

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-443/88-04

Docket No. 50-443

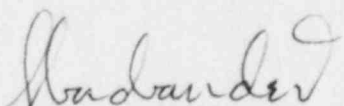
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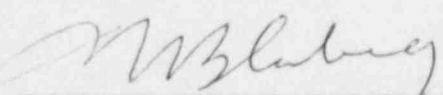
Facility Name: Seabrook Station Unit - 1

Inspection At: Seabrook, New Hampshire

Inspection Conducted: February 22-26, 1988

Inspectors:   
M. Dev, PE, Reactor Engineer

4/15/88  
date

Approved by:   
N. Blumberg, Chief, Operational Program  
Section, OB, DRS

4/15/88  
date

Inspection Summary: Inspection on February 22-26, 1988 (Inspection Report No. 50-443/88-04).

Areas Inspected: Review of the licensee's Startup/Power Ascension Test Program, Vendor recommended Reactor Trip Breaker (DS-416) modifications, and QA/QC Interfaces.

Safety Issue Management System (SIMS) Item:

Multi Plant Action (MPA) Item B-80, Seabrook Station Unit 1 (Completed).

Results: The licensee's QA for the startup test program for the current operational mode was found adequate; and vendor recommended modification to the reactor trip breakers undervoltage trip attachment per GL 83-28, Item 4.1 was found complete and satisfactory.

A large backlog in station maintenance work orders and the design coordination review packages was identified which warrants licensee attention for timely disposition (Paragraph 5.0).

No violations or deviation were identified.

## DETAILS

### 1.0 Persons Contacted

#### Seabrook Station Unit - 1, New Hampshire Yankee (NHY)

- \*D. Abley, Maintenance Supervisor
- \*S. Barracough, Lead QC Inspector
- \*S. Buchwald, QA Supervisor
- R. Cooney, Tech. Project Manager
- R. Cyr, Maintenance Manager
- \*W. DiProfio, Assistant Station Manager
- J. Grillo, Assistant Operation Manager
- \*P. Gurney, Reactor Engineering Department Supervisor
- \*M. Kenny, System Support Manager
- W. Leland, Chemistry/Health Physics Manager
- \*J. Malone, Operations Administration Supervisor
- \*R. McCormack, Lead Engineer - Inservice Inspection
- \*D. Moody, Station Manager
- D. Perkins, Licensing Engineer
- \*T. Pucko, Licensing Engineer
- J. Ross, Lead Electrical Engineer - Technical Services
- G. Sessler, Project Engineer
- \*W. Temple, Licensing Coordinator
- C. Vincent, QC Supervisor
- \*T. Wiebold, QA Auditor

#### United States Nuclear Regulatory Commission (US NRC)

- \*N. Blumberg, Chief, Operational Program Section, Region I
- A. Cerne, Senior Resident Inspector
- \*D. Ruscitto, Resident Inspector

\*Denotes those attended the exit meeting on February 26, 1988.

The inspector also contacted other administrative and technical personnel during this inspection.

### 2.0 Startup Test Program

#### 2.1 Inspection Criteria/References

The scope of this inspection was to ascertain if the licensee's QA program which covers operational activities has been implemented for the startup and power ascension test program. Following documents establish the requirements and provide guidelines for the startup test programs:

--Seabrook Station Final Safety Analysis Report Section 14.2,  
Startup Test Abstract, Amendment 61, November 1986.

- Seabrook Station Technical Specification, Section 6, Administrative Controls.
- ANSI N18.7 - 1976, Quality Assurance for the Operational Phase of Nuclear Power Plants.
- Regulatory Guide 1.33-1978, Quality Assurance Program Requirements (Operation).
- Regulatory Guide 1.58-1980, Qualification of Test Personnel
- New Hampshire Yankee Operational Quality Assurance Program Manual, Rev. 10, October 13, 1987.
- Seabrook Station Startup Test Program Description Rev. 2, May 14, 1987.

## 2.2 Program Review

The licensee's startup test program was reviewed to verify that requirements have been established for QA organization to:

- Inspect the conduct of testing,
- Track test deficiencies,
- Review test documentation,
- Verify adequacy of control of measuring and test equipment (M&TE), and
- Conduct audits to determine the adequacy of the licensee's compliance to regulatory requirements.

## 2.3 Program Implementation Review

### 2.3.1 QA for Startup Test Program

The licensee's Operational QA Program Manual Chapter 11.0, Test Control delineates startup test control requirements, including precriticality, criticality, low power and power ascension tests performed after initial fuel loading and after each refueling. The Station Manager is responsible for the review and approval of the startup test procedures and the conduct of these tests. The licensee's Nuclear Quality Group reviews the initial startup test program description and test procedures for quality requirements, and assigns witness and hold-points, as necessary. Conditions adverse to quality, such as malfunctions, nonconformances, and defective materials and procedures are identified, their causes determined and evaluated, and corrective action taken to preclude recurrence. Accordingly, the Nuclear Quality Manager is responsible for establishing and maintaining a trend analysis program which determines the effectiveness of the corrective action process.

The startup test program administration, ST-1 provides general guidance for the administration of the initial startup test program and a recommended sequence for the conduct of startup tests, including test sequencing and power escalation. The Seabrook FSAR has listed 50 test procedures required for zero to full power ascension. These procedures were found to have been reviewed and approved by the Station Operation Review Committee (SORC) and the station management and currently available for implementation. The inspector verified that twelve of these procedures were utilized to conduct tests for the current plant operational mode. Review of the four completed test procedures (Attachment-1) indicated that the test prerequisites, test instructions, acceptance criteria and test conditions were adhered to and were verified by QA personnel for procedural compliance. These tests verified instrument set points and thermal-hydraulic parameters applicable to the current operational mode, and found them acceptable. Completed tests were independently reviewed by the startup test group and were accepted by the plant management. Also test anomalies identified during tests were properly documented, reviewed, dispositioned and accepted by the station management.

#### 2.3.2 Design Coordination Review (DCR) Documentation Review

The inspector reviewed and discussed with the Licensee's startup test engineers the temporary changes to the startup tests (Attachment-1) and found them adequate. Also were reviewed the organization of several of the licensee's design coordination documentation packages (Attachment-1). As noted in the packages, some deficiencies were identified in the startup test activities and the licensee incorporated the corrective action, as required. For example, Raychem WCSF-N heat shrink tubing in-line splice was installed on multi-wire for component EDE-SPL-9 to meet the environmental qualification requirements (DCR 87-25). A setpoint of 8" and a reset of 9" for 1-HWS-LSL-5204, SIS drawing M-510000 was revised to reflect actual instrument location and field condition (DCR 87-290). The power cable for the RHR pump motor (RH-P-8B) had been found damaged due to improper installation. Since the cable insulation was intact, Raychem heat shrink tubing was used to provide mechanical and environmental protection to the conductor assembly (DCR 87-411).

These design coordination packages contained the licensee's 10 CFR 50.59 review concerning significant safety issues

and were found acceptable. All related critical installation and test activities were found to have been witnessed and verified by the QC personnel for their completeness. These completed packages are currently in the Seabrook Technical Services review cycle for quality documentation verification prior to their transmittal to the document control center for microfilming and retention.

### 2.3.3 Startup Test Audits Review

The inspector reviewed the licensee's startup test audit program and several of the recently completed QA audits (Attachment-1). These audits verified the effectiveness, especially, in the area of corrective action to the startup test anomalies, use of measuring and test equipment for the startup test, and temporary changes and setpoint control. These audits were found to have been conducted by qualified and trained personnel and the audits reports and audits findings were comprehensive. The inspector followed up selected QA audit findings having bearing on the licensee's startup test program. Based on the review of the documentation the inspector determined that in majority of the cases the auditees responses and corrective action implementation were adequate and timely. Where the corrective actions were found inadequate or beyond reasonable time, the QA audit group escalated it to the upper tier management for proper action. The QA audit findings and associated corrective actions are tracked by the QA audit group, which also provides adequate control over retrievability for the audit close-out.

## 2.4 Conclusions

The licensee Startup Test Program Description, adequately described administration of the startup test program, including test types, personnel responsibilities, administrative controls and procedures. Review of the status of the startup tests indicated that the licensee has completed 12 tests as listed in the FSAR chapter 14, Section 2 to meet the current operational mode. The licensee QA personnel have inspected the conduct of these tests, tracked the test deficiencies and reviewed the test documentation for their procedural compliance. Adequacy and control of measuring and test equipment utilized in the performance of the startup test and licensee's actions to disposition material and procedural nonconformances were evaluated through QA audits and were found adequate.

Based on the above, the licensee's QA program implementation for the startup test activities was found adequate. No violations were identified.

### 3.0 Seabrook Station Unit 1 Trip Vendor Recommended Reactor Trip Breaker Modification, MPA-B-80

#### 3.1 Background

On February 25, 1983, during startup of the Salem Unit 1 plant both Westinghouse DB-50 reactor trip system (RTS) circuit breakers failed to open automatically upon receipt of a valid trip signal on a low-low steam generator water level. This failure to trip was attributed to a binding with the undervoltage trip attachment (UVTA) located inside the breaker cubicle. The reactor was tripped manually from the control room about 30 seconds after the automatic trip signal was generated. Subsequent to the February 25 event, it was determined that a failure of the breakers to open following receipt of an automatic reactor trip signal also had occurred on February 22, but had not been detected at that time by the licensee. In addition, the NRC has become aware of approximately 25 other instances wherein the UVTAs failed to trip the RTS breakers within the acceptance time specified by the licensees. Sluggish operations of the UVTAs may indicate that the breakers are deteriorating to the point where complete failure to trip may ensue. This situation has caused the NRC to require licensees to expand their maintenance and surveillance testing of RTS breakers.

The Commission reviewed several intermediate-term actions to be taken by licensees and applicants as a result of the Salem anticipated transient without scram (ATWS). The actions were developed on the basis of information contained in NUREG-1000, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant." NRR issued GL 83-28 to all licensees and applicants on July 8, 1983, requiring the utilities, pursuant to 10 CFR 50.54(f), to furnish the status of current conformance with the positions contained in GL 83-28 and plans and schedules for any needed improvements.

This inspection was intended to verify the satisfactory completion of the licensee's action required in item 4.1 of GL 83-28 pertaining to vendor recommended modifications for reactor trip breakers at the Seabrook Station Unit-1. This item is identified as NRC Multiplant Action (MPA) Item B-80.

#### 3.2 Implementation Review and Findings

The Seabrook Station Unit 1 utilizes Westinghouse type DS-416 breaker in the rod control reactor protection scheme. Earlier, Westinghouse evaluation identified potential for misoperation of DS-416 reactor trip switchgear undervoltage trip attachments (UVTAs). Through letter NAH-2209 dated April 21, 1983 Westinghouse advised the licensee of the corrective action, including the replacement of the UVTA. Accordingly, the licensee initiated a 10 CFR 50.55(e) report and implemented the vendor recommended corrective action by replacing the UVTA in all reactor trip and reactor trip by-pass breakers.

The inspector reviewed the engineering change authorization, ECA-03/102582A and the work request, WR-CP0019 and other quality assurance and procurement documentation associated with this replacement. The work was completed in accordance with the Westinghouse installation procedures. Subsequently, post-modification testing was conducted to verify the reactor trip breakers operability. The modification was verified by the QC personnel for its satisfactory completion and was accepted by the Seabrook Station Startup group. Also, the NRC inspection report 50-443/85-31, dated December 31, 1985 which closed the reactor trip breaker construction deficiency report (CDR 83-00-07) had verified the adequacy of the field installation, and found the licensee's corrective action acceptable.

### 3.3 Conclusions

The licensee has implemented the reactor trip breaker Westinghouse type DS-416 by replacing the UVTA. The design features for the replacement had modified grooves to accommodate the new retaining ring. Westinghouse provided the licensee with revised design documentation and field installation procedure for proper alignment and interface of the attachment with the breaker trip shaft. The modification was found complete and adequately documented for quality control verification. Thus, the licensee's action to implement the vendor recommended modification per GL 83-28, Item 4.1 is considered complete. This closes the NRC Multiplant Action (MPA) Item B-80.

### 4.0 QA/QC Interfaces

Review of the completed startup tests indicated that the licensee QA inspected the conduct of testing, tracked the test deficiencies and reviewed the test documentation for their procedural compliance and completeness. QA audits have also evaluated the adequacy and control of measuring and test equipment utilized in the performance of the startup test, and licensee's actions to disposition material and procedural nonconformances and implementation of corrective action. The licensee QA has also verified the implementation of vendor recommended modification to the reactor trip breakers DS-416 undervoltage trip attachment. The installation work activities and procedural compliance were reviewed and monitored by the licensee QA/QC staff. Based on the above, the licensee QA/QC interfaces in the areas inspected are considered adequate.

### 5.0 Plant Walkdown and Maintenance Activities Review

The inspector conducted a plant walkdown and witnessed the maintenance activities on the Residual Heat Removal train B heat exchanger bypass control valve 1 RH FCV-611. The valve has been experiencing mechanical problems for sometime. When the internals were removed it was found that one of the guide keys was touching the valve body. Concurrently, the plant engineering and the maintenance personnel started developing corrective action plans, including vendor contact and review of the vendor recommended actions.

The inspector reviewed and discussed with the cognizant personnel the status of the station equipment corrective and preventive maintenance, and surveillance activities. The licensee has established and implemented a trending program whereby maintenance work requests, repetitive tests, and the DCRs status are reviewed and updated. These activities are coordinated on a weekly basis. Currently, the station has over 3000 maintenance work orders and over 600 design coordination review reports under the licensee's review cycle. The licensee representative explained that this backlog is being of lower priority, constrained primarily by the system and equipment availability for work and the manpower restraint. Nonetheless, all safety-related critical items are assigned higher priority, and the maintenance activities completed accordingly. Review of the QA surveillances status indicated that all Technical Specifications required surveillances are current and complete.

Based on the above, the inspector determined that the large backlog of the station corrective and preventive maintenance, and the design coordination review packages warrants special attention from the licensee to complete them in a timely manner.

#### 6.0 Management Meeting

The licensee management was informed of the scope and purpose of this inspection at an entrance meeting conducted on February 22, 1988. The findings of the inspection were discussed with the licensee representatives during the course of this inspection. An exit meeting was conducted on February 26, 1988 at the conclusion of this inspection to provide the findings of this inspection to the licensee management (see paragraph 1.0 for attendees).

At no time during this inspection was written material provided to the licensee. Also, the licensee did not indicate that any proprietary information was involved within the scope of this inspection.



ATTACHMENT - 1

Documents Reviewed

(a) Test Procedures

1-ST-4, Initial Core Loading, Rev. 3  
1-ST-6, Rod Control System, Rev. 1  
1-ST-8, Rod Position Indication, Rev. 0  
1-ST-10, RTD Bypass Flow Verification, Rev. 2

(b) Design Coordination Report Packages

87-275, Multi-Wire In-Line Splice limitation  
87-290, Setpoint change for 1-HWS-LSL-5204  
87-411, Damage Cable for RH-P-8B Motor

(c) QA Audits

87-A01-3, Temporary Modifications and Setpoints  
87-A02-3, Design Control  
87-A05-1, Corrective Action  
87-A10-4, Measuring and Test Equipment