



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

Report No.: 50-261/91-22

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

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: September 30 - October 4, 1991

Inspectors: J. Mellen  
J. Mellen, Reactor Inspector  
J. Mellen  
FOR L. King, Reactor Inspector

10/8/91  
Date Signed  
10/8/91  
Date Signed

Approved by: R. Crlenjak  
R. Crlenjak, Section Chief  
Operational Program Section  
Operations Branch  
Division of Reactor Safety

10/8/91  
Date Signed

SUMMARY

Scope: This was a routine announced inspection in the area of Emergency Operating Procedure and Abnormal Operating Procedure followup. The inspectors reviewed the licensee's program for the upgrade of Emergency and Abnormal Operating Procedures. Additionally, the inspectors reviewed the licensee's resolution of the Auxiliary Feedwater net positive suction head inadequacies.

Results: The inspectors found that the licensee had progressed slowly in the incorporation of comments from the NRC Emergency Operating Procedure audit. The draft charter for the Emergency Operating Procedure upgrade was adequate to ensure that the upgraded Emergency Operating Procedures would cover the broad range of accidents and equipment failures necessary for safe shutdown of the plant. The licensee had adequately addressed and corrected the previously identified Auxiliary Feedwater net positive suction head deficiencies.

## REPORT DETAILS

### 1. Persons Contacted

- B. Beverage, Manager of Quality Control
- B. Biggs, Manager - Nuclear Engineering Department
- \*S. Billings, Technical Aide - Regulatory Compliance
- \*R. Chambers, Plant General Manager
- W. Dorman, Nuclear Assurance
- W. Flanagan, Manager of Operations
- W. Gainey, Manager of Plant Support
- \*J. Kloosterman, Manager of Regulatory Compliance
- J. Lane, System Engineer
- C. Moon, Project Engineer
- J. Palmer, Procedure Engineer
- \*R. Wallace, Acting Manager of Operations

Other licensee employees contacted included instructors, engineers, mechanics, technicians, operators, and office personnel.

#### NRC Representatives

- \*L. Garner, Senior Resident Inspector
- \*K. Jury, Resident Inspector

#### \*Attended Exit Interview

A listing of abbreviations used in this report is contained in Appendix A.

### 2. Review of Emergency Operating Procedures Program

The inspectors discussed the licensee's implementation of the emergency operating procedure program with plant staff. The inspectors reviewed the draft charter for the emergency operating procedure program. The charter contained the requirements for the Plant Specific Technical Guidelines, Writer's Guide, Writer's Standard, Emergency Operating Procedure User's Guide, Emergency Operating Procedure Basis Document, Emergency Operating Procedure Training Packages, Verification and Validation, and Emergency Operating Procedure Maintenance Program. The draft document contained sufficient requirements to ensure the program could be effectively implemented. The implementation of the Emergency Operating Procedure program will be reviewed after the Emergency Operating Procedure upgrades are completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

### 3. Management Control of Emergency Operating Procedures

The inspectors discussed the schedule for completion of the Emergency Operating Procedure and Abnormal Operating Procedure upgrades with various members of the plant staff. The programs that had been started appeared as though they would accomplish the required tasks. However, the limited resources that the licensee had in place were not appropriate for the level of effort required to accomplish the tasks in a reasonable time frame. The inspectors discussed this with plant management. The licensee is reviewing their allocation of resources for these tasks and will provide the particulars in a letter to Region II detailing work force requirements and a realistic end date for the project. The licensee stated that this letter would be submitted prior to the end of December 1991.

### 4. Follow-up on Previous Inspection Findings (91702)

- a. (Closed) VIO 50-261/89-11-01: Auxiliary Feedwater System Inoperable Due to Inadequate Net Positive Suction Head.

The inspectors reviewed and inspected the piping changes made to the suction piping of the auxiliary feedwater pumps and determined that adequate NPSH was available when three pumps were running. The surveillance procedures were reviewed to ensure that testing had been done to demonstrate that adequate NPSH was available during three pump operation. The inspectors reviewed the results of the test run on August 22, 1989, to gather data on the suction piping head losses. The data indicated that prior to piping modifications a loss of steam driven auxiliary feedwater pump NPSH would have occurred at a condensate storage tank level of 79.4 percent. This was substantially above the technical specification minimum condensate storage tank level of about 16 percent. The auxiliary feedwater pump could not have delivered the required flow with the condensate storage tank at the Technical Specification minimum level.

The licensee increased the size of the Auxiliary Feedwater suction side piping from 6 inches to 12 inches to correct identified NPSH inadequacies. Modification acceptance test procedure AT-2 was performed after the licensee increased the suction piping size. Auxiliary Feedwater Water system flow rates and suction piping pressure drops were measured and compared to calculated pressure drops at the same flow rates to verify the validity of the suction piping system analytical model. A comparison of available NPSH based on the field data to required NPSH from the vendor pump curve at full-flow

conditions for each motor-driven pump individually and both pumps combined was performed. The inspectors reviewed the results of the test and determined that adequate NPSH was available to support three pump operation. This item is closed.

- b. (Closed) IFI 50-261/89-16-01: Develop a New Plant Specific Technical Guideline.

The first revision of the Plant Specific Technical Guideline had been completed; however, because of the extensive procedural changes that were scheduled for the Emergency Operating Procedures it appeared likely that the Plant Specific Technical Guideline would require some revisions. The inspectors discussed the Plant Specific Technical Guidelines with the Emergency Operating Procedure Writers and reviewed the current revision of the guidelines. The implementation of the Plant Specific Technical Guidelines and subsequent revisions will be reviewed when the Emergency Operating Procedure revisions are completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- c. (Closed) IFI 50-261/89-16-02: Develop an Abnormal Operating Procedure Writer's Guide.

The inspectors reviewed OMM-040, Writer's Standard For Operations Procedures, Revision 0, dated July 30, 1990. This was a new procedure that supplemented the Writer's Guide For the Development and Revision of Single Column Format Procedures, OMM-042. OMM-042 required the use of OMM-040. OMM-041, Writer's Guide For the Development and Revision of Flowpath and Two Column Format Procedures followed the development of OMM-040 and had some redundant material. The licensee stated that OMM-041 would be revised to delete the redundant material. The inspectors discussed the need for having both OMM-041 and OMM-042 and were told by the licensee that the decision was made to create two procedures because of the use of the single column format for Abnormal Operating Procedures. The licensee stated that they are planning to review the interface between single and dual column emergency procedures to ensure that transition back and forth between single and dual column procedures would not cause unnecessary operator confusion. The implementation of the Writer's Standard and the two Writer's Guides will be reviewed when the Emergency Operating Procedure Upgrades are completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- d. (Closed) IFI 50-261/89-16-03: Review Each Appendix D Item.

The inspectors discussed the disposition of the nomenclature and labelling discrepancies noted in Appendix D of NRC Inspection Report 50-261/89-16. The licensee stated that a labelling upgrade program had recently been formed. The inspectors discussed Emergency Operating Procedure and Abnormal Operating Procedure nomenclature and labelling upgrades with staff engineers. The licensee described the proposed labelling program and the corresponding procedure nomenclature changes. The proposed program for incorporating this nomenclature was adequate. This will be reviewed when the Emergency Operating Procedures and Abnormal Operating Procedures upgrade program is complete. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- e. (Closed) IFI 50-261/89-16-04: Review Each Appendix B Item.

The inspectors discussed the disposition of the Human Factors and Technical comments listed in Appendix B of NRC Inspection Report 50-261/89-16. The licensee described their program and showed the inspectors some draft examples of Functional Restoration Procedures that had comments incorporated. Based on this sample the proposed program for incorporating these comments was adequate. The incorporation of the balance of the Appendix B comments will be reviewed when the Emergency Operating Procedures and Abnormal Operating Procedures upgrade program is complete. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- f. (Closed) IFI 50-261/89-16-05: Review Each Appendix C Item.

The inspectors discussed the disposition of the Writer's Guide comments listed in Appendix C of NRC Inspection Report 50-261/89-16. The inspectors also reviewed OMM-041, Writer's Guide For the Development and Revision of Flowpath and Two Column Format Procedures, Revision 0, dated March 30, 1990. OMM-041 replaced OMM-013 and was expanded to comply with NUREG-0899, Guidelines for the Preparation of Emergency Operating Procedures. OMM-041 corrected most of the deficiencies noted in NRC Inspection Report 50-261/89-16; however, the action verb list still did not define some critical terms such as Faulted, Intact, Ruptured, Running, and Contact. The licensee stated that they would review the action verb

list to ensure it accurately defined all critical action verbs.

Some other Appendix C items had not yet been adequately dispositioned. Examples of these are:

Placekeeping methods for procedure transition or skipped steps had not been identified. The licensee stated that these would be defined in the next revision of OMM-022, Emergency Operating Procedure User's Guide.

The "WHEN condition, THEN action" sequences had not been addressed. The licensee stated that this probably would be addressed in the next revision of OMM-040, Writer's Standard For Operations Procedures.

Most Appendix C items were adequately covered. Some specific examples are:

Acronyms were referenced by the Writer's Guide and listed in Engineering Design Guide 3-05, Revision 2. The inspectors reviewed The design guide and noted that all acronyms identified as missing from the previous report were contained within the design guide. Additionally, a sampling of acronyms from other Emergency Operating Procedures were contained in the design guide.

Type style, type size and margins were designated in the writer's guide, but implemented through the use of VE-PROMS. The inspectors discussed the use of the VE-PROMS system with engineering personnel and determined the process would provide the required uniformity.

The implementation of the Writer's Guide and the balance of the unincorporated comments will be reviewed when the Emergency Operating Procedures revisions are completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- g. (Closed) IFI 50-261/89-16-06: Correct Verification and Validation Deficiencies.

The Verification and Validation process could not begin until the first set of Emergency Operating Procedure or Abnormal Operating Procedures were completed. The inspectors discussed Verification and Validation methodology with the Emergency Operating Procedure writer

and determined that the proposed method of Verification and Validation would be adequate. Additionally, the inspectors reviewed OMM-043, Verification and Validation, Revision 0, dated December 28, 1990. This procedure delineated the details of the Verification and Validation program. The program described in the procedure will produce an acceptable verification and validation product. This will be reviewed when the Emergency Operating Procedures and Abnormal Operating Procedures have been completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- h. (Closed) IFI 50-261/89-16-07: Review Memorization of Operator Immediate Actions.

This item involved a deviation from Emergency Response Guideline background document regarding the memorization of the immediate action steps. The inspectors discussed this deviation with the licensee. The inspectors were informed that the licensee had reconsidered their objection to memorization of "those actions which the operator should be able to perform before opening and reading his emergency procedure." The licensee revised operator training to require the memorization of actions that the operator should be able to perform before opening and reading his emergency procedure. The revised training was consistent with the Emergency Response Guidelines. The inspectors interviewed selected operators and determined that the level of retained operator knowledge of immediate action steps may not be consistent with the Emergency Response Guidelines. The licensee stated that they would review this area to ensure that operators can perform the required immediate actions prior to referring to procedures. The inspectors will review this when the Emergency Operating Procedure upgrade program is completed. This is identified as part of IFI 50-261/91-22-01: Review of completed Emergency and Abnormal Operating Procedure upgrade program.

- i. (Closed) Plant Examination Report 50-261/91-300, Item 3.h: AOP-16, Excessive Plant Leakage, Step 3.1.4 required Safety Injection prior to reactor plant trip when leakage exceeded Reactor Coolant System makeup capability.

The inspectors reviewed Abnormal Operating Procedure AOP-16, Revision 6. The procedure had been rewritten and step 4 had been revised to require a reactor trip prior to entry into PATH-1 and subsequent Safety Injection. This item is closed.

## 6. Exit Interview

The inspection scope and findings were summarized on October 4, 1991, with those persons indicated in paragraph 1. The NRC described the areas inspected and discussed in detail the inspection findings. No proprietary material is contained in this report. No dissenting comments were received from the licensee.

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
IFI 50-261/91-22-01	Open	Review of completed Emergency and Abnormal Operating Procedure upgrade program.
IFI 50-261/89-11-01	Closed	Auxiliary Feedwater System Inoperable Due to Inadequate Net Positive Suction Head.
IFI 50-261/89-16-01	Closed	Develop a New Plant Specific Technical Guideline
IFI 50-261/89-16-04	Closed	Develop an Abnormal Operating Procedure Writer's Guide.
IFI 50-261/89-16-03	Closed	Review Each Appendix D Item.
IFI 50-261/89-16-04	Closed	Review Each Appendix B Item.
IFI 50-261/89-16-05	Closed	Review Each Appendix C Item.
IFI 50-261/89-16-06	Closed	Correct Verification and Validation Deficiencies.
IFI 50-261/89-16-07	Closed	Review Memorization of Operator Immediate Actions.

APPENDIX A

Abbreviations

IFI	Inspector Followup Item
NRC	Nuclear Regulatory Commission
NPSH	Net Positive Suction Head
VIO	Violation