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

Report No: 50-302/86-38

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Docket No: 50-302 Licensee No.: DPR-72

Facility Name: Crystal River 3

Inspection Dates: November 7, 1986 - January 7, 1987

Inspectors: H O Christensen for 1/29/87
T. F. Stetka, Senior Resident Inspector Date Signed

H O Christensen for 1/29/87
J. E. Tedrow, Resident Inspector Date Signed

Approved by: Bruce A. Wilson 1/29/87
B. A. Wilson, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine inspection was conducted by two resident inspectors in the areas of plant operations, security, radiological controls, Licensee Event Reports and Nonconforming Operations Reports, review of IE Bulletins, and licensee action on previous inspection items. Numerous facility tours were conducted and facility operations observed. Some of these tours and observations were conducted on backshifts.

Results: Six Violations were identified: (Failure to adhere to posting requirements for radiation protection, paragraph 5.b(5); Failure to have an adequate procedure to perform shut down margin calculations, paragraph 5.b(8).b; Failure to comply with the requirements of 10 CFR 50 Appendix J, paragraph 5.b(8).c; Failure to perform surveillance requirements within the required time interval, paragraph 6.a(3); Failure to take adequate corrective action, paragraph 6.b(1); Failure to issue a LER, paragraph 6.b(2) and 6.b(3)).

REPORT DETAILS

1. Licensee Employees Contacted

*J. Alberdi, Manager, Nuclear Site Support
*F. Bailey, Superintendent of Projects
*J. Brandely, Nuclear Security & Special Projects Superintendent
*P. Breedlove, Nuclear Records Management Supervisor
*J. Buckner, Nuclear Security Superintendent
*J. Cooper Jr., Superintendent, Technical Support
*J. Gibson, Nuclear Technical Specification Coordinator
*V. Hernandez, Senior Nuclear Quality Assurance Specialist
*B. Hickle, Manager, Nuclear Plant Operations
*J. Lander, Director, Nuclear Projects & Outages
*M. Mann, Nuclear Compliance Specialist
R. Marckese, Nuclear Engineer I
*P. McKee, Director, Nuclear Plant Operations
R. Murgatroyd, Nuclear Maintenance Superintendent
W. Neuman, Supervisor Inservice Inspection (ISI)
W. Nielsen, Senior Nuclear Electrical/I&C Supervisor
*V. Roppel, Manager, Nuclear Plant Technical Support
*W. Rossfeld, Nuclear Compliance Manager
*P. Skramstad, Nuclear Chemistry/Radiation Protection Superintendent
*P. Small, Maintenance Department Coordinator
*S. Sullens, Senior Nuclear Electrical/I&C Supervisor
*K. Wilson, Manager, Site Nuclear Licensing
*R. Wittman, Nuclear Operations Superintendent

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

*Attended exit interview

2. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on January 7, 1987. During this meeting, the inspector summarized the scope and findings of the inspection as they are detailed in this report with particular attention to the Violations and Inspector Followup Items (IFI).

The licensee representatives acknowledged the inspector's comments and did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Inspection Items

(Closed) IFI 302/86-12-07: The licensee has revised maintenance procedures MP-124 (revision 13, dated August 8, 1986) and MP-162 (revision 7, dated October 1, 1986) to include alignment specifications for the emergency feedwater pumps. Action on this item is considered complete.

(Closed) IFI 302/86-20-04: The licensee has revised surveillance procedures SP-354A (revision 15, dated November 7, 1986) and SP-354B (revision 12, dated October 24, 1986) to require that both emergency diesel generator room supply fans are returned to normal following diesel shutdown. This item is considered to be complete.

(Closed) IFI 302/86-14-04: The inspector reviewed documentation from the manufacturer which stated that Gulf Dieselmotive 471 was an acceptable oil for use in the Woodward governor for the emergency diesel generators. The inspector has no further questions on this matter and this item is considered closed.

(Closed) Violation 302/86-27-02: The licensee has revised compliance procedure CP-115 (revision 58, dated November 28, 1986) to require the use of the appropriate procedures for system restoration from an equipment clearance. The inspector has reviewed this procedure and considers this clarification adequate. This item is considered closed.

(Closed) Violation 302/86-22-01: The licensee has completed and the inspector has verified the completion of the following items:

- Revisions to the Operating Daily Surveillance Log, SP-300 (revision 89 dated July 22, 1986), and Shutdown Daily Surveillance Log, SP-301 (revision 65 dated October 24, 1986), have implemented the following requirements:

  i) Checking the position of range selector switches on the hydrogen/oxygen analyzer.

  ii) Normal expected values of oxygen and hydrogen concentrations for comparison to logged values.

  iii) Check of the liquid nitrogen storage tanks to ensure an adequate volume of nitrogen is available for dilution of the Waste Gas Decay Tanks (WGDT) if required.

- A permanent nitrogen addition system has been installed which allows nitrogen to be added directly from the plant's nitrogen header to the WGDT's.

- The range selector switches have been replaced with switches that have a spring return to the proper low scale position.

- Operating Procedure OP-412, Waste Gas Disposal System, has been revised (revision 40 dated August 5, 1986) to include instructions for operation of the permanent nitrogen addition system.

Action on this item is considered complete.

(Closed) Violation 302/86-22-02: This violation was written to address inadequate corrective action taken by FPC for Violation 302/84-33-01 and Deviation 302/85-44-01 which resulted in Violation 302/86-22-01 discussed above. The corrective action taken in response to Violation 302/86-22-01 addresses the corrective action to this Violation and action on this item is considered to be complete.

(Closed) IFI 302/86-12-08: The licensee has completed the cleaning and flushing of the lines suppling bearing flush water to the nuclear services seawater pumps (RWP-2A, RWP-2B) and decay heat seawater pumps (RWP-3A, RWP-3B). The licensee has also completed an engineering analysis to determine the necessary amount of flush water which these pumps need. This analysis concludes that as long as the pump bearings are kept flooded or receive any amount of flush water flow, then the pumps should operate satisfactory. However, this analysis recommends that on any indication of a loss of normal bearing flush water to these pumps, that RWP-2A or RWP-2B should be started within ten minutes. The licensee has revised the appropriate annunciator response procedure to reflect this recommendation. This item is considered to be closed.

(Open) IFI 302/86-35-07: This IFI was written to review the licensee's activities to determine the cause for the "B" main feedwater pump overspeed transients. The licensee has done extensive troubleshooting on this pump and has completed the following activities in an attempt to correct these transients:

- Modified the Integrated Control System (ICS) input signal to the pump's governor electronic control assembly from a voltage signal to an amperage signal to reduce electrical noise.

- Shielded the ICS input signal cable.

- Replaced the governor's actuator.

- Tested the main steam supply line to the pump's turbine.

- Installed temporary recorders to monitor the ICS and governor operation.

At this time the licensee has been unable to positively identify the cause for the pump to overspeed and is continuing their investigation into this problem. The licensee is considering replacement of the Woodward governor

electronic analog controller with a new "state of art" digital controller which should be immune to electrical noise. Also the licensee plans to install a high frequency filter on the ICS input signal to further reduce electrical noise. This item will remain open pending completion of the licensee's investigation and corrective action.

4. Unresolved Items

Unresolved items were not identified during this inspection period.

5. Review of Plant Operations

The plant began this inspection period in power operation (Mode 1). On November 11, at 1:21 p.m., a control rod fell into the reactor core. A power reduction and reactor shutdown was initiated while troubleshooting was conducted to determine the cause for the dropped control rod. On November 14, at 10:38 a.m., the plant was cooled down to cold shutdown (Mode 5) to replace a defective control rod drive stator. After these repairs were completed, a plant heatup was commenced and at 1:43 p.m. on November 21 the hot standby condition (Mode 3) was reached. On November 22, at 2:10 a.m. plant operators observed an increase in reactor coolant system leakage and a plant cooldown and depressurization was conducted to repair the makeup and purification system letdown coolers, (see paragraph 9 of this report for details). After repairs had been completed to the makeup and purification system letdown coolers, a plant heatup was commenced and Mode 3 reached at 10:09 a.m. on December 23, followed by the resumption of power operation at 11:35 p.m. on December 24. On January 2, at 9:20 a.m., plant operators noticed that the first stage seal for the "A" reactor coolant pump showed degrading indications and a reactor shutdown and cooldown was commenced to replace this seal package. The plant remained in Mode 5 for the remainder of this inspection period.

a. Shift Logs and Facility Records

The inspector reviewed records and discussed various entries with operations personnel to verify compliance with the Technical Specifications (TSs) and the licensee's administrative procedures.

The following records were reviewed:

Shift Supervisor's Log; Outage Shift Manager's Log; Reactor Operator's Log; Equipment Out-Of-Service Log; Shift Relief Checklist; Auxiliary Building Operator's Log; Active Clearance Log; Daily Operating Surveillance Log; Work Request Log; Short Term Instructions (STIs); and Selected Chemistry/Radiation Protection Logs.

In addition to these record reviews, the inspector independently verified clearance order tagouts.

No violations or deviations were identified.

b. Facility Tours and Observations

Throughout the inspection period, facility tours were conducted to observe operations and maintenance activities in progress. Some operations and maintenance activity observations were conducted during backshifts. Also, during this inspection period, licensee meetings were attended by the inspector to observe planning and management activities.

The facility tours and observations encompassed the following areas: security perimeter fence; control room; emergency diesel generator room; auxiliary building; intermediate building; reactor building; battery rooms; and electrical switchgear rooms.

During these tours, the following observations were made:

(1) Monitoring Instrumentation - The following instrumentation was observed to verify that indicated parameters were in accordance with the TS for the current operational mode:

Equipment operating status; area atmospheric and liquid radiation monitors; electrical system lineup; reactor operating parameters; and auxiliary equipment operating parameters.

During these plant tours, the inspector noted the continuing licensee activities to locate and repair minor leaks in the waste gas system which has caused increased gaseous activity in the atmosphere of the auxiliary building (AB). While this increased activity has been minor in nature, it has been recurring and as a result, the licensee established a task force to locate the sources of these leaks.

As the result of this task force's investigations, the licensee has identified minor radioactive gas leaks around the make-up tank (MUT). It is postulated that these leaks were caused by the following:

- Valve stem leaks out of nitrogen and hydrogen addition diaphragm valves MUV-141 and MUV-143;

- A pipe union leak from a pressure transmitter instrument fitting; and,

- A weep hole in the weld securing a reinforcing saddle for a pipe connection located at the top of the MUT.

The licensee has repaired valves MUV-141 and MUV-143 and the pipe union leak but is unable to repair the weld weep hole at this time. The hole appears to be sufficiently small enough so that a special ventilation system the licensee has installed in the MUT room, which includes an independent filter system, can mitigate this leakage. The independent filter system exhausts to the normal AB ventilation stack so that all releases are adequately monitored. This filter system has been effective since no increases of radiation levels in the AB atmosphere have been detected. It is planned to repair this weep hole during the next refuel outage.

IFI (302/86-38-01): Review the licensee's activities to repair the weld weep hole in the MUT.

(2) Safety Systems Walkdown - The inspector conducted a walkdown of the Core Flood (CF) system to verify that the lineup was in accordance with license requirements for system operability and that the system drawing and procedure correctly reflect "as-built" plant conditions.

No violations or deviations were identified.

(3) Shift Staffing - The inspector verified that operating shift staffing was in accordance with TS requirements and that control room operations were being conducted in an orderly and professional manner. In addition, the inspector observed shift turnovers on various occasions to verify the continuity of plant status, operational problems, and other pertinent plant information during these turnovers.

No violations or deviations were identified.

(4) Plant Housekeeping Conditions - Storage of material and components and cleanliness conditions of various areas throughout the facility were observed to determine whether safety and/or fire hazards existed.

No violations or deviations were identified.

(5) Radiation Areas - Radiation Control Areas (RCAs) were observed to verify proper identification and implementation. These observations included selected licensee conducted surveys, review of step-off pad conditions, disposal of contaminated clothing, and area posting. Area postings were independently verified for accuracy by the inspectors. The inspectors also reviewed selected radiation work permits and observed the use of protective clothing, respirators, and personnel monitoring devices to assure that the licensee's radiation monitoring policies were being followed.

On November 18, while observing maintenance activities within the Reactor Building (RB), the inspector noted three licensee personnel that were not wearing glasses that provide beta protection for the eyes. The posting for the RB required beta protection for all personnel within the building.

When a roving health physics (HP) technician, that was in the immediate area, was notified of this observation, the technician immediately corrected the situation.

The licensee's radiation protection procedure, RSP-101, defines posting as a radiological control in paragraph 2.3.26 and requires adherence to radiological controls in paragraph 3.1.3.4. Failure to adhere to the requirements of procedure RSP-101 is considered to be contrary to the requirements of TS 6.11 and is considered to be a Violation.

Violation (302/86-38-02): Failure to adhere to the posting requirements of radiation protection procedure RSP-101 as required by TS 6.11.

(6) Security Control - Security controls were observed to verify that security barriers were intact, guard forces were on duty, and access to the Protected Area (PA) was controlled in accordance with the facility security plan. Personnel within the PA were observed to verify proper display of badges and that personnel requiring escort were properly escorted. Personnel within vital areas were observed to ensure proper authorization for the area.

No violations or deviations were identified.

(7) Fire Protection - Fire protection activities, staffing and equipment were observed to verify that fire brigade staffing was appropriate and that fire alarms, extinguishing equipment, actuating controls, fire fighting equipment, emergency equipment, and fire barriers were operable.

No violations or deviations were identified.

(8) Surveillance - Surveillance tests were observed to verify that approved procedures were being used: qualified personnel were conducting the tests; tests were adequate to verify equipment operability; calibrated equipment was utilized; and TS requirements were followed.

The following tests were observed and/or data reviewed:

- SP-104, Hot Channel Factors Calculations;

- SP-113, Power Range Nuclear Instrumentation Calibration;

- SP-154, Functional Testing and Calibration of the Triaxial Time-History Accelographs and Triaxial Seismic Switch;

- SP-177, Local Leak Rate Test of AHV-1A thru AHV-1D;

- SP-179, Containment Leakage Test-Types "B" & "C";

- SP-181, Containment Air Lock Test (only a procedure review was conducted, no data was reviewed);

- SP-317, RC System Water Inventory Balance;

- SP-326A, Toxic Gas Detection System (Weekly);

- SP-333, Control Rod Exercises;

- SP-335, Radiation Monitoring Instrumentation Functional Test;

- SP-363, Fire Protection System Tests;

- SP-404, Fire Deluge & Sprinkler System Surveillance;

- SP-421, Reactivity Balance Calculations;

- SP-422, RC System Heatup & Cooldown Surveillance;

- SP-455, Functional Test of Vital Bus Redundant Transformers & Static Transfer Switches;

- SP-510, Weekly Battery Check (Units 1&2);

- SP-512, Battery Inspection & Charger Test (Units 1 & 2); and,

- SP-513, Battery Service Test (Units 1 & 2).

As the result of these reviews, the following items were identified:

(a) The inspector observed the performance of SP-513 on the newly installed battery at Unit 2. This procedure has been rewritten to test the Unit 1 and Unit 2 batteries under a new

load profile. The licensee has been requested to provide information regarding the DC loads that these batteries must supply so that a correct battery load profile can be verified.

IFI (302/86-38-03): Review the information to verify the new load profiles for the Unit 1 and Unit 2 batteries.

(b) On November 12, while reviewing completed data for procedure SP-421, the inspector noted that Data Sheet II (Enclosure 4) which is used to compute the shutdown margin with an inoperable control rod, was incorrectly completed. The shutdown margin computed on the day shift of November 11 was computed as -1.5768% delta-k/k whereas the correct value should have been -2.468% delta-k/k. Furthermore data completed on the 4:00 PM to 12:00 AM shift of November 11 and on the 12:00 AM to 8:00 AM shift of November 12, had to have numerous corrections made to arrive at a reasonably correct answer.

Further review of this procedure by the inspector indicated the following procedure inadequacies:

- Step 6.3.1 of the procedure determines the shutdown margin available based upon existing core conditions. This shutdown margin is calculated on Worksheet I (Enclosure 1) with the resultant shutdown margin recorded in Step 6.b of the worksheet and on Data Sheet II. To assure that the calculations are performed correctly, the procedure requires in Step 4.3.5, that all algebraic signs be correctly maintained. Step 6.b also states "If the shutdown margin is <1% delta-k/k during Modes 1, 2, 3, 4, or 5, notify the shift supervisor," which means that any positive value greater than +1% delta-k/k (e.g., +1.5% delta-k/k) would be acceptable. Since a positive number would result if the reactor being in a critical condition, the intent of this step, i.e. to assure that the reactor is shutdown, is not accomplished.

- Step 6.3.3 of the procedure determines the shutdown margin that would be required to insure a shutdown reactor with an inoperable control rod. This margin is obtained by summing the rod worth of the inoperable control rod which is obtained from rod worth curves and recorded in Step 6.3.2 and the TS required shutdown margin of 1% delta-k/k. Since the rod worth reactivity is a positive number, when this number is added to 1% delta-k/k (as required by Step 4.3.5) the result is a

positive number which is in excess of 1%. The procedure then goes on to say in Step 6.3.4 that "The value obtained in Step 6.3.1 must be greater than the value obtained in Step 6.3.3."

Since this would provide a shutdown margin value that is always greater than the value obtained in Step 6.3.1, it appears that there is no way to insure that the required shutdown margin is met.

Personnel utilizing this procedure realized that the intent was to end up with a result that was a negative number that was less than -1% delta-k/k (e.g., -1.5% delta-k/k). In their attempts to arrive at a reasonable result, numerous corrections had to be made and in all these cases the procedure required answers were not obtained. There was no evidence that an actual improper shutdown margin was not being maintained.

The error made on the November 11 data sheet and the number of corrections that had to be made to the following November 11 and 12 data sheets provided strong evidence that the procedure was inadequate.

Written procedures must be adequate to assure that the intent of an evolution is completed correctly. Failure to have an adequate procedure is contrary to the requirements of TS 6.8.1 and is considered to be a violation.

Violation (302/86-38-04): Failure to have an adequate procedure for computing reactor shutdown margin.

c) During a review of procedure SP-181 on November 21, the inspector noted that step 1.3 had a notation regarding the surveillance frequency which stated in part:

"Air locks opened during periods when containment integrity is not required by Technical Specifications shall be tested at the end of such periods at not less than Pa. The 'end' of Mode 5 outages is defined as..."30 days prior to Mode 4 and 15 days following ascension to or beyond Mode 4."

Subsequent discussions with licensee personnel indicates that this notation represented the licensee's interpretation of 10 CFR Part 50, Appendix J, paragraph III.D.2(b)(ii).

Additionally the licensee believed that an exemption had been granted by the NRC for relief from this paragraph of Appendix J.

Further review of this issue by the inspector indicated the following:

- Paragraph III.D.2(b)(ii) of Appendix J requires air locks to be tested at the accident pressure (Pa) prior to entering a mode of operation where containment integrity is required. Since the TS require containment integrity in Modes 1 thru 4, this meant that such testing had to be accomplished in Mode 5 (cold shutdown) and prior to entering Mode 4 (hot shutdown).

- The plant changed operational modes, from Mode 5 to Mode 3 (hot standby), on November 21-22 and no air lock test at pressure Pa had been performed.

- The licensee had not received an exemption from the NRC that exempted them from the requirements of Appendix J, paragraph III.D.2(b)(ii).

Failure to comply with the requirements of 10 CFR Part 50, Appendix J is considered to be a Violation.

Violation (302/86-38-05): Failure to comply with the air lock testing requirements of 10 CFR Part 50, Appendix J.

(d) During a review of the completed data for procedure SP-154 performed on October 17, 1986, the inspector noted in step 10.2 of data sheet Enclosure 3, that the vendor performing the procedure recommended that the accelerometer package located on the top of the Reactor Building (RB) be inspected for humidity or desiccant monthly. The licensee has developed a Preventative Maintenance (PM) procedure to accomplish the inspection but has not yet implemented the procedure. The procedure will be implemented within a few weeks.

Inspector Followup Item (302/86-38-06): Review PM program implementation of the humidity/desiccant inspection on the RB accelerometer.

(9) Maintenance Activities - The inspector observed maintenance activities to verify that correct equipment clearances were in effect; work requests and fire prevention work permits, as required, were issued and being followed; quality control personnel were available for inspection activities as required; and TS requirements were being followed.

Maintenance was observed and work packages were reviewed for the following maintenance activities:

- Replacement of safety valve RCV-8 in accordance with maintenance procedures MP-102 and MP-122;

- Replacement of the Power Operated Relief Valve (PORV), RCV-10, and associated block valve RCV-11 in accordance with procedures MP-155 and MP-122;

- Repairs on the "D" vital inverter in accordance with procedures MP-531, PM-119 and PM-130;

- Troubleshooting and repair of the "D" Vital Bus Transfer Switch (V3XS-1D), in accordance with procedures MP-531 and SP-455;

- Troubleshooting and replacement of a power range neutron detector NI-5 in accordance with procedures MP-531 and MP-210;

- Troubleshooting and repair of auxiliary steam supply valve ASV-26; and,

- Troubleshooting and repair of the Emergency Feedwater Initiation and Control (EFIC) channel "C" main steam line isolation in accordance with procedure MP-531.

As the result of these reviews, the following items were identified:

(a) While observing maintenance activities on the vital inverter the inspector noted that the licensee does not have formal maintenance procedures (MP) to address repairs to certain electrical equipment such as inverters or the generator end of the emergency diesel generators (EDGs). Maintenance on this equipment is presently conducted using a Work Request (WR) and detailed work instructions that receive the same level of review and approval that a MP would receive.

This observation was discussed with licensee personnel at which time it was determined that the licensee had not developed formal MPs for this equipment since it has not (until recently on the inverter) required any corrective maintenance. The licensee also stated that they have begun development of MPs to cover these types of electrical equipment.

Inspector Followup Item (302/86-38-07): Review the licensee's progress in developing MPs to cover certain electrical equipment.

(b) While reviewing documentation following completion of work on the inverter, the inspector noted an apparent discrepancy between the post-maintenance testing listed on the WR and the testing that was actually performed. The WR listed procedure PM-130, Static Inverters, as the procedure to be used for post-maintenance testing. However, while reviewing the work package, the inspector noted that only a portion of PM-130 was performed and that this portion did not appear to provide adequate testing.

Subsequent discussions with licensee personnel and review of additional documentation provided assurance that an adequate post-maintenance test had been performed. The inspector noted, however, that a potential problem which could result in incorrect or improper post-maintenance testing may exist due to improper or incomplete documentation on the WR.

The licensee acknowledged the inspector's remarks and is reviewing the post-maintenance testing area to determine what improvements can be made.

Inspector Followup Item (302/86-38-08): Review the licensee's progress to improve the post-maintenance testing specification on WRs.

(10) Radioactive Waste Controls - Solid waste compacting and selected liquid and gaseous releases were observed to verify that approved procedures were utilized, that appropriate release approvals were obtained, and that required surveys were taken.

No violations or deviations were identified.

(11) Pipe Hangers and Seismic Restraints - Several pipe hangers and seismic restraints (snubbers) on safety-related systems were observed to insure that fluid levels were adequate and no leakage was evident, that restraint settings were appropriate, and that anchoring points were not binding.

No violations or deviations were identified.

6. Review of Licensee Event Reports and Nonconforming Operations Reports

a. Licensee Event Reports (LERs) were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events, which were reported immediately, were reviewed as they occurred to determine if the TS were satisfied.

LERs 85-34, 86-17, 86-19, 86-20, 86-21, 86-22 and 86-24 were reviewed in accordance with current NRC policy. LERs 85-34, 86-17, 86-19, 86-21 and 86-24 are closed.

(1) (Open) LER 86-22: This LER reported that the weekly Unit 1 battery surveillance test required by TS 4.8.1.1.1.C.1 was not performed within the required time interval. The LER stated that the plant status was in Mode 5 with no core alterations in progress. The LER further stated that the applicable action statements of the TS were complied with. The inspector reviewed this matter and determined that during the time period in which the surveillance test time interval had expired (November 21 - November 24), a plant heatup to Mode 3 was being performed when a letdown cooler failure occurred and forced the plant to shutdown and cooldown to Mode 5. This action would not have complied with the TS action statement (TS 3.8.1.2) to suspend all operations involving positive reactivity additions. The licensee plans to issue a supplement to this LER to provide additional information regarding the plant status and compliance with the TS action statement. This LER will remain open pending NRC review of the supplemental response.

(2) (Closed) LER 85-34: This LER reported that the core flood tank isolation valves (CFV-5 and CFV-6) were not verified to be operable as required by TS 4.5.1.d prior to ascending from Mode 4 to Mode 3. This action violated TS 4.0.4 which prohibits entry into an operational mode unless the surveillance requirements associated with the limiting condition of operation are satisfied. The licensee has revised surveillance procedure SP-402, Core Flood System Isolation Valve Alarms Actuation (revision 8 dated November 15, 1986) to specify that the valves must be checked prior to ascending from Mode 4. This matter is considered to be a licensee identified violation in which adequate corrective action was taken to prevent recurrence.

(3) (Open) LER 86-20: This LER reported that the surveillance frequency on the Reactor Vessel Vent Valves (RVVVs) and several other surveillances exceeded the maximum combined interval time for any three consecutive tests that is required by TS 4.0.2.

Review of this event by the inspector identified the following:

- SP-140, Incore Neutron Detector System Calibration, due by August 17, 1986, was not completed as of January 7, 1987;

- SP-154, Functional Testing & Calibration of the Triaxial Time-History Accelographs and Triaxial Seismic Switch, due by August 17, 1986, was not completed until October 17, 1986;

- SP-202, Inservice Inspection Vent Valve Internals, due by September 9, 1986, was not completed as of September 30,1986 (however NRC has issued an exemption to this requirement on November 7, 1986);

- SP-363, Fire Protection System Tests, due by October 5, 1986, was not completed until November 13, 1986;

- SP-404, Fire Deluge & Sprinkler System Surveillance, due by August 29, 1986, was not completed until November 20, 1986;

- SP-411, Fire Protection Deluge & Sprinkler Systems Test, due by October 11, 1986, was not completed until December 14, 1986;

- SP-512, Battery Inspection & Charger Test (Units 1 & 2), due by October 4, 1986, was not completed until November 14, 1986; and,

- SP-513, Battery Service Test (Units 1 & 2), due by October 22, 1986, was not completed until November 14, 1986.

Failure to meet the total maximum combined interval for any three consecutive tests of 3.25 times the specified interval is contrary to the requirements of TS 4.0.2 and is considered to be a Violation.

Violation (302/86-38-09): Failure to perform surveillance requirements within the maximum combined interval time specified in TS 4.0.2.b.

While it is recognized that this Violation was identified by the licensee, it is being cited due to the failure of the licensee to identify and correct the Violation in a timely manner.

This LER remains open pending issuance of the supplementary LER.

b. The inspector reviewed Nonconforming Operations Reports (NCORs) to verify the following: compliance with the TS, corrective actions as identified in the reports or during subsequent reviews have been accomplished or are being pursued for completion, generic items are identified and reported as required by 10 CFR Part 21, and items are reported as required by TS.

All NCORs were reviewed in accordance with the current NRC Policy. As the result of these reviews, the following items were identified:

(1) NCORs 86-224 and 86-228 reported problems which affected the 230 kv switchyard supplying the offsite power source for Unit 3.

NCOR 86-224, dated December 10, 1986, reported that the Unit 1 and Unit 2 battery load profiles were actually higher than that tested for during the 18 month battery service tests required by TS 4.8.1.1.1.C.4. These batteries provide the independent 125 volt DC control power for protective relaying schemes and breaker switching for the 230 KV switchyard as described in the Final Safety Analysis Report (FSAR) section 8.2.3.3.a. Since December, 1976, several modifications have been performed on these batteries to supply other DC loads for the non-nuclear coal plants. Therefore the DC loads which these batteries must supply have changed. These changes were not reflected in the battery service test which proves that these batteries can supply actual emergency loads for one hour.

NCOR 86-228, dated December 15, 1986, reported that three breakers (numbers 3230, 3233 and 3234) in this switchyard did not comply with the FSAR section 8.2.3.3. Specifically, these breakers did not have the two electrically independent sets of tripping coils supplied from separate DC supplies. These breakers were installed during Unit 4 and Unit 5 coal plant tie-ins to this switchyard in 1981 and 1982.

The licensee has experienced ongoing problems with non-nuclear modifications to the switchyard and switchyard interfaces which affect the regulatory basis for the nuclear unit. LER 85-32 was issued in January 1986 and reported that an auxiliary transformer installed in the 230 KV switchyard for the coal plants did not have the diverse DC control power for the primary and backup protective relaying as described in the FSAR section 8.2.3.3. The corrective action as stated in this LER included a check of the Unit 4 and Unit 5 interface with the 230 KV substation to assure that no deficiencies of this type existed there. None were found. In addition a review of other interfaces as described in the FSAR was conducted and no deficiencies were identified. It appears that if this review had been adequate, the events discussed in NCOR's 86-224 and 86-228 would not have occurred.

Failure to take adequate corrective actions thereby preventing the occurrence of the problems identified by NCOR's 86-224 and 86-228 is considered to be contrary to the requirements of 10 CFR Part 50 Appendix B Criterion XVI and the FPC Quality Program section 1.7.1.16, Corrective Action, and is considered to be a violation.

Violation (302/86-38-10): Failure to take adequate corrective action to identify and correct problems in the 230 KV switchyard.

(2) NCORs 86-204 and 86-205 reported that procedure SP-351, Nuclear Services Flow Path Operability, was not adequately implementing TS 4.7.3.1.a and 4.7.4.1.a. These TS require that each valve servicing safety related equipment in the Nuclear Services Closed Cycle Cooling (SW) and Nuclear Services Seawater (RW) systems which is not secured in position be verified in its correct position at least every 31 days.

The inspector reviewed these NCORs for reportability and noticed that at least two of the seven valves listed on an attachment to the NCORs were manual isolation valves which serviced safety related equipment. These two valves (SWV-305 and RWV-26) supplied the safety related portion of the Domestic Water (DO) system to supply bearing flush water to the safety related nuclear services and decay heat seawater pumps. Procedure SP-351 should have included these valves to comply with the TS but did not. The licensee identified this problem on November 14, 1986 and is going to revise procedure SP-351 accordingly. However, this matter was not reported to the NRC via an LER within thirty days as required by 10 CFR Part 50.73.a.2.i.B.

Failure to report via an LER any operation or condition prohibited by the plant's TS is contrary to the requirements of 10 CFR 50.73.a.2.i.B and is considered to be a violation.

Violation (302/86-38-11): Failure to issue a LER.

(3) NCOR 86-188 reported that normally closed inboard containment isolation valve AHV-1C was discovered off its seat during the performance of a type B leak rate test in accordance with procedure SP-177, Local Leak Rate Test of AHV-1A thru AHV-1D. The inspector reviewed this NCOR and on December 9, 1986, discussed the results of the leak rate test with the leak rate examiner who performed this test. This test is accomplished by pressurizing the air space between AHV-1C and AHV-1D (the associated outboard containment isolation valve) to Pa (the postulated post accident reactor building internal pressure - approximately 60 psig) and measuring the leakage rate from the two containment isolation valves. Since AHV-1C was not properly seated, the leakage rate exceeded the test equipment capacity to pressurize this air space and Pa could not be achieved (only approximately 25 psig could be obtained). Therefore the leak rate of this penetration could not be determined. The licensee was unable to obtain the as found leak rate for the downstream valve AHV-1D due to plant conditions but did perform a soap check of the seating surfaces of this valve at the 25 psig pressure that was obtained. The results of this check revealed that this valve appeared to be seated properly.

TS 3.6.1.2 requires containment leakage rates be limited to a combined leakage rate of less than .6 La (maximum allowable leakage rate at pressure Pa) for all valves and penetrations subject to type B and C tests. The inability of the licensee to show that the limits of this TS were not exceeded (since the leakage rate for the AHV-1C, AHV-1D penetration could not be determined) placed the plant in a condition prohibited by the TS. This situation should have been reported to the NRC via an LER as required by 10 CFR 50.73.a.2.i.B and is considered to be a violation. This violation is another example of the violation discussed in the preceding paragraph of this report (paragraph 6.b(2)).

(4) NCOR 86-226 reported that an engineering evaluation to verify control room habitability, conducted on November 3, 1986, identified that in June, 1984, a sulfur dioxide tank had been installed at the Unit 1 coal plant. Due to the close proximity of this tank to the nuclear unit, the licensee performed a conservative accident analysis for this tank and has determined that unacceptable levels of sulfur dioxide could accumulate in the nuclear unit's control room should a catastrophic failure of the tank occur. The licensee is pursuing additional protective measures to ensure that a catastrophic failure to this tank does not occur.

In a letter to the NRC dated December 18, 1986, the licensee outlined the corrective action that was being performed to protect the tank and provided justification to continue operating the nuclear unit. The low probability of a catastrophic failure of the tank and a more probable accident analysis showed little detriment to the safe operation of the nuclear plant. However, this letter stated that the following short term corrective actions would be accomplished:

- A sulfur dioxide monitor would be installed in the nuclear unit's control room by January 30, 1987.

- A sulfur dioxide monitor would be installed at the sulfur dioxide tank and this monitor would provide input to an alarm in the nuclear unit's control room. This action would be completed by February 15, 1987, and,

- Air breathing apparatus (air packs) would be provided in the control room. These air packs would be included in the preventive maintenance program for air packs.

IFI (302/86-38-12): Review the completion of the licensee's short term protective measures for the sulfur dioxide tank.

This letter further stated the following long term corrective actions to be taken:

- Complete permanent protective measures for the sulfur dioxide tank by June 30, 1987.

- Complete a report for the control room habitability review by June 30, 1987 to determine if additional actions are required, and,

- Complete the control room habitability modifications in Refuel 6.

IFI (302/86-38-13): Review the completion of the licensee's long term protective measures for the sulfur dioxide tank.

7. Review of 10 CFR Part 21 Evaluations

An evaluation of NCOR 86-96 regarding the design nozzle loading on the steam turbine of the emergency feedwater pump (EFTB-1) was reviewed to verify compliance with 10 CFR Part 21. No violations or deviations were identified.

8. Review of IE Bulletins (IEB) and IE Information Notices (IEN)

(Closed) IEB 86-03: The inspector reviewed the licensee's response to IEB 86-03, Potential Failure of Multiple Emergency Core Cooling System (ECCS) Pumps Due to Single Failure of Air-Operated Valve in Minimum Flow Recirculation Line. The licensee determined that the problem described by this bulletin did not apply because of the design of these recirculation lines at this facility. Licensee action on this bulletin is considered to be complete.

(Closed) IEN 86-106: The inspector reviewed the licensee's activities with respect IEN 86-106, Feedwater Line Break. Upon notification of the line break event that occurred at the Surry Nuclear Plant, the licensee formed a "Pipe Rupture Task Force" to determine what pipe examination activities could be accomplished while in their current outage. The task force identified 22 areas within the feedwater system that had similar flow characteristics (i.e., elbows, high turbulence areas, etc.) to the area that failed at the Surry plant and began Ultrasonic Testing (UT) on these areas. This testing is expected to be completed prior to the end of the current outage. The results of the UT remain to be reviewed.

Inspector Followup Item (302/86-38-14): Review the results of the UT on the main feedwater piping performed due to the Surry event.

9. Nonroutine Event Followup

On November 22, at 2:10 a.m. the plant was in the hot standby (Mode 3) condition. Plant operators observed an increase in the Nuclear Services Closed Cycle Cooling (SW) system activity with a corresponding increase in this system's surge tank level. Monitoring of the makeup and purification system's makeup tank revealed that a reactor coolant system to SW system leak had occurred. The leakage rate was estimated at four gpm. An unusual event was declared and a plant cooldown was commenced in accordance with TS 3.4.6.2.b. The leak was determined to be from the "A" makeup and purification letdown cooler (MUHE-1A). This leak was isolated and the unusual event terminated at 7:50 a.m.

A NRC welding specialist inspector observed the cooler replacement and weld repairs. The results of this observation are documented in NRC inspection report 50-302/86-40. Further information on this matter can be found in that report.