



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

Report No.: 50-400/92-13

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Raleigh, NC 27602

Docket No.: 50-400

Licensee No.: NPF-63

Facility Name: Harris 1

Inspection Conducted: June 20 - July 17, 1992

Inspectors:	<u><i>Janell O. Adcock for</i></u>	<u>7/30/92</u>
	J. Tedrow, Senior Resident Inspector	Date Signed
	<u><i>M. Shannon for</i></u>	<u>7/30/92</u>
	M. Shannon, Resident Inspector	Date Signed
Approved by:	<u><i>H. Christensen</i></u>	<u>7/30/92</u>
	H. Christensen, 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; radiological controls, security, fire protection, surveillance observation, maintenance observation, verification of plant records, design changes and modifications, evaluation of licensee self assessment, followup of onsite events, licensee event reports, 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:

Two violations were identified: Failure to maintain quality control inspector certification, paragraph 7.a; Failure to properly identify excessive auxiliary feedwater pump motor starts, paragraph 8.b.



Four reactor trips and eight automatic auxiliary feedwater system actuations occurred during this reporting period, paragraph 8.

A weakness concerning the performance of operator rounds is discussed in paragraph 2.b.(2).

Improvement was noted in the material condition of the containment spray and residual heat removal systems, paragraph 2.b.(3).

Quality control involvement in plant activities was considered to be minimal, paragraph 7.a.

The design and present operation of the auxiliary feedwater system challenges plant operators, paragraph 8.b.

Operator control of steam generator water level was found to be inadequate, paragraphs 8.b and 8.c.

Good operator response following a reactor trip was noted, paragraph 8.e.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Collins, Manager, Operations
- *J. Cribb, Manager, Quality Control
- *C. Gibson, Manager, Programs and Procedures
- C. Hinnant, General Manager, Harris Plant
- *D. Knepper, Project Engineer, Nuclear Engineering Dept.
- *B. Meyer, Manager, Environmental and Radiation Monitoring
- *T. Morton, Manager, Maintenance
- *J. Moyer, Manager, Project Assessment
- J. Nevill, Manager, Technical Support
- *C. Olexik, Manager, Regulatory Compliance
- A. Powell, Manager, Harris Training Unit
- H. Smith, Manager, Radwaste Operation
- G. Vaughn, Vice President, Harris Nuclear Project
- *E. Willett, Manager, Outages and Modifications
- *W. Wilson, Manager, Spent Nuclear Fuel

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

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Review of Plant Operations (71707)

The plant began this inspection period in power operation (Mode 1). On July 12, 1992, a reactor trip occurred as a result of a turbine trip (see paragraph 8.a for details of the reactor trip). The plant was stabilized in hot standby (Mode 3) at 2:08 a.m. on July 12 following the reactor trip. Following temporary main condenser repairs, the reactor was taken critical on July 14 at 4:41 a.m. followed by the resumption of power operation at 3:34 p.m. At 2:50 a.m. on July 15 the reactor was manually tripped due to a problem with the main feedwater system (see paragraph 8.d for details of the second reactor trip). Following the investigation and corrective action for this trip, the reactor was taken critical at 8:01 p.m. on July 15. Power operations resumed at 10:28 p.m. on July 15. After returning to full power, another reactor trip occurred on July 17 at 12:18 p.m. due to a main turbine trip on low main condenser vacuum (see paragraph 8.e for details of the third reactor trip). The plant was stabilized in the hot standby condition where it remained for the duration 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 (TS) and the licensee's administrative procedures. The following records were reviewed: Shift Supervisor's Log; Control Operator's Log; Night Order Book; Equipment Inoperable Record; Active Clearance Log; Grounding Device Log; Temporary Modification Log; Chemistry Daily Reports; Shift Turnover Checklist; and selected Radwaste Logs. In addition, the inspector independently verified clearance order tagouts.

The inspectors found the logs to be readable, well organized, and generally provided sufficient information on plant status and events. It was noted, however, that the logs did not adequately depict the numerous AFW actuations as discussed in paragraph 8.b. Clearance tagouts were found to be properly implemented. No violations or deviations were identified.

b. Facility Tours and Observations

Throughout the inspection period, facility tours were conducted to observe operations, surveillance, and maintenance activities in progress. Some of these observations were conducted during backshifts. Also, during this inspection period, licensee meetings were attended by the inspectors to observe planning and management activities. The facility tours and observations encompassed the following areas: security perimeter fence; control room; emergency diesel generator building; reactor auxiliary building; waste processing building; turbine building; fuel handling building; emergency service water building; battery rooms; electrical switchgear rooms; and the technical support center.

During these tours, the following observations were made:

- (1) Monitoring Instrumentation - Equipment operating status, area atmospheric and liquid radiation monitors, electrical system lineup, reactor operating parameters, and auxiliary equipment operating parameters were observed to verify that indicated parameters were in accordance with the TS for the current operational mode.

- (2) Shift Staffing - The inspectors 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.

At approximately 3:00 p.m. on July 2, 1992, during a routine plant tour, the inspector noticed that the oil level in the gear changer reservoir for the "B" charging/safety injection pump was not visible. The gear changer provides a coupling between the pump and the motor driver. The low level condition was reported to main control room personnel who took immediate action to refill the reservoir. This equipment is included in the auxiliary operator round checklist which requires a generic check of pumps to ensure that proper oil level is present. A review of the pump operating history revealed that the pump had been secured at approximately 4:00 a.m. on July 2. The inspector was informed that the oil level in the gear changer was satisfactory while the pump was in operation. The charging/safety injection pumps have had recurrent oil leaks which maintenance personnel have been unable to stop. Apparently, enough oil had leaked from the system while the pump was running to cause the oil level to be low when the pump was secured. Given the history of oil leakage, the inspector considered that plant operators should have been more observant of this equipment following operation and should have identified the low oil level condition. Therefore the inspector considered the performance of operator rounds to be poor in this case and recommended that plant management stress increased attention to detail in the performance of operator rounds.

- (3) 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. Improvement was noted in the material condition of the containment spray and residual heat removal systems. No visible boric acid or sodium hydroxide leakage was evident.

- (4) Radiological Protection Program - Radiation protection control activities were observed routinely to verify that these activities were in conformance with the facility policies and procedures, and in compliance with regulatory requirements. The inspectors also reviewed selected radiation work permits to verify that controls were adequate.
- (5) Security Control - The performance of various shifts of the security force was observed in the conduct of daily activities which included: protected and vital area access controls; searching of personnel, packages, and vehicles; badge issuance and retrieval; escorting of visitors; patrols; and compensatory posts. In addition, the inspector observed the operational status of closed circuit television monitors, the intrusion detection system in the central and secondary alarm stations, protected area lighting, protected and vital area barrier integrity, and the security organization interface with operations and maintenance.
- (6) 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.

The inspectors found plant housekeeping and the material condition of safety-related components to be good. The licensee's adherence to radiological controls, security controls, fire protection requirements, and TS requirements in these areas was satisfactory.

c. Review of Nonconformance Reports

Adverse Condition Reports (ACRs) were reviewed to verify the following: TS were complied with, corrective actions and generic items were identified and items were reported as required by 10 CFR 50.73.

3. Surveillance Observation (61726)

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:

- MST-I0177 Steam Generator C Narrow Range Level Loop (L-0493) Operational Test
- MST-I0122 Pressurizer Pressure P-0455 Operational Test
- MST-I0150 Steam Generator C Narrow Range Level Loop (L-0495) Operational Test
- OST-1039 Calculation of Quadrant Power Tilt Ratio, Weekly Interval (With Alarm Operable)

The performance of these procedures was found to be satisfactory with proper use of calibrated test equipment, necessary communications established, notification/authorization of control room personnel, and knowledgeable personnel having performed the tasks. No violations or deviations were observed.

4. Maintenance Observation (62703)

The inspector observed/reviewed 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:

- Check of the "A" and "B" AFW pump motors in accordance with procedure CM-E0014, Initial Checkout of Electrical Motors.
- Inspection of Brown Boveri LK-16 circuit breaker due to failure of fan E-18 breaker.
- Inspection of DEHC system SW cooler
- Troubleshoot low oil pressure trip of the "B" essential chiller in accordance with procedure PIC-I0100, Pressure and Differential Pressure Switch Inspection and Calibration.
- Calibration of main condenser pressure switches PS-4131A through PS-4131E.

The performance of work was satisfactory with proper documentation of removed components and independent verification of the reinstallation. During the reactor/turbine trip on July 12, the main condenser pressure switches failed to actuate at the correct setpoint. Also, the low main condenser vacuum alarm failed to actuate. These switches were found to have drifted from the required setpoint and were recalibrated.

- a. Problems with various normal service water heat exchangers were experienced in maintaining process temperatures. Initial investigations found silt buildup in the heat exchangers. Following the shutdown on July 12 the EHC cooler piping was disassembled to remove the blockage which was found on the inlet and outlet SW piping to the heat exchanger. The licensee has determined that small bore piping with low flow rates may be susceptible to the blockage problem and is preparing a work list of components to be inspected during the upcoming refueling outage. The inspectors also noted that the cooling tower blowdown rate was reduced from the previous year and may have contributed to the present blockage problems. The inspectors will continue to follow this item during routine inspection activities.
- b. On July 14, 1992, while preparing to perform routine maintenance the operators attempted to deenergize the breaker for the RAB normal exhaust fan, E-18. The 480 Vac Brown Boveri LK-16 breaker could not be remotely or locally tripped and bus MCC-1D2 had to be deenergized in order to remove the breaker. The deenergization of bus 1D2 subsequently led to a reactor trip.

The Brown Boveri LK-16 breakers have caused problems since initial plant startup. The breakers have periodically failed in the closed position which required deenergizing the bus in order to remove the breaker from service. Various breaker modifications have been implemented to try to resolve the deficiency. Thirty seven failures to open on demand occurred before implementation of the modifications. The failure on July 14, 1992 is the second failure of the LK-16 breaker to open on demand since the breaker modification was begun. The licensee has implemented an increased preventive maintenance program to inspect the breakers.

No violations or deviations were identified.

5. Verification of Plant Records (71707)

(Closed) TI 2515/115: This inspection was performed to evaluate the licensee's ability to obtain accurate and complete log readings from licensed and non-licensed operators. Security access records for ten licensed and non-licensed operators during the period June 19 - June 21, 1992, were reviewed. Approximately 78 room entries were involved.

The licensee's actions in regards to NRC Information Notice 92-30, Falsification of Plant Records, was previously discussed in NRC Inspection Report 50-400/92-08. The inspector utilized the operator log sheets and entered the subject areas to ascertain an appropriate time allotment to perform the rounds. From the review of the security access records in comparison with the inspector's time allotment, the performance of operator rounds was found to be satisfactory with appropriate time expended in each area to perform the required system checks. However, considering the observation discussed in paragraph 2.b(2), the inspector recommended that increased operator diligence be stressed by plant management.

No violations or deviations were identified.

6. Design Changes and Modifications (37828)

A review of an engineering calculation regarding emergency diesel generator relay circuitry was performed. Following the Potter Brumfield relay failure, which resulted in a valid diesel generator failure discussed in NRC Inspection Report 50-400/92-08, the Nuclear Engineering Department performed calculation HNP-I/INST-1043 to determine the suitability of the relay in the diesel generator circuitry. The calculation confirmed that the relay was acceptable in its present application and that the failure was not related to the previous Potter Brumfield contact overloading failure experienced in the emergency sequencer circuitry which was discussed in NRC Inspection Report 50-400/89-21. No violations or deviations were identified.

7. Evaluation of Licensee Self Assessment (40500)

In conjunction with the routine inspection program, this inspection was also performed as a followup to the comments made in NRC Inspection Report 50-400/91-13.

a. The licensee's quality control organization remained at approximate previous staffing levels with two QC receipt inspectors, five mechanical/civil/electrical inspectors, one supervisor, and one QC engineer. This

work force will be supplemented during the upcoming refueling outage with approximately five contract personnel. This number is substantially lower than the previous outage during which 12 contract personnel were utilized. The difference was discussed with onsite QC management who stated that the change was due primarily to the scope of the upcoming outage work. The licensee reorganized the onsite QC organization in conjunction with efforts to define/staff the NAD organization and replaced the onsite QC Manager at the beginning of the year.

The primary work activities for the QC group consisted of nondestructive examination inspections, modification work verification, and non-routine maintenance activities. The non-routine maintenance activities were listed in procedure MMM-001, Maintenance Conduct of Operations, and included load tests for rigging, ECCS/RCS/AFW/CCW/MFW/MS system cleanliness inspections, pump/motor alignments for ECCS/ESW/CCW/AFW/EDG systems, torque of large primary pressure boundary bolts, torque of class 1E electrical terminations, application of electrical insulation/heat shrink splices, and electrical cable separation. Other important maintenance activities which necessitated verification of quality were performed by lead mechanics/craft personnel.

The QC organization has recently begun to assist the other plant organizations in self-assessments/field surveillances during which a QC inspector is temporarily assigned to the other group and observes a work activity. Discrepancies identified are reported to the area manager who is encouraged to initiate any adverse condition reports deemed appropriate. Thus far, these self-assessment field surveillances have only been performed for spent fuel rack movement and mechanical maintenance on a high head safety injection pump. The inspector found these surveillances to be of high quality with findings that were beneficial for the host organization. However, since these surveillances are only performed if requested, little utilization of this effort has materialized and QC involvement in plant activities has remained minimal. In response to this, plant management has requested that the QC organization perform these surveillances as they deem necessary. This action should allow QC involvement in plant activities to increase substantially.

As part of this inspection effort, on June 23, 1992, the inspector requested the QC inspector certification records. The inspector was informed that several QC

inspector certifications had lapsed and were out of date. The licensee's quality verification procedure QVS-103, Personnel Indoctrination, Training, Qualification, and Certification, Section 7.8.1, specifies that the QC inspectors be recertified at intervals not to exceed three years. Five QC inspectors were found to have certifications which had expired between February and June 1992 involving approximately 11 types of inspections/examinations. Failure to maintain QC inspector certification is contrary to the requirements of 10 CFR 50, Appendix B, Criterion II, and the licensee's Corporate Quality Assurance Manual, and is considered to be a violation.

Violation (400/92-13-01): Failure to maintain QC inspector certification.

The licensee quickly recertified the QC inspectors when this matter was identified. The recertification process consisted of a verification of previous satisfactory performance of the inspection/examination within a one year time period.

- b. The inspectors attended selected PNSC meetings to observe committee activities and verify TS requirements with respect to committee composition, duties, and responsibilities. Minutes from these meetings were also reviewed to verify accurate documentation. The inspector considered the conduct and documentation of these meetings to be satisfactory with good discussion of the items presented. During the July 15 PNSC meeting, the failure of a Brown Boveri LK-16 breaker which contributed to the reactor trip on July 15 was discussed. This item was thoroughly reviewed by the PNSC prior to authorizing the unit to restart. The failure was considered to be an isolated reoccurrence of the previous failures and the PNSC considered previous action and preventive maintenance on the breakers to have substantially improved the performance of these types of breakers. No violations or deviations were identified.

8. Followup of Onsite Events (93702)

- a. At 2:08 a.m. on July 12, 1992, a reactor trip from approximately 100 percent power occurred. The boot seal for the north low pressure turbine ruptured allowing air in leakage into the main condenser and subsequent loss of main condenser vacuum. A resultant turbine trip occurred on low main condenser vacuum followed by the reactor trip. The auxiliary feedwater system automatically initiated following the turbine

trip due to the expected change in steam pressures and steam generator level decrease (shrink). The plant was stabilized in hot standby. The inspectors observed post-trip activities and reviewed the post-trip/safeguards review, OMM-004. The plant was subsequently restarted on July 14 following temporary repairs to the boot seal.

- b. The AFW system was realigned to the emergency standby lineup following the initial actuation on July 12 and the steam generator levels were maintained by using the main feedwater system. The operators stated that flow was reduced to the steam generators due to overcooling of the RCS which was causing pressurizer level and pressure control problems. A review of computer data found that RCS temperature was decreasing with little or no feedwater flow from 2:15 a.m. until the second AFW actuation at 2:54 a.m. Four actuations occurred between 2:54 a.m. and 3:13 a.m. Overall steam generator inventory decreased 31.3 percent over a 39 minute period and RCS average temperature decreased below 557 degrees F. Discussions with the operator found that the operator had placed a steam generator PORV in manual at the start of the event. This appeared to be the cause of the pressurizer level and pressure control problems and subsequently resulted in the low steam generator AFW actuations due to the lack of steam generator feed. The operator actions resulted in reduced steam generator feeding and led to the AFW actuations and is therefore considered to be a weakness of operator controls.

Due to the main condenser not being available for cooling, condensate system temperatures increased beyond the limit of 145 F for the condenser demineralizer resin and this diverted operator attention away from steam generator level control while realigning the feedwater system. The auxiliary feedwater system was periodically utilized to provide the feedwater for the steam generators but operators were reluctant to use this system as flow control valves/isolation valves had to be throttled/shut to control feed flow which technically rendered the system inoperable. Previous operation of the AFW system in this manner was discussed in NRC Inspection Report 50-400/91-13 and resulted in a violation (400/91-13-01). Even with the above considerations, the inspectors considered proper steam generator level control to be possible and that operator control of level to be inadequate to prevent the repetitious AFW system automatic actuations.

Although the initial AFW system actuation was reported to the NRC Operations Center in conjunction with the reactor trip, the subsequent actuations between 2:54 a.m. and 3:13 a.m. on July 13 were not reported until 5:40 p.m. on July 13. The operator's initial review of the reportability of these events immediately after the event occurrence was poor and did not identify that a report was required to be made to the NRC Operations Center within four hours.

During the post trip review of the July 12, 1992 reactor trip, the inspector noted that the AFW system had actuated five times in a little over one hour. The manufacturer's nameplate starting data was incorporated into the Auxiliary Feedwater System Operating Procedure OP-137, Section 4.0, Precautions and Limitations. Paragraph 15 of this section states that the motor driven AFW pump starting duty should not be exceeded and following the initial starting limitations subsequent restart attempts are allowed after the motor has been running for greater than 15 minutes or the motor has been standing idle for greater than 45 minutes.

Contrary to this limitation both AFW motors experienced three starts beyond the starting duty allowed by the operating procedure. Neither the operating personnel nor the technical personnel performing the post trip review realized that the motor starting limitations had been exceeded and therefore no evaluation of the nonconformance was initiated. 10 CFR 50 Appendix B, Criterion XVI, requires that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations and nonconformances are promptly identified. Contrary to this requirement the licensee did not identify that the AFW motors had exceeded their starting requirements and this item is therefore considered to be a violation.

Violation (400/92-13-02): Failure to identify excessive AFW motor starts.

Following inspector identification, the licensee initiated an Adverse Condition Report, ACR 92-271, which documented the excessive AFW motor starts. The licensee also initiated work requests which documented motor meggering, bridging, polarization indexing and a Baker surge test. A visual inspection was also performed. The results of the inspections and testing indicated that the motors were not affected by the excessive motor starts.



The design and present operation of the AFW system challenges plant operators, results in frequent AFW pump starts/stops resulting in system wear, and results in multiple entries into TS action statements. The inspectors encouraged plant management to review this system design/operation for potential enhancements.

- c. On July 13, at 9:21 p.m., a reactor trip and AFW actuation signal were generated due to decreasing steam generator "C" level below the bistable trip setpoint of 38.5 percent. The plant was in hot standby with shutdown control rod bank "C" fully withdrawn for shutdown margin considerations. Steam generator levels were being maintained between 45 - 75 percent by using the AFW system. A review of computer data documented that level decreases averaged 1.5 percent a minute which placed the actuation point only four minutes from the lower limit.

As the level approached the lower control limit the operator was requested to start a condensate pump. Prior to this start there had been three previous start attempts and therefore this start attempt drew the attention of much of the control room staff. The condensate pump was started and the operator verified proper system operating parameters, but before he returned to the steam generator level controls the low level condition was reached and caused a reactor trip and AFW actuation. The failure of the operator to maintain the proper SG level is considered to be another example of the weakness in operator controls listed in the previous paragraph.

A reactor startup was performed on July 14, 1992. The inspector observed the reactor startup and approach to criticality. It was noted that the actual rod height at criticality was acceptable but at the limit per the estimated critical position calculation. The ECPs are calculated with a plus or minus 500 PCM limit. The ECP was calculated at 79 steps on bank "D" with a lower limit of 40 steps. The reactor went critical at 40 steps on "D" bank. Various items were reverified to determine why there was such a large error in the ECP calculation. A preliminary review indicated that the AFD has been approximately three percent more negative than calculated and may be causing the calculated rod worth curves to be in error. Discussions with the reactor engineers indicated that another plant has experienced a similar problem which was thought to be caused by a higher void coefficient in the upper part of the core and subsequent disposition of material on the fuel in the upper part of the core. The nuclear



steam system supplier was contacted regarding this matter and is presently evaluating the data.

Inspector Followup Item (400/92-13-03): Follow the licensee's evaluation of inaccurate estimated critical positions.

- d. On July 15, at 2:50 a.m., a manual reactor trip signal was generated following the loss of the last running main feed pump while operating at 30 percent turbine load. Due to a breaker problem, bus MCC-1D2 was deenergized to rack out the failed closed breaker. During previous plant operations the 1D2 bus had been deenergized with no problem and therefore the operators reasoned that with improper operating equipment and a previous history of success at removing the bus, a detailed bus load review was not required. The operators did not realize that a modification to the main feed pump recirculating valve control circuit would cause the recirculating valve to fail open on a loss of control power.

Following de-energization of bus 1D2, alarms came in signaling a loss of main feed pump suction pressure which results in a main feed pump trip if not corrected within 30 seconds. The condensate booster pump flow was increased to maximum in an attempt to recover the main feed pump suction pressure. The operators also started a power reduction, took manual control of the main feed regulating valves and attempted to reenergize the bus. However these actions were not sufficient to restore suction pressure. The main feed pump tripped as designed on loss of suction pressure, and the operators subsequently initiated a manual reactor trip due to decreasing steam generator levels. All systems functioned as required during and after this reactor trip event. Operator actions during and after this event were reviewed and considered to be adequate based on the need for immediate action to secure the improper operating equipment.

- e. At 12:18 p.m. on July 17 another reactor trip from approximately 100 percent power occurred. The boot seal for the north low pressure turbine ruptured again resulting in a turbine trip/reactor trip. The inspector was present in the control room during this trip and observed that plant systems responded as required and the plant stabilized in hot standby. The AFW system actuated as expected. A main steam safety valve lifted during this event which was unexpected. The valve reseated and did not result in excessive plant cooldown. The preliminary post trip review



determined that the safety valve lifted at a lower pressure than the required setpoint and was subsequently declared inoperable until repairs/adjustments could be made. Operator response to this event was good. A dedicated licensed operator was available and was assigned to specifically monitor and control steam generator level and auxiliary feedwater. Steam generator level was maintained without repetitive AFW system actuations which had occurred following the first reactor trip. Instead of making another temporary repair, plant management decided to replace the boot seals on both low pressure turbines prior to restart.

9. Review of Licensee Event Reports (92700)

The following LERs were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events that were reported immediately were reviewed as they occurred to determine if the TS were satisfied. LERs were reviewed in accordance with the current NRC Enforcement Policy.

- a. (Closed) LER 91-09: This LER reported a reactor trip which occurred during surveillance testing on an RCS flow transmitter. This event was previously discussed in NRC Inspection Report 50-400/91-16. The licensee has reviewed this event with maintenance personnel and has developed a new troubleshooting guide (MMM-027) to enhance troubleshooting activities.
- b. (Closed) LER 92-01: This LER reported that the swing charging/safety injection pump was not provided with adequate ventilation when aligned to the "A" safety bus. This matter was previously discussed in NRC Inspection Report 50-400/92-02. The licensee has completed the review of design drawings for the reactor auxiliary building fan cooling system and has not identified any additional deficiencies.
- c. (Closed) LER 92-02: This LER reported the undetected failure of the plant computer which resulted in a TS violation. This matter was previously discussed in NRC Inspection Report 50-400/92-04 and plant computer upgrades discussed in NRC Inspection Report 50-400/92-08. The licensee has revised procedure OP-163, Plant Computer and Support Systems, to provide additional guidance to the operators to verify proper computer operation for the TS required functions. Additional plant modifications are being considered to provide an alarm if the computer stops functioning.

- d. (Open) LER 92-05: This LER reported a missed compensatory grab sample for an inoperable radiation monitor. The licensee's corrective action for this event will include providing a simplified flow diagram of the system and improving the operability criteria guidance available to control room personnel, and additional training.

10. Licensee Action on Previously Identified Inspection Findings (92702 & 92701)

- a. (Closed) IFI 400/90-10-04: Follow the licensee's activities to eliminate thermal stratification in safety injection piping and develop new evaluation trigger limits.

The licensee has created a Technical Support Guide TSG-245, SI Thermal Stratification Monitoring Program, to describe the temperature monitoring data collection and analysis activities currently in progress. This guide provides specific details on how to process and present this information as well as corrective actions to be performed when specific conditions arise. In addition to the 50 degree F differential temperature limit, temperature oscillations and top/bottom temperature time histories are considered for corrective action. The licensee's program was found to have incorporated much of the NRC evaluation criteria presented in an NRC letter dated September 16, 1991, related to NRC Bulletin 88-08, Thermal Stresses in Piping Connected to Reactor Coolant Systems. The temperature data is collected and graphed. Data for the entire operating cycle is transmitted to corporate engineering for detailed analysis. This additional analysis will be utilized to determine appropriate measures to be taken to deter thermal stratification in the safety injection piping.

- b. (Closed) Violation 400/92-04-01: Failure to properly identify and correct deficiencies as required by 10 CFR 50, Appendix B, Criterion XVI.

The inspector reviewed and verified completion of the corrective actions listed in the licensee's response letter dated May 12, 1992. Plant drawings were audited and additional discrepancies corrected. The operator round guidance has been revised to require ventilation unit access doors to remain shut. Appropriate procedure changes have been implemented to provide additional guidance on the performance of drawing audits and training has been provided to plant personnel.

11. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on July 17, 1992. During this meeting, the inspectors summarized the scope and findings of the inspection as they are detailed in this report, with particular emphasis on the Violations and Inspector Follow-up item addressed below. 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. No dissenting comments from the licensee were received.

<u>Item Number</u>	<u>Description and Reference</u>
400/92-13-01	VIO - Failure to maintain QC inspector certification, paragraph 7.a.
400/92-13-02	VIO - Failure to identify excessive AFW motor starts, paragraph 8.b.
400/92-13-03	IFI - Follow the licensee's evaluation of inaccurate estimated critical positions, paragraph 8.c.

12. Acronyms and Initialisms

ACR	-	Adverse Condition Report
AFD	-	Axial Flux Difference
AFW	-	Auxiliary Feedwater
ANSI	-	American National Standards Institute
CCW	-	Component Cooling Water
CFR	-	Code of Federal Regulations
DEHC	-	Digital Electro-Hydraulic Control
ECCS	-	Emergency Core Cooling System
ECP	-	Estimated Critical Position
EDG	-	Emergency Diesel Generator
EHC	-	Electro-Hydraulic Control
ESW	-	Emergency Service Water
F	-	Fahrenheit
IFI	-	Inspector Follow-up Item
LER	-	Licensee Event Report
MFW	-	Main Feedwater
MST	-	Maintenance Surveillance Test
NAD	-	Nuclear Assessment Department
NRC	-	Nuclear Regulatory Commission
OST	-	Operations Surveillance Test
PCM	-	Percent Change in Reactivity



PIC - Primary Instrument Control
PNSC - Plant Nuclear Safety Committee
PORV - Power Operated Relief Valve
QC - Quality Control
RAB - Reactor Auxiliary Building
RCS/RC- Reactor Coolant System
SG - Steam Generator
SW - Service Water
TS - Technical Specification
Vac - Volt Alternating Current
VIO - Violation

