March 29, 1999

EA 99-046

Mr. John P. Cowan, Vice President
Nuclear Operations
Florida Power Corporation
ATTN: Manager Nuclear Licensing (SA2A)
Crystal River Energy Complex
15760 West Power Line Street
Crystal River, FL 34428-6708

SUBJECT: NRC INSPECTION REPORT NO. 50-302/99-01

Dear Mr. Cowan:

This refers to the inspection conducted on January 17, 1999 through February 27, 1999, at the Crystal River facility. The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities at the Crystal River facility was generally characterized by safety-conscious operations. Operator response and system engineering corrective actions to address a raw water check valve issue were timely and thorough.

Based on the results of this inspection, the NRC has determined that two violations of NRC requirements occurred. These violations are being treated as Non-Cited Violations (NCVs), consistent with Appendix C of the Enforcement Policy. These NCVs are described in the enclosed report. If you contest the violation or severity level of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Sincerely,

(**Original signed by L. Wert**)

Leonard D. Wert, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket No. 50-302
License No. DPR-72

Enclosure: NRC Inspection Report 50-302/99-01

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-302
License No:	DPR-72
Report No:	50-302/99-01
Licensee:	Florida Power Corporation
Facility:	Crystal River 3 Nuclear Station
Location:	15760 West Power Line Street Crystal River, FL 34428-6708
Dates:	January 17 through February 27, 1999
Inspectors:	S. Cahill, Senior Resident Inspector S. Sanchez, Resident Inspector
Approved by:	L. Wert, Chief, Projects Branch 3 Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

Crystal River 3 Nuclear Station
NRC Inspection Report 50-302/99-01

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a six-week period of resident inspection.

Operations

- Changes to the Operations turnover process improved the quality of the crew turnover meeting by eliminating distractions present in the control room and allowing operators to challenge off-going shift turnover information. The changes also improved the transfer of information in the morning management meeting and more directly exposed the Nuclear Shift Managers to management expectations. (Section O1.1)

- A significant power reduction for planned maintenance was controlled well. A failure of an Integrated Control System module was promptly diagnosed and mitigated. Operators were formal, procedures were appropriately utilized, control room access was strictly controlled, and augmented management oversight was constant. (Section O1.1)

- The remote shutdown panel was verified to be correctly aligned to support emergency usage. Several housekeeping problems and burned out panel light indicators were identified, indicating licensee tours of the room were not rigorous. (Section 02.1)

- The inspectors concluded that the licensee Quality Assurance group performed a comprehensive audit of the licensee Corrective Action Program. The results were consistent with inspector observations. The findings and conclusions were presented well in a detailed exit meeting. The response of licensee Corrective Action Program management to the findings was systematic and thorough. (Section O7.1)

- Operators alertly detected and initiated prompt action to isolate a raw water check valve failure. Operators had questioned the lack of an expected output pressure change during a pump shift, even though an alarm limit had not been reached. This was considered excellent verification of expected system response. (Section E8.1)

Maintenance

- Performance of maintenance activities remained effective. Pre-job briefings were thorough. Activities were routinely monitored by supervisors and component engineers. Excellent maintenance response was noted for a failed main steam pressure transmitter that caused a 72-hour Technical Specification action to be entered. Troubleshooting, planning, and replacement of the transmitter was timely. (Section M1.1).

Engineering

- The inspectors concluded the component failure analysis and corrective action plan for the failure of a raw water check valve were timely, thorough, and complete. The licensee system engineer identified that corrective actions for a previous identical failure

of a check valve in 1991 were not adequate. Failure of the check valve resulted in degraded raw water cooling flow to both nuclear services closed cycle cooling heat exchangers. A Non-Cited Violation was issued for the previous inadequate corrective action. (Section E8.1)

Plant Support

- The inspectors determined that security equipment testing was performance-based, and search techniques were thorough and systematic. A minor vehicle barrier bollard spacing discrepancy was identified by the inspectors and was promptly addressed. Overall, the inspectors determined that the activities to relocate the Protected Area boundary were conducted rigorously and were well controlled. (Section S1.1)

- Licensee Fire Protection staff were not routinely involved with scaffold installation for consideration of transient combustible loading and fire suppression system impairment. Weekly surveillance reviews for transient combustible loading were of limited effectiveness. The licensee Fire Protection program review of scaffolding and control of transient combustibles was reactive and considered to be a weakness. Although the safety-significance of the deficiencies was limited by roving fire watches in effect for other issues, a non-cited violation was identified for the programmatic administrative problems. A corrective action plan initiated by the licensee was thorough and systematic. (Section F1.1)

Report Details

Summary of Plant Status

The plant began the period at full rated power and remained at that level until power was reduced to 93% on February 5, 1999, in response to problems with a main turbine governor valve. Power was restored to approximately 98.5% later the same day and remained at that level until February 24, when power was reduced to 32% to repair the governor valve controller. Power was restored to 100% later the same day and remained at 100% through the remainder of the period.

I. Operations

O1 Conduct of Operations

O1.1 Routine Conduct of Operations Reviews

a. Inspection Scope (71707)

Using Inspection Procedure 71707, the inspectors performed routine reviews of plant operations which included shift turnovers, response to emergent problems, log reviews, coordination meetings, and control room observations. The inspectors also performed extended observations of Operations and Maintenance activities associated with the plant power reduction on February 24, 1999.

b. Observations and Findings

Operations implemented a new shift turnover meeting practice at the beginning of the report period. The oncoming shift crew completed their verbal turnovers with their off-going counterparts, but before relieving the off-going individual, the entire oncoming crew assembled in a meeting room. The licensee's previous practice was to complete the watch reliefs and assemble in the control room after already relieving the shift. The inspectors observed that the new practice improved the quality of the meeting by eliminating distractions present in the control room. It also allowed operators to challenge the quality of turnover information provided by the off-going individuals before those individuals had departed the site. The crew Nuclear Shift Manager (NSM) also began to attend the morning management meeting to discuss plant status and emergent problems. This improved the transfer of information in the morning meeting including communication of management expectations directly to the NSM.

On February 5, 1999, the licensee noted control problems with main turbine governor valve (GV) number four. Power was lowered to 93% to fully close GV-4 and control oil was isolated to the GV-4 actuator. Power was then restored to approximately 98.5% on the remaining three GVs. Troubleshooting determined the problem was a GV-4 control circuit card. A power decrease was planned to change the card and perform other maintenance. On February 24, 1999, power was reduced to 32% (below the anticipatory reactor trip on a turbine trip setpoint of 45%). A detailed schedule had been developed for the power decrease activities. During the power reduction, a neutron error step change caused unanticipated rod motion. Operators promptly diagnosed an Integrated Control System (ICS) error and took manual control to stop the rod motion.

Although the step change output was intermittent and was not recurring, the licensee had connected data recording equipment to the ICS system prior to the reduction as a precautionary measure. This significantly facilitated diagnosis of the cause as an intermittent malfunction of an ICS neutron error processor, supporting repairs in a timely manner. Throughout the power changes, the inspectors observed that operators were formal, procedures were utilized and augmented management oversight was present. Control room access was strictly controlled and extra operations personnel were provided to assist with tasks.

c. Conclusions

Changes to the Operations turnover process improved the quality of the crew turnover meeting by eliminating distractions present in the control room and allowing operators to challenge off-going shift turnover information. The changes also improved the transfer of information in the morning management meeting and more directly exposed the Nuclear Shift Managers to management expectations.

A significant power reduction for planned maintenance was controlled well. A failure of an ICS module was promptly diagnosed and mitigated. Operators were formal, procedures were appropriately utilized, control room access was strictly controlled, and augmented management oversight was constant.

O2 Operational Status of Facilities and Equipment

O2.1 Remote Shutdown Panel Walkdown

a. Inspection Scope (71707)

The inspectors observed the status of the remote shutdown (RSD) panel room and various operator stations. The alignment of control panel settings and instrument indications were verified against Surveillance Procedure (SP) 338, Remote Shutdown and Post Accident Monitoring Channel Check, and Abnormal Procedure (AP) 990, Shutdown from Outside the Control Room.

b. Observations and Findings

The inspectors observed that the condition of the RSD room was adequate to support use of the shutdown panel, but several housekeeping problems were noted. Debris had been left inside RSD cabinets and on the RSD room floor from previous fire barrier installation work. A temporary work light had been left energized in the RSD room overhead. The inspectors identified five burned out valve position indication lights on the panel. Minor scratch and pen markings were present on the cabinets. Station location indicator placards for the public address and station phones were worn away. Several RSD cabinets were found locked, although a recent Operations program change had been implemented to leave these and numerous other plant cabinets unlocked. The inspectors verified that keys were still readily available for the locked cabinets so that response to a control room evacuation would not be hindered. A maintenance deficiency tag on an RSD panel component was associated with a work

request that had been closed in April 1998. An abandoned television monitor was left unsecured on a shelf above the operator RSD work station. Extension cords routed in normal traffic areas across the floor to supply the monitor and radio chargers presented a tripping hazard. The licensee subsequently resolved the discrepant items discussed above. Routine licensee tours of the RSD room had not previously identified the discrepancies. The inspectors also observed conditions at various RSD operating stations and found that staged procedures were current and staged equipment was complete and orderly.

The inspectors identified one minor discrepancy involving the switch alignment for cooling water valves to the reactor building (RB) fans. The switches were in accordance with SP-338 requirements and aligned for the normal plant configuration of cooling supplied by the Industrial Cooling (CI) system. However, the plant had been operating with cooling supplied by the Nuclear Services Closed Cycle Cooling (SW) system (as permitted by the procedure). Consequently, a transfer of plant control to the RSD panel would have caused an unexpected automatic transfer to CI cooling. Additionally, a subsequent step of AP-990 aligned RB fan cooling from CI to SW. The inspectors questioned the basis for the licensee's normal alignment of the RSD panel switches to CI, relative to the current SW cooling configuration and eventual alignment to SW in AP-990. Operations engineers were evaluating changing the alignment to SW and considering difficulty in tracking changing operating plant alignments versus the desire to avoid initiating a transient on RSD panel activation. The inspectors considered these actions appropriate and the evaluations thorough.

c. Conclusions

The remote shutdown panel was verified to be correctly aligned to support emergency usage. Several housekeeping problems and burned out panel light indicators were identified, indicating licensee tours of the room were not rigorous.

O7 Quality Assurance in Operations

O7.1 Quality Assurance Audit of Corrective Action Program

a. Inspection Scope (71707)

The January 1999 audit conducted by the licensee Quality Assurance (QA) group was focused on the licensee Corrective Action Program (CAP). The inspectors reviewed the QA findings, attended the QA exit meeting, and assessed licensee management response to the audit findings.

b. Observations and Findings

The inspectors observed that QA had procured additional personnel resources and performed a broad and comprehensive audit of the entire CAP. Although the audit scope did not result in a detailed vertical analysis of any one area, the results were a broad indication of the adequacy of the licensee CAP. The inspectors observed that the findings in each assessed area were performance-based in that random samples of

precursor cards (PCs) were evaluated for specified attributes. Negative conclusions were supported by valid examples and numerical data.

The inspectors determined the QA audit was thorough. The results were similar to previous inspector observations and were independent from previous licensee self-assessment and third party assessments of the CAP. The audit concluded that the CAP was a generally effective system with a low threshold for problem identification. The QA auditors noted some problems with completion of low level PC corrective actions and screening for nonforming conditions and identified several areas for improvement. The QA exit meeting was organized along key CAP functional areas and was easily understood.

After the QA findings had been finalized, the inspectors reviewed the response of the licensee CAP management to the audit. The inspectors found the preliminary response to be thorough and systematic. Significant effort was made by the CAP management to understand the scope and basis for the QA findings in order to develop effective changes to the CAP.

c. Conclusions

The inspectors concluded that the licensee Quality Assurance group performed a comprehensive audit of the licensee Corrective Action Program. The results were consistent with inspector observations. The findings and conclusions were presented well in a detailed exit meeting. The response of licensee Corrective Action Program management to the findings was systematic and thorough.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Routine Observations

a. Inspection Scope (62707, 61726)

Using Inspection Procedures 62707 and 61726, the inspectors observed various portions of several corrective maintenance tasks and surveillance tests and reviewed associated documentation.

b. Observations and Findings

The inspectors observed that work was routinely performed with the work packages present and in active use. Pre-job briefings continued to be thorough and sufficient detail was provided for the workers. Supervisors and system engineers frequently monitored job progress.

In the course of plant walkthroughs and work observations, the inspectors observed several housekeeping problems. An increasing trend was noted in the number of portable ladders left unsecured. Other observations included damage to recent plant

coatings, debris left in work areas, and equipment staged on carts for pending or ongoing work not secured. Licensee management remained focused on improving plant cleanliness standards and appropriately addressed the trends.

The inspectors observed portions of various work activities during the power reduction on February 24, 1999, and noted that pre-job preparation and walkdowns had been thorough. Work activities were closely tracked by licensee management. The evening before the power reduction, a main steam line pressure transmitter had malfunctioned, requiring entry into a 72-hour Limiting Condition for Operation (LCO) for Technical Specification (TS) 3.3.11 and 3.3.17. The inspectors observed that the emergent Work Request (WR) 359664 for this item was completed in a very timely manner. Additional resources were called in on night shift and troubleshooting and planning of the WR was done before the power reduction commenced at 2:00 a.m. Replacement of the transmitter was completed early in the morning, allowing the LCO to be promptly exited with no impact on the pre-planned power reduction work. The inspectors considered this excellent prioritization and repair of TS related equipment.

c. Conclusions

Performance of maintenance activities remained effective. Pre-job briefings were thorough. Activities were routinely monitored by supervisors and component engineers. Excellent maintenance response was noted for a failed main steam pressure transmitter that caused a 72-hour Technical Specification action to be entered. Troubleshooting, planning, and replacement of the transmitter was timely.

III. Engineering

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) LER 50-302/98-15-00: Check Valve Failure Causes Raw Water Pumps to Be Declared Inoperable Resulting in Entry Into Technical Specification 3.0.3.

a. Inspection Scope (92903, 37551)

The raw water system (RW) discharge check valve, RWV-36, for the normal duty raw water pump (RWP) 1, failed to close on December 3, 1998, when RWP-1 was secured during a routine pump surveillance. This caused discharge flow of the other pump (RWP-2A) to bypass the service water (SW) heat exchangers via reverse flow through RWV-36 and RWP-1. RWP-1, and the two safety-related pumps, RWP-2A and RWP-2B, share a single common discharge pipe which supplies the Nuclear Services Closed Cycle Cooling System (SW) heat exchangers. Immediate corrective actions were previously discussed in Inspection Report (IR) 50-302/98-11. The inspectors verified the results of the licensee's component failure evaluation, reviewed the immediate actions of operators responding to the failure, and researched previous licensee RW check valve failure actions.

b. Observations and Findings

The licensee component failure investigation concluded the failure was due to wear from disk rotation. The primary planned corrective action was to install anti-rotation pins on the valve disk backs to prevent wear. The licensee also placed the RW system in category a(1) of the maintenance rule and changed preventive maintenance inspections of the valves from two year to one year intervals. The licensee determined the extent of the problem was limited to the discharge check valves for the three RW pumps that supply the SW system heat exchangers, and the two slightly smaller discharge check valves for RWP-3A and 3B, which each supply a separate Decay Heat Closed Cycle Cooling system (DC) heat exchanger. The inspectors considered the licensee evaluation and corrective action plan to be thorough.

During the evaluation, the licensee system engineer identified that RWV-38, the RWP-2A discharge check valve, had failed to close in 1991 due to disk rotation wear. He also found that RWV-35, the RWP-2B discharge check valve, already had anti-rotation pins installed. A vendor failure analysis performed in 1991 determined that the pins were needed. RWV-38 had been expeditiously repaired with a spare disk that did not have pins attached. The licensee's other spare disk had been modified with the pins and subsequently installed in RWV-35. No other disks were modified. The 1991 problem had not been entered in the corrective action system and the pin addition was inappropriately processed as Plant Equipment Equivalency Replacement Evaluation (PEERE) instead of a modification. The PEERE was posted against the valve and disk parts in the spare parts database but it did not direct further pin installation and would only have been referenced if a spare disk was ordered. The licensee was evaluating to verify other equipment problems had not been inappropriately processed as PEEREs.

Investigations of other problems with RW check valves did not identify the missing pins. In 1993, a valve stuck open due to dealloying of several small valve parts. The licensee corrective action system evaluated the extent of the problem and upgraded all five RW check valves with improved material parts. Due to the failure mechanism, the cause evaluation for this problem would not have been expected to identify the missing pins.

A licensee service water self-assessment conducted in 1994 identified the single failure of a RW check valve could disable both trains of SW cooling. Subsequent NRC review noted the single failure was not modeled in the Probabilistic Risk study. The licensee added the valve failure to their study and determined that the valve failure resulted in a negligible increase in the resultant risk. Systematic Licensee System Readiness Reviews, conducted in 1997 as a corrective action for licensee design problems, also did not detect the missing pins. The inspectors concluded that it was reasonable that these reviews had not identified the missing pin issue because the PEERE would not be reviewed unless a detailed spare parts evaluation had been conducted.

The inspectors evaluated licensee design information and procedural guidance to determine the safety significance of a RW to SW cooling failure. The SW system cools numerous components, only several of which are safety-related and needed in an accident scenario. One significant load is the reactor building (RB) cooling fans. However, the Final Safety Analysis Report (FSAR), section 6.3.1, identifies that none of the RB fans were needed to provide adequate emergency cooling as long as two trains

of RB Spray were available. Two of the three make-up and purification (MUP) pumps can also be supplied by the independent DC system, although normal configuration is to have only one of the three MUPs aligned to DC. Other SW-cooled components had redundant trains of equipment that did not rely on SW cooling, so no single safety function would be disabled on the loss of RW to SW cooling.

Initial Emergency Operating Procedure (EOP) steps verify the two safety-related RWPs start and RWP-1 automatically stops, but not that RWV-36 closed. Later cooldown EOP steps direct specific RWV-36 verification, but the inspectors determined that a timely operator response to a RWV-36 failure would be initiated earlier by several control room indicators. A low RWP discharge pressure alarm would alert operators to reference an Abnormal Procedure (AP). The AP directs specific local operator action to diagnose the failure and to shut the RWP-1 discharge valve to isolate backflow though the stuck open check valve. Numerous SW cooled component alarms could also alert operators to a loss of RW to SW cooling. The inspectors validated these assumptions by interviewing various operators, reviewing EOP usage rules, and reviewing the operators' response to the December 3, 1998, failure of RWV-36. During the recent failure, RWV-36 failed partially closed, allowing RW pump discharge pressure to remain above the low pressure alarm. However, the operator starting RWP-2A and securing RWP-1 noted the resultant RWP discharge pressure did not exhibit the expected increase and dispatched a local operator who diagnosed the failure by observing RWP-1 rotating in reverse. The inspectors concluded this was excellent verification of expected system response and questioning of indications by the control room operator. The inspectors also determined that operators had adequate training and procedures to be able to diagnose and quickly respond to a failed RW check valve in an emergency scenario.

10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires that measures shall be established to ensure significant conditions adverse to quality, such as failures and defective equipment, are promptly identified, a cause of the condition is determined, and corrective action is taken to preclude repetition. Contrary to this requirement, following the March 1991 failure of RWV-38, the licensee did not take adequate corrective action to preclude repetition of wear-related RW check valve failures. Anti-rotation pins were only installed on one of five RW check valves which contributed to the similar failure of RWV-36 and resultant degraded RW flow on December 3, 1998. However, the licensee response to the latest failure and corrective action plan were timely and very thorough. The thorough effort resulted in the identification of the incomplete corrective action for the 1991 failure. The licensee already instituted a new corrective action program in 1996 which addressed the deficiencies found in the response to the 1991 failure. The licensee's thorough investigation identified the violation. The failure mechanism still allowed some RW to SW flow and no single safety function would be disabled on the loss of RW to SW cooling. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy, and will be referenced as NCV 50-302/99-01-01, Inadequate 1991 Corrective Action Results in Raw Cooling Check Valve Failure. This violation is in the licensee's corrective action program as PC 98-5326.

c. Conclusions

The inspectors concluded the component failure analysis and corrective action plan for the failure of a raw water check valve were timely, thorough, and complete. The licensee system engineer identified that corrective actions for a previous identical failure of a check valve in 1991 were not adequate. Failure of the check valve resulted in degraded raw water cooling flow to both nuclear services closed cycle cooling heat exchangers. A Non-Cited Violation was issued for the previous inadequate corrective action.

Operators alertly detected and initiated prompt action to isolate the raw water check valve failure. Operators had questioned the lack of an expected output pressure change during a pump shift, even though an alarm limit had not been reached. This was considered excellent verification of expected system response.

E8.2 (Closed) URI 50-302/97-14-12: NRC Review of Licensee Response to GL 88-17 Associated With Reduced Inventory Operation. This item involved the design of the reduced inventory reactor vessel level instruments that used common reference and sensing legs. Generic Letter (GL) 88-17 had recommended licensees provide at least two independent water level indications whenever the reactor coolant system (RCS) is in a reduced inventory condition. The licensee decided to evaluate the need for and best means to achieve an additional channel of RCS level instrumentation to be installed by a refueling outage in 1991. This evaluation was not completed and a second channel was not installed. This item was opened pending further staff review of this unresolved issue. The subsequent NRC staff review, completed in August 1998, determined that the licensee needed to either add a second independent channel or justify to the staff why addition of a second independent instrument would be a hardship per the original GL 88-17 guidance. The licensee determined that several issues exist with the current level indication system and that justifying a hardship was not appropriate. An engineering request was initiated in October 1998 to perform an engineering study to more closely evaluate the RCS level indication system and develop an upgrade plan. The design study is planned by the licensee to commence in April 1999, but implementation of any study recommendations will not be resolved before the next planned licensee reduced inventory operation in an October 1999 refueling outage. However, Inspector Follow-up Item (IFI) 50-302/97-11-01, RCS Reduced Inventory Level Indication Problems, is already open for reliability problems with the same mid-loop level indications and will be addressed prior to the outage. Since the lack of a second independent level instrument is not a violation of regulatory requirements, this unresolved item is closed. The licensee was adequately addressing resolution of the independent channel issue. IFI 50-302/97-11-01 remains open.

IV. Plant Support

S1 Conduct of Security and Safeguards Activities

S1.1 Relocation of Protected Area Boundary

a. Inspection Scope (71750)

The inspectors observed the licensee's Security organization perform activities associated with relocating the protected area (PA) boundary. These activities included searching the new Plant Administration Building (PAB) and the already existing Nuclear Administration Building (NAB), as well as final closure of the new PA fence and testing of new security equipment.

b. Observations and Findings

The inspectors observed testing of microwave sensors and closed circuit television cameras. The licensee utilized security personnel to try and circumvent the intrusion detection equipment. Maintenance personnel adjusted the equipment as necessary. This process was repeated until security personnel could not circumvent the system after several attempts. The inspectors considered the use of security personnel to test new equipment as an effective performance-based technique.

A portion of the vehicle barrier system (VBS) was relocated to accommodate the new PA fence. The inspectors independently verified the VBS installation and identified two bollards spaced a few inches more than the maximum distance specified in the referenced Regulatory Guide for the medium they were erected in. The licensee immediately compensated for the deficiency and installed two additional bollards next to the discrepant bollards. A subsequent engineering evaluation determined that the function of the VBS had not been compromised with the initial spacing. The inspectors had no further concerns associated with the VBS.

Licensee Quality Assurance (QA) personnel identified minor discrepancies with the installation of the fence. These discrepancies included the improper attachment of the fence fabric to the terminal and line posts, attachment of the fence fabric to the top and bottom rails, and lack of truss rods and truss tighteners at the terminal posts. Corrective actions were completed prior to the new fence being placed in service.

Searches of the PAB and NAB were conducted using several security teams, including the use of K-9 drug and bomb patrols. The security teams systematically searched each building. The inspectors observed various teams' searching techniques, as well as the K-9 search teams. When an area was completely searched, security personnel stood watch to ensure no unauthorized entry was made. No contraband, weapons, or other unauthorized materials were found during the search. The inspectors noted QA auditors also monitoring the search and testing activities. The inspectors considered the building searches to be well controlled and thoroughly conducted. The new PA boundary was subsequently placed in service on January 30, 1999.

c. Conclusions

The inspectors determined that security equipment testing was performance-based, and search techniques were thorough and systematic. A minor vehicle barrier bollard spacing discrepancy was identified by the inspectors and was promptly addressed. Overall, the inspectors determined that the activities to relocate the PA boundary were conducted rigorously and were well controlled.

F1 Control of Fire Protection Activities

F1.1 Control of Scaffolding and Transient Combustibles

a. Inspection Scope (71750)

The inspectors performed routine plant walkdowns to verify fire hazards were appropriately controlled. Based on some observations, the inspectors reviewed the Fire Protection (FP) program group involvement with scaffolding installation, FP control of transient combustible material, and routine FP surveillance procedures.

b. Observations and Findings

The inspectors noted scaffolding in engineered safeguards (ES) 4160 volt switchgear rooms had been installed for several months. The inspectors questioned licensee FP personnel regarding control of the scaffold wood transient combustible loading and the scaffolding impact on suppression systems such as sprinklers. The licensee determined that the specific scaffolds had not been formally evaluated by the FP group and consequently not included in the Fire Hazards Analysis (FHA) tracking program for the transient combustible loading. The inspectors noted that licensee Administrative Instruction (AI) 2200, Guidelines for Handling Use and Control or Transient Combustibles, specified that transient combustibles were to be controlled so that the maximum permissible fire loading in the FHA was not exceeded. AI-2200 also allowed the use of wood scaffolding in the plant if it was treated to be fire retardant. The inspectors verified that the wood had been treated. However, AI-2200 also specified that the use of large amounts of transient combustible materials, including treated wood scaffolding, was to be reviewed by responsible work supervisors with FP staff. The inspectors reviewed AI-1803, Safety Standards for Scaffolding and Ladders, to verify how this review was accomplished. The inspectors observed that AI-1803 specified that FP engineers were responsible for identifying compensatory measures required for scaffolding installations, but did not provide a checklist or other process to ensure a FP engineer was consulted. Consequently, FP personnel were not routinely considering transient combustible impact of scaffold wood or blockage of fire suppression equipment and were often unaware of the scope of installation. Therefore, they were not including the combustible load in the FHA program as specified by AI-2200. The inspectors also noted FP engineers were not evaluating the extended nature of transient combustibles, such as the ES 4160 volt room scaffolding that was left erected, although work had been suspended approximately one and a half months.

Both AI-2200 and the licensee's Fire Protection Plan also specified that periodic inspections were to be done by FP staff to verify that fire loading of transient combustibles did not exceed FHA limits without proper compensatory measures. The results of these inspections were to be reviewed on a quarterly periodicity to verify undesired trends had not developed. Both references stated the inspections were done by Surveillance Procedure (SP) 809, FP Weekly Inspection. The inspectors reviewed SP-809 and the documentation of several recently completed performances and determined that the weekly SP-809 walkdowns were ineffective reviews of transient combustible loading. Specific transient combustible information was not recorded in SP-809 so it was not useful for trending. Most of SP-809 was broad scope check-off lists. Discrepancies were usually not recorded because they were corrected as they were found. The licensee also identified that discrepancies, whether recorded in SP-809 or not, were not being placed in the licensee corrective action system. The licensee corrected this practice. SP-809 was routinely performed by contract fire watch personnel, not the FP engineers. The licensee initiated use of the FP engineers for some SP-809 performances to ensure the most qualified individuals were monitoring for combustibles.

The inspectors determined that the safety significance of the minimal FP engineer involvement with the scaffolding process was limited. Roving fire watches were checking each of the areas questioned by the inspectors as part of ongoing compensatory measures for Thermolag fire barrier replacement. These watches fulfilled the compensatory measures that would have been implemented for a transient combustible or suppression system concern. However, the watches may not have been present later in the year when all fire barrier replacement activities were expected to be complete. The licensee also determined the FHA for the ES 4160 volt room in question was not exceeded when the scaffold wood was added to the combustible load calculation.

Licensee FP management was reviewing the transient combustible and scaffolding controls in detail following the initial inspector questions. Each specific program deficiency they found was addressed and a corrective action plan developed. The inspectors reviewed the plan and initial completion progress. The inspectors observed that the plan was a systematic comparison of FP requirements against current practices and addressed all of the known deficient areas.

Crystal River Technical Specification 5.6.1.1 requires written procedures to be established and implemented covering Fire Protection Program implementation. The licensee's Fire Protection Plan encompasses the overall Fire Protection Program. Section 3.0 of the Plan specifies administrative and procedural requirements to govern the handling of and limit transient fire loads which are proceduralized in AI-2200. The problems delineated above constitute a violation to fully implement the procedural requirements to monitor for and limit transient combustible loads. The licensee has taken steps to restore compliance and these problems are not considered repetitive examples of previous problems. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. The violation is in the licensee's corrective action system as PC 99-0245 and will be tracked as NCV 50-302/99-01-02, Deficiencies in Control of Wood Scaffolding Transient Combustible Loading and Suppression System Impairment.

c. Conclusions

Licensee Fire Protection staff were not routinely involved with scaffold installation for consideration of transient combustible loading and fire suppression system impairment. Weekly surveillance reviews for transient combustible loading were of limited effectiveness. The licensee Fire Protection program review of scaffolding and control of transient combustibles was reactive and considered to be a weakness. Although the safety-significance of the weak involvement was limited by roving fire watches in effect for other issues, a non-cited violation was identified for the programmatic administrative problems. A corrective action plan initiated by the licensee was thorough and systematic.

V. Management Meetings

X1 Exit Meeting Summary

The inspection scope and findings were summarized on March 2, 1999. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensees

S. Bernhoft, Director, Nuclear Regulatory Affairs
J. Cowan, Vice President, Nuclear Operations
R. Davis, Assistant Plant Director, Operations
R. Grazio, Director, Nuclear Site and Business Support
G. Halnon, Director, Nuclear Quality Programs
J. Holden, Director, Site Nuclear Operations
C. Pardee, Director, Nuclear Plant Operations
D. Roderick, Director, Nuclear Engineering & Projects
M. Schiavoni, Assistant Plant Director, Maintenance
T. Taylor, Director, Nuclear Operations Training

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 61726: Surveillance Observations
IP 62707: Conduct of Maintenance
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92903: Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-302/99-01-01	NCV	Inadequate 1991 Corrective Action Results in Raw Cooling Check Valve Failure. (Section E8.1)
50-302/99-01-02	NCV	Deficiencies in Control of Wood Scaffolding Transient Combustible Loading and Suppression System Impairment. (Section F1.1)

Closed

50-302/98-15-00	LER	Check Valve Failure Causes Raw Water Pumps to Be Declared Inoperable Resulting in Entry Into Technical Specification 3.0.3. (Section E8.1)
50-302/99-01-01	NCV	Inadequate 1991 Corrective Action Results in Raw Cooling Check Valve Failure. (Section E8.1)
50-302/99-01-02	NCV	Deficiencies in Control of Wood Scaffolding Transient Combustible Loading and Suppression System Impairment. (Section F1.1)
50-302/97-14-12	URI	NRC Review of Licensee Response to GL 88-17 Associated with Reduced Inventory Operation. (Section E8.2)

Discussed

50-302/97-11-01	IFI	RCS Reduced Inventory Level Indication Problems. (Section E8.2)