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

Report Nos.: 50-325/91-07 and 50-324/91-07

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

Docket Nos.: 50-325 and 50-324 License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: February 19-22, 1991

Inspector: J. L. Coley, Jr. 3-12-91
Date Signed

Approved by: for J. J. Blake, Chief 3/12/91
Date Signed
Materials and Processes Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of follow-up on licensee's independent action plan (IAP) action items to correct two weaknesses identified in 1989 by an NRC Diagnostic Evaluation Team, followup on other NRC open items, and review of licensee actions concerning hydrostatic test nonconformance.

Results:

The inspector's review of the licensee independent assessment plan (IAP) actions taken to correct two weaknesses identified by an NRC Diagnostic Evaluation Team revealed that one item had sufficient information to allow closure. The other item remained incomplete, and essentially the same as identified in NRC Inspection Report 90-42.

The results of the review of the hydrostatic test nonconformance will be discussed in NRC Resident Inspectors Monthly Report No. 50-325, 324/91-04.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*K. M. Core, Senior Specialist, Control and Administration
*J. R. Cribb, Manager, Quality Control
*M. R. Foss, Supervisor, Regulatory Compliance
*P. D. Musser, Manager, Maintenance Staff
*W. W. Simpson, Manager, Control and Administration
*L. W. Wheatley, Supervisor, Inservice Inspection (ISI)
*E. B. Wilson, Manager, Nuclear Systems Engineering

Other licensee employees contacted during this inspection included engineers, technicians, and administrative personnel.

NRC Resident Inspectors

R. Prevatte, Senior Resident Inspector
*W. Levis, Resident Inspector

*Attended exit interview

2. Followup on Independent Action Plan Action Items to Correct Weakness Identified by the 1989 NRC Diagnostic Evaluation (92701)

a. General

The inspector examined the status of licensee actions to correct two Brunswick performance weaknesses identified by the NRC in a 1989 Diagnostic Evaluation. These weaknesses had previously been designated as inspector followup items in NRC Inspection 50-325, 324/89-34. The licensee developed and incorporated action items for correction of weaknesses identified by the Diagnostic Evaluation into their Integrated Action Plan (IAP). This plan addresses both NRC Diagnostic Evaluation findings and improvements undertaken by the licensee on their own initiative. Two levels of action items are specified in the plan-summary (Level 1) and subordinate (Level 2). Individual responsibilities are assigned for Level 1 and 2 items.

The licensee's current internal requirements for monitoring and documenting the effectiveness of the IAP implementation efforts are described in a memo from the Manager, Control and Administration to the Vice President, Brunswick Nuclear Project, dated August 6, 1990. They are as follows:

(1) Monthly Status Reports: Each month the Manager, Control and Administration complies a report of IAP action item status based on information obtained from Level 1 managers assigned responsibilities for the items. This report contains information on implementation schedule performance - such as the original and current target dates for completion. It is provided to CP&L Senior Management and to the NRC.

(2) Independent Assessment of Completion: After completion of a Level 1 action item an assessment is made by an independent organization to evaluate the extent of completion of the Level 1 item and its associated Level 2 action items, to evaluate the documentary evidence of completion and to look at measures in place to ensure improvement can be sustained.

(3) Reporting on Effectiveness of Completed Actions (by Managers Responsible for the Items): Level 1 managers are responsible to report on the effectiveness of their completed Level 1 actions, providing documentary evidence that the IAP action has produced the intended improvement and that the improvement has been institutionalized. The reporting is to be monthly for IAP items considered open by the NRC and quarterly for items not considered open by the NRC.

(4) Auditing of Continued Effectiveness (by Corporate QA): Audits of the effectiveness of the IAP are to be performed by Corporate QA. The timing, frequency and depth of the audits are determined by CQA on the basis of perceived significance, resource availability, relationship to other planned audits, etc.

(5) Documentation of Completed Activities: Documentary evidence of completed IAP activities is collected and maintained by the Control and Administration organization. For completed Level 1 action items this includes: evidence required to be provided by the action item managers to demonstrate item completion, reports of independent verifications of completeness (see (2) above) and effectiveness (see (4) above), and the Level 1 managers monthly or quarterly reports on the effectiveness of their completed items (see (3) above).

Subsections 2.b and 2.c below describe the IFIs examined by the NRC inspector and his findings.

b. (Closed) IFI 50-325,324/89-34-19, Followup on Implementation and Effectiveness of Maintenance Backlog Improvements in IAP Item D.2.1 and Strengthen Maintenance Planning Functions IAP Item D.2.2.

This IFI represented two concerns, one that the licensee's non-outage maintenance work backlog was too high, and the other that maintenance planning functions needed strengthening. These concerns were

identified by the NRC Diagnostic Evaluation (DET) in April 1989. Each item will be dealt with separately below:

(1) Maintenance Backlog Improvements (D.2.1)

In April 1989, the NRC DET identified a backlog of 3200 non-outage work requests. The DET estimated that this backlog represented about seven weeks work in the absence of any addition. In September 1990 an inspector (Report No. 50-325, 324/90-42) reviewed the licensee's actions relating to this item and discovered that based on the number of open non-outage work requests, it appeared that the backlog had been greatly improved since the DET review - a reduction of 1500 from the 3200 noted by the DET. However, in terms of weeks of work, the backlog remained about seven weeks as stated by the DET. The DET had reported that work requests were being completed at a rate of about 430 per week at that time. The completion rate in September of 1990 was 200 per week. In discussions with the licensee the inspector was informed that the reduction in the number of work requests represented an actual reduction in the corrective maintenance backlog and that the rate at which the requests were being completed was lower largely because greater emphasis and time was being directed to preventive and predictive maintenance. The inspector at that time indicated that the data in the IAP file did not demonstrate that corrective maintenance work had been replaced by preventive or predictive maintenance. In response to the inspector's concern the maintenance manager indicated he would provide further data to show that the backlog should not be considered excessive. However, before he could do so a scram occurred and he was required to divert his attention to participation in its investigation. Therefore, the inspector was unable to assess the licensee's actions.

During the current inspection the inspector also reviewed the IAP file, and held several discussions with the Manager of Maintenance where data was discussed that had been trended through January 1991.

This data revealed the following:

- Current non-outage work request backlog is 1597. The rate of completion is 300/week representing about five weeks backlog. The estimate and scheduling function which is the Man Hours to complete a package is even lower at 4.8 weeks.

- Total Backlog (Outage and Non-Outage) is 2584. This is a reduction of 2116 from the backlog level the DET experienced in April 1989.

- The licensee has focused attention on predictive and preventive maintenance to preclude a large backlog in corrective maintenance. However, this has not been done at the expense of responsively dealing with corrective maintenance. Discussion with the manager of maintenance and data provided the inspector revealed the following:

  - Predictive maintenance hours have increased 50 percent
  - Preventive maintenance hours have increased 15 percent
  - Corrective maintenance backlog has decreased approximately 50 percent since the 1989 DET inspection.

The inspector concluded from review of the data provided that the licensee is effectively dealing with the concern addressed by the DET and item D.2.1 is considered closed.

(2) Strengthen Maintenance Planning Functions IAP item D.2.2

This item dealt with the licensee addressing each of the following:

- Finalize the charter/mission statement of the Brunswick Maintenance Planning Sub unit

- Complete the position description for the Maintenance Planner/Analyst

- Establish specific guideline for Planner/Analyst

- Develop or acquire a formal Maintenance Planner/Analyst Training Program

- Implement Planner/Analyst Training Program at Brunswick for existing and prospective Planner Analyst

- Increase the amount and scope of maintenance planning completed before scheduled outages

The inspector's review of data provided in the IAP file concluded that the licensee has taken effective corrective action for each of the concern addressed above and therefore IAP item D.2.2 is considered closed.

c. (Open) IFI 50-325, 324/89-34-21, Followup on Implementation and Effectiveness of Developed Post Maintenance Testing Guidance in IAP Item D.4

This IFI represents a concern (originally licensee identified) that proper post maintenance Inservice Inspection (ISI) and Testing (IST) was not always being specified for repairs on ASME Code materials and components.

From a review of the IAP action item files the inspector found sufficient documentation to verify that the Level 1 and 2 action items had been completed. This involved the licensee's issuance of an Engineering Practice and a Plant Procedure covering specification of post maintenance test requirements. Both procedures (ENP-16.12, approved October 4, 1989 and PLP-08, approved November 21, 1989) were reviewed by the inspector. In addition, the inspector verified records indicating maintenance planners had been trained in application of the procedures ISI and IST requirements.

However, the inspector was unable to verify that implementation of the above actions had been effective in correcting the matter of concern. This problem had also been identified in RII Report No. 50-325,324/90-42. Discussions with the licensee's responsible personnel revealed that trends in the error rate in post maintenance testing requirements (PMTR's) have not been determined.

The ISI supervisor expressed concern that until the PMTR error rate could be assessed for the present Unit 1 outage the trend would not be representative. The basis for his opinion was that most work orders are performed during the outage period and only a few work order's have been reviewed by cognizant inservice inspection personnel this outage. The ISI supervisor also stated that problems have been identified during the current outage and documented by the licensee with Adverse Condition Reports which involved improper implementation of PMTR requirements. The inspector concluded as a result of the concerns expressed above, that although the licensee's corrective actions appear to be untimely, the analysis to determine the effectiveness of the licensee's corrective actions would be statistically enhanced by including the Unit 1 outage. Therefore, IAP item D.4 will remain open until the licensee can provide adequate data to support the effectiveness of their corrective measures.

Within the areas examined, no violation or deviation was identified.

3. Follow-up Action on Previous Inspection Findings (92701)

(Open) Unresolved Item 50-325, 324/90-18-02, Apparent Deficiency in Design of Supplemental Structural Steel

Discussions with the licensee concerning this issue revealed that this item is not ready for closure, since appropriated funds for 1991 were inadequate to ensure completion of projected work.

Within the area examined, no violation or deviation was identified.

4. Follow-up of Licensee Hydrostatic Test Nonconformance

When the inspector arrived at the Brunswick facility the licensee was in the process of start-up on Unit 1 after a lengthy refueling and recirculation pipe replacement outage. During the start-up process a nonconformance to inservice inspection (ISI) hydrostatic test requirements on portions of the Reactor Coolant System was identified by the licensee. The portions in question consisted of the section of various vent and drain lines between the first and second isolation valves. Twenty-seven lines on Unit 1 and a similar number on Unit 2 were identified.

The inspector became involved in this issue at the request of the senior resident inspector and provided technical guidance to his office until initial resolution could be established with the licensee, NRR, and Region II Management.

The licensee's responsiveness in conducting the required safety assessments and in reporting the facts pertaining to the ASME Section XI nonconformance to NRC was commendable. However, the fact that the nonconformance has existed for several years indicates weaknesses in the licensee's test program, test procedures and auditing of completed test records. Similar weakness had previously been identified by the inspector and three violations issued on ASME Class 2 and 3 systems in Inspection Report No. 50-325,324/87-30.

In the areas inspected, violations and deviations were not identified in this report. Specifics relative to the discovery of the present hydrostatic testing nonconformance and potential enforcement actions to be taken by NRC will be addressed in detail in the NRC Resident Inspector's Monthly Report No. 91-04.

5. Exit Interview

The inspection scope and results were summarized on February 22, 1991, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

6. Acronyms and Initialisms

ASME - American Society of Mechanical Engineers
DET - Diagnostic Evaluation Team
IAP - Integrated Action Plan
IFI - Inspector Followup Item
ISI - Inservice Inspection
IST - Inservice Test
NRC - Nuclear Regulatory Commission
NRR - NRC Office of Nuclear Reactor Regulation