U.S.NUCLEAR REGULATORY COMMISSION
REGION I

Docket/Report No.: 50-443/90-23 **License No.:NPF-86**

Licensee: Public Service Company of New Hampshire

Facility Seabrook Station, Seabrook, New Hampshire

Dates: October 15 - November 15, 1990

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Approved By: Ebe C McCabe, Jr 11/30/90
Ebe C. McCabe, Chief, Reactor Projects Section 3B Date

OVERVIEW

Operations: The reactor was operated in a safe and conservative manner. Eff[illegible] of inoperable heat tracing systems on system operability were not fully evaluated by the licensee.

Radiological Controls: The plant source term increased due to power operation. Adequate controls were evident during maintenance on contaminated equipment.

Maintenance/Surveillance: Work was well-controlled and conducted in accordance with procedures. Overtime appears to have been inadequately controlled and will be further evaluated by the NRC.

Security: Two fitness-for-duty events were properly dispositioned.

Emergency Preparedness: Areas requiring additional attention were identified by the licensee during an emergency drill.

Engineering/Technical Support: Completed and planned modifications were controlled. Several notable long and short term initiatives (e.g., design basis documentation, reliability centered maintenance) have been undertaken. Informal root cause analysis, licensee event report preparation, and control of minor modifications prior to closeout were noted by the NRC as being appropriate areas for improvement.

Safety Assessment/Quality Verification: The reportability of a potential 10CFR21 deficiency was properly evaluated.

TABLE OF CONTENTS

DETAILS

1.0 Summary of Activities

1.1 NRC Activities

Two resident inspectors were assigned. The 159 inspection hours included 27 backshift hours, of which 17 were deep backshift hours.

A resident inspector from Pilgrim Station was on-site periodically to respond to Congressional staff questions on welding and quality control.

A regional specialist was on-site from October 15-19, reviewing maintenance acti ities.

NRC operator license examiners were on-site from October 15-26, administering requalification examinations. The results will be recorded in Inspection Report 50-443/90-21.

1.2 Plant Activities

At the beginning of the inspection, the plant was in Mode 1 at 100% power. The plant was shut down on October 27 for repairs of the hydraulic actuator of Main Steam Isolation Valve MSIV-D (1-MS-V-92). The plant was taken critical the afternoon of October 29 and synchronized to the grid late that evening.

During power escalation on October 30, indication was received of a ground on the exciter. The turbine-generator was taken off-line and the reactor remained at low power while troubleshooting and repairs were conducted. The turbine generator was returned to service on November 2 and the unit was returned to full power.

On Nov er 9, the unit tripped from full power due to low level in a steam generator caused by a fail closed feedwater regulating valve. The plant was cooled to Operational Mode 5, Cold Shutdown, to repair primary power-operated relief valves and replace a reactor coolant pump seal.

2.0 Operations (71707, 71714, 92700, 92701, 92703, 94703)

2.1 Plant Tours

The inspector conducted daily control room tours which included reviews of operator log books, Technical Specification action statement tracking logs, tagout logs, and night orders. Assessments were made of Technical Specification action statements in effect, control room staffing, management oversight, operator awareness of plant conditions and alarms, and operator responses to abnormal events. No unacceptable conditions were noted.

On the inspector's plant tours, no equipment or structural problems were identified. Minor discrepancies were turned over to the licensee and adequately resolved.

2.2 Plant Events

During the week of October 15, 1990, a low level of tritium was detected in the secondary system. Measured levels were approximately $3x10^{-6}$ uCi/ml (microcuries per milliliter), which is below the 10 CFR 20 liquid release limit of $3x10^{-3}$ uCi/ml. The tritium levels appeared to be in equilibrium throughout the secondary system. No increase in secondary system radioactivity was detected by plant process monitors. Continued attempts to locate the source of the tritium were unsuccessful, including sampling for other fission products, sampling resin beds, and sampling of steam generators.

Several times during the week of October 22, Main Steam Isolation Valve MSIV-D indicated intermediate positioning. The Shift Superintendents took appropriate action by requesting Technical Support assistance, initiating a reactor shutdown, and making proper notifications. When MSIV-D was verified fully open, the reactor shutdown was terminated. Following continued problems with MSIV-D, the operators performed a controlled shutdown to Operational Mode 3, Hot Standby, to facilitate MSIV-D repairs.

The inspector observed portions of the reactor startup on October 28, 1990. When the containment evacuation alarm sounded during shutdown bank withdrawal, the Unit Shift Supervisor (USS) stopped the startup. Investigation determined that the evacuation alarm setpoint was not reset after the previous shutdown since power level was expected to drop well below 500 cps. Power level was at 200 cps when the startup began and reached the alarm setpoint before the procedural step requiring alarm bypassing was reached. The evacuation alarm was bypassed, appropriately, and the startup continued.

Later, Control Rod E-13 stopped at 216 steps when its shutdown bank reached 228 steps. The USS followed abnormal procedure OS 1210.06, "Misaligned Control Rod," realigned rod E-13 with its bank, and continued the startup.

Ten minutes after synchronizing the main generator to the grid on October 29, 1990, a ground alarm was received on the main generator exciter. The Technical Support group began troubleshooting activities. After the generator was taken off-line and the turbine secured, cuts due to fraying caused by contact with the shaft were found on two electrical cables, which were replaced and readjusted.

During a hydrazine addition to the secondary system on October 29, equipment problems and lack of operator awareness resulted in raising the PH to 9.9, which is above the Alert Level 1 limit of 9.2. Blowdown was maximized and PH was reduced below 9.2 within two days. The incident is being reviewed through the use of a Station Information Report.

No unacceptable conditions were identified. Operator responses were assessed as appropriate.

2.3 (Closed) Licensee Event Report (LER) 90-015-01: Turbine Trip Due to Ground Fault Relay Actuation

A reactor trip was caused on June 20, 1990 by actuation of a 180 Hz main generator ground fault relay manufactured by ASEA Brown-Boveri. The relay was modified to provide only an alarm function and further monitoring of the relay was performed.

New Hampshire Yankee (NHY) determined that the relay tripped when first activated at 30% power and reset at a higher power level. Based on actual readings, the actuation setpoint was revised from approximately 0.45 volts to 0.295 volts.

This trip function will remain bypassed based on the manufacturer's recommendation and industry experience. The voltage is not a directly referenced fundamental voltage but one which is apportioned between equivalent capacitances. As a result, the relay voltage can be affected by non-electrical influences such as dirt, humidity or condensation in the buswork. Therefore, the operation of the 180 Hz relay may not signify a ground fault in the generator winding. NHY will provide guidance to the operators in the alarm response procedure for the 180 Hz relay as to what parameters to monitor to verify that the main generator is not grounded. This issue is closed.

2.4 Cold Weather Preparat

The inspector reviewed Procedures ON 1490.06 and ON 1059.01, "Heat Trace Operations," walked down the heat trace panels with the system engineer and held discussions with operations personnel. The inspector determined that ON 1490.06 was properly completed.

The inspector noted that, due to the design of the local heat trace circuitry, heat trace malfunction alarms in the main control room are expected to be in "alarm" during normal operation. Auxiliary operators inspected local heat trace panels during their rounds and deficiency tags and work requests have been written for inoperable circuits. However, neither the operators nor the system engineer evaluated whether all systems have at least one operable heat trace system. NHY committed to develop a procedure for evaluating the adequacy of heat tracing operability.

3.0 Radiological Controls (71707)

The inspector observed the radiological controls established for entry into the containment and work on the power operated relief valve. No deficiencies were noted. Due to a crud burst, activity levels in the Containment and Residual Heat Removal Vault "A" have increased.

4.0 Maintenance and Surveillance (61726, 62703, 71707, 92701, 92703)

4.1 Maintenance

The inspector determined that maintenance was well-controlled, and that procedures and instructions appropriate to the work were available and used. In addition, there was good use of resources and information provided by Technical Support. Details of the major maintenance observed are provided below.

The inspector observed activities relating to the repair of the hydraulic system for MSIV-D. That work included the replacement of the solenoid valves, hydraulic pump, and pump discharge check valve for the hydraulic actuator. Work was controlled by Work Request 90W005391 and Procedure IS 0652.955, Revision 1. The inspector observed quality control inspection of the crimped-on termination lugs and Raychem sleeving for the new solenoid valves, the removal of the hydraulic reservoir and hydraulic pump, and the installation of the new pump. All steps were performed in accordance with the procedure and with the advice and assistance of the Technical Support System Engineer. After reassembly and testing, it appeared as though the pump discharge check valve was also leaking so it was replaced. Post-maintenance testing included 10% stroke testing and timing of slow and fast closure of the valve. All test results were satisfactory.

During the outage to repair MSIV-D on the weekend of October 27, the heater drain pumps were also maintained. The discharge head flange gasket on 1-HD-P-31B (Heater Drain Pump "B") was replaced due to leakage. The new gasket was cut and dovetailed to preclude the need to completely remove the pump (complete removal would have otherwise been required due to the pumps being a deep draft design). The mechanical seal for 1-HD-P-31A (Heater Drain Pump "A") was replaced due to excessive leakage. The motor was removed to permit replacement of the shaft sleeve. The inspectors observed the preparations for rigging the motor and inspected the old seal package after its removal.

The November 9 reactor trip was caused by a failure of an air fitting on Feedwater Regulating Valve 1-FW-FCV-520. An air volume booster relay had been originally mounted on the valve actuator. The booster relay was cantilevered off the actuator at the end of a short length of pipe. Vibration of the relay during operation caused a fatigue failure of the pipe nipple at the threads where it entered the fitting on the actuator. This created a loss of air pressure which resulted in the valve going completely shut. The loss of feedwater flow to the "B" Steam Generator caused a low-low water level, resulting in a reactor trip.

To preclude recurrence, a minor modification (MMOD 90-660) was designed and implemented to move the booster relays off the actuators of all four feedwater regulating valves and their associated bypass valves. The inspector reviewed the modification package, including the safety evaluation and design criteria. The installation of the equipment in the field was reviewed. No discrepancies were noted.

4.2 Surveillance

The inspector observed portions of routine surveillance 5828-A, "H_2 Analyzer Indication and Alarm Clarity," which was performed as a post-maintenance test following removal of dual channel capability of the main control board $\%H_2$ meter. The technicians followed procedures and coordinated with a health physics technician during installation of a temporary pressure gauge. No deficiencies were noted.

4.3 Management of Overtime

The inspector reviewed the weekly overtime hours of operations and maintenance department personnel for July and August, 1990. During these months, twelve workers worked over 72 hours in a seven day period and ten examples were noted where workers worked over 24 hours in a 48 hour period. Plant manager approval for the excessive overtime was not documented in eight cases. The adequacy of the control of overtime usage in accordance with the Station Management Manual (OPMM), Chapter 2, is considered an unresolved item (50-443/90-23-01) pending further NRC review of the extent and significance of this condition.

4.4 (Closed) Unresolved Item 50-443/90-05-03: Procedural Compliance for Scaffold and Temporary Sump Pump Control

The immediate corrective actions taken to correct programmatic problems in the control of scaffolds and temporary sump pumps were evaluated in NRC Inspection Report 50-443/90-13 and determined to be acceptable. The inspector noted no additional problems with the control of scaffolding in safety-related and non-safety-related areas. The corrective actions for the violation on configuration control issues were reviewed in NRC Inspection Report 50-443/90-17. That report concluded that New Hampshire Yankee had effectively identified configuration control program areas which require assessment.

This item is closed based on adequate control of scaffolding and the ongoing assessment and implementation of changes to the configuration control program.

5.0 Security (71707)

The inspector reviewed New Hampshire Yankee's (NHYs) disposition of two Fitness-For-Duty events and determined them to be appropriate.

On November 12, a United Engineers contractor employee failed the pre-badging breathalyzer test. His access to Seabrook Station was denied. In accordance with the NHY fitness-for-duty program, he has been barred from NHY-controlled property for one year.

On November 13, a NHY supervisor failed a random breathalyzer test. The individual had not entered the protected area, and the individual's normal work place is outside the protected area. An evaluation is being conducted to determine the scope of previous work review which will be required.

6.0 Emergency Preparedness (82301, 82302)

An emergency drill was conducted on October 27, 1990. The State of New Hampshire and the local New Hampshire towns participated. New Hampshire Yankee manned the simulator, the Emergency Operations Center (EOC), and the media center. The drill involved a hypothetical loss of coolant accident outside containment, with a significant radioactive release to the environment. The inspector observed portions of the drill in the EOC and monitored discussions between the drill coordinators immediately after the drill.

The inspector determined that the scenario effectively exercised the emergency response organization and forced command decisions to be made. The drill was used as a training exercise for "second team" players to gain experience in assigned positions. The drill controllers were self-critical and identified hardware, program, and scenario implementation enhancements. The controllers determined the overall performance of the players to be adequate.

The inspector concluded that the drill was an effective training exercise.

7.0 Engineering and Technical Support (71707, 37700, 37828, 92701)

7.1 Alternate Spent Fuel Pool Cooling System

The inspector reviewed Design Coordination Report (DCR) 90-042 which controls installation of an alternate spent fuel pool cooling (SFPC) system. DCR 90-042 is in the preliminary design stage and is scheduled for review by the Station Operations Review Committee (SORC) in early December 1990. The inspector reviewed the DCR with cognizant design and implementation engineers and conducted a field walkdown of the proposed installation. This major project includes the addition of:

-- A third SFPC heat exchanger with associated piping and valves.

-- A temporary non-safety-related cooling tower located adjacent to the Fuel Storage Building (FSB) to provide direct cooling for the third SFPC heat exchanger.

-- A safety grade path of cooling water from the service water cooling tower to the third SFPC heat exchanger.

The project was well organized. A Primary Component Cooling Water Task Team formed earlier in the year involved the appropriate working groups. Weekly meetings have been held since July 1990, with minutes taken.

External engineering organizations will participate in this project. Yankee Atomic has been contracted to evaluate the design of the new 12-inch service water piping in terms of its capability to withstand tornado wind and missile loads. United Engineers and Constructors (UE&C) has been contracted to perform calculations such as hydraulic analysis of the SFPC system to support the design. The cognizant design engineer has exercised control over these design interfaces. For example, Task Planning Document NHY-90-039-0 has been issued and will be further updated to define UE&C's scope of work.

Calculations were in progress to define the requirements for the temporary cooling tower specification, which will be included in DCR 90-042 when presented to SORC.

The cognizant design and implementation engineers were well versed concerning the project as evidenced by their response to various issues. For example, they noted that the third SFPC heat exchanger's condition is being safeguarded by layup under a nitrogen blanket at an offsite location. A physical inspection of the heat exchanger by New Hampshire Yankee is expected in December 1990.

New Hampshire Yankee intends to discuss the project in more detail with the NRC staff in the near future, after the design has been further developed. The inspector concluded that DCR 90-042 was proceeding in accordance with established engineering procedures. No unacceptable conditions were noted.

7.2 Modification Installation and Testing

A Design Coordination Report (DCR) and a Minor Modification (MMOD) were implemented in accordance with Procedure MT 3.1, "DCR/MMOD Implementation Plan." The inspector reviewed the two documents.

DCR 87-136, "Mid-Loop Operations Instrumentation Enhancements," implements Phase I of the instrumentation committed to in New Hampshire Yankee's response to Generic Letter 88-17, "Loss of Decay heat Removal." The DCR defines the installation for the wide range reactor vessel level indication and the suction pressure transmitters for the residual heat removal (RHR) pumps. In response to Generic Letter 88-17, narrow range hot leg level and core exit temperature instrumentation will be included in another DCR for Phase II of the instrumentation.

The inspector walked down the installation of the RHR pump suction pressure transmitters and had the following observations:

-- The installation of the pressure transmitter and its associated tubing was satisfactory.

-- The alarm setpoint for the transmitters was based on actual RHR pump operation data taken during Special Test Procedure 105, "Mid-Loop Operation Testing."

MMOD 90-556, "Startup Feed Pump (SUFP) Seal Water System Modification," changed the SUFP lube oil cooling water supply source from the pump discharge (sixth stage) to the first stage outlet. The lower pressure water supply source is expected to reduce the potential for the pipe erosion previously experienced.

Based on an independent walkdown of MMOD 90-556, the inspector noted that a flanged spool piece was installed in place of the flow indicator (CO-FI-4193) which was not available in late May 1990, when the work was completed. The use of the spool piece was documented on the work request used to install the modification but was not formally controlled.

New Hampshire Yankee prepared a temporary modification to control the spool piece until the flow indicator was installed. Also, a review was conducted of all MMODs installed in the last two years to identify any additional control problems. One additional problem, which concerned installation of a chain operator for a valve, was identified and corrected.

The inspector concluded that the DCR and MMOD were acceptably processed.

7.3 Engineering Organization, Training and Outstanding Work Items

The structure of the engineering organization has not significantly changed during the past year. A new engineer was recently added to the reliability and safety engineering group. Other changes have been minor and the overall engineering organization continued to be stable.

Training of the engineering staff met individual needs. The Engineering Assurance Supervisor tracked engineer training requirements developed mutually by the engineer and his or her supervisor. Since most of the staff is experienced, the training consists of retraining and upgrading elements. Within the past year, 25 technical support engineers received detailed systems training which consisted of 165 classroom hours. Orientation training was provided for new employees.

The Engineering Manager issued a weekly progress report concerning major engineering work items. Also, this report contains a summary of the engineering outstanding work items obtained from the licensee's computerized tracking system. A goal had been established to reduce this backlog to 1,200 items by the end of 1990. For the week ending September 28, 1990, this summary showed a backlog of 1435 outstanding work items categorized as follows:

DCRs	312
MMODs	72
Document Revision Reports	42
Requests for Engineering Services (RES)	758
Foreign Prints	107
Programs/Procedures	7
Other	137
Total	1435

This compares to backlog totals of 2400 and 1946 on January 1, 1990 and April 13, 19° respectively. This is on track to meet NHY's goal of 1200 items by the end of 1990.

The inspector sampled several RESs, and the engineering approaches to these RESs were determined to be satisfactory. For example, RES 89-371 requested Engineering to supply the minimum bend radii for 15 types of cable supplied by purchase order 113-22. Engineering acquainted the RES originator with this information from specification 113-22 but had not formally closed RES 89-371. The inspector concluded that RESs were being properly dispositioned.

7.4 Review of Licensee Event Reports (LERs) With Engineering Implications

(Closed) LER 90-018 - Reactor Trip Due to a Low Electrohydraulic Control (EHC) Oil Pressure Signal

The root cause of a reactor trip on a loss of EHC oil signal was determined to be vibration of EHC oil pressure switches mounted on the turbine stop valves. The pressure switch vendor's technical manual warns that spurious actuations may result from excessive vibration. The pressure switches were relocated to building supports to reduce the effects of steam line vibrations.

Corrective actions in the LER did not specify a requirement for engineers to consider vendor recommendations in the installation of new equipment. The inspector concluded that the LER corrective actions could have been more comprehensive but were acceptable.

(Closed) LER 90-021 - Group "A" Pressurizer Backup Heaters Not Operable During Loss of Offsite Power (LOP) Test

During the performance of Startup Test ST-39, Loss of Offsite power, Pressurizer Group "A" backup heaters could not be energized manually from the main control board (MCB) following actuation of the remote manual override (RMO) push button with emergency power sequence (EPS) load sequencing in progress. The Group "B" heaters performed normally. The control circuit wiring was checked, revealing a wiring discrepancy on the cable termination drawing that caused the circuit malfunction. Subsequent NHY investigation revealed that the same failure of the Group "A" heaters occurred in 1986 during the preoperational test and was misdiagnosed and left uncorrected.

The immediate corrective action consisted of a design change (MMOD 90-641) to correct the cable termination diagram and the field wiring. This was completed satisfactorily, with a retest simulating LOP conditions. Concerning long-term corrective actions, the licensee stated that two other reviews would be completed by September 28, 1990 as follows:

-- A review of test exceptions from preoperational tests that deal with diesel generator loading would be done to verify that no other test exceptions were closed out without adequate retest.

-- A design review of the wiring of any indefinite start loads on the diesel generators would be done to assure that a wiring error similar to that for the Pressurizer Backup Heater Group "A" does not exist in any other circuit.

The review of test exceptions from preoperational tests concerning diesel generator loading was completed satisfactorily on September 27, 1990. Engineering Evaluation 90-43, approved on September 21, 1990, documented the review of electrical drawings associated with the EPS wiring of indefinite start loads connected to the diesel generator. The review found no wiring errors that could result in misoperation of equipment similar to that observed for Pressurizer Backup Heater Group "A."

7.5 Root Cause Analysis

The inspector discussed with licensee personnel the use of root cause analysis for problems at the plant and component levels. Comprehensive root cause analyses are being performed by the reliability and safety engineering section in response to requests from the Station Manager. However, most plant problems are addressed at the system engineer level and the inspector noted no structured method for communicating and identifying root causes of problems resolved at lower levels of the station organization. The Technical Support Manager stated that such problems are discussed informally by the system engineers in the work place and at station working group meetings.

The inspector noted that informal root cause analysis in the Technical Support area is being reviewed by NHY. No unacceptable conditions were identified.

7.6 Engineering Initiatives

The inspector discussed with the Engineering Manager and the supervisors reporting to him various initiatives recently completed, undertaken or planned. The Reliability Centered Maintenance (RCM) and the Design Basis Document (DBD) programs were the Engineering Manager's top priorities.

An RCM program document was issued in July 1990 by the Reliability and Safety Engineering Group. This document describes the license's methodology and philosophy of identifying components and systems important to safety and developing an associated optimized maintenance strategy that is appropriate to their failure consequences and characteristics. Engineering and station procedures are being prepared to define additional guidance for program implementation. The initial list of plant systems to be included for RCM evaluation includes 20 systems. In establishing the priority for conducting these evaluations, the licensee considered probabilistic safety studies, maintenance history and operational difficulties. The diesel generator system is the first evaluation to be conducted and the system analysis is scheduled for maintenance review at the end of October 1990. The Emergency Feedwater System evaluation is also in progress. While both of these evaluations are being performed internally, the licensee intends to utilize outside contractors to augment their own expertise. Current plans are for the completion of four systems per year.

Implementation of the DBD program is being achieved through the preparation of individual system or program DBDs in accordance with Engineering Procedure 34005, "Preparation and Control of Design Basis Documents." The DBD is a summary of the design bases with source references and rationale for the particular system or program.

The DBD program was initiated about two years ago to ensure systematic retention and updating of design basis information. Several DBDs have been completed for items such as fire protection and equipment qualification. Various DBDs are currently in progress for systems such as feedwater, condensate, heater drains, service water and component cooling water. The licensee expects to complete the initial DBD effort in about three years.

Engineering has completed a check valve design review to address industry concerns regarding check valves similar to those identified in NRC Information Notice 86-01. This design review, Engineering Evaluation 90-42, was conducted by the Yankee Nuclear Services Division at the request of and as controlled by the Engineering Manager. It included a review of 241 valves from 24 systems. This information is being used by the Technical Support group in procedures being developed for monitoring the performance of these check valves. These procedures and associated activities will be an integral part of the preventive maintenance program for these check valves.

The inspector noted that these are recent developments in the check valve program and that it would be premature to assess Engineering Evaluation 90-42. However, it appears to be a reasonable approach to a complex issue. Also, the licensee appears to be well postured to make future check valve program changes because it is represented on the Nuclear Industry Check (NIC) Valve Group by members of the Technical Support Group.

7.7 Technical Support Initiatives

The inspector held discussions with Technical Support personnel on the status of several long-term projects. The plant has been experiencing pressure and flow oscillations in the heater drain system since initial power escalation. These oscillations result in pressure oscillations at the steam generator feed pump suctions. Technical Support has been tracking the issue and investigating the causes. Several potential problems have been identified, including pressure surges in the Moisture Separator Reheaters (MSRs) caused by turbine control valve oscillations, level oscillations in feedwater heaters, and inadequate venting of MSR shell-side drains. The heater drain system has been modeled in a computer simulation. The model was adjusted to obtain responses similar to those observed during Power Ascension testing. Using the model, a test procedure was developed (EN-91.14) to reduce flow through the No. 25 Feedwater

Heaters. Results of this test were being analyzed, but the cause of the oscillations does appear to be related to the No. 25 feedwater heaters. Procedures are being developed for additional testing to further define the cause. Contact has been made with the heater supplier (Westinghouse) and the system designer (United Engineering) for support and for information on equipment limitations.

During the plant shutdown the weekend of October 27, there was a water hammer in the Feed and Condensate System. The water hammer occurred while lining up the Startup Feed Pump (SUFP) to provide inventory to the steam generators. The water hammer damaged a pipe support in the non-safety-related SUFP discharge piping. Technical Support personnel reviewed this event in light of previous water hammer occurrences related to the SUFP. It was determined that the most probable cause was seat leakage, through a drain valve going to the condenser, causing voiding in the piping. The most desirable solution was determined to be a change to the normal system valve lineup. This modification would change a normally-closed valve to a normally-open valve to keep the line pressurized from the Steam Generator Main Feed Pump Discharge Header.

The Technical Support Group has been monitoring and trending data relating to the performance of the Reactor Coolant Pumps (RCPs). This data includes vibration, seal injection and return flows and seal injection temperatures. Over the past several months, there has been a gradual decrease in the seal return flow from RCP-1C. Westinghouse (the NSSS supplier) was contacted and provided information that, although uncommon, this phenomenon was not unknown. The decreasing flow is believed by Westinghouse to be due to the buildup of corrosion and erosion products (CRUD) on and around seal surfaces.

At the request of Westinghouse, seal injection flows and temperatures were deliberately altered and seal return flows monitored for data acquisition to allow further evaluation. NHY is changing the filter on the seal injection line to a smaller mesh size in order to prevent/reduce any flow of particulates into the seals. In addition, a decision was made to replace this mechanical seal during the outage following the November 9 reactor trip and to subject the seal to failure analysis (see Detail 4, Maintenance, for further discussion).

The inspector concluded that the Technical Support Group was being active in improving plant safety by identifying and correcting potential problems. No unacceptable conditions were found.

7.8 Independent Reviews of Engineering Activities

Examples of Engineering activities reviewed by independent groups in the past year follow.

-- An emergency feedwater (EFW) system independent review was conducted by Yankee Atomic personnel in January 1990. Recommendations were presented to licensee management for enhancement of the EFW system design.

-- A Quality Assurance audit of four major modifications was conducted in October and November, 1989. In addition to licensee QA personnel, outside technical consultants (Stone and Webster) and Independent Safety Engineering Group personnel participated. The audit was modeled after NRC Safety System Outage Modification Inspections. The four design change packages selected were:

    (1) DECR 86-709, Control Building Ventilation Modifications
    (2) DCR 86-320, Instrument Air Cross-Connect
    (3) DCR 86-481, Static Transfer Switches
    (4) DCR 87-311, Containment Spray and Residual Heat Removal System Interface

From these examples and the results of the licensee's self-assessment report dated September 11, 1990 concerning the Power Ascension Test Program, it appears that self and independent assessments were being constructively used to improve organizations.

8.0 Safety Assessment/Quality Verification

The inspector reviewed Engineering Evaluation 90-46, which addressed the reportability of organic contamination of a mobile demineralizer, causing elevated chlorides in the secondary side of the steam generators.

Ecolochem and their resin sub-vendor, Sybron Chemicals, confirmed that the source of the organic solvent (1,2 Dichloropropane) was the resin installed in the mobile demineralizer. This organic solvent is utilized during resin manufacturing and is supposedly processed out by rinsing. Quality Assurance checks of the mobile demineralizers did not include sampling the effluent quality for purgable organic carbons; only samples for non-purgable organic carbon were performed. The vendors plan to institute controls to prevent recurrence of solvent releases from the Ecolochem trailers.

The engineering evaluation concluded that there were no safety concerns based on the reduction of power to 30% and cleanup of the chlorides from the steam generators. Technical Specification 3.4.5, Surveillance Requirements for Inspection of the Steam Generator Tubes, and Technical Specification 3.4.6.2, Primary to Secondary Leakage Requirements, provide controls to assure steam generator integrity and were not violated.

The report concluded that the event did not violate the Atomic Energy Act of 1954, as amended, and did not result in a loss of steam generator safety function to the extent that there was a significant reduction in the degree of protection provided to the public health and safety. Thus, this event did not result in a significant safety hazard and was not reportable per 10 CFR 21.

The inspector concluded that the licensee's evaluation was acceptable.

9.0 Meetings

The scope and findings of the inspection were discussed periodically throughout the inspection period. An oral summary of the preliminary inspection findings were provided to the plant manager and his staff at the conclusion of the inspection.

Region-based inspectors conducted the following exit meetings.

Date	Subject	Report No.	Inspector
10-19	Engineering	90-23	Prividy
10-26	Operator Requalification	90-21	Bissett