U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket/Report No.: 50-443/92-03 **License No.:** NPF-86

Licensee: Public Service Company of New Hampshire
New Hampshire Yankee (NHY) Division

Facility: Seabrook Station, Seabrook, New Hampshire

Dates: January 28 - March 2, 1992

Inspectors: N. Dudley, Senior Resident Inspector, Operations
S. Wookey, Resident Inspector
T. Cerne, Senior Resident Inspector, Construction

Approved By: _____ 3/17/92
William J. Lazarus, Chief, Reactor Projects Section 3B Date

OVERVIEW

The Operations Department safely operated the reactor plant. The operators responded well to the contamination of the diesel fuel oil tank and to the actuation of the High Energy Line Break system due to heat from an improperly positioned welding machine.

The battery 60 month discharge test was performed in a deliberate and controlled manner. Maintenance activities were initiated to enhance equipment performance and improve the effectiveness of plant operation.

Health Physics technicians and security guards performed routine activities without incident. A fire drill was conducted which provided good training to the fire fighters.

The Engineering Department determined that the Technical Specification acceptance value for residual heat removal pump flow was incorrect, and further investigations were initiated. The Boraflex neutron absorber program for the spent fuel storage racks was developed by knowledgeable personnel and reflected industry experiences with neutron absorber materials.

Excellent management support was provided to the Independent Safety Engineering Group. The total number of safety related welds was correctly determined.

New Hampshire Yankee conducted adequate periodic reviews of the effects of changes in the environs on public health and safety.

TABLE OF CONTENTS

DETAILS

1.0 SUMMARY OF ACTIVITIES

1.1 NRC Activities

Two resident inspectors were assigned. An additional inspector was assigned temporarily to address Congressional inquiries. Backshift inspections were conducted on 2/5 and 2/12. Deep backshift inspections were conducted on 2/2, 2/15, 2/16, 2/17, 2/23, 2/27 and 2/28.

On January 27-31, there was a region-based inspection of engineering. The results will be documented in NRC Inspection Report 50-443/92-02.

On February 12-14, there was a region-based inspection of security. The results will be documented in NRC Inspection Report 50-443/92-04.

On February 24-27, there was a region-based inspection of health physics. The results will be documented in NRC Inspection Report 50-443/92-07.

1.2 Plant Activities

The plant was operated at 100% power throughout the report period.

Effective March 13, Don Moody, the Station Manager, will retire from New Hampshire Yankee. William DiProfio, the Assistant Station Manager, will become the Station Manager. Richard Cooney, the Maintenance Manager, will become the Assistant Station Manager. Jerry Peterson, the Assistant Operations Manager, will become the Maintenance Manager.

2.0 OPERATIONS

2.1 Plant Tours

The inspectors conducted daily control room tours, observed shift turnovers, and attended plan-of-the-day meetings. The inspectors reviewed containment integrity, compliance with Technical Specification requirements, staffing, tagging orders, and safety system valve lineups. Routine tours were conducted of the buildings containing safety related equipment, the turbine building, the pipe chases, and the circulating water building. Minor deficiencies were discussed with licensee personnel and corrected.

2.2 Observation of Activities

On February 13, a High Energy Line Break (HELB) actuation occurred for the primary auxiliary building due to the two area thermocouples detecting the heat generated by a portable welding machine placed directly below them. The Chemical and Volume Control System letdown, the steam generator blowdown lines, and the Auxiliary Steam System isolated as designed. Operators placed excess letdown in service, reset the HELB actuation

signal, restored normal letdown, and secured excess letdown approximately half an hour after the actuation. A letter from the Maintenance Manager to all maintenance personnel described temperature elements and emphasized the need to recognize and consider appropriate precautions.

On February 21, while installing minor modification (MMOD) 91-654, which reduced the rod insertion limit alarm cutout setpoint, the operators questioned why the alarm setpoint was set four steps below the Technical Specification limit. The inspector reviewed the Updated Final Safety Analysis Report, Amendment No.8 to Operating License No. NPF-86, a letter from Westinghouse dated February 4, 1991, and the 10CFR50.59 review for MMOD 91-654. The inspector discussed the issue with operators and Engineering managers.

Amendment No.8 to the operating license changed Technical Specification 3.1.3.6 for the fully withdrawn rod insertion limit of Rod Cluster Control Assembly (RCCA) banks from 228 steps to 225 steps. The Amendment allowed periodic repositioning of RCCA banks to minimize localized RCCA wearing. The approval of the Amendment was based on the negligible reactivity of the RCCA banks at 225 steps, which positions the ends of the control rods 0.4 inches below the top of the active fuel.

The rod insertion limit (RIL) monitor is not a safety related system. The alarm cutout for control banks A, B, and C was previously set at 215 steps with a precautionary low RIL alarm set at 225 steps. The alarm cutout and the low RIL alarm were lowered by MMOD 91-654 to 221 steps and 211 steps, respectively, in order to reduce nuisance alarms when the rod control banks were placed at the fully withdrawn position of 225 steps. The reactivity of the control banks is essentially zero above 211 steps such that the lowering of the alarm cutout and low RIL alarm had no effect on shutdown margin or plant safety.

The inspector concluded that the questioning attitude of the operators resulted in a better understanding of the basis for the alarm cutout and low RIL alarm setpoints.

3.0 RADIOLOGICAL CONTROLS

The inspector conducted routine tours of the Radiological Controlled Area (RCA), inspected postings, reviewed radiation work permits, and verified locked high radiation areas were secured. Clearly defined barriers were established in support of the recirculation of the demineralized storage tank through the temporary ion exchanger located in the circulating water pumphouse. The RCA in the turbine building was reduced. Prior to moving area boundaries, a complete survey was done of the area to be released and controlled entry and access points were clearly established. The inspector verified local radiation monitoring equipment was in calibration with indication of daily operability verification by health physics. No deficiencies were noted.

4.0 MAINTENANCE/SURVEILLANCE

4.1 Maintenance

The inspector observed activities associated with work request 91-0045. The work request verified the torque reading on a fuse connection in the DC wiring panel while the line was deenergized as part of the battery discharge test. The possibility of a poor connection had been identified by thermography evaluation. Quality Control personnel witnessed the torque and verified the test instrument calibration. The as found torque reading was correct. Following the torque verification, during the battery discharge test, licensee personnel used thermography equipment to gather as left data on the fuse connection.

The inspector noted that accomplishment of the work activity in coordination with the infrequent deenergization of the DC system demonstrated good planning and scheduling. The activity illustrated the application of diagnostic equipment to maximize system performance since the temperature difference noted on the connection did not involve equipment reliability concerns. The work request planning and implementation action represented a commendable maintenance attitude.

The inspector observed work activities associated with the repair of main steam valve 396, a normally closed bypass valve around the steam supply to the turbine driven emergency feedwater pump. Scaffolding was prestaged at the work site and a safe steam line block alignment was observed. Maintenance personnel were knowledgeable of the task. Parts, tools, and procedures were available. Work request 92-0515 documented the replacement of the valve stem and disc assembly.

The inspector concluded that maintenance was performed in a professional manner. The applicable Technical Specification Action Statement was entered as required.

4.2 Surveillance

Station Batteries

The inspector observed the performance of major steps of procedure MX0506.05, "Station Battery Performance Discharge Test", monitored data collection throughout the test, and discussed the test method with personnel involved in the test. A quality control hold point verification was observed.

Adequate personnel and supervision were available to complete test setup, data gathering, and troubleshooting activities. The test equipment used was in current calibration. The individual coordinating the test was knowledgeable of expected results and halted the test immediately when the preestablished 700 amp discharge rate was not automatically achieved during the initial discharge sequence. Electrical prints and technical manuals were available

and used to support the troubleshooting effort. Maintenance personnel determined that cables on the test equipment resistance units were misoriented. The cables were properly oriented and the test was reinitiated.

A Quality Control inspector verify the calculation and programming of the battery capacity test system prior to the start of the discharge test. The individual cell readings for specific gravity, cell voltage and temperature were consistent within a narrow range. The electrolyte level in all battery cells was within the normal range following recharge. Good housekeeping practices were maintained throughout the multiple day test cycle.

The inspector concluded the Battery Discharge Test, which is required to be conducted on each battery every five years, was performed in a deliberate and controlled manner. Personnel were knowledgeable of the test configuration and expected results. Irregularities were noted and pursued to resolution, with the involvement of supervision. The battery performance met design expectations.

Diesel Generator Fuel Oil Tank

On February 13, during the monthly test of Diesel Generator (DG) A bulk fuel oil tank, the sample results exceeded the 10 mg/liter limit for total particulate contamination stated in Technical Specification Surveillance Requirement 4.8.1.1.2.e.1. Diesel Generator A was declared inoperable but remained available for use. Actions were taken in accordance with the Technical Specification Action Statement.

Additional oil sampling confirmed the out of specification particulate levels on DG-A fuel oil tank. The DG-B fuel oil tank particulate level was confirmed to be within specification. A portable oil filtration system was supplied by a contractor, and the fuel oil from DG-A fuel oil tank was filtered. A fuel oil sample on February 16 confirmed the fuel oil was within specification and DG-A was declared operable.

The Technical Support engineer determined that the source of the particulate was dirty oil from the injectors, injection pumps, and the engine internal lubricating oil system. The dirty oil was discharged into the 75,000 gallon bulk storage tank by the fuel oil drain line. A previous engineering test of the dirty oil system had determined that four liters of dirty fuel oil containing approximately 300 mg of solids would be returned to the storage tank during a one hour monthly diesel surveillance test. A chemical analysis, performed when a similar buildup of particles in the fuel oil occurred, determined the particles to be carbon which would not interfere with diesel generator operation.

The inspector observed the filtration operation. A temporary moat was established to ensure any leakage from the filtration trailer was contained. The fuel oil supply and return lines between the filtration trailer and bulk storage tank were routed to contain a possible line

failure within the fuel storage tank room and to minimize the impact on vital area controls. The inspector noted excellent attention to security details, visitor escort responsibilities, and recognition of the fuel oil tank as a foreign material exclusion area.

The licensee reviewed and approved Design Change Request (DCR) 90-0013 "Diesel Generator Dirty Fuel Oil Collection" which was planned to be implemented prior to completion of the second refueling outage. The design change involved the addition of a dirty fuel oil reservoir to each diesel generator fuel oil drain line to allow for collection and disposal of contaminated fuel oil. Bypass valves, level indication, and drainage capabilities were provided by the design.

The inspector reviewed the DCR and the associated 10CFR50.59 evaluation. The inspector concluded that the short term response to the fuel oil sample results was adequate to ensure compliance with Technical Specifications. The long term corrective action of installation of the dirty fuel oil reservoirs will eliminate a known source of particulate into the bulk storage tanks. The DCR 90-0013 included an evaluation of fire hazards associated with the change, maintenance considerations in the placement of components, and changes to the Updated Final Safety Analysis Report. The response to this event reflected a strong safety focus.

4.3 Improvement Activities

The inspector noted, through routine plant tours and discussions with station personnel, that several activities were preventive in nature. Additional ultrasonic tests were performed on condenser steam dump piping as a result of industry problems with wall thinning due to erosion and corrosion. No unacceptable conditions were found. A process card for level indication on steam generator "D" was replaced after several routine calibrations indicated a drift of card output. A major preservation effort was initiated for service water pipes and supports in the Primary Auxiliary Building. Additional lighting was added to the turbine building, and the turbine building, diesel generator building, and residual heat removal vaults were relamped.

The inspector noted other activities which were intended to improve program and plant performance. Current to pneumatic (I/P) converters from different vendors were bench tested to determine the most reliable converters to order for the atmospheric steam dumps actuators. A new priority code, LC (leakage contamination), was developed for use on work requests to identify repairs which had radiological significance. I&C supervisors reviewed the results of routine surveillance over the past two years to establish and document a basis for adjusting the frequency of some surveillances.

The inspector noted the use of a Vitec 653C digital clipboard vibration monitor during performance of a quarterly surveillance test on charging pump B. The digital monitor was intended to replace the IRD 810 analog vibration monitor which provided good accuracy but required training and experience to obtain consistent readings. The Vitec 653C reading on the motor bearing was high. Calibration of the Vitec was verified in the calibration shop and

an IRD 880 diagnostic monitor was used to verify the acceptability of the pump motor bearing vibration. The vendor suspected the incorrect reading by the Vitec was a result of the electromagnetic effect resulting from large motors in confined spaces. The Technical Support Department was working with the vendor to resolve the problem before relying solely on the Vitec monitors.

The inspector concluded that maintenance activities were being pursued to enhance equipment performance and to improve maintenance effectiveness.

4.4 Followup Items

The inspector reviewed the followup report on the cause of the loose slide link for the solenoid valve on Atmospheric Steam Dump Valve "D". The inspection of the slide link in April 1990 was a visual inspection only and no discrepancy was noted. No apparent work activities occurred on the slide link following the inspection. The report concluded that the problem with the slide link was an isolated case which warranted no further action. The inspector had no questions on the conclusions reached.

In NRC Inspection Report No.50-443/89-04, the Technical Support Department committed to assess the need for more frequent surveillance of motor heaters. The System Annual Performance Report issued on January 28, 1992 identified one motor heater failure during 1991. The Technical Support Department determined that no trend was developing in the number of motor heater failures and that the annual surveillance frequency was appropriate. The inspector noted the completion of the commitment.

As reported in NRC Inspection Report No. 50-443/91-34, Section 2.3, a secondary supply breaker to a nonvital bus tripped during pump starts on the bus. During the preliminary assessment, the cause of the failure appeared to be stripped threads on the set screw for the "C" phase of the short term trip device. During the subsequent evaluation, the licensee determined that the cause of the breaker failure was a tapered set screw for the "C" phase long term trip, which had backed out reducing the time delay to zero. Equipment fabrication was determined to be the primary cause of the event, with the root cause being improper assembly. The long time trip and dash pot assembly were replaced. The licensee changed Maintenance Procedure MX0507.02, "480V ITE Power Circuit Breaker Inspection, Calibration, and Testing" to clarify the time delay settings on the trip device and to note the possibility of the set screw loosening. The inspector concluded the root cause investigation process was comprehensive and thorough.

5.0 SECURITY

The inspector toured the protected area, noted the closure of vital area doors, observed access controls, noted that compensatory measures were initiated as required, and observed security guards conducting routine rounds. The inspector visited the Secondary Alarm Station and determined the security guard was knowledgeable of job responsibilities and aware of plant conditions which affected security. No deficiencies were noted.

6.0 EMERGENCY PREPAREDNESS

The inspector observed a simulated fire drill in the exhaust fan filter in the fuel handling building. Five fully dressed fire fighters and a Health Physics technician responded to the fire. Two drill evaluators and three security guards were posted in the fuel handling building. Good command and control was demonstrated by the brigade leader who maintained continual phone communications with the Main Control Room. Proper fire fighter fighting techniques were used while simulating opening of the exhaust fan filter door. Some equipment storage problems were identified by the fire fighters. The inspector concluded that the drill provided effective training.

7.0 ENGINEERING/TECHNICAL SUPPORT

7.1 Boraflex Monitoring Program

Boraflex is a trade name for the neutron absorber component of high density spent fuel storage racks used at Seabrook. The inspector reviewed Reactor Engineering Procedure RN1745, "Boraflex Monitoring Program Procedure," associated technical references and procedures, Section 9.1.2 of the Updated Final Safety Analysis Report, and discussed the program with the Reactor Engineer and his Department Manager. Storage of the spare Boraflex control coupons in the site warehouse was verified.

Yankee Nuclear Services Division assisted Seabrook in the engineering evaluation and design of a boraflex coupon monitoring system to assess the performance of Boraflex in the Spent Fuel Pool. During the development of the Program, industry data, NRC Information Notice 87-43: "Gaps In Neutron-Absorbing Material in High-Density Spent Fuel Storage Racks," the station specific spent fuel pool criticality analysis, and Electric Power Research Institute (EPRI) information were considered.

The testing program was developed to obtain data in sufficient quantity and quality to provide meaningful information regarding the performance of the Boraflex in the spent fuel pool environment. The program includes two sample coupon trains. The first train, consisting of sixteen coupons, models an accelerated exposure. The train was positioned in the center of irradiated fuel. On a periodic basis, the coupons in this train will be removed, non-destructively examined, and returned to the train. The second train, consisting of sixteen coupons, models the typical spent fuel rack exposure. At approximately five year intervals, a coupon will be removed from the second train and destructively tested. In addition, sixteen spare coupons were stored in the warehouse as control samples.

Each coupon installed in the spent fuel pool sample trains was less than 0.1 inch thick by 6.5 inches wide by 13 inches long. The coupon was sandwiched between two metal sheets in a window frame arrangement to closely model the actual configuration of Boraflex in the spent fuel racks. Both coupon trains were installed in the fuel pool, with the location identified on

the spent fuel inventory logs. Station Procedure RSO721, "Refueling Administrative Control," included reference to RN 1745 as an element to be considered when developing the sequence for spent fuel placement.

The Reactor Engineer receives spent fuel pool chemistry information on a weekly basis. Through his knowledge of industry experience with Boraflex he was sensitive to the silica concentration trend as a monitor of Boraflex performance.

The inspector noted that since the RN1745 procedure will be performed under the station work control process, appropriate interaction with other departments in implementing and documenting the Boraflex monitoring program should occur. The linkage between the Boraflex surveillance and the refueling control procedure provides guidelines to maintain the configuration for the Boraflex surveillance program. RN 1745 contained minimal detail regarding the specifications to be used to destructively examine the coupon. However, RN 1745 required that detailed specifications be developed prior to conducting the destructive testing. The inspector determined since the coupons will not be examined for several years it is reasonable for the licensee to expand the section in RN 1745 regarding specifications based on evolving EPRI standards and other industry data.

The inspector verified the spare coupons were stored in a dry, nonradiological environment in the warehouse. A copy of the receipt inspection data sheet was included with each coupon.

Human factors issues were considered in the development of the Boraflex surveillance program. For example, the numbering system for the coupons was unique for train 1, train 2, and the spares, also, the coupon trains were designed so the orientation of the trains could be easily verified as "notch or notches - North". Attention to these details during the design phase should minimize the potential for error during the program implementation phase.

The inspector concluded the Boraflex program had been developed by knowledgeable personnel to reflect industry experience and the Seabrook design. The coupons were designed to be representative of the actual fuel pool rack configuration. The Boraflex program should provide data to enable monitoring of the high density spent fuel pool rack performance and to verify subcriticality analysis assumptions.

8.0 SAFETY ASSESSMENT/QUALITY VERIFICATION

8.1 Weld Record Reverification Program Follow-up

As documented in NRC Inspection Report (IR) 50-443/91-34, section 7.2 and 7.3, the violations relating to incomplete radiographic records at Seabrook were closed. The licensee's conduct of a Weld Record Reverification Program (WRRP) had identified a total of four missing weld radiograph packages (one of which had been found missing prior to the initiation of the WRRP) out of all the field welds at Seabrook Station that were determined

require radiography by Code. All four welds were reradiographed during the refueling outage with the resultant radiographs and records reviewed and accepted by certified licensee and NRC film reviewers. Other administrative and paperwork problems identified during the WRRP were documented, corrected, and checked for accuracy by the licensee, and sample inspected by the NRC for completeness to verify the adequacy of corrective action and final record accuracy.

New Hampshire Yankee (NHY), by letters dated October 31, 1991 (NYN-91179) and November 5, 1991 (NYN-91184), informed the NRC of the discovery that the previous transmittal of the results of the WRRP had incorrectly identified the total number of field welds requiring radiography by Code to be 2669. Subsequently, a surveillance, implemented as planned by the WRRP quality assurance program, identified three additional welds that required radiography, bringing the total number of Code-required weld radiograph sets to 2672. The required radiographic records were determined to be available in the record files for all three of these welds. Therefore, the licensee concluded that this correction does not affect any previous weld related reviews and does not change the substance of any conclusions transmitted to the NRC as a result of those reviews.

NRC inspectors discussed these new WRRP findings with the licensee and requested that NHY provide both the root cause for the omission of the three welds from previous data results and the licensee's basis for confidence that other omissions do not exist. In NYN-91184, NHY identified the cause of the error to be an incorrect interpretation of a complicated design change, coupled with the fact that the NHY QA surveillance finding, which led to the discovery of the error, had not been incorporated into the WRRP database at the time that the final report of the WRRP results was submitted to the NRC. Furthermore, since the omission of the three welds was discovered by the licensee QA overview of the WRRP, NHY indicated that the comprehensive nature of these surveillance activities provided confidence that no other errors exist.

The NRC team inspection, performed by the team of the NRC Mobile NDE laboratory with certified radiographic reviewer contract support, was conducted and documented in IR 50-443/91-21. This inspection reviewed the adequacy of the WRRP and independently sampled both the final radiographic records, as well as radiograph quality. This NRC inspection team concluded that the final safety related weld radiographs, as well as the documents associated with these radiographs, comply with regulatory requirements and that no further analysis of the radiographs at Seabrook need be undertaken. Additional NRC review of the circumstances, cause and impact of the licensee identification of the three welds added to the WRRP database has not altered the previous NRC conclusion that the radiographic inspection and examination of weld record accuracy at Seabrook Station is now complete.

8.2 Residual Heat Removal Pump Flow Rate

On February 12, 1992, New Hampshire Yankee identified a procedure problem that had the potential to create a condition that alone could have prevented the fulfillment of the safety functions of the Residual Heat Removal (RHR) system. A four hour report was made pursuant to 10CFR50.72(b)(2)(iii) and a Licensee Event Report was initiated.

The inspector held discussions with Senior Managers and Licensing Department personnel. Technical Specification surveillance requirement 4.5.2.h.3 requires a full flow test of the RHR system following modifications which may affect flow. The flow rate was required to be greater than 2828 gpm. On May 16, 1990, during review of RHR surveillance procedures, an engineer noted a difference between the acceptance criteria and the Technical Specification requirement for the pump flow rate, and initiated a Request for Engineering Services (RES). No priority was placed on the RES and after engineering review and discussions with Westinghouse, Westinghouse issued a letter on August 27, 1991 which identified that the Technical Specification flow requirement should be 3868 gpm.

A Technical Specification Amendment Request was prepared and approved by the Station Operations Review Committee. The subcommittee of the Nuclear Safety Audit Review Committee (NSARC) which reviewed the Amendment Request determined that the flow test conducted in November 1989, after installation of suction line check valves in the RHR system, did not exceed the 3868 gpm limit for RHR pump B. The test procedure required throttling of the pump discharge valve to obtain a flow rate greater than 3500 gpm. The recorded flow was above 3868 gpm, however when the NSARC subcommittee corrected the flow for an assumed water temperature, the actual flow was below 3868. During the Emergency Core Cooling System injection test conducted on August 10, 1991, all flow rates exceeded 3868 gpm. The NSARC subcommittee concluded that the RHR system had always been operable, even though the recorded RHR pump "B" flow rate for the test in November 1989 was below 3868.

The Licensing Department determined the erroneous flow rate was probably entered in the Draft Technical Specifications in 1983, when it was converted from the Standard Technical Specification Revision 3 format to the Revision 4 format. The Licensing Department reviewed actions necessary to identify any similar errors in the Technical Specifications, to expeditiously resolve any engineering questions concerning Technical Specifications, and to expeditiously incorporate vendor information regarding Technical Specifications in procedures.

The inspector concluded that the RHR system had always been operable and the followup actions appear to be properly focused.

8.3 Independent Safety Engineering Group

The Independent Safety Engineering Group (ISEG) is an advisory body with no operational management authority. The inspector reviewed procedure NHY 11270 which details ISEG operation, the ISEG Manual, Monthly Status Reports for 1991, a Summary of ISEG Activities for 1991, and the qualifications of ISEG personnel. The Technical Specification and UFSAR requirements were reviewed. The inspector discussed ISEG activities and performance with the ISEG Supervisor and the Director of Quality Programs, and met the ISEG staff.

ISEG reviews during 1991 were performed from a safety perspective with broad scope and depth for various functional areas on issues or events originating on and off site. The ISEG group has been requested to provide independent assessment of significant station activities, for example, a review of the use of steam generator dams during the second refueling outage.

The ISEG Review Log was used to track the status of documents or topics under ISEG review. ISEG recommendations were forwarded through the Senior Management of the impacted departments. The responses to the recommendations were reviewed and resolved to ISEG's satisfaction before closeout of the item on the ISEG Review Log and the Station's Integrated Commitment Tracking System. All of the sample files reviewed contained a trackable chronology of the activities and reviews performed by the individual reviewer, the ISEG Supervisor, and the Senior manager involved with the ISEG recommendations.

The inspector verified staffing to be in accordance with the Technical Specifications. The qualifications of the ISEG staff exceeded the minimum requirements for experience with specific expertise represented in mechanical, electrical, chemical, and nuclear disciplines. The staffing was maintained at five full-time engineers with other qualified personnel rotating into the group to allow special assignments during the refueling outage. There has been staffing continuity over several years by key members of the ISEG organization. During the last year a member of ISEG participated as a voting member of the Nuclear Safety Audit Review Committee (NSARC) committee, Beginning in 1992, the ISEG Supervisor plans to present a summary of ISEG activities at the NSARC meetings.

The inspector noted that ISEG members were not diverted from their primary mission, for example, the amount of time spent by the ISEG staff in support of the NSARC function was indicated in the monthly reports and represented a relatively small percentage of the ISEG staff time. The inspector noted the ISEG organization accomplished the independent safety oriented advisory function intended by Technical Specifications.

The inspector concluded that there was excellent management support and credibility given to the ISEG function. The voting status of the ISEG member on the NSARC, and the review, acceptance and authorization for implementation by senior managers of the ISEG recommendations indicated the perceived quality of the ISEG effort.

8.4 Procurement of Safety Related Components

The inspector reviewed the New Hampshire Yankee Procurement Manual, a sample of completed safety related procurement packages, and the 1991 log of nonconforming items. Discussions with personnel involved in procurement, and tours of the warehouse, receipt inspection test area, and storeroom, including physical verification of select items, were included in the inspection scope.

Administrative controls for receipt of safety-related items were described in the Procurement Manual and supplemented by implementing procedures. Material receipt, inspection, and storage requirements were detailed with responsibilities defined.

Physical storage and identification of safety related materials awaiting receipt inspection was well controlled; all material was stored in a central location with individual red tags. The location was in close proximity to the receipt inspectors' offices and testing facilities. The receipt inspection testing laboratory area, with specialized dedicated equipment, was a strength.

Materials stored in the warehouses were retrievable through the location identifier specified on the inventory tracking data base. Special storage areas, for example, environmental and chemical control areas, were available and well identified. Material tags were unique for items with shelf life considerations. The material labels were computer generated and bar coded. The storage of safety related piping, threaded rod, boric acid, lubricants, instrument boards, and boraflex coupons was observed.

A sample of completed work packages (91QA949, 90QA1265, 90QA74, and 91QA958) was reviewed. These packages covered materials with shelf life restrictions, high turnover volume, chemical limitations, or special application. The packages were complete and included certificates of compliance, receipt inspection documentation and results of an audit of the vendor. An Inventory Working Foreman was familiar with the work package requirements and provided an overview of the process to resolve nonconforming items using examples from 1991.

The inspector concluded that the receipt, storage, and handling of safety related equipment and materials was controlled and implemented effectively. Stored materials were traceable to procurement documents. The warehouse conditions were ample, storage conditions were maintained, and access was limited to authorized personnel.

8.5 Non-Compliance With Technical Specification Action Requirements: LER 92-01 (Closed)

The inspector reviewed Licensee Event Report (LER) No.92-01, submitted on February 28, 1992 and Station Information Report 92-001. On January 28, 1992, the Wide Range Gas Monitor (WRGM) was removed from service to investigate a spiking problem on the noble

gas activity monitor. The WRGM, including its normal iodine and particulate sampling pump remained running but was declared inoperable. An auxiliary sample pump was placed in service to meet the continuous sampling requirements of Technical Specification 3.3.3.10 "Radiological Gaseous Effluent Monitoring System," action statement 35.

At 5:05 a.m., on January 29, 1992, a Chemistry Technician discovered the auxiliary sample pump was not running as indicated by a lack of sample flow. The technician returned to the area with a replacement sample pump but found the original sample pump was running. The sample flow was verified again later in the morning. The auxiliary sample pump was replaced at 9:03 a.m. and inspected. A loose electrical connection to the cooling fan was discovered which prevented the fan from operating, resulting in the auxiliary sample pump periodically tripping on high temperature. When the thermal overloads reset, the auxiliary sample pump would restart and run until it again tripped on high temperature.

The loose cooling fan connection was corrected. A procedure change was initiated to check for cooling fan operation during the periodic calibration of the auxiliary sample pump. The event was reported pursuant to 10CFR50.73(a)(2)(i) for the periods that the auxiliary sample pump was not operating. A review of the WRGM database indicated that there were no abnormal radiological conditions during the event.

The inspector determined the information contained in the LER was complete and that the conclusions reached were acceptable. This LER is closed.

9.0 CHANGES TO THE ENVIRONS: TI 2515/112

9.1 Scope

The inspector conducted a review of New Hampshire Yankee's (NHY) programs for evaluating public health and safety issues resulting from changes in population distribution or in industrial, military, or transportation hazards that could arise on or near Seabrook Station. The inspector reviewed Sections 2.1, 2.2.1 and 3.5.1.6 of the Preliminary Safety Analysis Report (PSAR), the FSAR, the Updated Final Safety Analysis Report (UFSAR), the latest aircraft hazard analysis, and the Off-Site Hazardous Chemical Analysis Update. The inspector held discussions with personnel involved in preparing the UFSAR and the Seabrook Station Evacuation Study. New Hampshire Yankee has not established a formal comprehensive program that evaluates all changes to the environs. Specific programs have been established to meet license requirements and to evaluate major changes to the population. NHY conducted a formal analysis following an unexpected occurrence of a fire in an off-site chemical storage building which had not been considered in the original FSAR.

9.2 Updated Final Safety Analysis Report

The UFSAR was submitted to the NRC in May, 1991, within 24 months of the issuance of the low power license. The UFSAR section 2.2, "Off-site Hazards," had previously been revised in 1982. Section 2.2 of the UFSAR incorporated changes to the hazardous material used in businesses within a five mile radius of the station and the increased number of tank truck shipments of hazardous gas on interstate highway 95.

The individual who managed the UFSAR program held a Bachelor of Science (BS) degree in Geology and had 15 years engineering experience. He was supported by a hydrology engineer who held a BS degree in Civil Engineering and had 10 years experience, and by an engineer who held a BS degree in Meteorology.

9.3 Demography

The initial demography study for Seabrook Station was submitted to the NRC on March 30, 1973, as part of Chapter 2.1 of the Preliminary Safety Analysis Report. The study was updated in Amendment 45 to the FSAR which was submitted in June 1982. The demography data in the FSAR was not updated as part of the UFSAR, based on guidance provided in NRC Generic Letter 81-06.

The most current population data was provided in the Seabrook Station Evacuation Study which was a supporting document for the New Hampshire Radiological Emergency Response Plan (NHRERP). The Station Evacuation Study was completed in 1987, updated in 1989, and was under review based on 1990 census data. The Emergency Response Organization planned to periodically review the population changes, update the Station Evacuation Study as necessary, and modify the dose assessments and decision making procedures in the NHRERP.

The Evacuation Study was conducted by a contractor who was experienced in conducting demographic studies.

9.4 Off-Site Hazardous Chemicals

Following an off-site chemical warehouse fire on March 12, 1988, NHY conducted a study which was reported in the "Seabrook Station Off-Site Hazardous Chemical Analysis Update." The study evaluated the toxic hazards and expanded the scope of the report to reevaluate the hazards of stored industrial chemicals and transported hazardous chemicals.

The fire occurred in a chemical storage warehouse within a mile of the main control room air intake. Approximately 1,200 chemicals, most in small quantities, were stored in the warehouse. A conservative estimation was made of the toxic chemicals that potentially could have been released to the atmosphere. An air quality dispersion model was employed to estimate the worst case concentration of the chemicals in the Main Control Room. The

resulting concentrations were below the Immediately Dangerous to Life and Health (IDLH) levels established by the National Institute of Occupational Health and Safety. The study was performed by a Senior Scientist working for Environmental Services (ENSR), a contractor for Yankee Atomic Electric Company. The Senior Scientist who conducted the study held a Doctor of Philosophy Degree.

The initial study of Off-site Chemical Hazards was submitted with the Preliminary Safety Analysis Report on March 30, 1973. The study was updated by Amendment 44 to the FSAR which was submitted in February 1982. The updated report was prepared using guidance from NRC Regulatory Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," NRC Regulatory Guide 1.91, "Evaluation of Explosives Postulated to Occur on Transportation Routes Near Nuclear Power Plants," and NUREG-0800, "Standard Review Plan."

After the fire in the chemical warehouse, NHY updated the FSAR study by surveying the directories of manufacturers for Massachusetts and New Hampshire, and by reviewing public information submitted to local and state authorities by companies regarding the presence of specific chemicals. A total of 51 industries within a five mile radius of the plant were identified that stored or used hazardous chemicals. Fifteen of the industries were further investigated and six were considered as potential hazards due to the quantities of hazardous chemicals involved. Each of these six industries were reviewed with regard to the analysis performed in FSAR, Section 2.2, and new data obtained during the investigation. The report concluded that all manufacturers possessed limited quantities of hazardous chemicals or were at distances far enough away from the Main Control Room air intakes not to affect Main Control Room habitability. The information obtained by the analysis was incorporated in Section 2.2 of the UFSAR.

Studies performed of hazardous chemicals transported by railroad and highways were contained in the original FSAR and determined that an accident involving a chlorine tank truck could result in a buildup of toxic levels of chlorine vapors in the Main Control Room. The original studies were revised in December 1988. No changes had occurred to railroad transportation. However, the number of chlorine tank truck shipments had increased slightly and the probability of an accident increased slightly from 2.8×10^{-7} per year to 3.2×10^{-7} events per year. Both probabilities meet the regulatory objective in NUREG-0800, "Standard Review Plan," of an acceptably low probability of approximately 10^{-7} events per year. The results of the new analysis were incorporated into section 2.2 of the UFSAR.

The major contributor to the updated off-site hazardous chemical analysis and the hazardous chemical transportation analysis held a Master's Degree in Meteorology, had been a registered meteorologist for 17 years, and was certified as a Master Hazardous Material Manager by the Institute of Hazards Management.

9.5 Aircraft Hazard Analysis

NUREG-0896, "Safety Evaluation Report Related to the Operation of Seabrook Station Unit 1 and 2," dated March 1983, Section 2.2.1 required New Hampshire Yankee to review the frequency of flight operations and the type of aircraft using Pease Air Force Base, located 12 miles from the site, every three years. The latest report was issued on May 10, 1989 and concluded that the aircraft hazard analysis presented in FSAR Sections 2.2.1 and 3.5.1.6 continued to be bounding. The conclusion was based on the reduction in the number of flights and the lower flight crash frequency for FB-111A aircraft.

Information contained in the "Draft Environmental Impact Statement" for Pease Air Force Base, which was issued in February 1991, was used as a basis for validating flight information in the UFSAR. The requirement to conduct an evaluation of the flight operation frequency every three years was tracked on the Integrated Commitment Tracking System and was assigned to the Director of Licensing Services who was also responsible for updating the UFSAR.

The individual who conducted the review had 24 years service with the Air Force and held a Masters Degree in Statistics.

9.6 Summary

The inspector concluded, based on the reviews conducted during licensing of the facility, the study conducted in response to the chemical warehouse fire, and established programs for review of demography and aircraft flights, that NHY has conducted adequate periodic reviews of changes in the environs to assure public health and safety. The inspector determined that the evaluations and analyses were conducted by qualified individuals.

10.0 MEETINGS

The scope and findings of the inspection were discussed periodically throughout the inspection period. An oral summary of the inspection findings was provided to the Plant Manager and his staff at the conclusion of the inspection period.

Region-based inspectors conducted the following exit meetings during this report period.

DATE	SUBJECT	REPORT NO.	INSPECTOR
January 31	Engineering	92-02	L. Prividy
February 14	Security	92-04	R. Albert
February 27	Health Physics	92-07	S. Sherbini