U. S. NUCLEAR REGULATORY COMMISSION
Region I

Report No.: 50-443/89-80

Docket No.: 50-443 License No.: NPF-67

Licensee: Public Service Company of New Hampshire
1000 Elm Street
Manchester, New Hampshire 03105

Facility: Seabrook Station, Unit No. 1

Location: Seabrook, New Hampshire

Dates: May 27 - June 1, 1989

Inspectors: N. Dudley, Senior Resident Inspector
R. Nimitz, Senior Radiation Specialist
M. Kohl, Resident Inspector
M. Markley, Resident Inspector
D. Dempsey, Reactor Engineer
K. Kolaczyk, Reactor Engineer
J. Trapp, Reactor Engineer

Approved By: Donald R. Haverkamp 7/7/89
Donald R. Haverkamp, Chief Date
Reactor Projects Section No. 3C
Division of Reactor Projects

Inspection Summary:

Areas Inspected: Programmatic assessments and direct observations were made in the areas of operations, radiation protection, safety assessment/quality verification and startup testing. The licensee's readiness to commence plant heatup was evaluated by system lineup verifications, review of chemistry analyses, procedure reviews and discussions with cognizant licensee personnel. The conduct of the heatup was assessed over two days of 24-hour shift observation.

Results: Preparations for and the conduct of plant heatup were approached in a professional manner and evolutions were controlled and deliberate. The areas of radiation protection, startup testing and management effectiveness and assurance of quality were found to be adequate. Based on direct observation and reviews of the facility organizations, the licensee was found to be prepared for the initial approach to criticality and low power testing.

One unresolved item was identified regarding the use of an operations step list for the transfer of chemical and volume control system demineralizer resins (Section 5.3).

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*The NRC Inspection Manual inspection procedures (IP) that were used as inspection guidance are listed for each applicable report section.

## DETAILS

### 1. Licensee Activities

On May 26, 1989, New Hampshire Yankee (NHY or the licensee) was granted low power license No. NPF-67 for Seabrook Station Unit 1 (Seabrook, the plant or the facility) which superseded zero power license No. NPF-56. Upon receipt of the low power license, New Hampshire Yankee transitioned from zero power operating procedures to normal operating procedures. The transition included removal of caution tags and locks from reactor coolant boundary valves, which were under specific zero-power license condition controls. Chemistry was established in the steam generators by using a temporary demineralizer truck and draining and refilling the steam generators. Proper boron concentration was established in all tanks including the boric acid tanks, reactor water storage tank and the accumulators. The resin was replaced in the chemical volume control system demineralizers. Preparations for reactor heatup were completed including close out of the containment and completion of the required mode change check lists. Required testing was completed as the plant was heated to normal operating temperature and pressure. A detailed chonology of major plant operational milestones and activities is provided as Attachment A.

### 2. NRC Staff Organization and Activities

The Readiness Assessment Team (RAT) inspection evaluated the licensee's preparation for plant heatup, the conduct of plant heatup, and the licensee's readiness for initial criticality and commencement of the low power test program. Programmatic assessments and direct observations were made in the areas of operations, radiation protection, safety assessment/quality verification, and startup testing. The team was led by the Region I, Division of Reactor Projects (DRP) Section Chief and was composed of three DRP inspectors, a startup inspector, a radiological control inspector, the NRR project manager and the senior resident inspector.

A separate inspection was conducted during the week of May 22, 1989 which evaluated the maintenance and surveillance programs with respect to readiness for commencement of plant heatup. The results of that inspection are documented in NRC Inspection Report No. 50-443/89-05.

The licensee's completion of its programmatic requirements for commencing plant heatup were reviewed and independent verifications were conducted to assess the readiness of the licensee to commence plant heatup. Continuous shift coverage of main control room and in-plant activities was conducted to inspect and evaluate the operations department's conduct and control of the plant heatup to normal operating temperature from 6:00 a.m. May 29 through 6:00 p.m. May 31, 1989. Inspections were made of the radiological control program, startup test program and quality assurance program to assess those areas in terms of the licensee's readiness for criticality and low power testing.

3. Persons Contacted

Interviews and discussions were conducted with members of the licensee staff and management during the period of preparation and conduct of plant heatup to obtain information pertinent to the areas inspected. A list of the individuals who attended the exit meeting is presented in Attachment B.

4. Preparations for Heatup

4.1 General

Inspections were conducted to assess licensee readiness to conduct plant heatup to hot shutdown (Mode 4). The assessment consisted of attendance at licensee management meetings, control room observations, system lineup verifications, review of chemistry analyses and results, procedure reviews, and discussions with cognizant licensee personnel.

4.2 Meetings Attended

The inspector attended a meeting of the licensee Independent Review Team (IRT) on May 26, 1989. The licensee team reported that all Phase I report recommendations required to be implemented prior to initial criticality were completed. The IRT had reviewed station information reports (SIRs) and noted a declining trend in the number of SIRs. The IRT stated that the decrease appeared to be due to increased attention to detail by station personnel. After detailed review of the nine most recent SIRs, the IRT did not identify any common root causes. The IRT concluded that there were no outstanding issues which would prevent the commencement of low power testing.

A department management meeting was held on May 27, 1989 to complete the mode change check lists for operational modes 3 and 4. The status of surveillance, maintenance and other scheduled evolutions was discussed. Each manager provided a list of outstanding items requiring completion and sign-off prior to entry into operational mode 4. The inspector observed that the discussions were detailed and thorough.

Meetings with station security management were attended on May 25, 27 and 28, 1989 regarding contingency planning for demonstrations with the potential for civil disobedience activities. The licensee conducted on-going discussions with state and local law enforcement agencies concerning the numbers of demonstrators to be expected and types of activities planned. The plant security staff was augmented and the number of plant patrols in both vital and non-vital areas was increased. Contingency plans were in place to assure access to the

plant by site and NRC personnel in the event that main access gates were blocked. Licensee plans were well developed and appeared adequate to maintain the security of the facility.

4.3 Control Room Observations

The inspectors reviewed control room logs and records including night orders, shift journals, shift turnover sheets, temporary modifications log, locked valve log, and control board indications. The inspectors evaluated the plant's alarm status and adherence to technical specification limiting conditions for operation and action statements. Reactor coolant system and connected water supplies were checked for boron concentration and sampling frequencies.

Control room operators were knowledgeable of log contents and responsive to NRC questions and concerns. Shift turnover briefings were noted to be comprenensive and professionally conducted. Operator responses to alarms were timely and correct.

4.4 Procedure Reviews

Operating and surveillance procedures, listed in Attachment C, were reviewed by the inspectors for technical adequacy and completeness. Licensed and non-licensed operators were observed to properly utilize procedures during all evolutions and in response to system alarms. Throughout the inspection, operators were noted to display a proper questioning attitude regarding evolutions in progress.

During observation of chemical and volume control system mixed bed demineralizer resin changeout, the licensee's use of temporary step list procedures was questioned by the inspector. A step list procedure is intended for use when necessary to perform a task or system lineup in support of a non-routine evolution. In accordance with licensee operating procedure OP 10.7, Revision 1, Operations Step List, these procedures are prepared by control room personnel, reviewed by a licensed operator, and approved for implementation by the unit shift supervisor or shift superintendent. No station operations review committee (SORC) review is required prior to utilizing the procedure. Inspector concerns regarding the use of step list procedures are detailed in paragraph 5.3 of this inspection report.

4.5 Facility Tours

The inspectors toured the following areas of the plant noting general housekeeping conditions, system lineups and equipment condition: reactor containment, containment enclosure, primary auxiliary building, mechanical penetration area, circulating and service water

pumphouses, waste process building, emergency diesel generator rooms, turbine building, essential and non-essential switchgear rooms, battery rooms, and the emergency feed pumphouse.

No discrepancies that would adversely impact on plant heatup were noted during these facility tours.

4.6 Conclusions

Operations were conducted by licensee personnel in accordance with applicable station procedures and technical specifications. The licensee displayed a conservative approach to mode change preparations and an appropriate level of management and quality assurance department oversight of station activities was evident. No regulatory concerns were identified to preclude transition to hot standby (Mode 4) operation.

5. Conduct of Heatup

5.1 General

Continuous shift inspection was conducted to assess the performance of licensee activities associated with the plant heatup and to confirm readiness for the low power test program. Functional areas evaluated during the inspection were plant operations, maintenance, surveillance and engineering support. Procedures reviewed by the inspectors are listed in Attachment C and specific plant areas toured, evolutions observed, and equipment performance reviewed by inspectors are identified in Attachment D of this report.

5.2 Control Room Observations

Inspector observation of control room activities indicated good licensee performance. Control room personnel were cautious and deliberate in performing their duties. Personnel were knowledgeable of technical specifications, station procedures, and plant systems. Operators continued to properly utilize procedures during all safety-significant evolutions and in response to system alarms. Shift turnovers were noted to be thorough and well delivered. A positive questioning attitude was continuously observed. Shift turnover documentation adequately detailed off-normal conditions and plans for the oncoming shift.

Access to the control board area was well maintained. No loitering of non-shift personnel was observed. The inspectors noted few occasions where personnel entered without first securing unit shift supervisor permission. Licensed personnel demonstrated positive control and observation of operator trainee board manipulations.

The shift superintendent maintained good oversight of control room activities. However, shift superintendents occasionally performed administrative activities inside the "horseshoe" area of the control room panels in the vicinity of the licensed operator stations, which could have been conducted as effectively in another location, thereby limiting potential distractions of the operating shift. This practice did not result in any performance errors or operational events during the conduct of heatup. Nonetheless, the inspectors brought this matter to the attention of operations and plant management for their consideration in enhancing the general conduct of future control room activities.

Control room communications were generally good. Auxiliary operators performing system lineups were in continuous communication with the control room. Maintenance, surveillance, and QA/QC personnel interfaced well with the operations staff. However, one incident indicating a need to improve shift personnel communications was identified. On May 31, 1989 while aligning the residual heat removal (RHR) system valves for entry into operational mode 3, valve RH-V14 failed to open when it was remotely operated from the control room panel. The shift superintendent (SS) directed the cognizant system engineer to troubleshoot valve RH-V14 locally without fully informing the control room staff. When the inspector observed the control room position indication for valve RH-V14 change from the closed to mid position, the unit shift supervisor (USS) was unable to correctly identify the type of troubleshooting that was being performed on the valve. Senior operations management characterized this as being an isolated incident and not indicative of normal control room practices. The operations manager assured the inspector that steps would be taken to improve performance in this area. The specific licensee actions, which were not identified by the end of the team inspection, will be reviewed during a subsequent routine resident inspection.

Logkeeping documentation of plant activities and status was good. However, the inspector identified a need to improve "real time" documentation of off-normal conditions and emergency notification system (ENS) operability testing. Additionally, the use of preliminary notes for logbook entries may contribute to documentation traceability problems. On May 30, the licensee experienced a loss of plant computer availability and normal control room phone service. The licensee adequately documented the time when the computer failed but did not document when the computer was returned to service. When normal control room phone service was lost, the licensee verified the operability of the NRC ENS phone, phone service for offsite and state communications, and the availability for onsite gaitronics communications systems. However, these communication verifications were not documented in the shift logbook. Senior station management acknowledged the inspector's concerns and reaffirmed the licensee's

commitment to record log entries in accordance with existing program requirements. Continuing inspector review indicated satisfactory shift documentation.

5.3 System Verification and Conduct of Operational Evolutions

Licensee performance in properly aligning systems and conducting operational evolutions was good. The physical condition of the plant was satisfactory in that materials and equipment were properly stored. No unacceptable housekeeping conditions were observed which would constitute a system hazard for normal operations or a potential missile hazard. Fire protection equipment was found to be properly stored and tested.

Inspector review of system lineups noted them to be correct for the applicable plant conditions and preparations for mode changes. Personnel adequately addressed equipment problems that arose when preparing the plant for heatup. Planning was generally good. Work requests were issued as required. Inspector identified discrepancies were immediately addressed by the licensee. Equipment status changes were documented and communicated to appropriate shift personnel.

Operational evolutions were planned, authorized and implemented in accordance with the "shift plan" and station procedures. However, during the transfer of chemical and volume control system (CVCS) demineralizer resins, the inspector identified some problems regarding the use of operations step lists per procedure OP 10.7. Specifically, operations step lists 89-005 and 89-006 for the CVCS resin transfer indicated evidence of poor planning. Initially, step list 89-005 lacked the necessary guidance to complete the evolution as issued and required revision during implementation, and then the subsequent step list 89-006 was necessary to complete the evolution. Other inspector concerns included the lack of quality assurance review prior to implementation and the need for a higher level of independent verification authorization. Also, operations step list guidance was inconsistent with the more stringent programmatic controls found in maintenance step lists.

Senior station management was responsive to the inspector concerns. The licensee asserted that the evolution did not constitute a safety hazard since the demineralizer resins had not been used to process radioactive liquids and that no resins were spilled. The licensee acknowledged the programmatic weaknesses with the operations step list program. The licensee stated that the program would be upgraded to be consistent with the controls and guidance entailed in maintenance step lists which require department manager review and authorization. Specifically, in addition to requiring unit shift supervisor review and approval, OP 10.7 would be revised to also require shift superintendent (management) review and approval as well as independent quality control review and signature prior to

use. The inspector noted that OP 10.7 already requires post-implementation onsite review committee review and prohibits the use of operations step lists for certain activities, e.g., surveillance tests, emergency safety features system alignment, and evolutions that alter core reactivity.

The inspector noted, however, that the use of step lists as complete procedures effectively bypasses the normal station review cycle that is followed for developing station procedures. This fact was also identified by licensee quality assurance (QA) personnel, who observed the resin exchange and documented in QASR 89-0027 that step list 89-005 merited implementation as a procedure rather than a step list. The use of this step list as a procedure that bypassed the normal review cycle is unresolved pending resolution of inspector and QA identified weaknesses (89-80-01).

During the May 31 residual heat removal (RHR) system lineups in preparation for entry into operational mode 3, the inspector observed a systems engineer testing valve RH-V14. The inspector was concerned that a systems engineer was operating equipment which normally requires specific training and qualification as an auxiliary operator. The licensee explained that the contractor systems engineer was the cognizant individual responsible for declaring the valve operable and that he had been previously qualified to tag equipment. During a subsequent discussion, the operations manager assured the inspector that only properly qualified individuals were allowed to operate equipment. The inspector determined that in this instance the systems engineer was knowledgeable and qualified for the limited activities associated with testing valve RH-V14. The qualifications of individuals operating plant equipment will continue to be monitored during routine resident inspections.

5.4 Maintenance, Surveillance, and Engineering Support

Inspection review of plant maintenance, surveillance testing, and engineering support indicated good licensee performance. Surveillances required for heatup and mode changes were adequately completed. Maintenance and test equipment (MTE) was observed to be properly calibrated. Plant heatup was stopped when equipment did not satisfy surveillance requirements. Maintenance work requests were issued as required. Engineering evaluations were initiated for equipment anomalies which were identified during surveillance testing and normal maintenance. Below is a list of equipment problems or discrepancies that occurred during the heatup.

-- Demineralizer temperature divert valve CS-TCV-129 failed to operate in the automatic mode of control. Licensee investigation revealed that an electrical lead on cable GP-7-LCO to an interlock contact was found lifted. The interlock was installed as a modification to the valve. The licensee promptly issued a

work request to repair the valve. The licensee is evaluating the failure through a station incident report (SIR). No immediate safety concern exists. The resident inspector will review the licensee SIR determination and corrective actions during routine inspection.

-- Loop 1 resistance temperature detector (RTD) bypass flow indication was lower than expected. An engineering evaluation has been issued. Initial licensee assessment was that the indication system was accurate and that the bypass flow was low. The loop bypass line had been modified previously.

-- RHR valve problems. Crossover valve RH-V21 would not cycle and was opened manually. Cold leg isolation valve RH-V14 failed to cycle on demand. The licensee was troubleshooting these valves at the end of the inspection.

-- Reactor coolant pump (RCP-B) vibration. The initial licensee assessment was that it was an indication problem and that RCP-B was not actually vibrating abnormally.

The licensee is addressing the above described equipment problems through appropriate programs and procedures. The resident inspector will verify the adequacy of equipment problem resolution.

5.5 Management Oversight

Senior management personnel were observed to actively monitor heatup progress in the control room. The inspector attended plan of the day meetings and noted them to be effective in prioritizing and addressing plant challenges. Communication among participants was organized and orderly. The plant management staff was responsive in addressing inspector concerns.

5.6 Summary of Observations of Plant Heatup

The licensee was conservative during plant heatup. Staffing was adequate. Personnel were conscientious and responsive in performing their duties and addressing inspector concerns. Operations, maintenance and testing activities were, for the most part, conducted in a deliberate controlled manner and evolutions were conducted professionally by the plant staff.

6. Radiation Protection

The readiness and capability of the licensee's radiological controls program to support initial criticality and low power testing was reviewed. The inspector selectively examined the adequacy of the radiological controls organization and staffing, the training and qualification of

appropriate radiological controls personnel, the training and qualification of radiation workers, the establishment of the Radiological Controlled Zone, the numbers and adequacy of radiation and airborne radioactivity monitoring instruments, the implementation of the external and internal exposure control programs including the provisions of personnel dosimetry devices and radiation work permit program, the establishment and control of access to potential High Radiation Areas, the implementation of the shield survey program, the controls for radioactive and contaminated material and the implementation of the personnel contamination control program.

The inspector also reviewed the level of understanding of radiation protection department personnel of on-going and planned activities and the adequacy of inter and intra departmental communications. In addition, the inspector reviewed the level of management efforts to independently verify the adequacy of the radiological controls program to support initial criticality and low power testing.

The inspector evaluated licensee performance in the above areas by means of independent observation during plant tours, discussions with appropriate licensee personnel and review of documentation. The inspector considered overall licensee efforts to establish and implement an adequate and effective radiological controls program to support initial criticality and low power testing to be pro-active and commendable. With the exception of the isolated weaknesses discussed below, the overall radiological controls program was found to be adequate to support initial criticality and low power testing. The licensee implemented prompt corrective actions for the identified weaknesses.

-- Although a radiological control personnel training program was implemented, the program did not effectively provide for reading of important procedure changes or new procedures in a timely fashion. Some personnel had not read some important new procedures (e.g. High Radiation Area Access Control). The licensee immediately required all appropriate personnel to read the procedures and initiated changes to administrative procedures to provide for reading of important procedure changes or new procedures in a timely fashion.

-- Licensee radiological controls procedures contained a number of statements in which a particular action (e.g. surveying of material) was recommended rather than required. The licensee immediately initiated action to require all "shoulds" in radiological controls procedures to be treated as "shalls" pending a thorough review of the procedures. This action was taken immediately.

-- The licensee's high radiation area access control procedures did not contain well defined criteria for scheduling performance of radiation surveys to support high radiation area work or for actions to take following loss of a high radiation area access key. The licensee immediately initiated action to address these matters.

-- The licensee moved a shielded neutron source into the instrument calibration room for use in checking neutron survey meters. The shielded source, however, was producing a neutron field of 1-2 mrem/hr. Personnel stood in the field when calibrating other instruments. The licensee acted immediately to move the source.

The overall radiological controls program was found to be adequate to support initial criticality and low power testing. Several isolated weaknesses were corrected. Radiological controls personnel were found to be conscientious with a good understanding of ongoing and planned activities. An appropriate level of management and quality assurance department oversight of the program was evident.

7. Startup Testing

The low power physics test program, procedures and personnel qualifications have been reviewed previously and documented in inspection report 50-443/88-13. Observations made by the inspector during the inspection have been evaluated by the licensee and incorporated into the startup test program where applicable. The inspector concluded that the personnel, equipment and procedures were ready to conduct the low power physics test program. After a review of changes made to the test program since the last inspection, the inspector's conclusion that the licensee is prepared to conduct the low power physics test program remains valid.

8. Management Effectiveness/Assurance of Quality

The Nuclear Quality Group (NQG) is responsible for carrying out the Operational Quality Assurance Program (OQAP), the licensee's program that meets the applicable regulatory requirements of 10 CFR 50, Appendix B.

The NQG reports to the Vice President-Engineering, Licensing, and Quality Programs and currently has a staff of fifty-five pers. with five contractor positions approved. The NQG consists of the Quality Control, Audit and Evaluation, Quality Assurance Engineering and Quality Assurance Surveillance Sections. NQG management holds daily update meetings, attends the station plan-of-day meetings and the daily station manager's meeting.

With regard to the readiness for the commencement of initial criticality and the low power test program, the NQG prepared certain of its staff for these events. The NQG assigned two quality control (QC) personnel per shift (three shifts per day), one quality assurance (QA) surveillance senior reactor operator qualified person per shift (two twelve-hour shifts per day), and quality control engineering personnel on a "call-in" basis. NQG staffing will provide shift coverage until the completion of low power testing and is considered by the inspector to be adequate.

Preparations specific to low power testing for the assigned personnel included special briefings, development of inspector guidelines for use during the low power testing program, and review of the startup test

program test description and startup test procedures. Also, the assigned personnel were required to read and learn the appropriate sections of the technical specifications. The two Phase I licensee Self-Assessment Team recommendations that required NQG action before initial criticality were completed acceptably. These recommendations included NQG obtaining the requisite technical and operational expertise for the low power test program and additional training of the QA and QC personnel assigned to low power testing activities.

The licensee continues to perform self-assessment of its activities in order to assess its operational readiness and effectiveness. The Independent Review Team (IRT) is performing a self-assessment of the preparation for low power testing. The self-assessment is being performed in two phases. Phase I was completed and a report issued in October 1988. As a result of the IRT self-assessment, recommended Phase I NQG actions were developed that needed to be satisfactorily completed before initial criticality. The inspector determined that this has been done except for the NQG activities associated with the final acceptance testing of the emergency feedwater system which is scheduled to be completed before criticality. As mentioned above, action on those recommendations pertaining to NQG were completed. Phase II of the self-assessment will continue through low power testing; however, Phase II assessments accomplished to date are in the process of being reviewed with the functional area managers. The IRT determined that none of the currently identified Phase II recommended actions that may pertain to the NQG are required to be completed before initial criticality; therefore, none of these have any impact on low power testing. Based on a preliminary review of the identified Phase II recommended actions, the inspector agreed with that IRT determination.

9. Overall Team Conclusion Regarding Preparations for Criticality and Low Power Testing

Based on observation, inspection and review of the licensee's programs and operations, it was found that the licensee is adequately prepared for the approach to initial criticality and low power testing.

Operations conducted in preparation for plant heatup and the evolutions and testing performed during plant heatup were conducted by the licensee in accordance with applicable station procedures and technical specifications. The licensee displayed a conservative approach to operations and maintained discipline in the main control room. Control of access to the main control board area, communications, log keeping and performance of operational evolutions were good. Potential performance improvements were identified by the inspectors in the areas of communications in the main control room, timely log entries, and use of operations step lists. Plant maintenance, surveillance testing, engineering support and radiological controls were found to be good. The overall plant material condition was good. Sufficient management and NQG oversite was observed in all aspects of the facility operation. All recommendations for low power which were

developed during the licensee self-assessment process, have been completed. The startup test program personnel and procedures are adequate to conduct the low power test program.

10 Management Meetings

At periodic intervals during this inspection, meetings were held with senior plant management to discuss the findings.

The inspectors met with licensee representatives (denoted in Attachment B) at the conclusion of the inspection on June 1, 1989. The inspectors summarized the scope and findings of the inspection. No proprietary information was identified as being involved within the scope of the inspection.

ATTACHMENT A

MAJOR PLANT OPERATIONAL MILESTONES AND ACTIVITIES IN PREPARATION FOR LOW POWER TESTING AT SEABROOK STATION

| | | |
|---|---|---|
| May 18 | | Formal radiological control area procedures initiated. |
| May 18 | | Commission voted to issue low power license. |
| May 26 | 9:00a.m. | Low power license issued. |
| | 9:30a.m. | Independent Review Team recommended commencement of low power test program. |
| | 5:30p.m. | Began transition from zero power to normal operating procedures. |
| | 9:00p.m. | Removed boron boundary tags, valves unlocked and repositioned. |
| May 27 | 11:00a.m. | Managers met to complete signatures on the operational mode Change Check lists. |
| May 28 | 6:00p.m. | Started a reactor coolant pump (RCP) and allowed temperature and pressure to drift up. |
| May 29 | 7:00a.m. | Closed out containment. |
| | 8:21a.m. | Shift superintendent authorized change to operational mode 4. |
| | 9:51a.m. | Completed shift Technical Specification (TS) log for operational mode 5. |
| | 10:51a.m. | Completed shift TS log for operational mode 4. |
| | 11:00a.m. | Entered operational mode 4. |
| | 3:15p.m. | Completed transition from zero power to normal operating procedures. |
| | 10:12p.m. | Began dilution of the reactor coolant system (RCS) from 2100 ppm to 1550 ppm. |
| May 30 | 4:30a.m. | Completed boration of resin beds. |
| | 8:22a.m. | Recommenced heatup with four RCP's. |
| | 8:30p.m. | Established boron concentration of 1530 ppm. |

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|---|---|---|
| May 31 | 4:00a.m. | Opened main steam isolation valves. |
| | 4:40a.m. | Secured residual heat removal system, began removing heat with steam dumps to the condenser. |
| | 5:30a.m. | Established hydrogen overpressure on volume control tank. |
| May 31 | 7:40p.m. | Completed shift TS log for operational mode 3. |
| | 10:24p.m. | Completed over speed test of the turbine-driven emergency feedwater pump turbine with pump uncoupled. |
| June 1 | 5:54a.m. | Completed emergency core cooling systems (ECCS) check valve testing. |
| | 6:00a.m. | Completed ECCS lineup for operational mode 3 operations. |
| | 8:40a.m. | Shift superintendent authorized change from operational mode 4 to operational mode 3. |
| | 9:09a.m. | Entered operational mode 3. |
| June 2 | 5:00a.m. | Completed verification of ECCS valve line up. |
| June 3 | 12:34a.m. | Established normal operating temperature and pressure. |

ATTACHMENT B

PERSONNEL ATTENDING EXIT INTERVIEW ON JUNE 1, 1989

NRC Personnel

N. Dudley, Senior Resident
D. Haverkamp, Chief, Reactor Projects Section 3C
M. Markley, Resident Inspector
V. Nerses, Seabrook Project Manager
R. Nimitz, Senior Radiation Specialist
J. Trapp, Reactor Engineer

New Hampshire Yankee Personnel

S. Barraclough, Technical Project Engineer
S. Buchwald, QA Supervisor
J. Cady, Jr., ISEG Supervisor
R. Connolly, Jr., Lead Technical QC Inspector
R. Cooney, Maintenance Department Supervisor
D. Covill, Surveillance Supervisor
R. Cyr, Maintenance Manager
T. Feigenbaum, Vice President Engineering, Licensing and Quality
J. Grillo, Operations Manager
P. Gurney, Reactor Engineer Department Supervisor
M. Kenney, System Support Manager
G. Kline, Technical Support Manager
J. Kwasnik, Principal Health Physicist
W. Leland, Chemistry and Health Physics Manager
J. Malone, Operations Administrative Supervisor
J. Marchi, Nuclear Quality Group
R. Martel, Staff Engineer
D. McLain, Production Service Manager
D. Moody, Station Manager
T. Murphy, I&C Department Supervisor
V. Pascucci, QC Inspection Supervisor
J. Peschel, Operational Programs Manager
D. Perkins, Operational Programs
N. Pillsbury, Independent Review Team Manager
J. Rafalowski, Health Physics Department Supervisor
L. Rau, Reliability and Safety Engineer Manager
C. Roberts, Station Staff
R. Sherwin, Plant Services and Outage Manager
E. Sovetsky, Technical Project Supervisor
W. Temple, NRC Coordinator
G. Thomas, Vice President Nuclear Production
C. Vincent, QC Department Supervisor
L. Walsh, Operational Support
J. Warnock, Nuclear Quality Manager

ATTACHMENT C

PROCEDURES REVIEWED

Operating Procedures

| | | |
|---|---|---|
| OP 9.5, | Rev.2 | Alarm Response Guidelines |
| OP 10.7, | Rev. 1 | Operations Step List |
| OS 1000.01, | Rev.6 | Heatup From Cold Shutdown to Hot Standby |
| OS 1001.05 | Rev.3 | Reactor Coolant Pump Operation |
| OS 1001.08 | Rev.3 | Operation of the Pressurizer Relief Tank |
| OS 1002.07 | Rev.2 | Establishing a Hydrogen Atmosphere on the Volume Control Tank |
| OS1002.09 | Rev.3 | Resin Fill of Mixed Bed Demineralizers 2A and 2B |
| OS 1005.05 | Rev.7 | Safety Injection System Operation |
| OS 1013.06 | Rev.3 | Residual Heat Removal Train B Shutdown |
| OS 1015.19 | Rev.3 | Containment Closeout Procedure |
| OS 1019.13 | Rev.2 Change 2 | Steam Generator Wet Layup and Recirculation |
| OS 1030.01 | Rev.8 | Main Steam System Operation |
| OS1036.01 | Rev.5 Change 1 | Aligning the Emergency Feedwater System for Automatic Initiation |
| OS 88-1-12 | Rev.0 | Plant Transition from Zero Power to Normal Operating Procedures |

Test Procedures

| | | |
|---|---|---|
| IX 1660.872 | Rev.3 | R-6516 PCCW Loop "A" Radiation Monitor Operational Test |
| IX 1660.873 | Rev.3 | R-6516 PCCW Loop "B" Radiation Monitor Operational Test |
| OX 0901.17 | Rev.3 | Accumulator Boron Concentration |
| OX 1401.02 | Rev.3 | RCS Steady State Leak Rate Calculation |
| OX 1430.01 | Rev 2 Change 7 | Main Steam Isolation Valve Closure Test |
| STP 101 | Rev.3 Change 7 | Turbine Driven Emergency Feedwater Start Verification Test |

ATTACHMENT D

CONDUCT OF HEATUP

Areas Toured

--Control Room
--Reactor Containment Building
--Primary Auxiliary Building
--Emergency Diesel Generator Rooms
--Essential Switchgear Room
--Turbine Building
--Containment Penetration Area
--Residual Heat Removal Vaults
--Waste Treatment Area
--Hydrogen Monitoring Area
--Chemical and Volume Control System Area
--Service Water Building
--Cooling Tower Area

Evolutions Observed

--primary system heatup and pressurization to mode 3
--reactor coolant pump operations
--chemical and volume control system lineups
--residual heat removal operations
--boric acid mix tank recirculation and sampling
--demineralizer resin sluicing, filling, venting, and boration
--pressurization of safety injection accumulators
--reactor coolant system boron dilution
--main steam isolation valve closure tests
--steam dump operation
--steam generator recirculation

Equipment Performance Reviewed

--demineralizer temperature divert valve CS-TCV-129
--feedwater isolation valve FW-V39
--residual heat removal crossover valves RH-V21, RH-V14
--loop 1 RTD bypass flow indication
--emergency feedwater overspeed test
--reactor coolant pump vibration indication