The inspector also reviewed the QA quarterly reports. These reports provided self-critical assessments and were used as the basis for the site performance windows report. The windows report was a one page, color-coded display of the various departments' performance for several quarters. The QA audits and quarterly assessments provided effective self-critical reviews of plant activities.

However, during the review of many recent CRs (1998), the inspector found that the corrective actions for the previous QA audit of the corrective action program were not effective. Correction of problems was not timely and similar problems found in the past QA audit were still occurring. The corrective action program lacked focus on timely correction and preventing repetition of previous problems. Accordingly, this was identified as a violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action. This violation was identified as VIO 50-335,389/98-06-03, "Corrective Action Program Lacks Focus on Correction of Problems", and contained three examples.

Quality Assurance documented in CR 98-0635 that PMAIs issued as CAP corrective actions for 29 procedure revisions had been open since 1996. Further investigation by the inspectors identified fifteen of the Condition Reports as potentially affecting the operation of safety-related equipment. Nine of those CRs were determined to be more than "human factors" upgrades and would add to the substance of the procedure. These nine CRs (CR 96-1065, 96-1341, 96-1789, 96-1792, 96-1865, 96-2065, 96-2189, 96-2311, and 96-2768) each had at least one

procedure change related PMAI outstanding. The inspectors reviewed, in detail, six of the nine CRs (96-1065, 96-1789, 96-1792, 96-2065, 96-2311, and 96-2768), and noted several items of interest.

- Every PMAI issued in response to these CRs was originally assigned a due date before September 30, 1997. Most were assigned due dates before January 31, 1997. The PMAIs were transferred to the Procedures Group in mid January 1997.

- When transferred to the Procedures Group, all of the PMAIs were given a priority of either 1 or 2. These priorities superceded the due dates. However, the assigned priorities indicated that the licensee did not believe that these were the lowest level priority procedure changes.

- One CR (96-1792) was dispositioned with a recommended procedure change to prevent a loss of charging and letdown during maintenance. Another CR (96-2768) was dispositioned with a recommended procedure change to address aligning the control room ventilation system following an auto start, as described in the FSAR. The existing procedure did not agree with the FSAR. As of the end of the report period, the changes were still pending issuance.

Criterion XVI of Appendix B to 10 CFR 50 requires the licensee to have measures "established to assure conditions adverse to quality . . . are promptly identified and corrected." On January 17, 1997, Revision 5 of procedure, AP-0006129, "PMAI Corrective Action Tracking Program." added a requirement for closure of all procedure change related PMAIs within 16-months. Although the 16-month requirement to close a procedure was not in place when the subject PMAIs were issued, the licensee did not properly track these corrective actions and ensure implementation was completed in a timely manner. This is the first example of VIO 50-335,389/98-06-03.

Quality Report 97-2271 and related CR 98-0043 identified multiple CRs with unsatisfactory responses. The QA audit of 29 CRs found five CRs inadequately dispositioned, in that the corrective actions were not adequate to correct the conditions. This sampling of CRs indicated that about one-sixth of CRs audited were unsatisfactory. These issues were similar to a 1997 finding in QA Audit QSL-CA-96-20 that was documented in CR 97-282. Although each of the individual CRs were eventually adequately dispositioned, the licensee had not yet fully addressed the root causes for the inadequate dispositions. The licensee had failed to ensure that a significant condition adverse to quality (multiple assignments of inadequate corrective actions to CRs) was adequately corrected. This is identified as the second example of VIO 50-335,389/98-06-03.

Additionally, Root Cause evaluations were not performed as required by site procedure. Step 8.5.5 of AP-0006130, stated that a Root Cause Analysis was required for those significant events listed in Appendix 6

of the same procedure. Appendix 6 listed, among other items, inadequate 10 CFR 50.59 reviews/evaluations/screens. QA Audit QSL-CA-96-20 identified multiple instances of improperly assigned problem analyses, including examples involving inadequate 50.59 reviews and repetitive equipment failures, which were not investigated with a root cause analysis as required by the licensee's procedure. The licensee's response to the audit finding stated that Appendix 6 was provided as guidance and adherence was not a requirement. It further stated that a certain amount of human judgement was involved in the assignment of an evaluation level. Since the audit, QA identified in CR 98-043 a condition in which a 10 CFR 50.59 screening had not been performed as required by site procedures. Likewise, the inspectors identified that CR 98-0346 was written because a Temporary System Alteration was installed without a 10 CFR 50.59 screening. Both CR 98-043 and CR 98-0346 were not investigated with a root cause analysis as required by AP--0006130. However, NRC review of these CRs verified that a full 10 CFR 50.59 safety evaluation was not required in either case. Also, NRC regulations do not require a 10 CFR 50.59 screening. Therefore, the inspectors concluded that the lack of 50.59 screenings in these instances was of minor significance and is not subject to enforcement action.

Additionally, the inspectors identified an example of a repeat problem concerning periodic procedure reviews. CR 96-2531 identified that 65 procedures did not receive a periodic review as required by QI-5-PSL-1, Revision 7, "Preparation, Revision, Review/Approval Of Procedures", and Technical Specification 6.8.2. CR 98-0112 again identified that 183 procedures had not been reviewed as required. Appendix 6 of AP-0006130 required a root cause evaluation to be performed for QA program breakdowns, such as failure to follow verbatim compliance with procedures. Although this condition represented a repetitive problem resulting in a failure to implement the Quality Instruction, a Root Cause evaluation was not identified as necessary and was not performed. The inspectors concluded that these examples represented multiple failures by the licensee to perform Root Cause evaluations as required by the site procedure. This is identified as the third example of the VIO 50-335,389/98-06-03.

c. Conclusions

The site self-assessment program conducted quarterly and department audits were of mixed quality. Self-critical monitoring of these assessments was driving improvements in the process. The site QA audits and quarterly reports provided self-critical reviews of plant activities. However, corrective actions for a QA audit of Corrective Action Program were not effective. Recent CRs dealing with unsatisfactory and untimely corrective actions were identified. These issues were identified as a corrective action violation.

07.7 On-Site/Off-Site Committees

a. Inspection Scope (40500)

The inspector reviewed the on-site safety committee and off-site committee activities that were available during the period.

b. Observations and Findings

Off-Site

The inspector reviewed the functions of the Company Nuclear Review Board (CNRB). The requirements for the CNRB are specified in TS 6.5.2. The inspector reviewed the meeting minutes for meetings 440-451 covering the time period of January 21, 1997, to January 29, 1998. Each of the meeting minutes indicated the members and alternate members present. Compliance with TS requirements for attendance was verified.

The inspector verified that required items were reviewed such as safety evaluations, TS changes, violations, Licensee Event Reports (LERs), and minutes of the Facility Review Group (FRG). No deficiencies or problems with TS compliance were identified.

Meeting number 448 conducted November 25, 1997, addressed the site plant manager's report and a review of plant performance for 1997. This report reviewed a 1996 site-wide self-assessment. Weaknesses were identified and a list of indicators tracked to determine the effectiveness of corrective actions for the weaknesses was presented. The inspector reviewed this report and noted an overall positive improvement in plant performance. This was evident by a declining trend in the number of overdue CRs, control room instruments out-of-service, reduction of backlogs, and other items tracked.

The inspector noted a unique system termed the "early warning indicators." The early warning system was a set of 25 indicators used as precursor indications of future plant performance. These indicators were monitored to enable early detection of negative performance so that corrective actions may be taken prior to experiencing a significant decline in plant performance. The inspector noted that the overall trend for the site was positive except for overtime hours. This was previously identified a repeat problem and an NRC violation.

From the meeting minutes of the CNRB, it was apparent that the reviews conducted were rigorous, challenging, and conformed to TS requirements. The use of early warning indicators was an enhancement to the safety review process.

On-Site

The inspector attended an FRG meeting on April 14, 1998. This meeting focused on the TS requirement for FRG to review procedure revisions. Thirty items were reviewed and one item was not approved. The inspector

observed excellent feedback to the sponsor of one procedure revision for the quality of the 50.59 screening review.

The inspector reviewed compliance with the TS 6.5.1 concerning the requirements for Facility Review Group (FRG). The quorum membership, member disciplines, meeting frequency, and responsibilities were reviewed and no problems were identified. FRG meeting minutes were promptly available after the meeting. The inspector reviewed FRG minutes for meeting number 98-088 held on April 14, 1998, and a follow-up meeting, number 98-090, conducted April 15, 1998. The follow-up meeting was held to approve a change to the administrative procedure AP-0006130, "Condition Reports," to transfer responsibility for CR review and closure to line managers. This change also deleted the requirement to review CRs for repeat conditions. This was done to provide consistency between the FPL sites at the direction of senior management.

The inspector also reviewed recent guidance dated April 7, 1998, entitled "Conduct of the FRG." This guidance reduced the FRG membership from 40 to 19 members in order to achieve consistency. Also, noteworthy guidance was that each item presented to FRG had a sponsor. The FRG chairman, members, and sponsor's responsibilities were specified on a chart in the FRG room. This guidance was seen as enhancements to the process.

c. Conclusions

The off-site/on-site safety review groups provided an effective oversight of TS required activities. The use by the CNRB of early warning indicators was an innovative approach to detecting plant problems. Recent changes made to the FRG meetings were enhancements to their review process.

08 Miscellaneous Operations Issues

08.1 Control Element Assembly (CEA) Periodic Exercise

a. Inspection Scope (61726)

The inspector observed portions of the performance of Procedure OP 1-0110050, Revision 35, "Control Element Assembly Periodic Exercise."

b. Observations and Findings

On April 29, the inspector witnessed the Unit 1 Control Room operators exercise seven CEAs in accordance with the aforementioned procedure. CEA movement was actually performed by operators in license training. The activity was directed by a licensed operator and was overseen by the Assistant Nuclear Plant Supervisor.

The inspector noted good use of three-part communication by the participants. The control room was quiet with other activities kept to a minimum during the surveillance. The ANPS was noted to have provided

advice to the trainee based on personal experience. Overall control of the evolution was considered to be excellent.

The inspector verified the procedure was the proper revision and was being adhered to.

c. Conclusions

The inspector considered the operator performance of a surveillance of control element assemblies to be excellent. The control room was quiet with little other activities or traffic. Oversight of operators in training during this evolution was also excellent.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Work Order Planning and Control Of Troubleshooting During Maintenance

a. Inspection Scope (62707)

The inspector reviewed numerous Work Orders (WOs), focussing on the quality of planning, to verify that maintenance troubleshooting activities were being properly controlled and documented. Additionally, the associated procedures were also reviewed.

b. Observations and Findings

The inspector reviewed the licensee's procedure for the processing, planning, and working of WOs, ADM-0010432, Revision 18, "Control Of Plant Work Orders." In addition, the inspector reviewed the licensee's procedure for the control of maintenance troubleshooting activities, GMP-21, Revision 2, "Troubleshooting Process."

The inspector randomly selected eight I&C WOs to review the level and adequacy of planning. The inspector noted that seven of the WOs contained a step to troubleshoot and repair the associated equipment. The seven WOs were: 9800495901, 9702586501, 9702112501, 9702619801, 9800347601, 9800499301 and 9702325101. However, none of the WOs contained the required troubleshooting documents required by GMP-21. The approved planning of the WOs would typically state 1) Investigate the reported problem. 2) Repair/Replace as necessary the affected components. 3) If required, troubleshoot/repair associated components as directed by supervision using GMP-21 and vendor technical manuals as reference as necessary.

The inspector reviewed GMP-21 and noted that it required a formal step-by-step troubleshooting plan be developed, however, none of the WOs reviewed contained that documentation. The inspector discussed this issue with Maintenance supervisors who stated that GMP-21 was not actually used. The step was written into WOs as a contingency to be

used if necessary. The WOs had been completed as skill of the craft and did not require the use of the documents described in the GMP. The licensee provided several examples of troubleshooting WOs and the inspector verified the appropriate documents were included in the package.

The inspector concluded that GMP-21 was an excellent tool in developing work instructions for troubleshooting equipment problems. The procedure required a logical sequence of thought and observation prior to actually commencing work. It also provided for an adequate amount of review and oversight during the process.

One WO reviewed by the inspector, 9800499301, written to rebuild the plant vent stack sample pumps, contained only minimal instruction. The planning stated to remove the pumps from the skid and refurbish, sending it out to the vendor for rebuild if necessary. Although the pumps were safety-related, the WO contained no guidance on how to perform the actual refurbishment. The inspector discussed this with the licensee who stated that the planning was misleading. The pumps did not get refurbished, but actually were replaced. The WO controlling this activity was used to replace these pumps on a regular basis as part of a preventive maintenance activity. The practice of refurbishing the pumps was discontinued and the WO was never revised. The licensee revised the WO to more accurately reflect the maintenance activity.

The inspector reviewed ADM-0010432, Revision 18, "Control Of Plant Work Orders." Step 7.3.2.D, stated that "if a work task requires direction beneath the level of detail that is available with specific procedure or technical manual guidance, the work may be performed at the direction of and with direct oversight by the Maintenance Supervisor (having appropriate technical assistance when necessary)....." Two restrictions associated with this step were: 1) Stay within the scope of the WO or write a scope change, and 2) Use GMP-21 when performing troubleshooting activities. The inspector discussed the meaning of this step with various maintenance workers and supervision. A large percentage of workers interpreted this step as providing authorization for work to be conducted without a procedure provided oversight was provided by a supervisor. The inspector noted that to do so would bypass the various reviews necessary to ensure the activity could be safely accomplished. Additionally, work on equipment such as safety related, seismic, or fire protection required procedures that had been reviewed by the Facility Review Group.

The inspector discussed this issue with Maintenance supervision who stated that the intent of the step was to limit the work accomplished at the direction of the supervisor to minor maintenance or skill of the craft activities. The licensee revised the step in Revision 20 of the procedure.

The inspector concluded that a large portion of I&C work, by its very nature, involved troubleshooting. It was a routine practice to plan WOs with a heavy reliance on skill of the craft and supervisory oversight.

WOs were written to include a step to allow troubleshooting, if needed. However, the inspector found few examples where it was used. The troubleshooting activities were generally determined by the maintenance worker in the field and his supervisor as the job progressed and were considered skill of the craft. In the cases that were considered beyond skill of the craft, written instructions were provided. The inspector did not identify any examples of work which had been performed inappropriately.

c. Conclusions

The inspector concluded that the licensee's method of WO planning was adequate, but placed a heavy reliance on the skill of the maintenance worker and supervisory oversight. The inspector did not identify examples where this reliance resulted in inadequate work. In addition, the inspector concluded that GMP-21 provided an excellent tool developing work instructions and controlling troubleshooting of equipment problems.

M1.2 Engineered Safeguards Relay Test (Unit 2)

a. Inspection Scope (62707)

The inspector observed portions of OP 2-0400053, Revision 27, "Engineered Safeguards Relay Test." Discussions were held with maintenance workers, control room operators, and supervisors.

b. Observations and Findings

The inspector observed the preparation and set-up for the performance of Safety Injection Actuation Signal, Containment Isolation Actuation Signal, and Containment Spray Actuation System Channel A, Group 2 testing. The inspector reviewed the procedure in use by the maintenance workers and found it to be the correct procedure and the current revision. The knowledge level of the operations personnel and technicians with regard to the procedures was verified by the inspector through questioning and found to be good.

While the I&C technicians were performing a dry run to verify and label all terminal board test points, a discrepancy was found in the procedure. The technicians found the discrepancy as a result of the dry run while comparing the terminal board wiring with the drawings and procedure. The procedure, a first time use procedure, incorrectly identified a terminal board test point location. The licensee backed out of the procedure so that a temporary change (TC) could be made to the procedure prior to continuing with that portion of testing. The inspector observed the performance of the restoration and verification steps by operations personnel and found it to be performed properly.

While observing the test, the inspector identified a void in the fire barrier on the control room floor inside the east "SA" safeguards

cabinet. The inspector could not see if the void extended completely through the floor. This void was brought to the attention of the licensee. A fire breach permit was initiated and CR 98-0723 generated. The licensee will determine the extent of degradation of the fire barrier during the next outage of sufficient duration to de-energize the cabinet.

c. Conclusions

The experience and thoroughness of the maintenance and operations personnel helped identify a procedural error involving the testing of safety components. The inspector concluded that the correct actions were taken when the error was identified. The actions that were taken were properly performed.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Safety Related Recorder Maintenance

a. Inspection Scope (62707)

The inspector reviewed the maintenance history of multiple safety-related recorders for the time period July 1, 1997 through April 30, 1998. The inspector reviewed the records for common failures and problems, timely repairs, and documentation of work.

b. Observations and Findings

The inspector reviewed greater than 100 safety-related work orders for control room chart recorders. The vast majority of these work orders were preventive maintenance (PM) items as prescribed by the various recorder's Technical Manuals and as described by the applicable I&C procedure. Any recorder that provided an indication required by Technical Specifications (TS) was clearly identified within the work scope as being a TS required instrument. For example, Work Order 98007109, which would perform the midpoint calibration check for the Auxiliary Feedwater Flow Indication, identified this PM as partially satisfying TS 3.3.3.6. The inspector identified no problems with the PM documentation.

The inspector also reviewed approximately twenty work orders identified as "Trouble and Breakdown." Nearly all these work orders were performed to correct a recorder failing to advance, a recorder spiking, a recorder indication failing to change, or a recorder failing to ink. The inspector identified no clear, recurring problems with any individual recorders. Parts were available for recorder repair within a few weeks. However, several maintenance workers and work control personnel did note that the age of the recorders was making parts replacement more difficult with time.

The inspector did note that, on average, the licensee would fix the safety-related recorders four to six weeks after a problem was

identified. Conversations between personnel in Work Control and the inspector suggested that this was expected. The licensee has adopted a thirteen-week maintenance schedule. Administrative Procedure ADM-0010432, Revision 18, "Control of Plant Work Orders" ranked work based on the plant's needs. Emergency Work was classified as work that must be started immediately. Examples of this type of work were the following:

- TS 3.0.3 related failures
- Unidentified steam or through wall leaks
- Unplanned unit load threats
- Potential for major equipment damage
- Degrading equipment condition with the potential for significant consequences

The next level of significance included work that should be started within two weeks. This category included the following:

- A severe threat to personnel safety
- An actual load limit greater than one megawatt
- Event Response Team support
- TS Limiting Conditions for Operation with a unit shutdown in less than 72 hours or NRC notification
- Control Room nuisance alarms
- Plant General Manager Directive

The third level of work would be performed between two and seven weeks. Examples of this type of work included:

- A worsening condition affecting component operability
- Equipment needed regardless of system work week
- A condition adverse to Maintenance Rule availability impact
- Drip pockets
- Control Room deficiency tags

All other work would be scheduled after seven weeks.

The inspector discussed these procedural requirements with Work Controls personnel and questioned the advisability of delaying work on safety-related equipment. The licensee asserted that this plan met all regulatory requirements, allowed proper prioritization of work, and allowed efficient use of their maintenance workers.

c. Conclusions

The inspector concluded the safety-related recorder maintenance program was able to maintain the equipment operable despite the aging of the recorders. Finding replacement parts for these recorders has not yet impacted the program. The licensee was following their program to schedule repair of non-functioning recorders.

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) VIO 50-389/97-05-01, "Failure To Control Foreign Material Entering and Exiting The Unit 2 Containment" (92902)

This violation occurred as a result of not controlling the Unit 2 containment as a Foreign Material Exclusion (FME) area as required by procedure. An inspection identified incomplete logs of equipment taken into and out of containment. As a result of the violation the licensee completely revised the controlling procedure, QI 13-PR/PSL-2, "Foreign Material Control, Housekeeping And Cleanliness Control Methods." The inspector reviewed Revision 35 of that procedure and noted much more stringent controls of foreign material. In addition, the licensee developed pamphlets which describe the process, posted signs throughout the plant to serve as reminders about the program, and provided training to personnel that might be involved with FME (i.e. maintenance workers, utility men and operators).

The licensee also revised HPP-1, "Radiation Work Permits," Form 1.4, which is used to control containment entries in Modes 1, 2, 3 and 4 when no work is to be performed. The inspector verified the change had been incorporated into the current revision, Revision 11. In addition, the licensee prohibited the use of the unit restart open items list as a method for controlling FME in the containment. The inspector reviewed AP 0010728, Revision 23, "Unit Restart Readiness," and verified that this change had been made.

The inspector considered these actions adequate to prevent recurrence. This violation is closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Generic Letter (GL) 89-10; Safety Related Motor Operated Valve Testing and Surveillance Program Implementation

a. Inspection Scope (Temporary Instruction 2515-109)

The objectives of this inspection were to review: 1) the licensee's response to NRC Integrated Inspection Report (IR) 50-335,389/97-11, and 2) the Motor Operated Valve (MOV) program implemented in response to GL 89-10. The inspection was conducted through reviews of documentation and interviews with licensee personnel.

b. Observations and Findings

Guidance for the MOV program was documented in Florida Power and Light (FPL) Procedure JPN-PSL-SEMP-91-030, "St. Lucie Plant Units 1 & 2 NRC Generic Letter 89-10 Program Description," Revision 6, dated October 22, 1997. Specific engineering documents contained the justifications for

MOV program assumptions. These included justifications for valve factors, load sensitive behavior, and stem friction coefficient assumptions.

Inspection Report 97-11 and the licensee's letter (Letter L-97-258) dated October 10, 1997, identified 13 issues and the associated corrective actions needed to resolve the Nuclear Regulatory Commission (NRC)'s concerns with the GL 89-10 MOV program. The following sections discuss these 13 issues.

(1) Weak Valve Factor Justifications: IR 97-11 identified several weak valve factor justifications. In its October 10, 1997 letter, the licensee committed to take the following specific actions to resolve these concerns.

- (Closed) Grouping Criteria - The licensee's grouping criteria had not considered a valve's American Nuclear Standards Institute pressure class or the system's fluid temperature. The inspectors reviewed JPN-PSL-SEMP-94-027, "St. Lucie Unit 1 - Motor Operated Gate, Globe, and Butterfly Valve Grouping for MOV Dynamic Test Reduction Program," Revision 5, dated March 30, 1998 and JPN-PSL-SEMP-95-024, "St. Lucie Unit 2 - Motor Operated Gate, Globe, and Butterfly Valve Grouping for MOV Dynamic Test Reduction Program," Revision 3, dated March 30, 1998. The procedures had been revised to include the above criteria and to regroup the MOV valve population. This item is closed.

- (Closed) Inadequate Open Valve Factor Data for Valves 1-V3206, 1-V3207, 1-V3452, 1-V3456, and 1-V3457 - The original valve factor justification for this group did not include open dynamic test data to address performance in the open safety function direction. The inspectors reviewed the dynamic tests of valves in this group which were reanalyzed using Electric Power Research Institute (EPRI)'s extrapolation criteria and concluded three tests had adequate disc loading levels to provide reliable open valve factor information which was used to justify the valve factors used by this group. This item is closed.

- (Closed) Low Differential Pressure Test Conditions for Valves 1-MV-08-1A/B - These valves were originally tested at very low differential pressures relative to a design-basis differential pressure of 1015 psid. The licensee recently retested these valves and was able to obtain significantly higher differential pressure conditions. The inspectors reviewed the test results which demonstrated that the valves were flow-over-the-seat globe valves and were self-closing in their safety function direction. This item is closed.

- (Closed) Address Unwedging for Valves ½-MV-09-9, ½-MV-09-10, ½-MV-09-11, and ½-MV-09-12 - These WKM balanced-plug globe valves had not been analyzed to determine whether significant unwedging loads could exist under design-basis conditions. Several near

design-basis dynamic test results were reviewed by the inspectors and no unwedging concerns were observed. Dynamic testing of this valve design will continue as part of the long-term MOV program. This item is closed.

- (Open) Inadequate Close Valve Factors for Valves 2-MV-08-12/13 - The licensee was unable to perform meaningful dynamic tests on these 4 inch Anchor/Darling double-disc gate valves in the close direction. To justify the applied valve factors, the licensee compared EPRI Performance Prediction Methodology (PPM) flow isolation model results to the results obtained from the industry standard equation using a 0.50 valve factor. This comparison found that the industry standard method bounded the PPM results and was used as the basis for continued use of a 0.50 valve factor.

  The inspectors observed that these Auxiliary Feedwater (AFW) Pump Steam Supply valves have a design-basis function to close under high-energy line beak conditions. Therefore, some additional stem thrust, beyond flow isolation, is necessary to ensure that these valves continue to meet their safety function under all plant conditions.

  A new PPM calculation was performed that assumed the worst-case lower wedge orientation, so that a bounding prediction could be established. The current torque switch settings were found to be approximately midway between the current minimum required thrust and the worst-case PPM prediction for full disc wedging. This provided confidence that the valves would reliably perform their safety function at their current settings. Further, the licensee will increase actuator capability during the upcoming Unit 2 outage. The licensee issued Plant Manager Action Item (PMAI) PM 98-04-072 to revise program documents and thrust calculations to establish a minimum thrust requirement that ensures adequate mechanical wedging of the valve discs under design-basis conditions.

- (Closed) Inadequate Close Valve Factor for Valves 2-V3481 and 2-V3651 - The licensee reviewed the design-basis conditions for these valves and determined that they were not closed under differential pressure conditions. Therefore, the close valve factor does not affect the close thrust requirements for these valves. The inspectors agreed with this determination. This item is closed.

- (Open) Inadequate Close Margin for Valves 2-MV-08-1A/B - Unit 2's Main Steam Isolation Valves (MSIV) bypass valves were found to have inadequate actuator capability to meet their close safety function and were declared inoperable. The licensee de-energized these valves in their close safety function position. PMAI PM97-10-113 and modification package PC/M 98014 had been issued to implement actions to increase the margin for these

valves. Further, the valves will be reversed to change the flow direction across the valve plug. These modifications were scheduled to be implemented during the Fall 1998 Unit 2 refueling outage.

- (Closed) Justify Safety Function for Valve 2-MV-08-3 - AFW Turbine Trip Throttle Valve - The licensee reviewed the safety function for valve 2-MV-08-3 to ensure that it was correctly classified as not having an open safety function. Condition Report (CR) 98-0457 documented the licensee's review of the Final Safety Analysis Report and the emergency operating procedures. This review determined that 2-MV-08-3 is maintained in its open safety position and is not relied upon to re-open after a turbine overspeed trip because the accident analysis relies on the 2 motor-driven AFW pumps. Additionally, Operations personnel confirmed that this understanding was consistent with plant operating procedures. This item is closed.

- (Closed) Inadequate Close Margin for Valves 2-V3550, 2-V3551, and 2-V3536 - Globe valves 2-V3550, 2-V3551, and 2-V3536 were found to have inadequate actuator capability to meet their close safety function. The licensee revised 2-V3536's thrust calculation to take credit for its flow-over-the-seat design which assists closure of the valve. This removed any capability concerns for this valve. Further review of the design-basis requirements for valves 2-V3550 and 2-V3551 identified that these valves do not have a close safety function. This item is closed.

(2) (Closed) Periodic Verification Plan Did Not Address Dynamic Testing of Globe Valves: The licensee's periodic verification program was described in PSL-ENG-SEMS-97-018, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves for NRC Generic Letter 96-05", Revision 3, dated April 9, 1998. Inspection Report 97-11 identified that dynamic testing of globe valves was specifically excluded. In its October 10, 1997 letter, the licensee committed to revise the program to include dynamic testing of a sample of balanced disc globe valves. The inspectors verified that these changes were implemented. However, the inspectors noted that the licensee did not intend to dynamically test any unbalanced globe valves. The licensee's decision was based on a preliminary assessment, as part of the Joint Owners Group (JOG) program on MOV periodic verification, that unbalanced globe valves were not susceptible to degradation mechanisms. The inspectors indicated that the JOG is now including some unbalanced globe valves in their test program to validate this assumption. In response, the licensee revised PSL-ENG-SEMS-97-018 to include a review of the JOG's unbalanced globe valve testing and to reassess the need to perform continued testing of unbalanced globe valves, if necessary. This item is closed.

(3) (Closed) Globe Valve Calculations Did Not Use Correct Disc Area: The inspectors reviewed Mechanical Standard, STD-M-003, "Engineering Guidelines for Sizing & Evaluation of Limitorque Motor Operators," Revision 3, dated 10/31/97, which had been revised to provide guidance on determining if globe valves were guide or seat based for PPM calculations. Additionally, the inspectors reviewed PSL-1FJM-91-019, Revision 12, and PSL-2FJM-91-048, Revision 12, which had been revised to identify which globe valves were guide based. This item is closed.

(4) (Closed) Dynamic Testing Data Extrapolation Guidance Needs Updating: The licensee's justification for linear extrapolation of dynamic test data did not include EPRI's latest recommendations for identifying the disk loads that were necessary to ensure that test results were reliable for extrapolation. Licensee personnel had revised JPN-PSL-SEMP-91-030 and their linear extrapolation justification to include EPRI's extrapolation criteria. A review of previous extrapolations using this guidance found that all existing dynamic test conditions were adequate. This item is closed.

(5) (Closed) Condition Report 97-1732 Does Not Address Load Sensitive Behavior in the Open Direction: Condition Report (CR) 97-1732 determined that the original 10.5 percent load sensitive behavior margin was non-conservative. Analysis of in-plant data using EPRI methods determined that a 22.5 percent margin was appropriate. However, CR-97-1732 did not specify a margin for the open direction. To resolve this issue, the licensee revised the open setup calculations to include the 22.5 percent margin. CR 97-1734, Supplement 1, addressed the revised margins and identified 3 valves that required further review (1-V2514, 2-V3663, and 2-V3665). These valves were found acceptable based on valve-specific dynamic test data. This item is closed.

(6) (Closed) Revisions Needed to Address Effects of Stem Lubricant Change on Stem Friction Coefficient and Load Sensitive Behavior: The licensee recently changed the standard stem lubricant from FelPro N5000 to Mobil 28 which may have different performance characteristics. The licensee will monitor for stem friction coefficient and load sensitive behavior performance changes as part of the long term MOV program. Load sensitive behavior and stem friction coefficient justifications will be revised to reflect the new test data, as necessary. This item is closed.

(7) (Closed) No Margin Identified for Age Related Degradation: The licensee had not identified a margin for valve degradations. PSL-ENG-97-018, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves for NRC Generic Letter 96-05," Revision 2, dated 4/3/98, was revised to include a minimum 10 percent thrust margin goal. The licensee also had identified 48 MOVs that will be modified over the next three outage cycles to attain this margin goal. This item is closed.

(8) (Closed) MOV Calculations Need to Be Updated to Incorporate the Latest Design Information: The inspector reviewed PSL-1FJM-91-017, Revision 12; PSL-2FJM-91-048, Revision 12; F-MECH-CALC-018, Revision 3; and L-MECH-CALC-017, Revision 4. These procedures had been revised to address non-conservative valve factors, load sensitive behavior, and include EPRI PPM results for non-testable valves. This item is closed.

(9) Long Term Plans Where EPRI PPM is Considered "Best Available Data:" Engineering Report JPN-PSL-SEMS-96-070, "Evaluation of EPRI MOV Performance Prediction Program Results - MPR Report 1759," Revision 3, dated March 30, 1998, describes how the PPM is applied to MOVs and identifies several cases where the conditions for model application were not met. These results were considered to be "best available data." In its October 10, 1997 letter, the licensee committed to develop plans to resolve each of these cases. The licensee's actions to implement these plans are discussed below.

- (Open) Nonapplicable Guide and Seat Material Combination - EPRI's PPM was not validated for valves that use Deloro on the guide and disc seating surfaces. Valve 1-V3480 (10 inch Velan gate valve) uses this material. A contractor study showing Deloro and Stellite 6 as having similar friction characteristics was used as an interim justification. Further, the JOG program test plan includes at least one valve that has Deloro internal surfaces. The licensee issued PMAI PM98-04-071 to monitor the JOG and other industry testing and to compare this information to PPM predictions as a long-term resolution of this issue.

- (Closed) Nonapplicable Butterfly Valve Bearing Material - Butterfly valves ½-MV-07-2A/B, 2-MV-14-3, and 2-MV-14-4 were identified to use a nylatron bearing material that was not included as part of the PPM validation program. The licensee reviewed existing dynamic tests for valves 1-MV-07-2A/B using EPRI methods to measure the bearing friction coefficient. This testing resulted in a bounding coefficient of friction of 0.26. For conservatism, a coefficient of 0.35 was used by the PPM prediction. In-plant investigations found that valves 2-MV-07-2A/B have bronze bearings. Therefore, the PPM predictions are directly applicable to these valves. The bearing material concern was resolved for valves 2-MV-14-3 and 2-MV-14-4 as they have no safety function in either direction and were removed from the GL 89-10 program. This item is closed.

- (Open) Compressible Flow Globe Valves - The licensee applied PPM results to the MSIV bypass valves (2-MV-08-1A/B) which are globe valves that operate under steam (compressible flow) conditions. Engineering Report JPN-PSL-SEMS-96-070 noted that the PPM is not validated for globe valves that are in compressible flow applications. The licensee issued PMAI PM97-10-133 and modification P/CM 98014 to modify these valves to increase their

margin during the Fall 1998 Unit 2 refueling outage. Further, dynamic tests will be performed to establish design-basis settings.

- (Open) Inverted Valve Guides - Valves 1-MV-15-1 and 1-MV-18-1 use an inverted guide design, where the guide rail is part of the valve disc which rides in a slot in the valve body. The PPM was not validated for valves with this design. A contractor study was used to justify use of the PPM as "best available data." This study modified the guide offset dimensions used by the PPM and determined that disc tilting and nonpredictable behavior was not a concern for these valves. Engineering Report JPN-PSL-SEMS-96-070 stated that industry test programs would be monitored and new information would be incorporated as it becomes available. The licensee issued PMAI PM98-04-71 to communicate with industry sources and other licensees to identify existing or future testing of this valve design.

- (Closed) Nonpredictable Behavior - The PPM results for valves 1-MV-09-7/8 originally determined that these valves would be nonpredictable due to disc tilting and the sharp disc, seat ring, and guide edges assumed by the PPM. These valves were subsequently opened, and the seat and guide edges were verified to be rounded in accordance with EPRI's criteria. Revised PPM calculations resulted in a predictable thrust requirement and resolved this PPM applicability issue. This item is closed.

- (Open) Valves Sizes Larger than 18 Inches - The licensee had applied PPM results to several 20 inch gate valves (1-MV-09-1, 1-MV-09-2, 1-MV-09-7, and 1-MV-09-8). The NRC safety evaluation (dated March 15, 1996) on the EPRI PPM indicated that the PPM was validated for specific solid and flex-wedge gate valve design up to 18 inches in size. Engineering Report JPN-PSL-SEMS-96-070 stated that industry test programs would be monitored and new information would be incorporated as it becomes available. Additionally, EPRI will be contacted to determine the status of EPRI's efforts to validate the gate valve model for valves in excess of 18 inches. The licensee issued PMAI PM98-04-71 to track this validation effort. The licensee's MOV periodic verification program requires that a post-outage report be completed within 3 months of the end of a refueling outage. The licensee intends to use this report to update its efforts taken to complete the actions identified in the PMAIs.

(10) (Closed) Update Total Equipment Database: The inspectors reviewed the Total Equipment Database to ensure that it had been updated. This review consisted of a sampling of ten percent of the GL 89-10 valves. Findings were acceptable and this item is closed.

(11) (Closed) Plans to Upgrade Low Margin Valves: PSL-ENG-97-018 was revised, as noted above in Issue 7, to include a minimum 10 percent thrust margin goal. The licensee identified 48 MOVs that will be modified over the next three outage cycles to attain this margin goal. This item is closed.

(12) (Closed) Use of Stem Friction Coefficients Less Than 0.20: The licensee's stem friction coefficient study analyzed gate and globe valve data points obtained from static testing and justified a 0.20 stem friction coefficient for valves. However, IR 97-11 identified that a 0.15 stem friction coefficient had been assumed for valves 1-MV-09-1, 1-MV-09-2, 1-MV-09-7, and 1-MV-09-8. The setup calculations used a 22.5 percent thrust margin to account for load sensitive behavior. These valves are scheduled for future margin improvements and stem friction coefficient performance will be monitored each outage until the modifications are complete. Operability assessments for valves 2-V1476 and 2-V1477, Power Operated Relief Valves (PORV) Block valves, were reviewed. These assessments used a stem friction coefficient of 0.15 based on valve-specific static testing where the results were less than 0.15. This item is closed.

(13) (Open) PORV Block Valve Long Term Plan: IR 97-11 identified margin concerns for the Units 1 & 2 PORV Block Valves (1-V1403, 1-V1405, 2-V1476, and 2-V1477). Valve 1-V1403 was closed and declared inoperable for the closing stroke in accordance with Technical Specification Limiting Condition for Operation 3.4.12, which requires the valve to be closed and power removed. In its October 10, 1997 letter, the licensee committed to make the following changes to Unit 1's PORV Block Valves during the January 1998 refueling outage: 1) change the valve stem material to eliminate the potential for stem embrittlement, 2) replace the valve disc with one that has stellited guide slots, and 3) increase the available thrust margin. The inspectors verified that the modifications were implemented, including stem and disc replacement and rounding of disc and guide edges as documented in JPN-PSL-SEMP-96-070. An actuator gear change was made to increase actuator capacity. The Unit 1 PORV Block Valves now have 25 percent margin based on use of actuator pullout efficiencies and a 0.2 stem friction coefficient assumption.

The licensee also committed to assess the Unit 2 PORV Block Valves (2-V1476, and 2-V1477) margins to determine if modifications are needed. These valves currently rely on operability assessments that use actuator run efficiency and a 0.15 stem friction coefficient assumption. Modification Package PC/M 98013 identifies actions that will increase these valves' margins. These modifications were being tracked by PMAI PM97-10-115 and were scheduled to be implemented during the Fall 1998 Unit 2 refueling outage.

Other Issues

The licensee's grouping method identified a "prototype" valve for each group which contained valves that were testable under dynamic conditions. This "prototype" valve was based on its available margin and risk significance. The licensee's program specified that only a given group's "prototype" valve be considered for future dynamic testing. in conjunction with the JOG effort to address periodic verification of MOV switch settings. The inspectors noted that dynamic performance information will be needed for any valve group that is not covered by the JOG program. The licensee agreed to include this consideration as part of the long-term MOV program.

c. Conclusions

The NRC staff review of the GL 89-10 program at St. Lucie is being closed based on the completed and scheduled work, including the actions identified in the PMAIs noted above. The completion of the commitments in the PMAIs and the closure of the specific remaining items described above will be tracked as Inspection Follow-up Item, IFI 50-335,389/98-06-04, "Completion of Motor Operated Valve Program Follow-up Items."

E2 Engineering Support of Facilities and Equipment

E2.1 Engineering Support of Sodium Hydroxide Tank Issues

a. Inspection Scope (37551)

On April 8, the licensee identified that the Unit 1 Sodium Hydroxide (NaOH) Tank level indication was off-scale high, and Operations was unable to verify that level was less than the maximum amount allowed by Technical Specifications. The inspector noticed that this was the second problem identified with NaOH tank level in two months. The inspector reviewed Engineering's disposition of both Condition Reports (CR) for adequacy of the corrective actions and depth of condition review.

b. Observations and Findings

On February 9, Chemistry noted in Condition Report CR 98-0214 that the level indication on the Unit 1 NaOH tank did not correlate with the volume of NaOH added and drained from the tank as calculated using the strapping tables. The System and Component Engineer's (SCE) response to the CR reviewed the history of the NaOH tank. A 1985 change lowered the required flow rate, changed the weight requirement of the NaOH, and changed the level requirements in the tank. The maximum allowable level in the tank was then greater than the maximum indicated level. The evaluation continued by describing how the minimum volume would be ensured by low level alarms. If level was maintained on-scale, the maximum level would not be exceeded.

The CR response did not specifically address the fact that several iterations of adding and removing NaOH did not cause the observed level changes to be as expected. The CR response, however, initiated two corrective actions. First, the level instrument was scheduled for a calibration. The engineer believed that an out-of-calibration instrument could have been the cause of the mismatch. Second, the SCE issued a PMAI to issue a Request for Engineering Action to change the range of the level instrument or identify precautions to prevent the tank level from exceeding the top of the indicating band.

Three weeks after the CR response was issued, I&C performed a calibration check on the instrument. They found that the instrument was within all tolerances. The ANPS determined that no further work was required on the instrument. This information was not fed back to. Chemistry or the SCE for resolution or further investigation. This lack of feed back is identified as a weakness.

Approximately one week later, Operations found the level in the NaOH tank greater than 80 inches (top of indicating range). The licensee conservatively entered a 72-hour shutdown Action Statement for Technical Specification (TS) 3.6.2.2 since they were unable to confirm that the contained volume was less than 5000 gallons. Also, the licensee was uncertain that the concentration had not been diluted out of specification. The licensee's immediate actions included draining the tank into the gage range and verifying the NaOH concentration. Based upon the amount of NaOH drained, the SCE confirmed that the level never exceeded the TS limits. Chemistry results confirmed that the concentration remained within the TS limits.

CR 98-0612, was issued to determine the cause of the level increase. The SCE identified two potential leak paths, the nitrogen supply lines or the closed solenoid valves to the containment spray system. The SCE had identified a constant level increase of 0.1 inches per five day period. Recently, the licensee had completed maintenance on the nitrogen supply line valve and had seen no indication of water intrusion. The SCE planned to evaluate the other possibility during the quarterly stroke test of the solenoid valves in May.

Approximately one week later, Operations found the level in the NaOH tank greater than 80 inches (top of indicating range). The licensee's immediate actions included draining the tank into the gage range and verifying the NaOH concentration. CR 98-0612 was issued to determine the cause of the level increase. The SCE identified two potential leak paths; the nitrogen supply lines or the closed solenoid valves to the containment spray system. The SCE had identified a constant level increase of 0.1 inches per five day period. Recently, the licensee had completed maintenance on the nitrogen supply line valve and had seen no indication of water intrusion. The SCE planned to evaluate the other possibility during the quarterly stroke test of the solenoid valves in May.

The inspector discussed the issues with the SCE including the intent of the original CR, 98-0214. The SCE verified that the strapping tables were adequate by reviewing the calculations in PC/M 231-177. The SCE was confident that he understood the problems with the level indications. He also acknowledged that there had been a missed connection with I&C's and Operation's handling of the calibration discussed above. The inspector learned that the SCE had discussed the issues concerning the tank and its level indication problem with the Chemistry Supervisor and they were working to get an acceptable solution in place.

c. Conclusions

Upon identification, the SCE actively worked toward correcting deficiencies with the NaOH tank level indication. The inspector noted good communications between the SCE and Chemistry in determining the problem and corrective actions. A weakness was identified when Operations and I&C failed to inform Chemistry or the SCE about the results of work performed on the level instrument.

E2.2 Updating Total Equipment Data Base (TEDB)

a. Inspection Scope (37550)

A review was made by the inspectors of the licensee's current efforts in updating and resolving problems with the TEDB.

b. Observations and Findings

The inspectors reviewed the licensee's current efforts and plans for updating and resolving problems with the TEDB. The licensee explained the background for these efforts. A review of Condition Reports (CR) was conducted in early 1997 to identify and assess the generic concerns related to this data base system. The review identified 65 potentially valid CRs which were further broken down by causal factors, e.g., calibration issues, NRC/QA issues, etc. The predominant issue was miscellaneous setpoint/range issues for primarily non-safety-related equipment. The safety-related setpoints were determined to be adequately controlled.

The seven areas were evaluated using importance factors and significance factors as multipliers. The NRC/QA issues had the highest ranking with TEDB procedure revision/process streamlining second and third was the setpoint/calibration issues, followed by the remaining four areas. The highest concern involving regulatory/compliance was given top priority because it had the highest probability for impacting a quality related or safety-related condition. The potential existed for misclassification for quality group or safety class. Initial results showed numerous upgrades in classification were necessary. The final classifications were determined to be accurate.

The CRs had recommendations for corrective actions which, in a few cases, seemed to conflict. The inspectors discussed the licensee's new system for streamlining the process for correcting information in TEDB. A new MEP, No. 98012M, Revision 1, dated March 19, 1998, was made available for use in dispositioning various administrative, non-safety-related engineering concerns. A Change Request Notice (CRN) would be generated against the generic MEP and provide timely process for addressing certain TEDB changes. Setpoint and calibration concerns, as they are found, would then result in prompt issuance of a CRN to resolve the issues. The licensee was expending substantial effort each month to resolve the non-safety-related problems with the TEDB system.

c. Conclusions

The licensee has adequately controlled in a timely manner the safety-related information in the TEDB. The licensee's new updating process was adequate and facilitated a more timely resolution of non-safety-related setpoints and other design information issues as they are found in the TEDB. The licensee was allocating substantial engineering effort to resolve the problems with TEDB and to improve the support for the I&C group maintenance setpoint and calibration program.

E2.3 Nuclear Division Engineering Meeting (37551)

On April 22, the inspectors met with the Nuclear Division Engineering staff in Juno Beach to discuss current issues. The Engineering staff delivered presentations on Turkey Point and St. Lucie Engineering indicators, site self-assessments, regulatory and industry issues, specific site problems and their root cause analyses, and Engineering initiatives. The licensee stressed the fact that the Engineering Division was unifying its approach to both sites. The inspectors found the meeting informative.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) VIO 50-335,389/97-11-05, "Failure to Maintain Motor Operated Valve Calculations, Design Documents, Supporting Test Results, and Equipment Data Base Current and Consistent" (92903)

The inspector reviewed the licensee's corrective actions as contained in FPL letter L-97-291, dated December 10, 1997. Specific corrective actions reviewed are contained in paragraphs E1.1.b (1), (3), (6-8), and (10) above. The corrective actions were acceptable. This item is closed.

E8.2 (Closed) URI 50-335,389/96-08-05, "Licensee Identified UFSAR Deficiencies" (92903)

The subject URI was opened as a result of UFSAR reviews undertaken by the licensee to compare procedures described in the UFSAR with operational and other procedures. At the time the URI was initiated, the licensee had identified 151 items for both units. As the licensee's

review process is now complete, the inspector reviewed the results of the process. As a result of the licensee's review effort, 1591 individual items were identified.

The inspector reviewed six items, selected at random, from the licensee's database of identified UFSAR accuracy issues. All issues were appropriately documented, entered into the licensee's corrective action process, and were either resolved or corrective actions were specified and completion dates were established. Of the sample population, the inspector identified no violations. Items reviewed had documented cases in which procedures lacked UFSAR references, cases in which reviewers were, at the time of the review, unaware of supplemental information in the UFSAR which provided context of the items identified, and cases in which reviewers were unaware of procedures which existed which implemented UFSAR commitments. Of the items identified, 70 Unit 1 items, 181 Unit 2 items, and 42 procedural revision items remained to be resolved. The project was scheduled to be completed in February of 1999. The inspector concluded that the licensee was appropriately addressing the items identified. This item is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Review of Condition Report Regarding Containment Entries Without Health Physics Escort

a. Inspection Scope (71750)

The inspector reviewed the circumstances surrounding Condition Report (CR) 98-0340 which identified that personnel entered the Unit 1 containment without a health physics (HP) escort.

b. Observations and Findings

Condition Report 98-0340 stated that personnel unescorted by HP entered a Locked High Radiation Area on February 22, 1998. The inspector reviewed the CR and determined that the Locked High Radiation Area in question was the Unit 1 containment building. At the time of the incident the unit was shut down to perform repairs on a reactor coolant pump (RCP) motor.

The CR stated that the containment was not actually a Locked High Radiation area, but rather had been "over posted." An area inside the containment between the reactor coolant piping and the reactor vessel met the requirements to be posted as a Locked High Radiation area. However, signs used to post radiological areas were not allowed in that area of containment because they could become dislodged, travel to the containment sump and block the strainers. As a result the licensee moved the posting to the entrance of the containment.

Through interviews conducted, the inspector determined that two individuals had entered the containment to work on the RCP motor without HP escort. One of the individuals was a qualified HP and the other was with electrical maintenance. The inspector determined that the maintenance worker had been briefed by HPs prior to entering the containment. He was directed as to the path to take after entering the containment and was told that he would be met along the route by an HP technician. After the individual was briefed the HP at the RCP inside the containment was contacted and told that a worker would be entering shortly. The maintenance worker stated that the path was well marked and he was met by the HP close to the RCP.

The inspector reviewed Procedure HPP-3, Revision 6, "High Radiation Areas," regarding the requirements for entry into the containment or a Locked High Radiation Area. Step 7.7.3 of that procedure stated that "All entries into locked high radiation areas require constant coverage by a qualified Health Physics technician with a dose rate instrument." Appendix A, Step 9.A, stated that "Locked High Radiation Areas and Very High Radiation Areas require continuous Health Physics coverage." Step 13.A defined continuous direct coverage as, "coverage performed by a qualified Health Physics individual who is in or near the area with workers at all times and maintains exposure control on a continuous basis." After discussing the circumstances surrounding this event with the HP supervisor and others involved, the inspector concluded that adequate HP coverage was provided to the maintenance worker. A review of the radiation work permit for the RCP motor repair indicated that the exposures were below the prescribed limits.

The inspector noted that one of the corrective actions identified in the CR was to procure posting materials that could be used in containment.

c. Conclusions

The inspector concluded that adequate HP coverage was provided for individuals entering the Unit 1 containment to repair a Reactor Coolant Pump.

F2 Status of Fire Protection Facilities and Equipment

F2.1 Operability of Fire Protection Water System and Fire Pumps.(64704)

a. Inspection Scope (64704)

In conjunction with the NRC Fire Protection Functional Inspection (FPFI Report No. 50-335, 389/98-201) conducted during the March 9, 1998, and April 3, 1998, time period, the inspectors reviewed station open maintenance work orders and Condition Reports (CRs), issued for the facility's fire protection water system and fire pumps, and performed a walkdown inspection of the equipment to assess the material conditions and performance trends.

b. Observations and Findings

Maintenance Observations:

The review of station open maintenance work orders listed as of March 30, 1998, indicated that the total number of open maintenance work orders related to the fire protection water system and fire pumps was 17.

The inspectors noted that very few (only 2) of the fire protection water system (System 15) work orders (W/O) above were associated with fire protection water supply system piping or the fire pumps. These items involved backfill for fire water piping (W/O No. 980006075) and repair of a mounting discrepancy of the fire pump discharge pressure gauges (W/O No. 97012288). These work orders were minor repairs which did not affect the operability of the fire protection water system or fire pumps. Work was properly scheduled to correct these issues. There was not a high backlog of open work orders for fire protection water system or fire pumps.

Fire Protection Condition Reports:

The inspectors evaluated approximately 150 licensee fire protection related CRs initiated from January 1997 to March 30, 1998, that were listed in the Condition Report Tracking database. Most of the identified issues were the result of the licensee's on-going Appendix R reassessment effort. Only five of the licensee CRs initiated during this period involved the fire protection water supply system piping or the fire pumps.

The inspectors concluded that the maintenance and material condition of the fire protection water system components and fire pumps was good. The number of open Condition Report deficiencies identified as part of the station problem evaluation process associated with the fire protection water system components or the fire pumps was small. The licensee's corrective action dispostioned for resolution of fire protection system problems was being properly scheduled.

c. Conclusions

The maintenance and material condition of the fire protection water system components and fire pumps was good. There was not a high backlog of open work orders associated with the fire protection water system components or the fire pumps. The number of open Condition Report deficiencies identified as part of the station problem evaluation process associated with the fire protection water system components or the fire pumps was small. The licensee's corrective action dispostioned for resolution of fire protection system problems was being properly scheduled.

V. Management Meetings and Other Areas

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on May 14, 1998. Interim exit meetings were held on April 3 and April 9, 1998 to discuss the findings of Region based inspection. The licensee acknowledged the findings presented.

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

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Allen, Training Manager
C. Bible, Site Engineering Manager
W. Bladow, Site Quality Manager
D. Fadden, Services Manager
R. Heroux, Business Manager
H. Johnson, Operations Manager
J. Marchese, Maintenance Manager
C. Marple, Operations Supervisor
R. McDaniel, Fire Protection Supervisor
J. Scarola, St. Lucie Plant General Manager
A. Stall, St. Lucie Plant Vice President
E. Weinkam, Licensing Manager

Other licensee employees contacted included office, operations, engineering, maintenance, chemistry/radiation, and corporate personnel.

INSPECTION PROCEDURES USED

IP 37550: Engineering
IP 37551: Onsite Engineering
IP 61726: Surveillance Observations
IP 62707: Maintenance Observations
IP 64704: Fire Protection
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92901: Followup - Plant Operations
IP 92902: Followup - Maintenance
IP 92903: Followup - Engineering
TI 2515-109: Inspection Requirements for GL 89-10

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-335,389/98-06-01	VIO	"Repeat Failure to Implement an Equipment Clearance Order Prior to Beginning Work" (Section O1.2)
50-335,389/98-06-02	NCV	"Failure to Fulfill a Technical Specification Surveillance Requirement to Continuously Monitor Oxygen Concentration in the Gas Decay Tank" (Section O2.1)
50-335,389/98-06-03	VIO	"Corrective Action Program Lacks Focus on Correction of Problems" (Section O7.6)
50-335,389/98-06-04	IFI	"Completion of Motor Operated Valve Program Follow-up Items" (Sections E1.1)

Closed

50-389/97-05-01	VIO	"Failure To Control Foreign Material Entering and Exiting the Unit 2 Containment" (Section M8.1)
50-335,389/97-11-05	VIO	"Failure to Maintain Motor Operated Valve Calculations, Design Documents, Supporting Test Results, and Equipment Data Base Current and Consistent" (Section E8.1)
50-335,389/96-08-05	URI	"Licensee Identified UFSAR Deficiencies" (Section E8.2)

Discussed

50-335/97-01-01	VIO	"Failure to Follow In-Plant Equipment Clearance Order Procedure" (Section O1.2)
50-335/97-03-01	NCV	"Failure to Adequately Implement an Equipment Clearance Order" (Section O1.2)
50-389/97-04-01	VIO	"Failure to Follow The Equipment Clearance Order Procedure" (Section O1.2)
50-335/97-06-01	NCV	"Failure to Implement an ECO Prior to Beginning Work" (Section O1.2)
50-335/97-14-03	VIO	"Failure to Properly Execute an Equipment Clearance Order" (Section O1.2)

LIST OF ACRONYMS USED

ADM	Administrative Procedure
AFW	Auxiliary Feedwater (system)
ALARA	As Low as Reasonably Achievable (radiation exposure)
ANPS	Assistant Nuclear Plant Supervisor
AP	Administrative Procedure
ATTN	Attention
CAP	Corrective Action Plan
CEA	Control Element Assembly
CFR	Code of Federal Regulations
CNRB	Company Nuclear Review Board
CR	Condition Report
CRN	Change Request Notice
ECO	Equipment Clearance Order
ENG	Engineering
EPRI	Electric Power Research Institute
ESFAS	Engineered Safety Feature Actuation System
FME	Foreign Material Exclusion
FPL	The Florida Power & Light Company
FRG	Facility Review Group
FSAR	Final Safety Analysis Report
GDT	Gas Decay Tank
GL	[NRC] Generic Letter
GMP	General Maintenance Procedure
HP	Health Physics
HPP	Health Physics Procedure
i.e.	that is
e.g.	for example
I&C	Instrumentation and Control
IFI	[NRC] Inspector Followup Item
INEEL	Idaho National Engineering and Environmental Laboratory
IP	Inspection Procedure
IR	[NRC] Inspection Report
JCN	Juno Change Notice
JOG	Joint Owners Group
JPE	(Juno Beach) Power Plant Engineering
JPM	Job Performance Measurement
JPN	(Juno Beach) Nuclear Engineering
LER	Licensee Event Report
LHR	Locked High Radiation
MOV	Motor Operated Valve
MEP	Minor Engineering Package
MSIV	Main Steam Isolation Valve
NaOH	Sodium Hydroxide
NCV	Non-Cited Violation (of NRC requirements)
NLO	Non-licensed Operator
NOV	Notice of Violation
NPS	Nuclear Plant Supervisor
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulatory (NRC Headquarters Publication)
NWE	Nuclear Watch Engineer

O_2	Oxygen
OEF	Operating Experience Feedback
OJT	On-the Job Training
PDR	NRC Public Document Room.
PMAI	Plant Managers Action Item
PORV	Power Operated Relief Valve
PPM	Performance Prediction Methodology
psid	Pounds per square inch (differential)
PSL	Plant St. Lucie
QA	Quality Assurance
QI	Quality Instruction
QSL	Quality Surveillance Letter
RAB	Reactor Auxiliary Building
RCO	Reactor Control Operator
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RPS	Reactor Protection System
SCE	Systems and Component Engineering
SCR	Significant Condition Report
St.	Saint
TC	Temporary Change
TEDB	Total Equipment Data Base
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	[NRC] Unresolved Item
USNRC	United States Nuclear Regulatory Commission
VIO	Violation (of NRC requirements)
VP	Vice President
WCC	Work Control Center
WO	Work Order