

## EXECUTIVE SUMMARY

Crystal River 3 Nuclear Station  
NRC Inspection Report 50-302/97-13

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 5-week period of resident inspection; in addition, it included the results of announced inspections by regional reactor inspectors and visiting resident inspectors.

### Operations

The licensee was well prepared for the evolution to draw vacuum in the main condenser and successfully verified the secondary plant was ready to support unit restart (Section 01.1).

A Non-Cited Violation (NCV 50-302/97-13-01) was identified for improper clearance restoration causing a Reactor Coolant System leak. However, the licensee's actions for this problem were comprehensive and proactive and included a significant planned effort to label all instrument valves in the plant (Section 01.2).

The inspectors concluded that Operations questioning attitude and communications remain a challenge to the licensee, but licensee management continues to pursue the problems and implement initiatives aggressively in an effort to improve performance.

Licensee system requalification training and STAR (Stop-Think-Act-Review) Simulator training was good. The Star training was very effective at reenforcing desired operator behaviors. However, some problems were noted with system training because of the limited coverage of recent modifications (Sections 05.1 and 5.2).

The inspectors concluded that the licensee's progress to date on the Management Corrective Action Plan (MCAP II) was satisfactory. The licensee was not yet ready for restart but had plans to get there. Ten open MCAP II items were on the licensee's restart list. Also, inspectors identified two additional items on which progress was needed prior to restart: personnel errors (quality of work) and availability and knowledge of licensing and design basis information (Section 07.1).

The inspectors concluded that the licensee's recent assessment of MCAP II was generally good. However, the MCAP II Assessment Report did not assess the current status on MCAP action items with respect to readiness for plant restart. Also, the licensee did not have a good plan for follow up and closure of the MCAP II Assessment Report findings and recommendations (Section 07.1).

The licensee's response to a violation and corresponding closure package adequately addressed the technical issue but was inadequate because it lacked any resolution of the inadequate corrective action that was the cause of the violation (Section 08.3).

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### Maintenance

The licensee's maintenance department achieved a significant goal to reduce the corrective maintenance backlog. On September 13, the licensee achieved their goal of less than 200 open corrective maintenance work requests, down from a peak of 768 in May of 1997. (Section M1.1).

A review of work packages and corrective actions for a spent fuel pump rebuild revealed that the licensee's investigation was adequate but not especially thorough and the corrective actions were limited (Section M1.2)

The licensee had made significant improvement in improving the coordination of the hydrostatic testing process, but problems continued to occur regarding communications between different groups. Participants exhibited excellent sensitivity to reactivity management, and work package documentation was good (Section M1.3)

A Violation (VIO 50-302/97-13-02) was identified for failure to perform an engineering evaluation for the installation of scaffolding in the vicinity of safety related equipment (Section M2.1).

### Engineering

A Violation (VIO 50-302/97-13-03) was identified for failure to follow procedure in controlling circuit breakers when removed from switchgear cubicles (Section E2.1).

The licensee's Final Safety Analysis Report (FSAR) review project, which was completed in March, 1997, was limited in scope. The results of the review indicated that additional FSAR reviews may be required to assure the FSAR was accurate. The licensee's Restart Readiness Review and Configuration Document Integration Project should provide additional assurance that the FSAR accurately reflects the design, operation, and licensing basis of the plant (Section E3.1).

### Plant Support

A Non-Cited Violation (NCV 50-302/97-13-04) was identified for failure to control tools contaminated with radioactive material in accordance with regulatory and licensee contamination control procedures (Section R1.1).

The inspector concluded that the licensee was implementing good radiological protection controls in accordance with licensee procedures and regulatory requirements. Good interaction between the Health Physics staff and radiation workers were observed in the inspection (Section R1.2).

A Non-Cited Violation (NCV 50-302/97-13-05) of licensee radiation safety procedure requirements was identified for failure to secure access to a high radiation area (Section R1.3).

The sampling and analysis process for the reviewed gaseous effluent samples was adequate. The technicians performing the work understood the processes

very well. The applicable procedures provided sufficient detail to perform the work and the procedure was properly utilized throughout the sampling and analysis process (Section R1.4).

A potential problem concerning the accuracy of reactor building gaseous effluent release start times and volumes was identified by the licensee and will be reviewed by the NRC in a future inspection as an Inspector Follow-up Item (IFI 50-302/97-13-06) (Section R1.4).

The 1996 Effluent Report was complete and met Technical Specification requirements. The radiological effluents were well within the limits specified in the Offsite Dose Calculation Manual (Section R3.1).

The 1996 Annual Environmental Monitoring Report met Technical Specification requirements (Section R3.2).

The inspectors found the practical factor qualification training an excellent training component with the licensee's computer based training program (Section R5.1).

The inspector concluded the Manager of Radiation Protection met the Technical Specification qualification requirements for the Radiation Protection Manager (Section R6.1).

The fundamental objectives of the annual Emergency Preparedness drill were met and the inspectors considered the drill to be a success. Some minor communication problems occurred, but nothing that was considered to detract from the drill's intent and purpose (Section P1.1).

The inspectors assessed the licensee's performance in the five areas of continuing NRC concern in the following sections: the assessments are limited to the specific issues addressed in the respective sections.

NRC AREA OF CONCERN	ASSESSMENT PARAGRAPH											
	04.1	07.1	08.3	08.4	08.5	08.8	08.8	08.8	08.8	08.8	08.8	08.8
Management Oversight	G	A	A	I	S	G	A	A	G	G	G	
Engineering Effectiveness		A	A	G			A	A	G	G	G	A
Knowledge of Design Basis		A	A	A			A	A	G	G	G	A
Compliance With Regulations	A	A	A	I	G	A	A	A	G	G	G	
Operator Performance	A	A	A		G	G	A					A

S = Superior G = Good A = Adequate/Acceptable I = Inadequate  
Blank = Not Evaluated/Insufficient Information

Section 04.1: Operations Readiness

Section 07.1: Management Corrective Action Plan (MCAP II)

Section 08.1: (Closed) VIO 50-302/94-25-01: Failure to Properly Control the Control Complex Habitability Envelope (Door Blocked Open for Maintenance Work)

Section 08.3: (Closed) VIO 50-302/96-01-01: Inadequate Corrective Action to Fix High Pressure Injection (HPI) Flow Indication Problems

Section 08.4: (Closed) VIO 50-302/97-01-01: Inadequate Clearance Tagging Requirements [Restart Issue No. 0-12]

- Section 08.5: (Closed) VIO 50-302/97-01-02: Failure To Follow Procedures, Resulting In An Inadvertent Emergency Diesel Generator Start [Restart Issue No. 0-13]
- Section 08.1: (Closed) LER 50-302/96-018-00: Failure to Verify Reactor Building Penetrations Closed per Technical Specifications
- (Closed) LER 50-302/96-018-01: Failure to Verify Reactor Building Penetrations Closed per Technical Specifications
- (Closed) EA 96-365, 96-465, 96-527, VIO B (02013), **EXAMPLE 5 ONLY**: Three Inadequate Procedures for Containment Penetration Surveillances
- Section E8.1: FSAR Review Project
- Section E8.2: (Closed) EA 96-365, 96-465, 96-527, VIO A (01012, 01022, and 01032); ED<sub>g</sub> Loading USQs due to inadequate 10 CFR 50.59 evaluations; three examples (one modification and two procedure changes); and
- (Closed) LER 50-302/96-020: Unreviewed Safety Questions Concerning Diesel Generator Loading Caused by Interpretation of Regulatory Requirements Other than Prescribed
- (Closed) EA 96-365, 96-465, 96-527, VIO A (01042); EFW NPS; USQ due to Inadequate 10 CFR 50.59 Safety Evaluation for a Modification; and
- (Closed) LER 50-302/97-001: Ineffective Change Management Results in Unrecognized NPSH Issue Affecting EFW Availability
- Section E8.3: (Closed) EA 96-365, 96-465, 96-527, VIO A (01052); EFW USQ due to Removing the Automatic Open Signal from ASV-204, Reducing the Reliability of EFP-2
- Section E8.5: (Open) VIO 50-302/96-01-06: Failure to Correctly Translate Design Basis of Service Water System into Procedures, Drawings, and Instructions [Restart Issue No. D-54]
- (Open) LER 50-302/96-005-001: Inadequate Failure Modes Review Creates Possibility of Cooling Water Flow Outside of Design Limits

## Report Details

### Summary of Plant Status

The unit remained in Mode 5 throughout the inspection period, continuing in the outage that began on September 2, 1996. The reactor coolant system (RCS) remained filled to a normal pressurizer level with a nitrogen over pressure of approximately 40 psig. One train of forced decay heat removal system flow remained in service. Both once-through steam generators (OTSG) remained filled to a normal inventory with a nitrogen over pressure to support use as a backup decay heat sink if needed. On September 13 through September 19, vacuum in the main condenser was established by using Auxiliary Steam from adjacent fossil fuel plants. The majority of the secondary cycle flowpaths and all major pumps were exercised for post-maintenance testing and to assess the readiness of the plant for startup after being in lay-up for over a year.

Work on major physical modifications related to the licensee's restart efforts continued this report period. Work that commenced August 3 to replace the radiator and upgrade cooling airflows for the A Emergency Diesel Generator progressed relatively on schedule. The addition of the Backup Diesel Power Supply to Feedwater Pump 7 was nearing completion and containment penetration relief valve work continued to address concerns in NRC Generic Letter 96-06, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions. Modifications to address EDG loading concerns were completed which added pull-to-lock switches on redundant cooling water system pumps and a defeat switch for motor-driven emergency feedwater pump 1.

### I. Operations

#### 01 Conduct of Operations

##### 01.1 Drawing Vacuum

###### a. Inspection Scope (71707)

Using Inspection Procedure 71707 the inspectors conducted routine reviews of ongoing plant operations which included shift turnovers, response to problems, use of procedures, log reviews, system lineup verifications, and review of clearance tagging processes. Significant observations are discussed in the following paragraphs.

###### b. Observations and Findings

On Saturday, September 13, two days earlier than originally planned, the licensee admitted auxiliary steam into the plant from the adjacent coal plants (Units 1 & 2) and drew a vacuum in the main condenser. The secondary side of the plant had been in lay-up since Crystal River shut down on September 2 of last year. The evolution went very well, and only minor complications were encountered such as valve stem and gasket leakage and intermittent actuations of pump protective features. The encountered problems were quickly corrected. Chemistry results were also extremely favorable and allowed the transition to long cycle cleanup from short cycle earlier than expected on September 13. Levels

of dissolved solids and corrosion products and oxygen in the condensate were very low. The licensee ran both condensate pumps, both feedwater booster pumps, and both main feed pumps. Vacuum was maintained until Friday, September 19 to support numerous post-maintenance tests. An Institute of Nuclear Power Operations (INPO) assist team was onsite through the weekend of September 13 and 14 to support the licensee and evaluate their operational readiness. The inspector reviewed the results of their observations and concluded that their review was beneficial to the licensee and their findings were similar to problems noted previously by the licensee and the NRC.

As discussed in Section E2.1, problems were observed with previous reportability determinations that did not have an adequate technical basis and were not timely. Problems were also noted with internal Operations department communications regarding implementing corrective action.

The inspectors frequently observed operations shift turnover briefings and noted improvement over recent inspection periods. Some notable improvements were: operator knowledge of plant activities; briefings now held inside control room rather than outside in break room (all operators can now attend); more questions and comments coming from building operators. Room for improvement still exists in the areas of operator knowledge of plant activities while off-shift for a few days and consistency amongst shift supervisors in information on plant status conveyed to the shift during turnover briefings (i.e., some shift supervisors provide more information to operators during turnover than others).

c. Conclusions

The inspector concluded the licensee was well prepared for the evolution of drawing a vacuum and successfully verified that their secondary plant was ready to support unit restart.

01.2 RCS Draindown from Improper Clearance Restoration

a. Inspection Scope (71707)

On August 9, 1997, an error by an operator removing clearance tags and restoring an RCS pressure transmitter (PT) to service resulted in an inadvertent and unrecognized draining of the RCS. The inspectors reviewed the details of the event and the results of the licensee's root cause investigation under PC 97-5264.

b. Observations and Findings

The subject RCS PT was isolated by system root valve RCV-83 which was red tagged closed per electronic clearance order (ECO) 97-08-065. A second valve included on the ECO for position control was the instrument drain valve described as valve "Valve V-1 - Drain Valve for RC-132/3B-PT1&3." It was unplugged and opened to drain the PT but was not tagged.

When the operator went to remove the clearance and restore the PT, he went directly to the root valve, RCV-83. Adjacent to this was a high point vent valve for the PT that was labelled "V-1." This valve was closed and plugged already but the operator assumed it was the aforementioned V-1 drain valve and signed on the clearance restoration that the valve was closed with the plug installed. The drain valve V-1 that he should have restored was on a different level in the reactor building and not visible to the operator. He then removed the red tag from RCV-83, opened it, and left the reactor building. This created a leak path from the RCS, through the root valve, through the V-1 drain valve which remained open, to the reactor building sump. The leak continued for approximately 47 minutes and resulted in a pressurizer level drop of 100 gallons. The drop was noted by control board operators who directed RCV-83 to be closed, stopping the leak. The inspector considered the operator's actions exhibited a significant lack of a questioning attitude and a lack of verification of the results of his actions. The licensee's investigation also identified this as a root cause. However, their root cause investigation extended beyond this obvious cause and recognized the challenges presented to the operators by inadequate labeling of the valves. The licensee has not had labels on instrument valves downstream of main root valves. Some of the valves have generic labels such as the V-1 designator used on these valves but no nomenclature. The licensee did not have a system for these generic labels which was why two valves on the same PT loop were labelled V-1. The licensee has had other recent problems where labeling has been a contributing cause. As a result of this, the licensee committed to label these instrument valves as part of their corrective action. This was a significant project that will require engineering and operations coordination to develop a system for labeling numbers and affixing the labels. The inspector considered this initiative to be consistent with the resolve of the licensee to enhance programs to eliminate challenges to the operators that the inspector has previously observed. The licensee's investigation also identified unclear expectations for tagging of vent and drains to support work and an inadequate pre-job briefing as contributing causes. They identified appropriate corrective actions to revise the clearance procedure to address these problems.

c. Conclusions

The inspector concluded the licensee's corrective actions for this problem were comprehensive and proactive. The plan to label instrument valves is a very significant task for the licensee. Consequently, consistent with Section VII.B.1 of the Enforcement Policy, this licensee identified failure to follow procedure is identified as a Non-Cited Violation NCV 50-302/97-13-01, Improper Clearance Restoration Causes RCS Leak.



## 04 Operator Knowledge and Performance

### 04.1 Operations Readiness

#### a. Inspection Scope (71707)

The inspectors continue to assess examples of Operations performance to gauge the operators questioning attitudes and communications practices. Operations Readiness is a restart restraint item on the NRC Restart List.

#### b. Observations and Findings

Problems continued to occur that indicated weaknesses in Operations communications with other departments and inconsistent questioning attitudes. The improper clearance restoration discussed earlier in this report was a significant example of poor questioning attitude and verification of actions. Another notable negative example was the notes and memos from the licensing organization that were found by the inspector in the main control room copy of Technical Specifications on August 22. The inspector observed that the memos clarified what specific instrument tag numbers corresponded to required Technical Specification (TS) 3.3.17 Post-Accident Monitoring (PAM) Instrumentation verbal descriptions and what other procedures would be applicable if an instrument failed. The inspector observed that a Shift Supervisor used these memos to respond to a question on PAM operability but did not question their presence in the controlled TS copy. While the inspector did not identify anything incorrect in the guidance, the inspector considered the memos to be potential TS interpretations made through an uncontrolled process. One memo dated in February 1996 noted that the guidance given would be incorporated into the TS Bases by July 1996. This did not happen. The licensee replaced the control room copy of the TS and performed an audit to verify no other examples were in other copies. This audit revealed some other minor discrepancies with updating of the Technical Specifications controlled copies that were corrected.

The inspectors did observe several good examples of operator questioning attitude. A clearance was questioned by the operator who hung the tag and this hanger resulted in identification of an inadequate clearance on August 21 (PC 97-127). Another operator rejected a clearance request to fill and vent a system because this was prohibited procedurally and would result in the clearance process being used in lieu of procedural guidance (PC 97-6142). Operations shift turnovers remain good. Operators usually demonstrated good knowledge of plant status and evolutions and appropriate information was conveyed at turnover meetings.

#### c. Conclusions

The inspectors concluded that Operations questioning attitude and communications remain a challenge to the licensee, but licensee

management continued to pursue the problems and implement initiatives aggressively in an effort to improve performance.

The inspector assessed the licensee's performance, with respect to this restart-related issue, in the five NRC continuing areas of concern:

- Management Oversight - Good
- Engineering Effectiveness - N/A
- Knowledge of the Design Basis - N/A
- Compliance with Regulations - Adequate
- Operator Performance - Adequate

## 05 Operator Training and Qualification

### 05.1 STAR Simulator Training

#### a. Inspection Scope (71707)

On September 9, 1997, the inspector observed Stop-Think-Act-Review (STAR) Simulator training for operators. The purpose of this training was to train operators in communications and STAR techniques.

#### b. Observations and Findings

The STAR simulator is a cabinet with various knobs, buttons, switches, lights, and labels that are situated in such a manner that is confusing and illogical. The labels are confusing because of the way they are enumerated. For example, one switch was labeled "2USXF6" and another "2UXFS6" (subtle differences). A switch to start a motor indicated "START-STOP" and another switch, with the same identification label, indicated "OPEN-CLOSE." The exercise in this instance was to recognize that starting a motor requires a switch to be manipulated in a START-STOP and not an OPEN-CLOSE manner. In addition, it requires the students to question the labeling since two different switches could have identical labels.

The STAR simulator cabinet was connected to a computer terminal so that the instructor could follow the students' progress and anticipate the next manipulating function. An audible alarm was also connected to indicate when a wrong manipulation had occurred. There were two students at a time performing the training, with one performing the manipulations and the other reading steps in a procedure. Both students were visually isolated from each other, but able to communicate via electronic headsets. This reinforced the need for formal and precise verbal communications.

The procedure itself contained some potential problem areas for the students. Time was allowed beforehand for the students to review the procedure and ask questions of the instructor. The procedure contained typographical errors, out-of-sequence steps, missing steps, and notes placed in inappropriate locations. For example, a note placed after one step and at the top of the next page indicated that the next step must

be completed within ten seconds of the previous step. If the students did not recognize this beforehand, by the time they turned the page and read the note, ten seconds would more than likely have passed and thus caused an alarm. Another time constraint built in was if the students proceeded too cautiously and used more frequent repeat-backs, the temperature inside the cabinet would exceed its operating range and the audible alarm would actuate. The procedure itself was written to establish ventilation to avoid overheating of the cabinet.

The licensee indicated the intention to develop other simulators and offer this training to other plant personnel sometime in the future.

c. Conclusions

The STAR simulator training provided to the operators appeared to be very thorough and effective. Feedback received from the operators by the inspector was very positive. Other plant personnel will benefit greatly when similar type simulators are developed for instruction in communications and STAR techniques.

05.2 EFIC System Training

a. Inspection Scope (71707, 62707)

On September 11-12, 1997, the inspector observed emergency feedwater initiation control (EFIC) system training. The purpose of this requalification training was to provide Instrumentation and Control (I&C) personnel with a brief system review along with instruction on the latest changes to the system and associated procedures.

b. Observations and Findings

All of the students in the class had previously received EFIC system training, although in most cases it had been at least two years. Most of the students had not performed any type of work on the EFIC system within that two year period. Because of this, most of the first day of the two day training session was used to review the system and its various purposes and functions.

Many drawings were used in the conduct of this course because of their necessity and value when performing troubleshooting on the EFIC system. The drawings that were used extensively were the 118-series drawings (electrical logic diagrams) and the flow diagram for the emergency feedwater (EFW) system. Recent modifications to the EFW system, specifically, the cavitating venturi modification, resulted in revisions and changes to various drawings and procedures. The revised EFW system flow diagram was not used during this class, even though it had already been issued. Some of the 118-series drawings used in class were also not the revised and issued drawings.

The inspector followed up with questions regarding the effectiveness of the training with a few students. Some indicated that the written

examination was very challenging because a lot of material was covered in only two days and that the training should be longer in order to cover all the material. Others indicated that the examination was challenging but appropriate for what was presented in the class.

c. Conclusions

Overall, the EFIC requalification training was adequate. The inspector questioned the effectiveness of the training due to the extensive time spent on system review and hurried manner in presenting the various modifications affecting the EFIC system and associated procedures. Better lesson plan preparation would be prudent to ensure an effective and thorough training class is provided to students with or without prior system knowledge and experience.

06 Operations Organization and Administration

06.1 Effective September 2, 1997, the following management changes were made:

- Mike Danford assumed the role of Manager, Nuclear Safety Assessment Team (NSAT) on an interim basis, during the recovery effort prior to restart. Mike will remain in this position until a permanent replacement is named.
- Dave Daniels assumed responsibilities for coordinating the site self-assessment program under Jim Baumstark, Director, Quality Programs.

07 Quality Assurance in Operations

07.1 Management Corrective Action Plan (MCAP II)

a. Inspection Scope (40500)

The inspectors reviewed the licensee's status on the actions described in Management Corrective Action Plan (MCAP II) to verify satisfactory progress. The NRC Confirmatory Action Letter to Crystal River of March 4, 1997, included five actions to be taken by Crystal River before restart of Unit 3. Action four of the letter required that FPC "Meet with the NRC to discuss FPC's acceptance criteria for and achievement of satisfactory progress on the actions described in FPC's Management Corrective Action Plan (MCAP), Phase II, forwarded by FPC's letter of November 12, 1996."

The five sections in MCAP II that were inspected for satisfactory progress were 1) Section A, Leadership Oversight and Involvement; 2) Section B, Engineering Performance; 3) Section C, Configuration Management/Design Basis; 4) Section D, Regulatory Compliance; and 5) Section E, Operations Performance.

The inspectors also reviewed the licensee's recent self assessment of MCAP II. The stated purpose of the MCAP II Effectiveness Assessment

Report, dated August 22, 1997, was to assess the results of the corrective actions intended to address the root and contributing causes of the problem areas.

b. Observations and Findings

b.1 Section A - Leadership Oversight and Involvement

The problem in this area, as described in MCAP II, was that leadership oversight and involvement in plant issues had been inadequate in emphasizing its safety culture role. This had occurred in areas ranging from communication and reinforcement of core values and expectations to site processes and priorities. Further, where assessments had been conducted, they had neither focused on elements from the safety culture perspective, nor had they been sufficiently self-critical to enable assessment of root or apparent causes.

The inspectors verified that most of the MCAP II action items in this area had been completed. Of those that were not completed, the licensee had identified none as restart items. The inspectors noted that the corrective actions had been completed for the items identified by the licensee as restart items for this area of concern.

The inspectors assessed that the uncompleted MCAP II action items in this area were not required for restart. However, the inspectors did identify one item on which progress was needed prior to restart; this was: personnel errors. The licensee's recent MCAP II Effectiveness Assessment had rated the three site management areas of human errors, performance monitoring and trending, and related analysis and follow up as "2" (indicating less than adequate progress). Although corrective actions had been completed in the form of human error reduction training, there were indications that this training had not been fully effective. Operator errors continued to be excessive (see section b.5 below). In addition, the inspectors noted that the licensee did not have a plan to reduce engineering errors, which had been a problem area (see section b.2 below). Unlike Operations or Regulatory Assurance, Engineering had no performance monitoring for personnel errors or quality of work. The inspectors further noted that personnel errors had been dropped from the CR3 Top 10 Priorities List. This was part of the change made in the Top 10 List in 1997 to shift focus from programmatic (MCAP type) areas to restart (hardware) items.

The inspectors reviewed the licensee's performance monitoring in this area, and noted that most of it was to be derived from trending of Precursor Cards (PCs). However, the PC trending program was not yet established. Consequently, most of the intended performance monitoring of the leadership oversight and involvement measures of effectiveness had not been accomplished.

The inspectors reviewed the licensee's recent MCAP II Effectiveness Assessment Report and noted that it rated the overall area of leadership oversight and involvement as a 3. The rating of "3" indicated that some

improvement had been made, root causes had been partially satisfied, and full resolution of the problem was pending completion of remaining significant corrective actions. The inspectors found this assessment to be reasonably accurate. However, the inspectors noted that the MCAP II Assessment Report did not assess the current status on MCAP action items with respect to readiness for plant restart. Also, inspectors noted that the licensee's plan for follow up and closure of the MCAP II Assessment Report findings/recommendations consisted of asking Department Directors to review the report and address the recommendations as they deemed appropriate. The plan did not include documenting the actions taken in response to the recommendations.

#### b.2 Section B - Engineering Performance

The MCAP II concern in this area was that the engineering department had not supported plant operations well, particularly in maintenance and the application of the plant design basis. The focus of the concern was primarily on design and analytical work, configuration management, and teamwork with other departments. Two root causes and several contributing causes were identified that required corrective actions. The two root causes listed were 1) safety culture was not effectively emphasized and 2) inadequate communication of management expectations with respect to safety culture. The contributing causes included inadequate performance monitoring, trending, self-assessment, detection of adverse trends, inadequate root cause analysis, and ineffective communication of problems.

The inspectors verified that the licensee had completed or made satisfactory progress in implementing the corrective action items listed in MCAP II that addressed engineering performance. The licensee had identified one uncompleted MCAP II item as a restart item:

MCAP II Item B-CC2-1: Assure the tracking and trending of measures and indicators for the contributing cause (above) are assessed by engineering managers to uncover 1) adverse trends requiring increased management attention and 2) potential common causes of both equipment and human performance issues. The due date was September 30, 1997. This issue was identified as licensee restart item OP-2.

The inspectors noted that, while engineering errors had been a concern, the licensee did not have a plan to reduce engineering errors. Unlike Operations or Regulatory Assurance, Engineering had no performance monitoring for personnel errors or quality of work.

The inspectors reviewed the MCAP II Effectiveness Assessment Report and noted that engineering performance was rated 4 out of a possible 5. The rating indicated that significant improvement was made under the current engineering management. Problems and causes had been recognized and corrective actions had been implemented. Corrective actions beyond MCAP II had also been implemented. The inspectors found this assessment to be reasonable, but it was not confirmed by performance monitoring.

### b.3 Section C - Configuration Management/Design Basis

The MCAP II concern in this area was that weaknesses had existed in implementing programs for maintaining plant configuration consistent with the design basis. The problem description identified weaknesses in the following areas: 1) discrepancies between the plant and design documentation; 2) inaccuracies in the technical content of design documents; 3) incorrect assumption and calculational errors; 4) discrepancies between operational configuration and supporting design documentation; and 5) inconsistencies among design documents and between the design basis and licensing basis. The root cause was identified as a limited emphasis on nuclear safety culture. The contributing cause was inadequate self assessment for identifying and correcting these issues.

The inspectors verified that the licensee had completed or made satisfactory progress implementing the corrective action items listed in MCAP II that addressed the above concern. Of those not completed, the licensee had identified six as restart items:

MCAP II item C-ID-I-1: Implement the Design Basis and Licensing Basis as major programs. The due date was September 15, 1997. This was identified as licensee restart item OP-7.

MCAP II item C-RC1-7: Establish a comprehensive management control process for the Design Basis. The due date was December 1, 1997. This was identified as licensee restart item OP-8.

MCAP II item C-ID-I-3: Establish the legal and regulatory status of the FSAR. The due date was November 30, 1998. This was identified as licensee restart items OP-8 and R-20.

MCAP II item C-ID-I-6: Revise procedure NOD 11, Maintenance of the Current Licensing Basis, to require engineering review of the FSAR and design basis documents. The due date was November 30, 1997. This was identified as licensee restart items OP-8 and R-20.

MCAP II item C-ID-I-7: Promulgate a procedure for the control of design and licensing basis documentation for the entire nuclear organization. The due date was September 30, 1997. This was identified as licensee restart item OP-8.

MCAP II item C-ID-VII-6: Improve the definition, understanding, and use of the licensing basis. The due date was September 15, 1997. This was identified as licensee restart item D-23.

The inspectors also reviewed the MCAP II Effectiveness Assessment Report and noted that Configuration Management and Design Basis was rated "3". The rating indicated the work processes had improved; the review of design basis issues on safety had been completed; procedures had been revised; the modification process had been revised; a Design Review Panel ensures requirements are addressed; and the utilization of the

corrective action program for precursor cards (deficiencies) had been increased for documenting configuration and design issues. The inspectors found this assessment reasonably accurate.

#### b.4 Section D - Regulatory Compliance

MCAP II described the problem in this area to be that CR3 did not have a sufficient understanding of NRC regulations and did not assign full compliance with the intent of NRC regulations a sufficiently high priority. Also, there had been a perception that conservative decision making regarding regulatory issues was seen as secondary to plant availability.

The inspectors verified that most of the MCAP II action items in this area were completed. Of those that were not completed, the licensee had identified one as a restart item:

MCAP II item D-RC1-6: Benchmark key regulatory processes against Systematic Assessment of Licensee Performance (SALP) 1 plants and revise processes as necessary. This was identified as licensee restart item OP-5, with a due date of November 30, 1997.

The inspectors considered that the other uncompleted MCAP II action items in this area were not needed for restart. However, the inspectors identified one additional item on which progress was needed prior to restart. One MCAP item was to conduct an assessment of Regulatory Compliance and Licensing, which had been completed in January 1997. That assessment identified that the availability and knowledge of licensing and design basis information to the plant staff was not adequate to support 10 CFR 50.59 evaluations, operability evaluations, or TS interpretations. A Precursor Card on this finding had been written in February 1997, but was one of about 4000 low level PCs that had been closed without tracking of corrective actions to completion. (The inspectors had previously addressed the issue of prematurely closed PCs as IFI 50-302/97-11-04, Corrective Actions for Approximately 4000 Precursor Cards not Tracked to Completion). The licensee's QA group was doing an audit of those 4000 PCs.) Licensing had a plan to address the availability and knowledge of licensing and design basis information by March 1998. In response to inspector questions, Licensing began developing a plan to adequately improve the availability and knowledge of licensing and design basis information prior to restart.

The inspectors reviewed the licensee's performance monitoring in this area, which included trend charts showing improvement in submittal quality and timeliness for LERs, violations, and other licensing submittals. The inspectors concluded that the licensee's performance monitoring in this area was good. While improvements had been made in the quality of licensing submittals, both the licensee's monitoring and the inspectors' reviews of submittals indicated that additional improvement was warranted.



The inspectors reviewed the licensee's recent MCAP II Effectiveness Assessment and noted that it rated the area of regulatory compliance a "3". The rating of "3" indicated that some improvement has been made, root causes have been partially satisfied, and full resolution of the problem was pending completion of remaining significant corrective actions. The inspectors found this assessment to be reasonably accurate.

#### b.5 Section E - Operations Performance

In this area, the problem description was that the Operations Department had not attained a level of performance equivalent to those measured as excellent by Institute of Nuclear Power Operations (INPO) and the NRC. Also, outside and internal audits had detailed several areas in need of improvement in order to attain operational excellence.

The inspectors verified that most of the action items in this area were completed. Of those that were not completed, the licensee had identified two as restart items:

MCAP II item E-FU-3: Address all identified emergency operating procedure (EOP) weaknesses. This was identified as licensee restart item OP-19D, which was scheduled for completion by November 21, 1997.

MCAP II item E-CC1-4: Reduce the abnormal procedure (AP) backlog to less than 10 outstanding comments through the use of contract procedure writers. This was partially addressed by licensee restart item OP-19C, which scheduled rewriting of certain APs required for restart to be completed by November 21, 1997.

The inspectors assessed that the other uncompleted MCAP II action items in this area were not needed for restart. However, the inspectors did identify one additional item on which progress was needed prior to restart. The licensee's recent MCAP II Effectiveness Assessment had found that operator errors were excessive. While the Operations Department had completed their MCAP II action items in the area of operator performance early in 1997, they continued to have excessive operator errors. The inspectors found that the Operations Department recognized the problem and had a new action plan, including performance monitoring, to address operator errors before restart. The inspectors noted that the Operations Department action plan was not captured in MCAP II or the licensee's Restart List, but concluded that it was receiving adequate management attention.

The inspectors reviewed the licensee's performance monitoring in this area, which included trend charts on operator errors. The inspectors assessed that the licensee's performance monitoring in this area was good.

The inspectors reviewed the licensee's recent MCAP II Effectiveness Assessment and noted that it rated the area of Operations performance a "3". The rating of "3" indicated that some improvement had been made, root causes had been partially satisfied, and full resolution of the problem was pending completion of remaining significant corrective actions. The inspectors found this assessment to be reasonably accurate.

c. Conclusions

The inspectors concluded that the licensee's progress to date on the Management Corrective Action Plan (MCAP II) was satisfactory. The licensee was not yet ready for restart, but had plans to get there. Ten open MCAP II items were on the licensee's restart list. Also, inspectors identified two additional items on which progress was needed prior to restart: personnel errors (quality of work) and availability and knowledge of licensing and design basis information.

The inspectors concluded that the licensee's recent assessment of MCAP II was generally good. However, the MCAP II Assessment Report did not assess the current status on MCAP action items with respect to readiness for plant restart. Also, the licensee did not have a good plan for follow up and closure of the MCAP II Assessment Report findings and recommendations.

The inspectors assessed the licensee's performance, relative to MCAP II, in the five areas of continuing NRC concern:

- Management Oversight - Adequate
- Engineering Effectiveness - Adequate
- Knowledge of the Design Basis - Adequate
- Compliance with Regulations - Adequate
- Operator Performance - Adequate

08 Miscellaneous Operations Issues

08.1 (Closed) VIO 50-302/94-25-01; Failure to Properly Control the Control Complex Habitability Envelope (Door Blocked Open for Maintenance Work)

a. Inspection Scope (92901)

This violation involved maintenance personnel blocking open a control complex habitability envelope (CCHE) door for maintenance work on the building roof. The inspectors followed up on the licensee's corrective actions as stated in the response to the NRC Notice of Violation.

b. Observations and Findings

The inspectors verified that new signs were installed on the control complex habitability envelope doors to identify clearly actions to be taken when work activities affect the doors. In addition, the licensee had installed door alarms which sounded when a CCHE door was open. The

licensee had also installed a vestibule, with another door, at each of the three large double CCHE doors. The inspectors noted that the licensee had installed the door alarms and vestibules in response to subsequent additional instances of CCHE doors being inappropriately left open. The inspectors also reviewed the licensee's completion of maintenance training on a related LER and a maintenance study book entry on the event. There had been no recent instances of CCHE doors being left open. Related design issues with control complex habitability, envelope leakage were being tracked under URI 95-02-02, Control Room Habitability Envelope Leakage.

c. Conclusions

The inspectors concluded that the licensee's stated corrective actions, and more, had been completed. These included actions to prevent recurrence of the violation. VIO 50-302/94-25-01 is closed.

The inspectors assessed the licensee's performance, relative to corrective actions for this violation, in the five areas of continuing NRC concern:

- Management Oversight - Adequate
- Engineering Effectiveness - Adequate
- Knowledge of the Design Basis - Adequate
- Compliance with Regulations - Adequate
- Operator Performance - Adequate

08.2 (Closed) LER 50-302/94-009-02; Unauthorized Tests Involving Makeup Tank Level and Pressure

a. Inspection Scope (92901)

This LER involved unauthorized tests of makeup tank level and pressure that had been conducted by operators. The issue described in the LER was related to EA 95-126, VIO I.A (01013), Nine Instances Where Operators Violated Procedures for MUT Pressure/Level; VIO I.B (02013), Conduct of Unauthorized Tests of MUT Without 10 CFR 50.59 Evaluation; and VIO I. C.1 (03013), Failure to Take Adequate Corrective Actions for Operator Concerns Regarding OP-103B, Curve 8, for MUT Pressure/Temperature Limits; which were closed in IR 50-302/97-07. The inspectors followed up on the licensee's corrective actions as stated in the LER.

b. Observations and Findings

The inspectors reviewed the licensee's corrective actions stated in the LER and concluded that they were encompassed by the corrective actions for the three closed related violations.

c. Conclusions

The inspectors concluded that the licensee's corrective actions had been

implemented and had been previously inspected and documented. LER 50-302/94-009-02 is closed.

08.3 (Closed) VIO 50-302/96-01-01; Inadequate Corrective Action to Fix High Pressure Injection (HPI) Flow Indication Problems

a. Inspection Scope (92901)

This item was tracked by the licensee as Restart Issue D-53 on their restart list. It pertained to the condition of the four HPI line flow indicators prior to February 1996. In 1989, as documented in LER 50-302/89-037, the licensee determined that the existing, single, wide-range indicators in each HPI line were inadequate to support the required operator action to balance HPI flow in response to a broken line. Consequently the licensee added four narrow range (NR) instruments, one in each HPI line. In February 1996, the licensee determined that the failure of the DC power supply to the NR instruments during a specific accident scenario would again result in inadequate indications for the operators to balance HPI flows. This violation was identified for inadequate corrective action to resolve the issue the first time in 1989. The licensee also issued LER 50-302/96-07 which was reviewed and closed by the inspector in Inspection Report 50-302/97-11. The inspector reviewed the closure package the licensee assembled that justified their closure of Issue D-53 and VIO 50-302/96-01-01.

b. Observations and Findings

The inspector noted that the licensee's closure package justified in detail that the currently installed HPI flow indicators were technically adequate. The inspector did not identify any problems with the licensee's technical conclusions and verified they were consistent with the bases used for closing LER 96-07 on the same issue. However, the licensee's package, which was based on their violation response letter dated May 13, did not address the title and basis of the violation, which was inadequate corrective action. The inspector was especially concerned with this omission because the licensee's closure package had been reviewed and approved by their Nuclear Regulatory Assurance Group (NRAG). The inspector discussed the importance of responding directly to the requirement that was cited with the NRAG Manager and was satisfied that the licensee's sensitivity was now appropriate. The licensee attributed the root cause of the event to be personnel error in 1989 but then did not identify any corrective actions to address this cause. The inspector determined the cause of the event was related to the inadequacies of the licensee's design process in the past which have already been the subject of recent extensive NRC enforcement (EA 96-365), licensee corrective action, and NRC inspection (Inspection Report 50-302/97-11). Numerous actions have been taken by the licensee during the current shutdown to correct engineering design processes as well as their corrective action system. These have been previously inspected as satisfactory and are tracked on the restart restraint list. Consequently, the inspector determined the licensee had adequately addressed the root cause of this violation.

c. Conclusions

The inspector determined the licensee's completed restart item fully addressed the original technical concerns of the item. Consequently VIO 50-302/96-01-01 is closed. However, their violation response letter and closure package were inadequate because they were lacking any resolution of the inadequate corrective action that was the cause of the violation. The inspector concluded the omission was another example of the already reported weaknesses in the licensee's sensitivity to regulatory requirements.

The inspector assessed the licensee's corrective action performance, with respect to this restart-related issue, in the five NRC continuing areas of concern:

- Management Oversight - Inadequate
- Engineering Effectiveness - Good
- Knowledge of the Design Basis - Adequate
- Compliance with Regulations - Inadequate
- Operator Performance - N/A

08.4 Closed) VIO 50-302/97-01-01; Inadequate Clearance Tagging Requirements [Restart Issue No. 0-12] (71707, 92901)

By letter dated April 23, 1997, the licensee responded to Violation (VIO) 50-302/97-01-01 describing the corrective actions they had taken and results achieved. However, the NRC considered FPC's response too narrowly focused and by letter dated May 16, 1997, requested the licensee to provide a supplemental Notice of Violation (NOV) response that would address more comprehensive corrective actions. By letter dated June 16, 1997, FPC submitted its supplemental response.

An inspector reviewed the licensee's comprehensive corrective actions to address this and other problems related to implementation of their clearance control and tagging program prescribed by Compliance Procedure (CP) 115, Nuclear Plant Tags and Tagging Orders. As part of the corrective actions identified in their letter dated April 23, 1997, FPC conducted a formal root/common cause analysis documented by Root Cause (RC) 96-5457 dated April 1, 1997. The summary results and additional corrective actions from this analysis were provided in the June 16, 1997, letter.

The inspector reviewed the licensee's closure package for Restart Issue 0-12, which included the applicable incident report, training records, required reading material, CP-115 revisions (Nos. 74 and 75), short term instruction (STI), RC 96-5457, etc. The inspector also met with the Operations Manager to discuss the details associated with the accomplishment of these corrective actions. The licensee's corrective actions were generally thorough, complete and well documented. However, several minor deficiencies were identified: 1) Incomplete training attendance records for STI 97-008; 2) Incomplete training attendance records for the Manager, Nuclear Power Operations (MNPO) Event Free

Seminar Discussing CP-115 Events during Operator Requalification training of April and May 1997; and 3) No documented evidence that the maintenance shops were provided copies of and actually reviewed RC 96-5457 and the training summary of CP-115 changes. The inspector discussed these discrepancies with the Operations Manager, who managed to locate more complete attendance records for STI 97-008. No additional records could be found regarding the Event Free Seminar. In fact, the Operations Manager confirmed there was no supporting evidence that three of the on shift senior reactor operators (SRO) had attended the required seminar. Also, the SROs themselves could not recall the specific seminar. Notwithstanding the missed training, the Operations Manager considered subsequent requalification training on program changes associated with CP-115, Revision 75 to be sufficient. Lastly, he confirmed that the information provided to the maintenance shops for their review was conducted on an informal basis, the only evidence being verbal assurances from maintenance management. The inspector considered these to be reasonable explanations.

In addition, the inspector reviewed a number of active in plant tagging orders, interviewed shift personnel responsible for developing and processing tagging orders, and independently verified over 100 tags in the field. All tagging orders and individual tags examined by the inspector were in proper order. Responsible personnel were knowledgeable in their duties and familiar with recent changes to the process (i.e., CP-115 revisions). To their credit, these individuals were still exploring potential improvements in plant processes for tagging and clearance control, and providing suggestions. Furthermore, the licensee's commitments to assess the long term effectiveness of their corrective actions by performing a common cause analysis of Precursor Cards (PCs) dated March 1 through December 31, 1997, and conducting a special audit of CP-115 compliance by February 24, 1998 were considered positive steps in their determined efforts to prevent recurrence. This VIO is considered closed.

The inspector assessed the licensee's performance, with respect to this restart-related issue, in the five NRC continuing areas of concern:

- Management Oversight - Superior
- Engineering Effectiveness - N/A
- Knowledge of Design Basis - N/A
- Compliance with Regulations - Good
- Operator Performance - Good

08.5 (Closed) VIO 50-302/97-01-02: Failure To Follow Procedures, Resulting In An Inadvertent Emergency Diesel Generator Start [Restart Issue No. 0-13] (71707, 92901)

By letter dated April 23, 1997, the licensee responded to VIO 50-302/97-01-02 describing the corrective actions they had taken and results achieved. In this letter the licensee stated that the violation occurred due to personnel error and the responsible Primary Plant Operator (PPO) had been counseled by the Operations Manager. Also, a

personal improvement plan, dated February 7, 1997, was developed for the PPO using FPC's progressive discipline program. The PPO was not permitted to resume his duties until the plan was completed and approved by the Operations Manager. An inspector reviewed the personal improvement plan and discussed it with the current Operations Manager. The Operations Manager indicated that the PPO had since completed the plan satisfactorily and his qualifications were restored.

In addition to the corrective actions identified in their letter dated April 23, 1997, the licensee re-examined the time-sensitive nature of the procedure steps for functionally restoring an emergency diesel generator (EDG) to service. FPC concluded that the prescribed time frame for performing steps 4.6.30 thru 4.6.34 of Surveillance Procedure (SP)-354A(B), Monthly Functional Test of Emergency Diesel Generator EDG-1A (EDG-1B), was much too restrictive (i.e., PPO was only allowed 5 minutes). Although this principal contributing cause to the PPO's failure to follow procedure was recognized and addressed by the licensee, it was not included as part of the closeout package for Restart Issue O-13 nor mentioned in their NOV response. The inspector verified that the latest revision of SP-354A, Revision 45, did incorporate the newly expanded time interval (i.e., 40 minutes) for the PPO to trip the EDG fuel racks and roll the diesel after a run. However, SP-354B had not as yet been revised. The Operations Manager indicated that SP-354B would be revised prior to the next monthly functional test of EDG-1B. This VIO is considered closed.

The inspector assessed the licensee's performance, with respect to this restart-related issue, in the five NRC continuing areas of concern:

- Management Oversight - Good
- Engineering Effectiveness - N/A
- Knowledge of Design Basis - N/A
- Compliance with Regulations - Adequate
- Operator Performance - Good

## II. Maintenance

### M1 Conduct of Maintenance

#### M1.1 General Comments (62707)

The licensee has implemented several changes in the maintenance department over the last several months to improve performance. These included assigning new management, developing the position of production coordinator in each shop to assist with emergent job problems and scheduling, and developing a maintenance support group to perform corrective action investigations and remove some of the administrative burden from the shops to allow them to focus on production. Although the results of these changes have not yet been consistently displayed, the inspector concluded they were a good initiative by the licensee. The licensee maintenance department has also focused on a goal of significantly reducing the corrective maintenance backlog. On September

13, the licensee achieved their goal of less than 200 open corrective maintenance work requests. This was down from a peak of 768 in May of 1997. The inspector concluded this was a significant achievement by the licensee and would allow the licensee to focus resources expeditiously on emergent problems.

#### M1.2 Spent Fuel Cooling Pump 1A Rebuild (62707)

In June of 1997, the licensee replaced the bearings and mechanical seal for Spent Fuel Cooling pump (SFP) 1A to correct mechanical seal leakage. This was performed under work request (WR) 0334957. Post-maintenance testing of this work revealed excessive noise and vibration when the pump was run. A mechanical rubbing sound was also heard when the shaft was rotated by hand. WR 0344929 was generated to trouble shoot and repair this problem. The troubleshooting revealed that a rubber preload spacer for the mechanical seal had not been removed and that the pump impeller had contacted the pump casing. The licensee initiated Precursor Cards (PC) 97-4239 and 97-4611 to investigate the problem. The inspector reviewed both of the aforementioned work packages and the apparent cause investigation results for the PCs. The licensee concluded that the preload spacer was not the cause of the noise and vibration but that proper referencing and use of a vendor mechanical seal drawing would have ensured it was removed. The licensee implemented appropriate corrective actions to prevent recurrence. The cause of the noise and vibration was determined to be excessive shaft end play as a result of missing bearing end cover shims. Although various circumstances with the pump rebuild led to the decision to omit the end cover shims, the licensee and inspector concluded that a lack of questioning attitude by the mechanics and failure to elevate the problem with the new bearings to supervision was the cause. The mechanics made inappropriate assumptions that their activities were within the skill of their craft. The only corrective action the licensee implemented for this problem was a review of the problem with all mechanical maintenance personnel. Although the licensee performed an extent of condition review in their PC that noted that they had several other pump problems due to maintenance activities in the last three years, they did not take any generic corrective actions to address the problem. The inspector was concerned because several of these problems have occurred in the past year. Licensee management was focusing on the generic implications of the problems. The inspector verified the physical problems with the pump were adequately corrected and it was returned to service. The inspector did not identify any further problems with the work packages or PCs and concluded that the licensee's investigation was adequate, but not thorough, and the corrective actions were limited.



### M1.3 Decay Heat Removal System Hydrostatic Testing

#### a. Inspection Scope (62707)

The inspector reviewed the preparations and observed portions of the performance of hydrostatic testing of a newly installed manual Decay Heat system (DH) pump suction valve (DHV-21) performed under WR 0346318 on August 18 through 20.

#### b. Observations and Findings

The inspector observed the pre-job briefing and noted that all involved parties attended, the test was reviewed in detail by the cognizant mechanical supervisor, and questioning was open and encouraged. This was a vast improvement in coordination from previous observations by the inspector of hydrostatic testing in May 1997 that resulted in Violation 50-302/97-07-02. The inspector also noted that proper planning and precautions had been implemented to ensure adjacent systems were not inadvertently pressurized, although not all of the contingency actions were formally incorporated in the work package. The lack of consideration of adjacent systems had been a problem in the testing in May. Several of the participants questioned the use of demineralized water for the test and the potential for dilution of the primary coolant if a test boundary leaked by. They ensured that an analysis was performed to verify that the worst possible leakage would not cause a dilution problem. The inspector concluded that this was excellent sensitivity to reactivity management.

During the performance of the test, the system pressurization had to be suspended due to excessive leakage. The licensee's investigation revealed that a boundary valve was not fully seated when it was manually checked. This valve had been specified to be red tagged closed in the recommended valve lineup that the hydrostatic test engineer developed per Maintenance Procedure (MP) 137, System Hydrostatic Pressure Testing, Revision 30, attachment 1. Procedure MP-137 was encompassed within WR 0346318. However, Operations had decided the valve did not need to be tagged or included on the clearance. Consequently the valve was never checked closed prior to commencing the test. The valve also should have been checked closed as part of the position verification required by step 4.3.1 of MP-137, but this step was misinterpreted by the maintenance supervisor who signed it. While the consequences of this were very minimal, the failure of Operations to resolve their differences in implementing the valve alignment formally were indicative of incomplete communication between Operations and Engineering. The inspector considered these communications critical to ensure Operations correctly implements specific hydrostatic test requirements that are fully understood and recommended by engineering personnel. These incomplete communications were a direct cause of the failure to consider adjacent system pressurization in the aforementioned Violation 50-302/97-07-02. The licensee initiated PC 97-6106 to identify appropriate corrective action.

The inspectors review of the completed WR package did not reveal any additional problems. The inspector noted that the chronological "Work Performed" notes in the WR were very detailed and were an accurate and informative account of the testing and preparation performance.

c. Conclusions

The inspector concluded the licensee had made significant improvement in the coordination of the hydrostatic testing process, but problems continued to occur regarding communications between different groups. The inspector considered these communications essential to ensure successful implementation of hydrostatic test requirements. Participants exhibited excellent sensitivity to reactivity management and work package documentation was good.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Scaffolding Control

a. Inspection Scope (62707, 92902)

The inspector reviewed the licensee's program for controlling scaffolding in the plant. The inspector performed walk-downs of various safety related equipment to assess the potential impact from installed scaffolding.

b. Observations and Findings

On August 20, 1997, during a walk-down of the 4160V ES switchgear rooms, the inspector noted that scaffolding was erected in vicinity of both the protected operable train and the inoperable train. Examination of the scaffolding revealed that it was free standing, unrestrained between the two panels, in both rooms, with some scaffolding over the top of the panels. In addition, for the B 4160V ES switchgear, which was the operable train, portions of the scaffolding were in contact with conduit and cabling where it entered the top of the panels. The scaffolding was erected within one foot of the panels, in areas, on both trains. In addition, walkdowns in the main control determined that scaffolding erected in front of the main control panels was not restrained, affecting safety related components.

Licensee Procedure AI-1803, Safety Standard for Ladders, Scaffolds, and Ancillary Equipment, Revision 11, section 3.2, Responsibility, has a note that acknowledges that inadvertent movement of scaffolding in the vicinity of safety related or protected train equipment may cause damage to personnel or equipment. Section 4.0, Instructions, contains a note that states that plant safety and reliability must be considered during erection of scaffolding and ladders; which must be erected with a minimum potential for creating a plant transient. AI-1803, section 4.2, Scaffolds, step 4.2.1, stated that the installation of scaffolding was controlled to allow the Nuclear Operations Department to approve the location of scaffolding before actual construction. A note in the

procedure, section 4.2, states that scaffolding in the vicinity of safety related equipment will be secured to walls or I-beams to prevent inadvertent movement and damage to safety related equipment or personnel injury.

Licensee Procedure OI-07, Control of Equipment and System Status, Revision 5, section 6.0, Maintenance and Testing Work Authorization and Documentation, step 6.2, stated that installation of scaffolding in the plant must be authorized by operations personnel. According to this procedure, an operator must review the actual in plant configuration to ensure no adverse affect on nuclear safety, transient response, or normal operations has occurred. OI-42, Operations Work Control Supervisor Position, Revision 0, section 1.0, Operations Work Control Supervisor Responsibilities, step 1.6, stated that the work control supervisor was the operations representative for the scaffold control program. Step 2.5 states that the work control supervisor was responsible for the walkdown and approval of scaffold installation and removal.

Quality Programs Surveillance (QPS) Report QPS-97-0102 was issued on July 28, 1997, which reviewed the installation and removal of scaffolding. The QPS identified a weakness in the program which allowed scaffolding to be installed in contact with, or in close proximity to, safety related systems, structures and components without prior evaluation and approval of engineering. The QPS concluded that AI-1803 was inadequate in addressing the scaffolding program. As a result of the surveillance, PC 97-5315 and PC 97-5606 were issued. PC 97-5606 was issued on July 30, 1997, and stated that initial and periodic inspection of scaffolding was being performed without any defined instruction or criteria established for installation. This PC was graded as a level D PC on August 4, 1997, and was closed on August 22, 1997, with inclusion in a computer tracking system for procedure comments, NUPOST, which is not part of the licensee's corrective action program. At the time of the inspection, these comments had not been incorporated into the licensee procedures.

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established to assure that appropriate quality standards are specified in documents and that deviations from such standards are controlled. The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews. The scaffolding control program has no documented review of impact on the plant by the installation of scaffolding in the vicinity of safety related systems. Experience and judgement are the only criteria used by operations in the approval of scaffolding installation. The procedure did require that scaffolding in the vicinity of safety related equipment be restrained to the wall or to I-beams. The inspector observed that operations was approving installation of scaffolding in the vicinity of safety related equipment that was not restrained. The lack of specific installation criteria or engineering review of impact on safety related equipment was a violation of the 10 CFR 50, Appendix B, Criterion III requirement, and will be addressed as

VIO 50-302/97-13-02. Failure to perform a safety evaluation prior to erecting scaffolding in the vicinity of safety related equipment.

Since the concerns were identified by the inspector, the licensee has taken steps to restrain the scaffolding in the 4160V ES switchgear rooms. Engineering performed a review of the existing scaffolding and concluded that with the restraints, seismic concerns did not exist. Impact on operation of the safety related equipment has not been formally or systematically performed. The licensee maintenance organization was working with the engineering department to develop criteria and proceduralize scaffolding installation practices, to prevent adverse impact on safety related equipment.

c. Conclusions

Even though the licensee's QA organization identified weaknesses in the scaffolding control program in July of 1997, changes were not instituted to the procedures and erected scaffolding was not brought into compliance when the inspector examined scaffolding in the immediate vicinity of critical safety related equipment, such as the main control board and the operable 4160V ES switchgear on August 26, 1997. A lack of timely response to the QA identified concerns resulted in the existing scaffolding remaining in noncompliance and the inspectors independently identifying the programmatic inadequacies. The licensee's scaffolding control program was inadequate, in that it did not require an engineering evaluation prior to installing scaffolding where it may impact safety related equipment.

**M8 Miscellaneous Maintenance Issues**

M8.1 (Closed) LER 50-302/96-018; Failure to Verify RB Penetrations Closed per IS

(Closed) LER 50-302/96-018-01; Failure to Verify RB Penetrations Closed per IS

(Closed) EA 96-365, 96-465, 96-527, VIO B (02013) - EXAMPLE 5 ONLY; Three Inadequate Procedures for Containment Penetration Surveillances

(FPC Restart Items 0-2, OP-15)

a. Inspection Scope (61726, 92902)

The inspector reviewed the corrective actions developed in response to the violation of March 12, 1997, in a letter dated April 11, 1997, and supplemented in a letter dated June 16, 1997. The inspector also reviewed the corrective actions for the related LERs; dated July 5, 1996 and November 25, 1996.

b. Observations and Findings

The responses to the violation example for the inadequate procedures to

assure containment integrity address several corrective actions to resolve the concern. Licensee procedures SP-324, Containment Inspection and SP-341, Monthly Containment Isolation Valve Operability Check were revised to include containment isolation valves identified to be excluded from the existing procedure. The inspector reviewed the licensee root cause analysis and extent of condition review, which included extensive containment walkdowns, and determined that the licensee properly identified the total containment isolation valve population. Procedure SP-324, Revision 35 became effective on June 20, 1997, and SP-341, Revision 31 became effective on July 25, 1997. Both procedures were verified to include the valves previously omitted.

The licensee committed to revising Procedure SP-346, Containment Penetrations Weekly Check During Refueling Operations, to include appropriate isolation valves and to address leakage pathways potentially created during refueling outages. This was committed to be completed prior to the next refueling outage, the next time this procedure will be used. The inspector verified that this commitment is being tracked in the licensee's corrective action system and is scheduled to be completed prior to the next refueling outage.

The licensee created a new series of drawings, the 315 series, which were penetration drawings. A Document Change Notice (DCN), 97-042A was issued on June 13, 1997, to control the development and issuance of these drawings. Valve and instrument tags as shown on the drawings were verified by the licensee during extensive containment walkdowns. The inspector reviewed a sampling of the drawings and found them to be detailed and comprehensive.

Licensee Procedures, NEP-210, Modification Approval Records, Revision 16, issued on March 31, 1997, and NEP-254, Plant Equipment Equivalency Replacement Evaluation, Revision 1, issued on March 31, 1997, were revised to provide guidance to design engineers for handling changes to items which affect containment integrity. The inspector reviewed the changes to the procedures and determined that in regard to changes which affect containment integrity, open items are required to be opened and dispositioned to update affected documentation.

Corrective actions for LER 50-302/96-018 and LER 50-302/96-018-01 were reviewed and were similar to those developed for the violation response, with additional initial corrective actions to address immediate concerns. Engineering provided a listing of penetrations which had not been previously surveilled to the operations department. The SSOD maintained a required action log entry to require that the penetrations be surveilled in accordance with TS requirements until the issuance of the procedure revisions. The inspector verified that the penetrations were all verified to be in the correct configuration.

c. Conclusions

The licensee has adequately addressed the concerns relating to restart for the issue, which includes both LERs and the example of the violation

addressed in the inspection. Both LERs are closed, and example 5 of violation B of EA 96-365 are closed. The remainder of EA 96-365 remains open, pending inspection of each issue.

The inspector assessed the licensee's performance, with respect to this restart-related issue, in the five NRC continuing areas of concern.

Management Oversight - Adequate  
 Engineering Effectiveness - Adequate  
 Knowledge of Design Basis - Adequate  
 Compliance with Regulations - Adequate  
 Operator Performance - Adequate

### III. Engineering

#### E2 Engineering Support of Facilities and Equipment

##### E2.1 Seismic Qualification of Circuit Breakers

###### a. Inspection Scope (37551, 62707)

The inspectors reviewed documentation for the licensee's review of the issue of seismic qualifications for circuit breakers in various configurations, including connect, test disconnect, and racked out. This review included precursor cards (PC), licensee evaluation of NRC generic communications, and reportability determinations performed by the licensee.

###### b. Observations and Findings

On April 21, 1997, the licensee issued PC 97-2032 to address a concern on a maintenance practice that allowed a circuit breaker to be racked out of the bus cabinet and be stored on the floor. Two concerns were discussed; whether the cabinets were seismically qualified with the breakers removed and whether an interaction problem existed with the breaker stored on the floor outside of the cabinet. A reportability determination on April 21, 1997, was made that until an engineering evaluation was performed, a final reportability determination could not be made.

On June 4, 1997, engineering personnel issued a memorandum discussing the issue. The memorandum discussed the two concerns and stated that the first concern was resolved by a review of plant switchgear using earthquake experience data per the Seismic Quality Upgrade Group (SQUG) standards. A separate interoffice communication, NOE 96-0235, was referenced and documented that review. Suggestions from this NOE were discussed as being reviewed and incorporated into Request for Engineering Assistance (REA) 97-0570, dated June 4, 1997, to address the second concern. As of the completion of this inspection period, the recommendations from the REA had not been incorporated into any plant procedures.

NOE 96-0235, dated December 31, 1996, contained four attachments, documenting different aspects of the seismic reviews of 480V and 4160V circuit breakers, performed by a consultant. These attachments are dated between December 6, 1996 and December 23, 1996. The original evaluation report, dated December 20, 1996 addressed both 480V and 4160V breakers. Due to the physical construction of the 480V breakers, only three positions can be set; connect, test, and disconnect. For the three breaker types in use at the site, the consultant determined that the 480V switchgear has a positive and adequate load path for all directions of motion. The review of the 4160V breakers addressed four possible configurations; connect, test, disconnect, and racked-out (left in the enclosure). The consultant concluded that the 4160V switchgear have a positive and adequate load path for all directions of motion for all positions except racked-out. The consultant concluded that for the racked-out position, licensee Procedure OP-703, Plant Distribution System, stated that the breaker was to be removed from the enclosure. No procedure existed that allows the breaker to be racked-out and left inside the enclosure with the door closed. The NOE did not address the seismic qualifications of the enclosure with the breaker removed.

Attachment D to NOE 96-0235, dated December 19, 1996 stated that during a walkdown of the 4160V switchgear to review the seismic adequacy of the breakers in the test, disconnect, and racked-out positions, the consultant noted that unracked breakers were stored in the walkway between the switchgear panels. The attachment states that the potential interaction issue had not been previously identified and was not addressed in the earlier evaluations and needed to be addressed. The report included a list of recommendations for revisions to licensee storage practices to prevent interaction during seismic events. These recommendations were reviewed by the licensee and some were included as proposed corrective actions in REA 97-0570.

On July 18, 1997, the NRC issued Information Notice (IN) 97-53, Circuit Breakers Left Racked Out in Non-Seismically Qualified Positions. This IN was issued to alert licensees to the potential that some safety-related circuit breakers in their racked-out positions may not be seismically qualified. The IN notes that removal of the circuit breaker from the switchgear will result in mass redistribution of the switchgear. Mass redistribution of the switchgear may then change the frequency of the switchgear and its dynamic response during a seismic event and may invalidate the original seismic qualification of the switchgear. The IN states that the situation needs to be evaluated to ensure that the removal of the circuit breaker will not invalidate the original seismic qualification of the switchgear. On July 30, 1997, PC 97-5635 was issued to document the review of the IN. The PC was closed on August 22, 1997, with the comment that these concerns were being appropriately addressed by engineering and are being tracked under PC 97-2032, which remains open.

The inspector reviewed the reportability determination from June 7, 1997. The licensee concluded that the issue was not reportable based on the reevaluation of PC 97-2032. The first concern was resolved per

verbal communications with engineering personnel and the second concern was resolved based on NOE 96-0235 conclusions. The inspector reviewed the NOE, the attachments, and the PC. There was no documentation attached to support the verbal communication from engineering to close the first concern. The inspector discussed the issue with engineering and was informed that the attachments to the NOE implied that the issue had been evaluated. The inspector reviewed the NOE and found no mention of the seismic qualification of the switchgear with the breakers racked-out and removed. The second concern had been closed based on the NOE; however, the attachments identified the potential seismic interaction as being of concern and stated that it needed to be addressed. As a result of the inquiries of the inspector, on September 4, 1997, the licensee obtained a clarification from the consultant for the original attachments to the NOE which addressed the seismic qualifications of the 4160V switchgear with breakers racked-out and removed from the panels. The inspector determined that the reportability determination performed by the licensee on June 7, 1997, did not include the necessary technical basis to justify the conclusion reached.

On September 10, 1997, discussions with management personnel in maintenance and operations revealed that the REA had been distributed to those departments on June 4, 1997, who were responsible for revising the procedures which control the removal and storage of the 4160V breakers, but, the REA had not been transmitted to the procedure writers for either group. The licensee has now distributed this document to the responsible personnel in both departments, and the required revisions were being developed. The changes recommended by the REA include storing the breakers in a marked off setdown area that includes loose chaining of the breaker to a building structure at approximately 2/3 height of the breaker, to preclude sliding or overturning of the breaker.

The inspector examined the A 4160V ES switchgear room. At the time of the inspection, the unit was in Mode 5 with the A 4160V ES bus inoperable and not required to be operable. Examining the switchgear room revealed nine breakers being stored on the floor. Five were unrestrained against a wall. Four were stored in front of the cabinet. None of the five breakers stored against the wall had their wheels chocked. Three of the four breakers on the floor in front of the panel had a single chock on the side away from the cubicle. The fourth breaker had no chocks. On August 18, 1997, a building operator had written PC 97-6020 stating that the yellow chock blocks being used throughout the plant, including the 4160V ES switchgear rooms, were ineffective in preventing breakers from moving. Even though this observation was made several weeks prior to the inspectors examination, no corrective actions had been taken.

Technical Specification 5.6.1.1, Procedures, requires that written procedures be established and implemented covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. This includes procedures for equipment control. Licensee procedure CP-115, Nuclear Plant Tags and Tagging Orders.



Revision 75, step 4.5.9.3 states that all breakers outside of a cubicle are to have their wheels chocked. The inspector's examination of the A 4160V ES switchgear room revealed that six breakers were removed from cubicles without their wheels being chocked and that three additional breakers were chocked in such a manner as to be unable to restrain motion of the breakers. This is identified as a failure to follow licensee Procedure CP-115, for storing breakers removed from cubicles, and will be tracked as VIO 50-302/97-13-03, Failure to follow procedure for controlling breakers removed from switchgear cubicles.

c. Conclusions

The reportability determination made on June 7, 1997, was not timely for an issue identified on April 21, 1997, and based on a report issued during December of 1996. The decision reached in the June 7, 1997, determination was not supported by the evidence available in the December 1996 report. That information was not available until the clarification issued on September 4, 1997, in response to questions by the inspector.

Internal communications in both the maintenance and operations departments were weak, as demonstrated by the fact that the REA, including storage requirements for removed breakers, was transmitted to managers in both departments on June 4, 1997, but neither procedure writers nor department heads were aware of the existence of the REA when interviewed in September 1997.

Procedures for controlling removed breakers were inadequate to address concerns with potential interactions between the breakers and cubicles during a postulated seismic event. Adequate reactions did not exist to store circuit breakers removed from cubicles to prevent interactions during a seismic event, as determined by the licensee during the evaluation from December 1996. Examinations by the inspector revealed that the licensee failed to follow the procedure for controlling breakers removed from switchgear cubicles.

E3 Engineering Procedures and Documentation

E3.1 FSAR Review Project

a. Inspection Scope (37550)

The inspectors examined the licensee's Final Safety Analysis Report (FSAR) review project. The purpose of the licensee's FSAR review, which was accomplished during May 1996 through March 1997, was to ensure that the information contained in the Enhanced Design Basis Document (EDBD) and implementing plant procedures was consistent with the descriptions in the FSAR.

b. Observations and Findings

The FSAR Review Project was accomplished using an Action Plan

which provided an outline with a description of the objective of the review, the method of implementation, and the schedule for completion. The findings from the review were categorized as A through E, as defined in the Action Plan. Findings A, B, and E were tracked as Nuclear Operations Tracking and Expediting System (NOTES) items per the licensee's corrective action program. Category A findings, which totaled 49 findings, were editorial (typos, incorrect references, etc.) The 103 Category B findings, which were defined as clearly bounded by the FSAR, were also tracked as NOTES items. Category E findings were identified for potential deficiencies in documents other than the FSAR. These totaled 67 findings and involved documents such as the EDBD in which discrepancies were identified during the FSAR review. The 135 Category C findings, which were identified as those clearly bounded by the FSAR, were documented on Precursor Cards. Problem Reports were initiated for the nine category D findings, which were defined as issues not clearly bounded by the FSAR, but which required additional review. The extent of the review completed under the Action Plan involved one individual for ten months, with assistance from two other individuals on a part time basis.

The inspectors reviewed approximately one-half of the 363 findings identified in the FSAR review. The inspectors noted that there were numerous duplicate findings. That is, often the same issue was identified more than once since it may have affected more than one plant procedure or document. The inspectors reviewed the licensee's corrective actions to resolve the findings and verified the FSAR review findings had been included in the licensee's corrective action program. The inspectors verified findings affecting restart were so identified and corrective actions were appropriate. Corrective actions included revisions to plant operating procedures, editing the FSAR, and clarification of information in the EDBDs. The licensee determined that none of the findings from the FSAR review project were reportable, and none affected operability of any safety related systems. The inspectors reviewed six of the more significant findings and verified that they were not reportable and did not affect operability.

c. Conclusions

The inspectors concluded that the licensee's FSAR review project performed under the Action Plan was limited in scope. The results of the review indicated that additional FSAR reviews may be required to assure the FSAR is accurate in all respects. The licensee's Restart Readiness Review and Configuration Document Integration Project should provide additional assurance that the FSAR accurately reflects the design, operation, and licensing basis of the plant.

The inspectors assessed the licensee's performance, relative to the FSAR Review Project, in the five areas of continuing NRC concern:

- Management Oversight - Adequate
- Engineering Effectiveness - Adequate
- Knowledge of the Design Basis - Adequate
  - Compliance with Regulations - Adequate
- Operator Performance - N/A

## E8 Miscellaneous Engineering Issues

E8.1 (Closed) EA 96-365, 96-465, 96-527, VIO A (01012, 01022, and 01032); EDG Loading USQs due to inadequate 10 CFR 50.59 evaluations; three examples (one modification and two procedure changes)

(Closed) LER 50-302/96-020, Unreviewed Safety Questions Concerning Diesel Generator Loading Caused by Interpretation of Regulatory Requirements Other than Prescribed

### a. Inspection Scope (92907)

These three violations and LER involved inadequate 10 CFR 50.59 evaluations for a modification, an emergency operating procedure (EOP) change, and an operating procedure (OP) change. Each of these changes increased EDG loading to beyond what was described in the FSAR or TS. The changes involved unreviewed safety questions or a required TS change and the licensee made the modification and procedure changes without obtaining the required prior NRC approval. The inspectors followed up on the licensee's corrective actions as stated in the response to the NRC Notice of Violation and in the LER.

### b. Observations and Findings

The inspectors reviewed the following procedures and training lesson plans:

- CP-213, Preparation of a Safety Assessment and Unreviewed Safety Question Determination (10 CFR 50.59 Safety Evaluation), Rev. 2, dated June 3, 1997
- Nuclear Operations Engineering Standard OES-3, 10 CFR 50.59 SA/USQD Expectations, Rev. 2, dated July 11, 1997
- AI-300, Plant Review Committee Charter, Rev. 40, dated March 27, 1997
- AI-400C, New Procedures and Procedure Change Process, Rev. 19, dated March 31, 1997
- AI-400F, New Procedures and Procedure Change Process for EOPs, APs, and Supporting Documents, dated March 31, 1997

- NEP-210, Modification Approval Records, Rev. 16, dated March 31, 1997
- NEP-213, Design Analyses/Calculations, Rev. 10, dated March 31, 1997
- NEP-224, Emergency Diesel Generator Load Calculations, Rev. 7, dated March 31, 1997
- NEP-261, Design Verification, Rev. 5, dated March 31, 1997
- Nuclear Operations Training Department Special Technical Training, NUC ST-0067, 10 CFR 50.59 Safety Evaluation Training, Safety Assessment and Unreviewed Safety Question Determination Training, Rev. 2, dated March 22, 1997
- Nuclear Operations Training Department Special Technical Training, ST-1223, Introduction to the Technical Specifications and Final Safety Analysis Report, Rev. 0, dated March 7, 1997.

The inspectors noted that the licensee had committed to keep the plant shut down until the design issues identified in their October 28, 1996, letter to the NRC were satisfactorily resolved. EDG loading was included in those design issues. The resolution of those design issues prior to plant restart was also included in an NRC Confirmatory Action Letter of March 4, 1997.

The System Readiness Review Program was nearing completion and was tracked as licensee restart item D-23. An NRC Safety System Functional Inspection (SSFI) is scheduled to review that program's effectiveness prior to restart. The licensee plans to update the Final Safety Analysis Report (FSAR), Enhanced Design Basis Document (EDBD), and Analysis Basis Document (ABD) prior to restart, to show EDG and EFW equipment dependencies and limitations and to include the swing B makeup pump as being a selected engineered safeguards (ES) load, and those plans are tracked by licensee restart item R-20. The licensee also plans to conduct training of operators, on the design basis and design basis accidents, by December 31, 1997, and those plans are tracked by licensee MCAP item C-ID-III-1. The EDGs are being uprated and the completion of the modifications, EDG loading calculations, and related licensing submittals prior to plant restart are tracked by licensee restart items D-06A and R-20. The NRC will review the EDG uprate design along with the related license amendment request. Also, completion of EDG loading calculations is also tracked by open NRC restart item EA 96-365, VIO B (02013), Use of Unverified Calculations to Support Modifications. The emergency operating procedures (EOPs) are being revised prior to plant restart and the completion of those changes is tracked by licensee restart item OP-19D. An NRC inspection is scheduled to review the revised EOPs prior to plant restart.

The inspectors verified that licensee management had conveyed expectations for effective 10 CFR 50.59 evaluations to those individuals

involved in the process. This included an engineering stand-down, revised procedures, and training. The formation of the Safety Analysis Group (SAG) and the Design Review Boards, their effectiveness, and the improvement in quality of 50.59 evaluations were previously reviewed by the NRC and documented in NRC inspection reports 50-302/97-06, 97-08, and 97-09. Inspectors verified that the SAG had completed a review of previous modifications to identify any additional examples of inadequate 10 CFR 50.59 evaluations. Inspectors also verified that Plant Review Committee expectations had been enhanced. In addition, inspectors verified that procedural changes had been made to better define the responsibilities of the design engineer, verification engineer, EDG Load Management Program, and verification of calculations, including case studies. In addition, inspectors verified that revised procedures included requirements for reviews of emergency operating procedures and operating procedures by engineers.

c. Conclusions

The inspectors concluded that most of the licensee's corrective actions had been implemented. Those remaining were in progress and were in a licensee tracking system. Also, the more significant outstanding corrective actions (System Readiness Review Program, EDG uprate, and EOP revisions) are scheduled for further NRC review. The licensee's corrective actions included actions to prevent recurrence of the violation, and represented effective improvements. EA 96-365, 96-465, 96-527, VIO A (01012, 01022, and 01032) and LER 50-302/96-020 are closed.

The inspectors assessed the licensee's performance, relative to corrective actions for this violation, in the five areas of continuing NRC concern:

- Management Oversight - Good
- Engineering Effectiveness - Good
- Knowledge of the Design Basis - Good
- Compliance with Regulations - Good
- Operator Performance - N/A

E8.2 (Closed) EA 96-365, 96-465, 96-527, VIO A (01042); EFW NPSH USQ due to Inadequate 10 CFR 50.59 Safety Evaluation for a Modification

(Closed) LER 50-302/97-001; Ineffective Change Management Results in Unrecognized NPSH Issue Affecting EFW Availability

a. Inspection Scope (92903)

This violation and LER involved an inadequate 10 CFR 50.59 evaluation for a modification that increased the probability of failure of the turbine-driven EFW pump. This change involved an unreviewed safety

question and the licensee made the change without obtaining the required prior NRC approval. The inspectors followed up on the licensee's corrective actions as stated in the response to the NRC Notice of Violation and in the LER.

b. Observations and Findings

In addition to the corrective actions discussed above, the inspector verified that the licensee had installed EFW flow limiting venturis. The modification design, 10 CFR 50.59 evaluation, installation, and initial testing had been inspected and documented in previous inspection reports. Completion of the modification prior to restart was tracked as licensee restart items D-05 and D-06A. In addition, the licensee was completing a failure modes and effects analysis of the LOCA, LOOP, and loss of DC power scenario, and was tracking completion of that as restart item D-8. Licensee completion of this failure modes and effects analysis was also scheduled for NRC inspection prior to restart. Also, the inspector verified that engineering staffing levels had been increased and that the licensee was working toward increasing system design margins through physical means (modification or testing) as opposed to analytical means.

c. Conclusions

The inspectors concluded that most of the licensee's corrective actions had been implemented. Completion of the modification prior to restart was in a licensee tracking system. The licensee's corrective actions included actions to prevent recurrence of the violation, and represented effective improvements. EA 96-365, 96-465, 96-527, VIO A (01042) and LER 50-302/97-001 are closed.

The inspectors assessed the licensee's performance, relative to corrective actions for this violation, in the five areas of continuing NRC concern:

- Management Oversight - Good
- Engineering Effectiveness - Good
- Knowledge of the Design Basis - Good
- Compliance with Regulations - Good
- Operator Performance - N/A

E8.3 (Closed) EA 96-365, 96-465, 96-527, VIO A (01052): EFW USQ due to Removing the Automatic Open Signal from ASV-204, Reducing the Reliability of EFP-2

a. Inspection Scope (92903)

This violation involved an inadequate 10 CFR 50.59 evaluation for a modification that increased the probability of failure of the turbine-

driven EFW pump. This change involved an unreviewed safety question and the licensee made the change without obtaining the required prior NRC approval. The inspectors followed up on the licensee's corrective actions as stated in the response to the NRC Notice of Violation.

b. Observations and Findings

In addition to the corrective actions discussed above, the inspectors verified that the licensee was installing a modification to restore the automatic opening signal to ASV-204. The modification design and 10 CFR 50.59 evaluation had been inspected and documented in previous inspection reports. Completion of the modification prior to restart is tracked as licensee restart item D-05C.

c. Conclusions

The inspectors concluded that most of the licensee's corrective actions had been implemented. Completion of the modification prior to restart was in a licensee tracking system. The licensee's corrective actions included actions to prevent recurrence of the violation, and represented effective improvements. EA 96-365, 96-465, 96-527, VIO A (01052) is closed.

The inspectors assessed the licensee's performance, relative to corrective actions for this violation, in the five areas of continuing NRC concern:

- Management Oversight - Good
- Engineering Effectiveness - Good
- Knowledge of the Design Basis - Good
- Compliance with Regulations - Good
- Operator Performance - N/A

EB.4 (Open) Unresolved Item 50-302/97-07-03; Reactor Building Liner Plate Degradation (92903)

During the inspection documented in NRC Inspection Report 50-302/97-07, NRC identified the containment liner plate at the junction of the liner plate and elevation 95 concrete floor appeared to be corroded. The extent of the corrosion was indeterminate since the liner plate had already been recoated. The licensee initiated a precursor card to document and disposition this issue. The licensee's corrective actions included removal of the coatings and any corrosion areas from the liner plate for a height of approximately ten inches above the concrete floor slab and implemented a nondestructive testing program to determine the thickness of the liner plate and depth of corrosion. The measured liner plate thickness was compared to the calculated minimum plate thickness value of 0.312 inches determined by licensee engineers. The inspectors reviewed the results of the ultrasonic testing (UT) which was performed to determine the actual thickness of the liner plate. The UT

measurements were taken in areas not affected by corrosion to obtain the most accurate data on plate thickness. The irregular corroded surfaces would have affected the accuracy of the UT data. These measurements showed that the installed liner plate had an average thickness of approximately 0.390 inches, which exceeded the specified value of 0.375 inches. The inspectors also reviewed the results of visual examinations of the liner plate. The areas inspected extended below the concrete slab since the licensee removed gasket materials and a portion of the one inch thick cork bond breaker placed between the concrete and liner plate below the top of the concrete floor. During the visual inspections the licensee measured the depth of the corrosion and subtracted this amount from the plate thickness measured using UT. One area was measured which had a depth of corrosion of 0.065 inches, in an area where the measured UT plate thickness was 0.372 inches. The actual remaining plate thickness in the corroded area was 0.307 inches after the corrosion depth was deducted. This was less than the minimum plate thickness (0.312 inches) specified by licensee engineers. The corrosion was classified as pitting, with the deepest corroded area (0.065 inches) identified by the licensee to be a single pit. The licensee was in the process of performing an engineering evaluation to determine if additional repairs, that is, weld repairs were required. Pending further review of the licensee's corrective actions by NRC, this URI will remain open.

E8.5 (Open) VIO 50-302/96-01-06, Failure to Correctly Translate Design Basis of Service Water System into Procedures, Drawings, and Instructions (Restart Issue No. D-54) (92903)

(Open) LER 50-302/96-005-01, Inadequate Failure Modes Review Creates Possibility of Cooling Water Flow Outside of Design Limits (92903)

This item concerned the licensee's identification of an unanalyzed failure in the Nuclear Services Closed Cycle Cooling Water (SW) system. The SW system is flow balanced for only two Reactor Building Cooling Units (RBCU) to be in operation. During certain accident conditions, where a third RBCU was placed in operation, SW total flow would increase and individual flows would decrease. This would cause an increase load on the Emergency Diesel Generator (EDG) above its approved load limit and would also result in lower than required flows to individual components. The cause was an error made by Engineering personnel during the preparation of a design change for the RBCUs which did not consider all failure modes.

The licensee's immediate corrective actions were to declare the SW system inoperable until one of the RBCUs was isolated by closing manual valves in the SW system and to notify the NRC via 10 CFR 50.72.

The inspector reviewed the licensee's closure documentation and interviewed Operation and Engineering personnel. The short term corrective actions to prevent exceeding EDG loading and ensure adequate SW flow were: 1) the C RBCU has been red-tagged out-of-service with a



Shift Supervisor's tag out; 2) Operations Procedure OP-417, Containment Operating Procedure, Revision 72, has a statement to preclude the use of C RBCU as an ES selected fan; 3) an Engineering review and identification of any other similar scenarios in the SW system; and 4) complete the revision to the Design Data Sheet to provide additional instructions for the determination of failure effects. The inspector concluded that the licensee's evaluation and short term corrective actions were adequate. Consequently, this item is acceptable for restart and can be closed on the NRC restart restraint list.

However, during the interviews, the inspector identified the existence of a pending modification, MAR 97-07-0101. The MAR will incorporate an interlock to prevent loading two RBCUs on one EDG and exceeding its loading limits. This modification will need to be reviewed as a long term corrective action and is scheduled for completion in 1998. Consequently, these items will remain open pending completion of the MAR.

The inspector assessed the licensee's performance, with respect to this restart-related issue, in the five NRC continuing areas of concern:

- Management Oversight - N/A
- Engineering Effectiveness - Adequate
- Knowledge of Design Basis - Adequate
- Compliance with Regulations - N/A
- Operator Performance - Adequate

#### IV. Plant Support

#### R1 Radiological Protection and Chemistry (RP&C) Controls

##### R1.1 Control of Byproduct Materials

###### a. Inspection Scope (83750)

The inspectors reviewed a licensee identified problem concerning the discovery of tools having measurable byproduct contamination outside the licensee's primary Radiological Control Area (RCA).

###### b. Observations and Findings

During the extended outage the emergency diesel generators were outside the licensee's RCA. On August 21, 1997, maintenance personnel working in the diesel generator area reported the discovery of a bag marked "hot side" to the Health Physics (HP) staff. Health Physics Technicians (HPTs) dispatched to the work area found a climbing harness in the bag having fixed radioactive contamination of approximately 500 counts per minute (cpm) when measured with a thin window Geiger Muller detector. The activity was equivalent to approximately 25,000 disintegrations per minute (dpm)/100 cm<sup>2</sup>. The harness was returned to the RCA and HPTs performed radiation surveys on other tools and equipment located in the diesel generator work area. No additional contaminated items were

identified. A precursor card, number 97-6132, was initiated to document the problem for corrective actions.

On August 27, 1997, personnel working in the diesel generator area reported the discovery of a hammer having faded radioactive material tape on the handle. A HPT was dispatched to the work area to retrieve the hammer. A survey of the hammer identified fixed radioactive contamination at a concentration of approximately 5,000 dpm/100 cm<sup>2</sup>. Again HPTs conducted additional radiation surveys in the area. The technicians found a carpenter's speed wrench marked "caution radioactive material" in a tool box in the area. Three other tools in the diesel generator area were found having contamination at concentrations between 5,000 to 50,000 dpm/100 cm<sup>2</sup>. Precursor card number 97-6206 was initiated to document the problem. In response to the findings, meetings with maintenance personnel working in the diesel generator area were held on August 27, 1997, to address the radiological control requirements for tools exiting the RCA.

The HP staff began surveying other tool storage areas outside the RCA. Surveys were made in the Fabrication Shop, Cold Machine Shop, and Maintenance Support Building. The licensee estimated approximately 4,000 to 5,000 tools were surveyed by the staff on August 27 and 28, 1997. On August 27, 1997, a tubing tool was found in a Cold Machine Shop tool box having contamination of approximately 8,000 dpm/100 cm<sup>2</sup>. Four contaminated tools having radioactive contamination between 12,000 to 50,000 dpm/100 cm<sup>2</sup> were found in the Cold Machine Shop Tool Room on August 28, 1997.

The inspectors reviewed Radiation Safety Procedure (RSP) 101, Basic Radiological Safety Information and Instructions for Radiation Workers, revision dated July 9, 1997. Paragraph 3.1.17.2 of the procedure required HP personnel perform a radiation survey of equipment being unconditionally released from the RCA. HP personnel were required to verify no radioactivity was present and all radioactive material indicators, stickers, and tags were removed or defaced.

Title 10 CFR, Part 20.1801 required the licensee to secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas.

Title 10 CFR Part 20.1501(a), required, in part, that each licensee make or cause to be made, surveys that may be necessary for the licensee to comply with the regulations and are reasonable under the circumstances to evaluate the extent of concentrations or quantities of radioactive material and the potential radiological hazards that could be present.

The regulations applicable to nuclear power reactor licensees do not provide for release of materials for unrestricted use that are known to be contaminated at any level. The licensee's failure to control licensed byproduct contaminated materials and make adequate radiation surveys to detect fixed byproduct contamination was identified as a violation of Title 10 CFR Part 20.1801, 20.1501, and licensee procedure

requirements. However, the licensee identified the violation and had taken corrective measures to prevent recurrence. Consistent with Section VII.B.1 of the NRC Enforcement Policy, this licensee identified and corrected violation was treated as a Non-Cited Violation, NCV 50-302/97-13-04, Failure To Control Licensed Byproduct Materials and Make Adequate Contamination Surveys of Contaminated Tools Released from the Licensee's RCA.

c. Conclusions

A NCV of regulatory requirements and the licensee's contamination control procedures was identified for failure to control contaminated tools.

R1.2 Radiation Controls

a. Inspection Scope (83750)

Radiation Protection (RP) control activities were observed to verify that the activities were performed in accordance with the facility procedures and regulatory requirements.

b. Observations and Findings

The inspectors observed the following within the licensee's RCAs: housekeeping, radiological postings and labeling, work activities within radiation, high radiation, and contaminated areas, and the condition of radiation monitoring equipment. The inspectors also observed interactions of various plant staff with HPTs concerning appropriate RP measures prior to performing tasks in the RCAs. The inspectors made independent radiation surveys in the licensee's Auxiliary, Intermediate, and Reactor Buildings, and surveyed RCA boundaries and facilities outside the RCA.

Radiological housekeeping within the Auxiliary Building was good. All areas surveyed by the inspectors were properly posted and consistent. No unlabeled containers of radioactive materials were identified. All radiation monitoring equipment found in the RCA was operational and calibrated.

c. Conclusions

The inspector concluded that the licensee was implementing good RP controls in accordance with licensee procedures and regulatory requirements. Good interactions between the HP staff and radiation workers were observed in the inspection.

R1.3 High Radiation Door Controls

a. Inspection Scope (83750)

The inspectors reviewed the events concerning the licensee's discovery of an unlocked high radiation area on May 22, 1997.

b. Observations and Findings

Licensee Technical Specification (TS) 5.8.2 required high radiation areas with radiation levels  $\geq 1$  rem/hr at 30 cm from the source be provided with locked or continuously guarded doors to prevent unauthorized entry. The keys for those high radiation areas were required to be maintained under the administrative control of the Shift Supervisor on duty or health physics supervision. Doors were to remain locked except during periods of access by authorized personnel.

On May 22, 1997, Instrumentation and Control (I&C) personnel checked out a high radiation key for the Make-Up Prefilter Room. The work area was a high radiation area controlled by a locked gate. While in the room the workers were distracted and caused to depart the area. The I&C technicians failed to lock the Make-Up Prefilter room gate when they left the room. Approximately 30 minutes later a HPT touring the area found the gate to the room open with the key still in the lock. The HPT secured the area and the licensee began an investigation into the event. At the time the event occurred the HP staff was controlling the area as a locked high radiation area.

The licensee did a good job of investigating the event and produced Root Cause Report 97-3530, Make-up Prefilter Locked High Radiation Door Left Unattended. The licensee documented the event as a violation of TS 5.8.2, 10 CFR 20.1601, and RSP-101. Corrective actions included:

Staff review of radiation workers responsibilities (RSP-101);  
Placing a "Responsibilities For High Radiation Area Key Sign-Out" document in the high radiation key log for workers to review when checking out a high radiation key; and Proposed gate modification to install a audible alarm that would sound when the gates were open.

The inspectors initially believed the May 22 event was a violation of licensee TS 5.8.2. However, upon review of a licensee radiation survey for the area made May 22, 1997, the inspectors concluded the licensee was not in violation of TS 5.8.2. The radiation levels at 30 centimeters from the radiation sources in the area were not in excess of the 1,000 mrem/hr dose rate criteria specified in the licensee's TS.

While the inspectors concluded no violations of TS 5.8.2 had occurred, the inspectors found the licensee had intended the I&C personnel maintain positive control of the Make-up Prefilter Room at the time the key was issued. Step 4.4.3 of licensee Procedure RSP-101, Basic Radiological Safety Information and Instructions for Radiation Workers, required radiation workers ensure all gates, doors, and other access control mechanisms were secured when access to a high radiation area was left unattended. Failure to secure the Make-up Prefilter Room was a violation of the licensee's RSPs. However, the licensee identified the violation and had taken corrective measures to prevent recurrence. Consistent with Section VII.B.1 of the NRC Enforcement Policy, this licensee identified and corrected violation was treated as a NCV, NCV 50-302/97-13-05, Failure To Secure Unattended High Radiation Area Door.

c. Conclusions

A NCV of the licensee's radiation safety procedure requirements was identified for failure to secure access to a high radiation area.

R1.4 Effluent Release

a. Inspection Scope (84750)

The sampling and analysis of a continuous gaseous radioactive waste release for the Auxiliary Building Exhaust was observed to verify applicable licensee procedures for radioactive gaseous effluents were properly utilized.

b. Observations and Findings

The inspectors reviewed applicable licensee procedures for the preparation of a gaseous effluent release. The inspectors observed the sampling and analysis of the Auxiliary Building exhaust and reviewed the gaseous release permit. The results of the analysis were all below measurable concentrations as the unit had been shutdown for approximately 12 months. The analysis results were documented in accordance with licensee procedures.

Licensee personnel reported that there was a procedure problem with the Reactor Building (RB) purges. There was some confusion on whether operators were recording the correct start time of all RB purges. Precursor Card 97-6145 was initiated to cause proper review of applicable procedures. The problem concerned the following procedures:

- OP-417, Containment Operating Procedure, revision dated August 25, 1997; and
- SP-335C, Radiation Monitoring Instrumentation Functional Test of RM-A1, A2, A6, A11, and A12; revision dated April 11, 1997.

According to licensee personnel, when a functional test of the monitoring system was performed prior to the beginning of the release, the time of the functional test may not be recognized as the start time of the release. If the release start time incorrectly excluded the time of the preceding functional test, approximately 40 minutes of release time may not be included in the release calculations. The unaccounted for volume during that period could be greater than one million cubic feet. The licensee had only initiated a review of the concern and the extent of the problem was unknown. A review of the gaseous effluent release volume will be made in a future NRC inspection. The item is tracked as an Inspector Follow-up Item (IFI) 50-302/97-13-06, Review Accuracy of Gaseous Effluent Release Start Times and Volumes.

c. Conclusions

The sampling and analysis processes for the reviewed gaseous effluent release were adequate. The technician performing the work was very knowledgeable of the procedure processes. The applicable procedures provided sufficient detail to perform the work and the procedures were properly utilized throughout the sampling and analysis process.

A potential problem with determining Reactor Building (RB) gaseous effluent release start times and volumes was identified by the licensee and will be reviewed by the NRC in a future inspection as IFI 50-302/97-13-06.

R3 RP&C Procedures and Documentation

R3.1. Annual Radiological Effluent Release Report

a. Inspection Scope (84750)

The Annual Radiological Effluent Release Report for 1996 was reviewed to identify any adverse trends and to verify that the requirements of TS were met.

b. Observations and Findings

Licensee TS 5.7.1.1.c required the licensee submit an annual Radiological Effluent Report covering the operation of the unit in accordance with 10 CFR Part 50.36a. The TS also required the material provided be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM) and Process Control Program and in conformance with 10 CFR 50.36a and Appendix I, Section IV.B.1.

The release of radioactive material to the environment from Crystal River for 1996 was a small fraction of the 10 CFR Part 20, Appendix B and 10 CFR Part 50, Appendix I limits. The inspectors compared the reported measurements in the 1996 report with those of previous years and did not identify any adverse trends. The licensee appeared to be effectively managing radiological effluents to maintain offsite doses as low as reasonably achievable.

c. Conclusions

The 1996 Effluent Report was complete and met TS requirements. The radiological effluents were well within the limits specified in the ODCM.

### R3.2. Annual Radiological Environmental Operating Report

#### a. Inspection Scope (84750)

The Annual Radiological Environmental Operating Report for 1996 was reviewed to identify any adverse trends and to verify that the requirements of TS were met.

#### b. Observations and Findings

Licensee TS 5.7.1.1.b required the licensee submit an Annual Radiological Environmental Operating Report summarizing and tabulating the results of all radiological environmental samples and environmental radiation measurements taken during the period.

Sampling of the facility environs was performed by the State of Florida Department of Health, Bureau of Radiation Control. The State of Florida also performed the required analyses, participated in the Environmental Protection Agency's Interlaboratory Comparison Program and performed the annual Land-use Census.

The inspectors compared the reported radiation measurements in the 1996 report with those of previous years. There were increases in the radioactivity observed in sediment and oyster samples. The increases were attributed to an increase in radioactive liquid effluents released during 1996. The liquid effluent increased from 0.2 curies in 1995 to 0.5 curies in 1996. The licensee attributed the liquid effluent increases to the two shutdowns in 1996 versus none in 1995.

#### c. Conclusions

The 1996 Annual Environmental Monitoring Report met TS requirements. The report indicated that plant operations in 1996 had not resulted in any significant impact on the environment.

### R5 Staff Training and Qualification in RP&C

#### R5.1 Radiation Worker Training and Qualification in RP

#### a. Inspection Scope (83750)

The inspectors reviewed elements of the licensee's RP General Employee Training (GET).

#### b. Observations and Findings

Title 10 CFR Part 19.12, required the licensee provide radiation protection instructions to radiation workers.

The licensee was one of the first to utilize the computer as an instructor of GET and had utilized computer based training for several years. In addition to completing the RP training on the computer, the

licensee developed practical factors to supplement the training. Students were required to demonstrate knowledge and precautions associated with various radiation protection controls. The practical factors included reviews of radiation worker precautions, responsibilities, and tours within the licensee's RCA with qualified HP personnel. The tours provided the students the opportunity to see and utilize radiation protection equipment, radiological posting and labeling, radiation work permits, and radiation surveys in the RCA. Students were encouraged to ask questions throughout the training.

c. Conclusions

The inspectors found the practical factor training an excellent training component with the licensee's computer based training program.

R6 **RP&C Organization and Administration**

R6.1 Organization Changes

a. Inspection Scope (83750)

The inspectors reviewed changes in the RP Organization since the last radiation protection inspection in 1996.

b. Observations and Findings

Licensee TS 5.3.1 required, in part, each member of the unit staff meet or exceed the minimum qualifications of ANSI N18.1, 1971 for comparable positions, except for the Radiation Protection Manager (RPM), who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975.

The designated RPM is responsible for providing proper program oversight and technical direction. The previous RPM, the Manager of RP, vacated the position in 1996. The position was temporarily filled by a RP Supervisor during that period and a new Manager of RP was appointed in November 1996. The inspector reviewed the qualifications of the new Manager of RP and found the individual qualified for the RPM position.

The licensee had also changed the reporting and organization structure of the RP&C organization in April 1997. Prior to the changes the Nuclear Chemistry Department reported to the Operations Department and the RP Department reported to the Maintenance Department. In the revised organization the Managers of Nuclear Chemistry and RP departments report to the Manager of Nuclear Chemistry and RP, a new position. The Manager of Chemistry and RP reported to the Director of Nuclear Plant Operations. The new Manager of Chemistry and RP was the former RPM.



c. Conclusions

The inspectors concluded the Manager of RP met the TS qualification requirements for the RPM.

P1 Conduct of EP Activities

P1.1 Emergency Drill Observations

a. Inspection Scope (71750)

On September 3, 1997, inspectors observed the licensee's annual emergency preparedness drill, from both the technical support center (TSC) and the simulator control room. On September 5, 1997, an inspector attended a critique of the drill.

b. Observations and Findings

The inspector observed in drill activities in the simulator control room. The simulator operating crew used good command and control and were always aware of plant conditions because of frequent crew updates. Throughout the drill, a few communication related issues surfaced. One issue was in obtaining sufficient personnel from operations (non-licensed operators) to participate in the drill. Drill controllers reported an exercise vehicle accident prematurely. Another issue was with information reported by the state regarding steam generator tube leak rates. Leak rates of greater than 200 gallons per minute were still being reported by the state after the leak rates had decreased when the reactor coolant system was depressurized. Lastly, it took approximately half an hour before the simulator control room received word that a fire had been extinguished.

The inspector observed the emergency preparedness drill in the TSC. The licensee's response was in compliance with procedure; however, it was observed that the briefings held by the emergency coordinator (EC) did not occur on a regular basis, but when the need was determined by the EC. At times, this appeared to interfere with the personnel maintaining awareness of plant status. For example, it was noted that approximately 20 minutes following the simulated evacuation of the auxiliary building, the security representative in the TSC was unaware that the evacuation had been initiated and had not taken action to assure that the building had been evacuated. Following notification, security was able to assure timely completion of the simulated evacuation.

c. Conclusions

The fundamental objectives of the drill were met and therefore the inspectors consider the drill to be a success. Some minor communication problems occurred, but nothing that was considered to detract from the drill's intent and purpose.

## S1 Conduct of Security and Safeguards Activities

### S1.1 Review of Lost Security Badge Incidents (71750)

As part of the licensee's implementation of their licensee exemption on July 24 to allow security badges to be taken offsite, the inspectors reviewed the results of the licensee's efforts to correct a problem with individuals losing their badges while in the protected area. The inspectors observed that licensee management had made correcting this problem a significant priority starting in May of 1997. One step taken was to purchase and strongly encourage the use of nylon lanyards to affix and retain an individual's badge. Another step was the involvement of an individual's supervisor following each occurrence and the development of a consistent and progressive discipline process. Although these initiatives did not achieve significant results through June, the inspector observed that only six lost badge events were reported in July and none in August as of the 25th. These were significant reductions and indicated the licensee's efforts were successful.

In response to several problems with contractor personnel losing their badges in June, the licensee strongly encouraged contractors to also develop a policy to address individual accountability to minimize the number of lost badges. The licensee did not specify any particular type of policy for the contractor to develop. One contractor adopted a policy on June 13 that any lost badge would result in site termination. In response to concerns about the negative effect this policy would have on an individual being reluctant to report a lost badge to Security and looking for it instead, the inspector verified the contractor revised the policy on July 14 to require a case-by-case review of each lost badge incident. The inspector reviewed each of the six lost badge occurrence reports for July and verified that in four of the occurrences the individual notified security about the missing badge and in the other two the individual was unaware that his badge was missing. One of these latter two examples involved a contractor employee after the new policy was implemented July 14. The corrective action taken was appropriate considering the extenuating circumstances involved with the loss. The inspector concluded that individuals were not reluctant to report missing badges to allow security to remove their access ability until they could be located. The inspector did not identify any concerns with the licensee's actions and concluded they were successful at significantly reducing lost badge incidents.

### V. Management Meetings

#### X1 Exit Meeting Summary

The inspection scope and findings were summarized on September 22, 1997. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Anderson, Senior Vice President, Nuclear Operations  
 J. Baumstark, Director, Quality Programs  
 J. Cowan, Vice President, Nuclear Production  
 R. Davis, Assistant Plant Director, Operations and Chemistry  
 R. Grazio, Director, Nuclear Regulatory Affairs  
 G. Halnon, Assistant Plant Director, Nuclear Safety  
 B. Hickie, Director, Restart  
 J. Holden, Site Director  
 D. Kunsemiller, Manager, Nuclear Licensing  
 M. Marano, Director, Nuclear Site & Business Support  
 C. Pardee, Director, Nuclear Plant Operations  
 W. Pike, Manager, Nuclear Regulatory Compliance  
 M. Rencheck, Director, Nuclear Engineering and Projects  
 M. Schiavoni, Assistant Plant Director, Maintenance  
 T. Taylor, Director, Nuclear Operations Training

NRC

D. Billings, Resident Inspector, Oconee (September 9 through 11, 1997)  
 J. Jaudon, Director, Division of Reactor Safety, Region II (August 20 through 21, 1997)  
 W. Holland, Reactor Inspector, Region II (September 8 through 10, 1997)  
 K. Landis, Branch Chief, Region II (August 20 through 21, 1997)  
 M. Miller, Reactor Inspector, Region II (September 15 through 19, 1997)  
 S. Ninh, Project Engineer, Region II (August 20 through 21, 1997)  
 L. Raghaven, Project Manager, NRR (August 20 through 21, 1997)  
 T. Ross, Senior Resident Inspector, Farley (August 19 through 22, 1997)  
 R. Schin, Reactor Inspector, Region II (August 20 through 21, September 15 through 19, 1997)  
 M. Thomas, Reactor Inspector, Region II (September 15 through 19, 1997)

## INSPECTION PROCEDURES USED

IP 37550: Engineering  
 IP 37551: Onsite Engineering  
 IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems  
 IP 61726: Surveillance Observations  
 IP 62707: Conduct of Maintenance  
 IP 71707: Plant Operations  
 IP 71750: Plant Support Activities  
 IP 83750: Occupational Radiation Exposure  
 IP 84750: Radioactive Waste Treatment and Effluent and Environmental Monitoring  
 IP 92901: Follow up - Operations  
 IP 92902: Follow up - Maintenance  
 IP 92903: Follow up - Engineering

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

<u>Type / Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
VIO 50-302/97-13-02	Open	Failure to perform a safety evaluation prior to erecting scaffolding in the vicinity of safety related equipment. (Section M2.1)
VIO 50-302/97-13-03	Open	Failure to follow procedure for controlling breakers removed from switchgear cubicles. (Section E2.1)
IFI 50-302/97-13-06	Open	Review Accuracy of Gaseous Effluent Release Start Times and Volumes. (Section R1.4)

Closed

<u>Type/Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
NCV 50-302/97-13-01	Closed	Improper Clearance Restoration Causes RCS Leak. (Section O1.4)
VIO 50-302/94-25-01	Closed	Failure to Properly Control the Control Complex Habitability Envelope (Door Blocked Open for Maintenance Work). (Section O8.1)
LER 50-302/94-009-02	Closed	Unauthorized Tests Involving Makeup Tank Level and Pressure. (Section O8.2)
VIO 50-302/96-01-01	Closed	Inadequate Corrective Action to Fix HPI Flow Indication Problems. (Section O8.3)
VIO 50-302/97-01-01	Closed	Inadequate Clearance Tagging Requirements. (Section O8.4)
VIO 50-302/97-01-02	Closed	Failure To Follow Procedures. Resulting In An Inadvertent Emergency Diesel Generator Start. (Section O8.5)
LER 50-302/96-018-00	Closed	Failure to Verify Reactor Building Penetrations Closed per Technical Specifications. (Section M8.1)

LER 50-302/96-018-01	Closed	Failure to Verify Reactor Building Penetrations Closed per Technical Specifications. (Section M8.1)
VIO EA 96-365, 96-465, 96-527, VIO B (02013)	Closed	Three Inadequate Procedures for Containment Penetration Surveillances. (Section M8.1)
VIO EA 96-365, 96-465, 96-527, VIO A(01012, 01022 and 01032)	Closed	EDG Loading USQs due to inadequate 10 CFR 50.59 evaluations: three examples (one modification and two procedure changes). (Section E8.1)
LER 50-302/96-020	Closed	Unreviewed Safety Questions Concerning Diesel Generator Loading Caused by Interpretation of Regulatory Requirements Other than Prescribed. (section E8.1)
VIO EA 96-365, 96-465, 96-527, VIO A 01042)	Closed	EFW NPSH USQ due to Inadequate 10 CFR 50.59 Safety Evaluation for A Modification. (Section E8.2)
LER 50-302/97-001	Closed	Ineffective Change Management Results in Unrecognized NPSH Issue Affecting EFW Availability. (section E8.2)
VIO EA 96-365, 96-465, 96-527, VIO A (01052)	Closed	EFW USQ due to Removing the Automatic Open Signal from ASV-204, Reducing the Reliability of EFP-2. (section E8.3)
NCV 50-302/97-13-04	Closed	Failure To Control Licensed Byproduct Materials and Make Adequate Contamination Surveys of Contaminated Tools Released from the Licensee's RCA. (Section R1.1)
NCV 50-302/97-13-05	Closed	Failure To Secure Unattended High Radiation Area Door. (Section R1.3)

### Discussed

<u>Type / Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
IFI 50-302/97-11-04	Open	Corrective Actions for Approximately 4000 Precursor Cards not Tracked to Completion. (Section 07.1)
URI 50-302/95-02-02	Open	Control Room Habitability Envelope Leakage. (Section 08.1)

VIO EA 96-365,96-465, 96-527, VIO B (02013)	Open	Use of Unverified Calculations to Support Modifications. (Section E8.1)
URI 50-302/97-07-03	Open	Reactor Building Liner Plate Degradation. (Section E8.4)
VIO 50-302/96-01-06	Open	Failure to Correctly Translate Design Basis of Service Water System into Procedures, Drawings, and Instructions. (Section E8.5)
LER 50-302/96-005-01	Open	Inadequate Failure Modes Review Creates Possibility of Cooling Water Flow Outside of Design Limits. (Section E8.5)

## LIST OF ACRONYMS USED

ABD	- Analysis Basis Document
AI	- Administrative Instruction
AP	- Abnormal Procedures
AR	- Air Removal
BAST	- Boric Acid Storage Tank
CARB	- Corrective Action Review Board
CCHE	- Control Complex Habitability Envelope
CFR	- Code of Federal Regulations
CFT	- Core Flood Tank
CPM	- Counts Per Minute
CREVS	- Control Room Emergency Ventilation System
CR3	- Crystal River Unit 3
CT	- Current Transformers
DBD	- Design Basis Document
DH	- Decay Heat
DHP	- Decay Heat Pump
DHV	- Decay Heat Valve
DNPO	- Director, Nuclear Plant Operations
DPM	- Disintegration Per Minute
EA	- Enforcement Action
ECCS	- Emergency Core Cooling System
EDBD	- Enhanced Design Basis Document
EDG	- Emergency Diesel Generator
EEI	- Escalation Enforcement Item
EFIC	- Emergency Feedwater Initiation and Control
EFW	- Emergency Feedwater
EOP	- Emergency Operating Procedure
ES	- Engineered Safeguards
ESQPM	- Environmental and Seismic Qualification Program Manual
FLA	- Full Load Amperes
FLUR	- First Level Undervoltage Relays
FME	- Foreign Material Exclusion
FPC	- Florida Power Corporation

FSAR	- Final Safety Analysis Report
FSP	- Fire Service Pump
FTI	- Framatome Technologies, Inc.
GET	- General Employee Training
GL	- Generic Letter
HP	- Health Physics
HPI	- High Pressure Injection
HPT	- Health Physics Technician
HVAC	- Heating Ventilation and Air Conditioning
I&C	- Instrumentation and Controls
IFI	- Inspector Follow-up Item
INPO	- Institute of Nuclear Power Operations
IPAP	- Integrated Performance Assessment Process
IR	- Inspection Report
ISA	- Instrument Society of America
ISI	- Inservice Inspection
Kw	- Kilowatts
LER	- Licensee Event Report
LOCA	- Loss of Coolant Accident
LOOP	- Loss of Offsite Power
LPI	- Low Pressure Injection
MAR	- Modification Approval Record
MCAP	- Management Corrective Action Plan
MREM	- Milli Roentgen Equivalent Man
MSLB	- Main Steamline Break
MUT	- Make-up Tank
MUV	- Make-up Valve
NCV	- Non-cited Violation
NEP	- Nuclear Engineering Procedure
NGRC	- Nuclear General Review Committee
NOTES	- Nuclear Operations Tracking and Expediting System
NOV	- Notice of Violation
NPSH	- Net Positive Suction Head
NP&SM	- Nuclear Procurement and Storage Manual
NQA	- Nuclear Quality Assessments
NRC	- Nuclear Regulatory Commission
NRR	- Office of Nuclear Reactor Regulation
OCR	- Operability Concerns Resolution
ODCM	- Off-site Dose Calculation Manual
OI	- Operating Instruction
OJT	- On The Job Training
OP	- Operating Procedure
PC	- Precursor Card
PM	- Preventive Maintenance
PMRG	- Plant Modification Review Group
PMT	- Post Maintenance Test
PORV	- Power Operated Relief Valve
PPO	- Primary Plant Operator
PR	- Problem Report
PRC	- Plant Review Committee
PT	- Liquid Penetrant Test
QA	- Quality Assurance

RB - Reactor Building  
RCA - Radiologically Controlled Area  
RCBT - Reactor Coolant Bleed Tanks  
RCP - Reactor Coolant Pump  
RCS - Reactor Coolant System  
REA - Request for Engineering Assistance  
RG - Regulatory Guide  
RM - Radiation Monitor  
RP - Radiation Protection  
RPM - Radiation Protection Manager  
RP&C - Radiological Protection and Chemistry  
RSP - Radiation Safety Procedure  
SALP - Systematic Assessment of Licensee Performance  
SBLOCA - Small Break Loss of Coolant Accident  
SEL - Security Event Log  
SIR - Security Information Reports  
SLUR - Second Level Undervoltage Relays  
SM - Shift Manager  
SP - Surveillance Procedure  
SQUG - Seismic Quality Upgrade Group  
SR - Surveillance Requirement  
SRO - Senior Reactor Operator  
SSC - System, Structure or Component  
SSFI - Safety System Functional Inspection  
SSOD - Shift Supervisor on Duty  
TC - Temporary Change  
TDBD - Topical Design Basis Document  
TS - Technical Specification  
URI - Unresolved Item  
USQ - Unreviewed Safety Question  
VIO - Violation  
WI - Work Instructions  
WR - Work Request  
WSI - Welding Services, Inc.