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SUBJECT: Provides response to violations noted in Insp Rept
 50-261/93-34. Corrective actions: intermediate range high
 level trip & control rod stop setpoints checked & adjusted
 as necessary for nuclear instrument N-35 & N-36.

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Carolina Power & Light Company
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Robinson File No.: 13510E
Serial: RNP/94-1121

JUN 8 1994

United States Nuclear Regulatory Commission
Attn: Document Control Desk
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
NRC INSPECTION REPORT NO. 50-261/93-34
REPLY TO A NOTICE OF VIOLATION

Gentlemen:

This provides the Carolina Power & Light Company reply to the Notice of Violation identified in NRC Inspection Report 50-261/93-34, which was transmitted by letter dated May 9, 1994. The Notice of Violation involves the failure to establish and implement procedures for refueling operations and plant startup, and the failure to assure that purchased fuel conformed to procurement documents.

Should you have any questions regarding this matter, please contact Mr. R. M. Krich at (803) 383-1802.

Very truly yours,

C. S. Hinnant
Vice President

DTG:sgk
Enclosures

c: Mr. S. D. Ebnetter, Administrator, US NRC, Region II
Mr. W. T. Orders, Senior Resident Inspector, HBRSEP

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REPLY TO A NOTICE OF VIOLATION

Violation A:

Unit 2 Technical Specifications, Section 6.5.1.1.1 requires that written procedures shall be established, implemented, and maintained consisting of, in part, procedures for refueling operations and the applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Rev. 2, February 1978, including procedures for calibration of nuclear instrumentation and control of plant power changes.

EST-050, "Refueling Startup Procedure," was proposed to govern plant startup from a refueling outage. Prerequisite 3.10 of EST-050 required that intermediate range nuclear instrument adjustments specified by Procedure FMP-002, "Nuclear Instrumentation Post Refueling Adjustment Determination," be completed prior to criticality after modifications to the nuclear instrumentation. FMP-002 required that Power Range nuclear instrument currents be calibrated using the two closest fuel assemblies in conjunction with a third assembly diagonally behind these assemblies.

Step 7 of GP-005, "Power Operations," requires, in part, that the intermediate range reactor trip and intermediate range overpower rod stop function be blocked by depressing the two Logic Trip Defeat push-buttons when reactor power exceeds 10 percent power.

Contrary to the above, procedures were not adequately established and implemented as evidenced by the following examples:

1. Prior to the reactor being taken critical on November 12, 1993, the licensee did not implement Prerequisite 3.10 of EST-050, in that the intermediate range nuclear instruments were not recalibrated to meet the revised rod stop and high trip setpoints that resulted from modifications to the nuclear instrumentation.
2. While increasing reactor power on November 14, 1993, Procedure FMP-002 was inadequate in that the procedure required the utilization of the two fuel assemblies closest to the power range instruments in conjunction with a third assembly diagonally behind these assemblies for predicting Power Range nuclear instrument currents rather than the four assemblies in the outer diagonal row closest to the power range detector as specified by a March 16, 1988, letter to the licensee from the fuel vendor. This resulted in a failure to properly calibrate the power range instruments which contributed to an approximate 10 percent reactor power increase within a 15-minute period in violation of technical specification requirements.

3. During a power ascension on November 14, 1993, the operating crew failed to implement Step 7 of GP-005 in that the intermediate range reactor trip and intermediate range overpower rod stop function were not blocked by depressing the two Logic Trip Defeat pushbuttons. This function was accomplished by placing the level trip switch on intermediate range instrument NI-36 in the "bypass" position to block the intermediate range high flux trip which defeated the automatic reset function in the event power was reduced below the setpoint.

1. The Reason for the Violation

Carolina Power & Light Company (CP&L) agrees that the violation occurred as described with clarifications of examples (2) and (3). The following causal factors address each of the examples cited in the Notice of Violation.

- 1) Personnel error was the cause for prerequisite 3.10 of procedure EST-050 not being performed prior to criticality on November 12, 1993. The responsible reactor engineer did not formally communicate nor adequately follow-up with maintenance to ensure the work request for resetting the Intermediate Range (IR) Nuclear Instruments (NIs) was performed prior to initial criticality. Also, the work request was improperly scheduled to be performed following initial criticality. The setpoints were adjusted prior to placing the unit on line November 13, 1993.
- 2) The March 16, 1988 letter referenced in the Notice of Violation was not from the fuel vendor, rather this letter was from Westinghouse Corporation, the Nuclear Steam Supply System supplier. However, this letter was not transmitted to the plant staff nor adequately reviewed for applicability to H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2.

The specific cause of this violation example was that the method chosen to calculate new core NI current correction factors for the power range NIs in plant procedure FMP-002, "Fuel Management Procedure for NIS Post Refueling Adjustment Determination," was not identified to have limitations on its applicability. The method was empirically developed after reviewing several alternatives, among those being the method described in the March 16, 1988 letter from the Nuclear Steam Supply System supplier, based upon their accuracy in predicting the change in NI response for previous similar core design. The limitations inherent in the selection of the method used in procedure FMP-002, as it applied to the dissimilar cycle 16 core design, were undetected in procedure performance and technical reviews prior to the beginning of cycle 16.

The broader cause of the NI event was that management did not effectively implement some corrective/preventive actions from similar industry and CP&L nuclear instrumentation system miscalibration events to preclude such events from occurring at HBRSEP. Significant Operating Experience Report (SOER) 90-03 was issued by the Institute of Nuclear Power Operations (INPO) on September 11, 1990 describing a similar event at the CP&L Shearon Harris Nuclear Power Plant (SHNPP). However, one corrective action that was implemented at HBRSEP resulted in reactor overpower trip setpoints being reduced to 45 percent of full power prior to initial post-refueling startup. This action would have mitigated potential adverse consequences of the improperly calibrated NIs.

- 3) The Operations Shift Outage Coordinator (OSOC) who was charged with monitoring the IR NIs during the startup initially bypassed the IR control rod stop and IR reactor trip by placing the IR instrument N-36 channel in the "bypass" position with the concurrence of the Shift Supervisor; however, this action was not procedurally directed. The OSOC then directed the Reactor Operator to verify his indications (i.e., Permissive (P)-10, Power Range (PR) NI indication greater than 10 percent power bistables) and block the IR control rod stop and IR low power trip, in accordance with General Procedure, GP-005, "General Procedure for Power Operation." Blocking was then performed in accordance with the procedure by depressing the two logic trip defeat pushbuttons.

Operations personnel were highly concerned with not tripping the reactor due to an IR instrument trip. The OSOC was observing the IR NIs and became concerned that the N-36 IR channel was approaching the ranges for the rod stop and reactor trip setpoints. Since the logic of IR NIs only requires 1 out of 2 coincidence to trip the reactor and the OSOC did not want to cause an inadvertent reactor trip, action was taken to block the IR N-36 channel at the instrument drawer. By taking this action, there was a short period of time when the automatic reset function of the IR high flux trip was not enabled. This action was not a step in procedure GP-005, therefore the cause of this violation example was a failure to follow the applicable procedure.

An additional cause for examples 1 and 3 was a lack of self assessment of operator performance covering the startup activities.

2. The Corrective Steps That Have Been Taken and the Results Achieved

- 1) The IR high level trip and control rod stop setpoints were checked and adjusted as necessary for nuclear instrument N-35 and N-36 prior to criticality on February 8, 1994.

- 2) Procedure FMP-002 was revised on January 13, 1994 to ensure the proper calibration methodology is used for each core reload or requires the fuel vendor to supply excore instrumentation adjustment factors. Included in the revision are means of self-checking the calculated NI adjustment results. These include:
 - verification by the off-site Nuclear Fuels Section that the methodology used in the procedure is appropriate;
 - comparison of calculated NI adjustment results to the change in core loading near and along the core periphery;
 - comparison of calculated NI adjustment results with previous cycle results including independent review; and,
 - comparison of calculated NI adjustment results with expected result by the off-site Nuclear Fuels Section.
- 3) Administrative Procedure, AP-006, "Procedure Use and Adherence," and Operations Management Manual Procedure, OMM-001, "Operations - Conduct of Operations," have been revised to ensure management expectations on procedural adherence are clearly stated. Operations Management also reviewed with the operators the basic concepts of procedural compliance when faced with challenging situations.

3. The Corrective Steps That Will Be Taken to Avoid Further Violations

The CP&L letter dated December 31, 1993, provided the NRC with a list of actions required for completion prior to restart which included sixteen (16) short-term corrective actions recommended by the "Power Range Nuclear Instrumentation Indication Error" Event Evaluation Team report, "Adverse Condition Report 93-284." All actions have been accomplished, as delineated.

Corrective actions taken to preclude recurrence, as discussed during an enforcement conference held on March 14, 1994, at the NRC Region II office, Atlanta, Georgia and, in accordance with your request in the cover letter of your May 9, 1994 Notice of Violation included:

- Extensive management intervention actions were initiated to ensure that expectations are understood and met;
- Plant startup training was improved;
- Procedures were upgraded;

- A structured self-assessment process specifically covering plant startup activities was implemented; and,
- Implementation of the Near Term Improvement Plan as discussed with the NRC by CP&L on May 13, 1994.

4. The Date When Full Compliance Will Be Achieved

Full compliance was achieved with regard to actions taken covering present core reactor startups. Full compliance will be achieved with regard to actions taken covering reactor startups from future core reloads upon the start of Refueling Outage 16, scheduled to commence in April 1995.

Violation B:

10 CFR 50, Appendix B, Criterion VII, requires in part that measures shall be established to assure that purchased material, equipment and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents.

Contrary to the above, as of November 14, 1993, measures were not established to assure that fuel purchased directly from a fuel manufacturer conformed to the procurement documents. Specifically, there were no measures to assure that fuel purchased from Siemens Fuel Corporation for the cycle-16 fuel load conformed to procurement document, EMF-CS-486, Rev. 2, "HB Robinson - Characteristics of Reload ROB-13, Cycle 16." As a result, six fuel assemblies were installed in the core that did not have gadolinium rods located in the quadrants specified in the procurement document.

1. The Reason for the Violation

CP&L agrees that the violation occurred as described.

This violation was caused by a combination of factors. The CP&L review of vendor's fuel design and manufacturing processes was not adequate, in that, the plant fuel vendor's errors were not detected prior to fuel installation into the core and subsequent unit startup. In addition, the vendor's design and manufacturing processes allowed design and bundle fabrication errors and their Quality Assurance/Quality Control program failed to prevent or to detect these errors.

2. The Corrective Steps That Have Been Taken and the Results Achieved

CP&L management reconfirmed that the fuel assemblies used for cycle 16 met the design requirements and that the safety analyses, other relevant analyses, and supporting documentation were adequate. Furthermore, plant management conducted a critical review of formal statements from the fuel vendor, off-site Nuclear Fuels Section, and the site Reactor Engineering organization that fuel design, manufacturing, safety analyses, receiving, handling, inspections, and core placement met the applicable requirements.

3. The Corrective Steps That Will Be Taken to Avoid Further Violations

The CP&L letter dated December 31, 1993 providing the NRC with a list of actions required for completion prior to restart which included eleven (11) short-term corrective actions recommended by the "RNP Cycle 16 Fuel and Core Loading Problems," Event Evaluation Team report, "Investigation of RNP Cycle 16 Fuel and Core Loading Problems - Final Report." All actions were accomplished as delineated.

Corrective actions to preclude recurrence, as discussed during an enforcement conference held on March 14, 1994, at the NRC Region II office, Atlanta, Georgia are as follows.

- CP&L and the fuel vendor are to respond with corrective actions to all fuel vendor identified items in both the CP&L Self-Assessment Reports and the fuel vendor's investigation findings.
- CP&L management will establish Interface Agreements to control the fuel vendor's on-site activities.
 - Plant line management will control the fuel vendor's on-site activities.
 - Off-site Nuclear Fuels Section will provide monitoring in support of plant line management.
 - CP&L established a tracking system to confirm adequacy of CP&L and fuel vendor related corrective actions.
 - Programmatic corrective actions to prevent recurrence were institutionalized.
- Lessons learned from this event have been applied to all CP&L nuclear units and also shared with the industry.

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4. The Date When Full Compliance Will Be Achieved

Full compliance was achieved with regard to actions taken covering present core reactor startups. Full compliance will be achieved with regard to actions taken covering reactor startups from future core reloads upon the start of Refueling Outage 16, scheduled to commence in April 1995.