September 24, 1999

Mr. Ted C. Feigenbaum
Executive Vice President and Chief Nuclear Officer
Seabrook Station
North Atlantic Energy Service Corporation
c/o Mr. James Peschel
P.O. Box 300
Seabrook, NH 03874

SUBJECT: NRC INSPECTION REPORT NO. 50-443/99-10
(CORRECTIVE ACTION PROGRAM EFFECTIVENESS)

Dear Mr. Feigenbaum:

This letter transmits the results of the NRC team inspection conducted at the Seabrook Nuclear Station during the period July 26-30 and August 9-13, 1999. The purpose of the inspection was to review the effectiveness of the corrective action program using NRC Inspection Procedure 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems." The inspection was completed on August 13, 1999, and the inspection results were verbally communicated to your staff at an exit meeting held at the station that day.

Overall, the inspection team determined that NAESCO's program for identifying, resolving and preventing problems has improved since the last 40500 inspection was conducted at Seabrook in August 1997. Of particular note was the significant decrease in the backlog of open evaluations and corrective actions resulting from various program improvement initiatives. NAESCO was found to have a good problem identification process with a low threshold for identifying issues and high volume input. The timeliness of disposition of adverse condition reports (ACRs) has improved as well as the tracking, trending, and evaluation of findings. Safety systems reviewed by the team exhibited good material condition. No significant system hardware discrepancies, operating concerns, or program deficiencies were noted that were not previously identified by NAESCO and included in the station's ACR program.

Notwithstanding, the above improvements, several longstanding areas for improvement were identified. In particular, the effectiveness and timeliness of corrective actions continue to be areas for improvement in that recurrent problems continue to be identified necessitating issuance of additional ACRs for matters such as ineffective corrective actions. Also, overdue corrective actions and evaluations were identified indicating apparent personnel accountability concerns and a need for continued management attention to this area.

NAESCO has taken action on the above matters to further review and identify areas for additional improvement. Since these efforts were underway at the time of the inspection, the effectiveness of these initiatives has yet to be demonstrated and will be reviewed during future inspections.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the Enforcement Policy. The NCV consisted of two examples. The first example involved failure to promptly identify and take corrective actions for a condition adverse to quality associated with problems in identifying multiple training and qualification deficiencies as an adverse trend and reacting accordingly. The second example involved failure to assure that all deficiencies associated with air operated valves, an adverse condition identified to NAESCO via industry information, were identified and corrective actions taken to prevent occurrence of a failure at Seabrook. The NCV examples are further described in the subject inspection report. If you contest the violation or severity level of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with a copies to the Regional Administrator, Region I; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Vermont Yankee facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

Sincerely,

ORIGINAL SIGNED BY:

Wayne D. Lanning, Director
Division of Reactor Safety

Docket No. 50-443
License No: NPF-86

Enclosure: NRC Inspection Report No. 50-443/99-10

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B. D. Kenyon, President - Nuclear Group
J. S. Streeter, Recovery Officer - Nuclear Oversight
W. A. DiProfio, Station Director - Seabrook Station
R. E. Hickok, Nuclear Training Manager - Seabrook Station
D. E. Carriere, Director, Production Services
L. M. Cuoco, Esquire, Senior Nuclear Counsel
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D. McElhinney, RAC Chairman, FEMA RI, Boston, Mass
R. Backus, Esquire, Backus, Meyer and Solomon, New Hampshire
D. Brown-Couture, Director, Nuclear Safety, Massachusetts Emergency Management Agency
F. W. Getman, Jr., Vice President and General Counsel - Great Bay Power Corporation
R. Hallisey, Director, Dept. of Public Health, Commonwealth of Massachusetts
Seacoast Anti-Pollution League
D. Tefft, Administrator, Bureau of Radiological Health, State of New Hampshire
S. Comley, Executive Director, We the People of the United States
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REGION I

Docket No.:	50-443
License No.:	NPF-86
Report No.:	50-443/99-10
Licensee:	North Atlantic Energy Service Corporation
Facility:	Seabrook Generating Station, Unit 1
Location:	Post Office Box 300 Seabrook, New Hampshire 03874
Dates:	July 26-30 and August 9-13, 1999
Inspectors:	R. L. Nimitz, Team Leader, Senior Radiation Specialist George Morris, Assistant Team Leader, Reactor Engineer Craig Smith, Resident Inspector, Three Mile Island Laurie Peluso, Radiation Specialist
Approved by:	John R. White, Chief Radiation Safety and Safeguards Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Seabrook Generating Station, Unit 1
NRC Inspection Report 50-443/99-10

During the period July 26-30 and August 9-13, 1999, a team of inspectors conducted an onsite inspection of the Corrective Action Program at the Seabrook Station using the guidance of NRC Inspection Procedure 40500. The inspection evaluated the Corrective Action Program effectiveness over the period since the last NRC Corrective Action Program Inspection conducted in late August 1997. (Reference NRC Inspection Report 50-443/97-80, dated October 24, 1997). The results of the inspection were summarized at an exit meeting conducted at the station at the conclusion of the inspection on August 13, 1999. The team inspected six major areas of the Corrective Action Program as discussed and summarized below. Also reviewed and summarized below is North Atlantic Energy Service Corporation's (NAESCO's) initiatives relative to corrective action program enhancement efforts.

1.0 Corrective Actions and Corrective Action Process

The Adverse Condition Report (ACR) Program at Seabrook is a high volume, low-threshold program and station management continued to support issuance of ACRs at low thresholds. NAESCO experienced a voluminous amount of low level ACRs, due to the low threshold philosophy regarding adverse conditions. In general, corrective actions were completed in a timely fashion commensurate with the safety significance of the item. However, not all actions taken prevented recurrence of a similar or related problem and numerous overdue corrective actions and evaluations existed.

NAESCO initiatives over the past two years have resulted in a significant reduction in the backlog of both overdue corrective actions and evaluations. However, the current backlog indicates a need for enhanced personnel accountability and focus on backlog reduction. There was generally good tracking of ACR issues on a macroscopic basis, but the ACR data base showed marginal capabilities for tracking and trending, and assisting in the detection of adverse trends which resulted in other site organizations creating separate data bases for tracking and trending purposes. The various data bases used for tracking issues created tracking and trending challenges and the method to trend repetitive and low threshold items has not been consistent.

Overall, the Operations group made progress in reducing its backlog of open corrective actions but some longstanding overdue corrective actions still existed. The Maintenance group used the ACR process to document adverse trends including an adverse trend in Main Steam Line Isolation Valve (MSIV) system performance prompting development of a Maintenance Rule Improvement Plan. Overall, plant support groups demonstrated good performance in implementing the ACR program. The plant support groups appropriately issued ACRs for identified findings.

There was no formal training of station personnel on the ACR process either within general employee training initial or retraining lesson plans. There was an inconsistent understanding by personnel as to when to issue an ACR and inconsistent use of the program.

2.0 Problem Resolution

Safety Systems

Safety systems selected for review exhibited good material condition and those system engineers interviewed and accompanied on walk downs were knowledgeable of the present and historical status of their system. Problems found during walkdowns were being adequately identified either in the ACR or Work Request (WR) processes and the licensee had adequately addressed the initial safety significance, operability and reportability of issues in a timely manner.

Although problem resolution for the safety-related systems reviewed was adequate and overall, improvement and progress was noted in licensee response to degraded conditions, NAESCO continued to allow a backlog of overdue work requests and ACR programmatic corrective actions to increase. Based on longstanding material issues, weaknesses continued to be noted in timeliness of corrective action and continued focus was warranted on identification and response to degraded equipment (e.g., Post Accident Sampling System (PASS) panel, Radiation Monitoring System (RMS), Operational Experience (OE) response to vendor issues relative to concerns to Copes/Vulcan valve).

General Performance in Problem Resolution

Overall, NAESCO's resolution of problems was generally adequate. However, additional corrective action was sometimes required to complete the resolution of the problem. Generally, Operations was effective at resolving procedural and equipment related adverse conditions but was not effective at resolving human performance issues involving errors in the tagging program and component mispositionings.

Maintenance performance in the area of problem resolution was mixed. For example, although the maintenance rule improvement plan for the MSIVs was thorough and the corrective actions assigned appeared to resolve the outstanding issues with the MSIV actuator hydraulic system failures, performance on selected other longstanding equipment degradation issues was not as good.

In the area of engineering, the corrective actions for the B Service Water (SW) pump were not properly implemented resulting in a subsequent failure of the C SW pump and the corrective actions for PASS and radiation monitoring system were not timely in resolving longstanding deficiencies with these systems. The planned corrective action to monitor the C service water pump shaft vibration was not properly implemented resulting in an unexpected pump failure. There were problems with corrective actions for repeat operations problems for PAB fans and personnel response to problems with PAB fan testing. Corrective actions with high voltage inverter problem was narrowly focused. The revised plan for resolution of the DC surveillance testing was adequate. The Westinghouse AR relay resolution was very good but the potential cross contamination on the instrument racks was inappropriately closed following the first ACR review.

In general, the plant support groups have demonstrated adequate problem resolution. Root cause analyses were performed by Emergency Planning (EP) to resolve self-identified adverse

trends. Most actions taken to correct issues in Security and Chemistry have been effective, with the exception of PASS and RMS. However, a voluminous amount of ACRs and ACR extensions appears to hinder trending of repetitive issues and contributed to overdue or longstanding ACRs.

NAESCO identified that it was slow to recognize an adverse trend in personnel training and qualification issues. Also, immediate and interim corrective actions were not identified in the corrective action program, and a common cause analysis for numerous training issues had been open for over a year. NAESCO subsequently concluded that corrective actions were taken on individual issues but that additional corrective actions must await the results of its common cause evaluation. This failure to promptly identify, take and document corrective actions for this condition adverse to quality was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action". This example of a Severity Level IV violation is being treated as a Non-Cited Violation consistent with Appendix C of the NRC Enforcement Policy. The issue was entered into NAESCO's corrective action program as ACR No. 98-1530.

3.0 Operating Experience (OE) Review Program

Overall, NAESCO collected and distributed operating experience information to station groups for action and the station groups were using the information, as appropriate, to make program enhancements and prevent recurrence. However, some OE items were overdue for review in that applicability evaluations had not been performed consistent with procedure recommended guidance. This could result in NAESCO not taking prompt action on an important OE issue.

There was good use of OE by the operations group. NAESCO provided appropriate OE information to engineering with adequate engineering evaluations conducted and the engineering group opening ACRs as appropriate. One example was identified (i.e., instrument rack potential cross contamination) where a previous ACR and OE experience was not used in the evaluation of the problem resolution.

The plant support groups, including radiation protection, chemistry effluent and environmental monitoring, fire protection, security, and emergency preparedness, have demonstrated adequate review of operational experience (OE) items. In general, OE items were discussed at morning meetings and in routine continuing training. Plant support groups reviewed OE items for applicability and action. Corrective actions were adequate and OE items were managed in an effective and timely manner.

Use of OE by Maintenance was mixed. The team noted good use of OE in the development of the maintenance rule improvement plan for MSIVs. However, the team identified a longstanding OE recommendation for Copes-Vulcan AOV diaphragms that had not been fully acted on by NAESCO. The issue was a condition adverse to quality and involved industry recommend actions to perform preventative maintenance on AOV's to avoid their premature failure. NAESCO failed to take prompt action to evaluate the need for preventive maintenance activities on its total population of safety-related AOVs and implement and document corrective actions, as appropriate, to prevent failures. This is a second example of a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions." This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. The issue was entered into NAESCO's corrective action program as ACR 99-3429.

4.0 Self-Assessment Activities

NAESCO implemented a generally well defined self-assessment program. However, performance was mixed in that some departments had not established schedules, findings were not always entered into the ACR process, and evaluation of the effectiveness of the self-assessment process was not always performed. Operations performance in conducting self-assessments was mixed. There was no defined schedule for conducting periodic self-assessments of important aspects of the operations programs. ACRs were not consistently submitted for deficiencies identified during self-assessments and recommended corrective actions were not always acted on.

Maintenance performance in conducting self-assessments was generally very good. Assessments were self-critical and well documented. Results of self-assessments were shared among the various disciplines within the maintenance department.

Engineering self-assessments, conducted in response to the engineering self improvement plan, were a beneficial initiative and were producing good recommendations for improvement.

Overall, the RP, Chemistry, Environmental, Effluents, Emergency Preparedness, and Security, FP groups performed adequate self-assessments to evaluate each area.

QA audits were an effective element of the self-assessment process and were critical and thorough in evaluating station program areas. However, repetitive issues were noted in follow-up audits of program areas indicating lack of effectiveness in correcting problems. Also the repetitive issues (e.g., procedure adherence) indicated the QA program did not aggressively track and monitor corrective action issues identified in its audits to ensure deficiencies in its audits were properly resolved.

5.0 Onsite and Offsite Safety Review Committees

Station Operation Review Committee - SORC

The SORC was conducted with appropriate regard to safety and oversight of plant activities and performance of the SORC was adequate to meet minium Technical Specification requirements. However, areas for improvement were noted. SORC members did not always actively participate in the discussion of the items being presented and members were not always polled to seek approval or opinions on matters before the SORC. The Station Qualified Reviewer program (SQR) program was found to be operating in accordance with the Technical Specification charter.

Nuclear Safety Engineering Group (NSEG)

Although NSEG was implementing its station review requirements under the station Technical Specifications, there were limited instances noted where NSEG had performed independent evaluation of station activities and identified areas for improvement indicating NSEG was not being fully utilized to improve station corrective action program performance.

Nuclear Safety Audit Review Committee (NSARC)

Selective reviews identified that NSARC was implementing requirements as outlined in Technical Specifications. NSARC implemented numerous actions to improve its efficiency and effectiveness.

General Conclusion - Onsite and Offsite Safety Review Committees

Historical review indicates onsite and offsite safety review committees have not been fully effective in resolving lingering corrective action program weaknesses (e.g, human performance issues, mispositioning, tagging, degraded conditions, etc.). However, NAESCO has taken action to improve the effectiveness of safety review committees and the corrective action program in general.

6.0 Licensee Action on Non-cited Violations (NCVs)

Performance regarding corrective actions for NCVs was good. NCVs were entered into the corrective action program and corrective actions were implemented, as appropriate.

7.0 Corrective Action Program Enhancements

NAESCO has established and implemented numerous initiatives to improve its corrective action, human performance, and self-assessment programs. These initiatives have resulted in improvement in NAESCOs' programs in the aforementioned areas as well as its capabilities to track and trend performance data. Despite these improvements some lingering problems (e.g., issuance of ACRs for identified concerns, adequacy of corrective actions to prevent recurrence) continue in the corrective action, human performance, and self-assessment programs at Seabrook. NAESCO has initiated additional action to address these matters and further improve performance. Since these efforts are recent and were ongoing at the time of this inspection, their effectiveness could not be fully evaluated.

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Report Details

1.0 CORRECTIVE ACTIONS AND CORRECTIVE ACTION PROCESS

1.1 Corrective Action Program (CAP)

a. Inspection Scope (40500)

The team reviewed the corrective action program to verify that the licensee was appropriately identifying significant issues and implementing timely corrective actions which achieve lasting results. The team reviewed the adequacy of analyses for identified problems as well as licensee evaluations of equipment operability and reporting of identified problems. The team assessed the adequacy of assigned corrective actions, reviewed tracking and trending of identified items, and reviewed implementation of corrective actions. The team reviewed adverse condition reports (ACRs) in the areas of operations, maintenance, engineering, and plant support. ACRs in other areas were selectively reviewed. The team attended various scheduled station management meetings where ACRs were discussed, categorized, and assigned for evaluation.

The review included documentation reviews and follow-up discussions with individuals involved with the identification and resolution of the ACRs. The Team evaluated implementation of applicable station corrective action program procedures and quality assurance against criteria specified in 10 CFR 50, Appendix B, particularly Criterion XVI, Corrective Action.

b. Observations and Findings

b.1 General

The Adverse Condition Report (ACR) Program, a low threshold, high volume program, is the principal program for resolution of issues or concerns requiring evaluation and corrective action at Seabrook Station. Procedure OE 3.1 provides guidance for issuance and completion of an ACR and is supported by various other documents/procedures in the station's operational experience and reference manuals and corrective action group instructions. The program provides for documentation of items as adverse conditions; notification of station operations personnel for reporting and operability review purposes; cross discipline review of items in an ACR screening committee for initial significance level determination and prioritization; and categorization, re-review and prioritization of corrective action items by a Management Review Team (MRT) chaired by the Assistant Station Director.

Items entered into the ACR process are identified by a significance level (i.e, A, B, or C items) based on their perceived safety significance and prioritized (i.e., 1, 2, 3) based on an evaluation of the issues's perceived need for expeditious review and evaluation. Two major actions occur for ACRs. Depending on the perceived significance, various types of evaluations are performed for the issues or otherwise corrective actions are identified. Special procedures exist for event evaluations, cause and failure analyses, apparent causes, and plant nonconformances. In addition, procedures provide guidance for reportability and operability analyses. The evaluations and corrective actions are to be completed consistent with procedure specified completion dates (i.e., 180 days for corrective actions only; 60 days for event evaluation, root and common

cause analyses; 45 days for cause and failure analyses and plant nonconformance evaluations; and 30 days for apparent causes).

Once the item or concern has been evaluated, proposed corrective actions such as remedial, interim, or actions to prevent recurrence are identified which are then categorized into one of 9 commitment categories. The commitment categories principally drive the speed of item closure and management interest. Station management monitored on a weekly basis the status of items contained in 7 selected commitment categories (e.g., category M - actions to prevent recurrence). Every other week, reviews were conducted of ACR open item status and key performance indicators.

Various enhancements have been made to the program as a result of internal and external reviews to improve program performance. Of particular note was the efforts by a February 1998 Fix it now team and recent changes to station procedures to reduce the back log of open corrective actions and evaluations. The enhancements are further discussed in Section 7 of this report.

Since February 1998 there has been an approximate 75% reduction in open evaluations and about a 50% reduction in open corrective actions. As of the end of the inspection, there were 666 open corrective actions. However, 204 of the 666 open items were overdue (i.e., greater than 180 days old). Seven of the 204 over due items were being tracked by management as higher priority items. The remainder primarily involved programmatic (P) items associated with various station programs. These include such matters as evaluation of potential unmonitored release paths and valve preventative maintenance issues.

There were 102 open ACR evaluations of which 9 were overdue (as of August 13, 1999) (i.e., greater than 60 days old). These were lower significance level (B3) evaluations. Although, the licensee has made progress in reducing its backlog of overdue corrective actions and evaluations, the large number of overdue corrective actions indicates an apparent lack of personnel accountability and tolerance of overdue items. However, operability reviews were performed promptly as well as screening for reportability.

Station personnel were aware of the ACR process and would readily issue an ACR if warranted. Notwithstanding, there was no specific training of station personnel on the ACR process either in initial training or in requalification training. Further, personnel interviews indicated that there was inconsistency of personnel understanding regarding expectations for initiation and completion of ACRs and station department use of the program, as discussed later in this report, was inconsistent. ACRs were not consistently initiated, or have not been initiated in a timely manner for deficient conditions or processes, repetitive events or degraded conditions identified by the NRC or licensee reviews (e.g., self-assessments findings, emergency feedwater control valve problems, leaking pressurizer safety valve issues, and startup feed pump discharge vent leak issue). In some cases, work requests were initiated for items that appeared to be appropriate for ACRs.

Tracking and trending of items contained in the corrective action program was performed by the Corrective Action group. NAESCO had established key performance indicators to track and trend open corrective actions and evaluations. Although procedures discussed what constituted a repeat item, the teams review of open ACRs indicated special sections on the ACR, to identify whether the issue identified was recurrent, were not always completed.

NAESCO had in place and was continuing to enhance an extensive computer-based Performance Indicator Program (PIP) that contained important key indicators. This replaced a hard copy (Big Picture) type process in December 1998. Station management could customize their Key Performance Indicator (KPIs) menus to track indicators of importance. The program was being enhanced with additional KPIs including those of importance under the NRC's risk based inspection program. NAESCO also published a monthly Plant Health Report. NAESCO also maintained a "Top Ten List" which provided a list of the highest priority initiatives at Seabrook. Included in the list was the reduction of the work request and corrective action backlogs. NAESCO did not meet its goals for either work request or corrective action backlog reduction for 1998 and has carried over these goals to 1999. Although management reviewed selected categories, station goals for open ACR corrective actions (i.e., 400 open ACRs by the end of 1999) do not appear to promote focus of resources on risk significant ACRs.

NAESCO maintained multiple data bases dealing with problems and corrective actions including the ACR process, the work order process, the action item tracking system, and independent data bases maintained by other groups (e.g., engineering). The team found the ACR process had limited capability for identifying adverse trends in equipment or human performance. Adverse trends that had already been identified, such as clearance (tagging) errors and mispositioned components, were assigned "hot buttons" for tracking and trending purposes. However, the system was not set-up for easy identification of unidentified adverse trends within the ACR data base and the large number of data bases did not readily support rapid and efficient detection of repetitive events and adverse trends.

The lack of trend analysis capabilities in the ACR data base resulted in Engineering Technical Support creating a separate ACR data base for tracking and trending equipment deficiencies to support implementation of the Maintenance Rule. Technical Support also created a data base to track and trend work requests for the same purpose. The separate data bases created by Technical Support functioned well to support Maintenance Rule tracking and trending of equipment deficiencies.

NAESCO senior management has recognized these issues and has dedicated resources to improve the corrective action programs and process. Currently, a special task implementation team is reviewing a corrective action change management plan and benchmarking it against perceived industry top performers in the corrective action area. The area of corrective action program improvement is further discussed in Section 8 of this report. Due to the early stages of this effort it is unclear if these improvement initiatives will successfully resolve lingering concerns in the corrective action process at Seabrook.

The team's review and interviews of personnel indicated that because program procedures span multiple documents and are somewhat subjective, particularly with respect to the need/requirement to issue an ACR, the procedures were considered not user friendly and somewhat subject to interpretation.

In general, management has been involved in the corrective action program. For example, managers initiated, reviewed, and discussed ACRs with their respective department members. Managers and department members were willing to initiate ACRs to improve program procedures and practices.

b.2 Operations - ACRs

Operations department personnel actively participated in the corrective action process and routinely submitted ACRs. Corrective actions were generally appropriate and effective. Station management has focused resources on reducing the back-log of open corrective actions assigned to Operations. There were 34 open priority corrective actions assigned to Operations. This was down from a high of 75 open priority corrective actions in August 1998. However, seven of the open corrective actions were greater than 180 days, with the oldest being 976 days old. None of the seven were actions to prevent recurrence. Five of the seven involve programmatic enhancements. The two oldest concern programmatic changes to the site radiation data management system (SRDMS) and are awaiting a design change to the SRDMS computer system. The remaining are non-NRC external commitments. All seven had revised due dates prior to the end of this year. The team reviewed the list of open corrective actions and found no immediate safety significant issues.

b.3 Maintenance - ACRs

Maintenance generally used the ACR process for identifying equipment issues and material deficiencies. The team conducted a detailed review of selected safety systems to assess the use of the corrective action process for identifying and correcting adverse conditions. The systems reviewed included primary component cooling water, emergency feedwater (EFW), electrical inverters, DC electrical distribution, main steam isolation valves (MSIVs), and containment enclosure ventilation. The system reviews included a review of open and closed job orders, a review of ACRs and corrective actions written against the system, and a system walkdown accompanied by the responsible system engineer.

As a result of an adverse trend identified by the licensee in the performance of the MSIV hydraulic actuators, the system was entered into Maintenance Rule a(1) status in November 1998. Three ACRs and three work requests were written in 1998 that documented separate functional failures in the MSIV actuator hydraulic control circuit. ACR 98-3353 was written to document that the hydraulic actuators had entered the maintenance rule category requiring increased monitoring. This observation indicated appropriate monitoring by the licensee of component performance and use of the maintenance rule.

Some minor material deficiencies and leaks that had not been previously identified by the licensee were identified by the team. Work requests were subsequently written and entered into the work control system. The team questioned the consistency of the licensee's threshold for documenting adverse conditions using ACRs. The team noted that following the EFW system walkdown no ACR was written to document the valve packing leaks, however, an ACR was written to document a pile of dead bugs noted by one of the team members in the EFW pump room.

b.4 Engineering -ACRs

Review of engineering ACRs is discussed in Section 2.0.

b.5 Plant Support - ACRs

Plant support areas reviewed included radiation protection (RP), effluent monitoring and control, environmental monitoring, emergency preparedness, security, and fire protection.

From the Chemistry and Radiation Protection Corrective Action (CA) Look-ahead Report, dated August 1, 1999, 62 ACRs were open, and from the Emergency Preparedness (EP) and the Security CA Look-ahead Reports, dated August 3, 1999, eight and two ACRs were open, respectively. Many ACRs had multiple corrective actions for completion. Engineering work requests (EWRs) were generated, when applicable.

A sample of 1989/1999 open and closed ACRs were reviewed in Radiation Protection. The ACRs were determined to be completed generally consistent with applicable station procedures. The ACRs were properly prioritized and categorized, evaluations were completed as required, and applicable corrective actions were implemented. Of particular note was an effort by RP to review all radiation protection ACRs issued during the refueling outage to identify any adverse trends and initiate appropriate corrective actions. The radiation protection group had no overdue ACR corrective actions or evaluations as of August 3, 1999 and was tracking seven open evaluations and 36 open corrective actions.

A sample of 1998/1999 ACRs related to Chemistry, Effluents, Environmental; and EP indicated 4 ACRs remained open in Chemistry, 2 were open in Security, and 1 was open in EP. The majority of the ACRs generated were low significance and priority levels. In general, the correct level of significance and priority was assigned to identified deficiencies. Implementation of corrective actions were generally timely. For example, Chemistry initiated an ACR 99-1795 to note the inability to place steam generators "A" and "D" in wet lay-up as scheduled due to continuing valve work on associated systems during the recent outage. Also noted in the ACR, a plan had been established prior to shutdown and was not followed through, and other ACRs had been written for the same issue in previous outages. This ACR (99-1795) was assigned a significance level "B," priority "3". Corrective actions were recommended and the issue will be tracked in the next outage. ACR 98-1263, initiated by a quality assurance auditor, noted ineffective corrective actions taken in Chemistry to address an ACR generated as a result of a 1997 Quality Assurance audit. This ACR was assigned a significance and priority level of A2 to emphasize the importance of improving the performance of the Chemistry department. Emergency Preparedness assigned a significance and priority level B-2 to

ACR 98-2438 because two primary duty responders did not respond to the pager notification during an Augmentation Drill and a trend was noted regarding reduction in response timeliness of Emergency Response Organization (ERO) personnel. Overall, the level of significance and priority assigned to identified deficiencies was appropriate and the time required for resolution was adequate.

Fire protection personnel had no overdue ACR corrective actions or evaluations. The review of ACRs indicated the corrective actions were initiated in a timely fashion. In most cases procedure changes or other actions were taken during the evaluation of the ACR issue and presented to the MRT for review.

c. Conclusions

The ACR program at Seabrook is a high volume, low-threshold program and station management continued to support issuance of ACRs at low thresholds. NAESCO experienced a voluminous amount of low level ACRs, due to the low threshold philosophy regarding adverse conditions. In most cases, corrective action was completed in a timely fashion commensurate with the safety significance of the item. However, not all actions taken prevented recurrence of a similar or related problem and numerous overdue corrective actions existed.

NAESCO initiatives over the past two years has resulted in a significant reduction in the backlog of both overdue corrective actions and evaluations. However, the current backlog indicates a need for enhanced personnel accountability and focus on backlog reduction. There was generally good tracking of ACR issues on a macroscopic basis, but the ACR data base showed marginal capabilities for tracking and trending, and assisting in the detection of adverse trends which resulted in other site organizations creating separate data bases for tracking and trending purposes. The philosophy and the various data bases used for tracking issues created tracking and trending challenges. The licensee's method to trend repetitive and low threshold items has not been consistent.

Overall, the Operations group made progress in reducing its backlog of open corrective actions but some longstanding overdue corrective actions still existed. The Maintenance group used the ACR process to document adverse trends including an adverse trend in MSIV system performance prompting development of a Maintenance Rule Improvement Plan. Overall, plant support groups demonstrated good performance in implementing the ACR program. The plant support groups appropriately issued ACRs for identified findings.

There was no formal training of station personnel on the ACR process either within general employee training initial or retraining lesson plans. There was an inconsistent understanding by personnel as to when to issue an ACR and inconsistent use of the program.

2.0 Problem Resolution

2.1 Risk Significant Systems Review and Implementation of the Maintenance Rule

a. Inspection Scope (40500)

The team selected risk significant safety systems for review and walked down selected portions of the systems and components and reviewed system/component performance. An NRC Region I Senior Reactor Analyst assisted in the selection of risk significant systems for review. The team selected the risk significant emergency feedwater (EFW) and direct current power supply (DC) systems and reviewed the historical record of adverse condition reports (ACRs) associated with those systems. The team accompanied Technical Support engineers on walkdowns of their systems. The team walked down the DC system and the EFW system and reviewed system material condition, selected component status, and system housekeeping. The team also reviewed the corrective actions on multiple-occurrence ACRs associated with those systems.

b. Observations and Findings

The team met with licensee probabilistic risk assessment personnel and confirmed that the NRC selected systems/components for review were also identified by the licensee as risk significant systems. The team observed that the engineers possessed a good working knowledge of their systems and the historical problems associated with their systems. The team found the corrective actions taken for problems associated with those systems to be adequate.

The ACR process did not consistently identify problems associated with the EFW system, but sometimes identified them as feedwater (FW) system problems, a nonsafety-related system. This inconsistency was due to Seabrook not having a separate system identification for the emergency feedwater subsystem of the main feedwater system. It was left to the individual to add EFW as a key word on the ACR form. This was seen as a weakness of the Seabrook system identification scheme which could lead to lost history for EFW problems.

The team observed that the system engineers conducting the walkdowns of the EFW and the direct current (DC) electrical system were attentive to the materiel condition of their systems, noting some minor valve packing and vent leakage, and observant of the general plant housekeeping. Selected review of valve and breaker position by the staff was consistent with the plant operating mode.

Deficient or degraded materiel conditions and processes found by the licensee or team members were not consistently documented in ACRs but were identified as work requests (WRs). The licensee indicated that their threshold for ACR initiation was the observation of unexpected conditions. Minor packing leaks were expected and would receive a WR but housekeeping findings were not expected and would receive an ACR. As an example, a minor valve actuator oil leak found by the team on the EFW flow control valves received three separate WRs for leaks on the three valves themselves and a common ACR because two of the valves had been worked during the last outage.

The team reviewed the latest (March 1999) system health reports for the FW (includes the EFW subsystem) and DC systems. Both systems were in maintenance rule status (a)(2) indicating that the systems remain capable of performing their intended function with normal preventive maintenance. The FW system had been running in the yellow band primarily because of back leakage to the EFW system through Feedwater valve (FW-V) FW-V-82 and 88. Corrective maintenance was performed on these valves which appeared adequate.

Review of MSIVs and walkdowns indicated good housekeeping and apparent material condition. System engineer involvement and knowledge for MSIVs was good with multiple disciplines exhibiting good system knowledge. The maintenance rule improvement plan for MSIVs was through and appeared that corrective actions appeared to resolve outstanding issues and included OE research.

The team noted a large backlog of overdue safety-related work requests and engineering items. The licensee had established a goal of 10 or less safety-related work requests for WRs greater than 150 days old. The December 12, 1998, KPI report indicated there were 33 WRs in this category, four of which were from 1992 or 1993. However, the August 13, 1999, listing of WRs indicated that only two of the 1993 WRs remained, but that the number of WRs in this category had risen to 47. Both the remaining 1993 WRs had been dispositioned by the licensee as non-safety significant. In addition, while the number had peaked at about 190 during the spring 1999 outage, since May 1999, the number has remained between 45 and 60.

Various initiatives that had been recently implemented to enhance performance in this area but did not appear to be effective in reducing this number. The team reviewed this matter and noted that NAESCO listed work to be done on safety systems as safety-related but the work item may not necessarily be safety significant. The team selectively reviewed the backlogged WRs and found no safety significant open items.

The team reviewed an August 1999 list of mechanical engineering overdue ACR corrective actions. The team noted 7 of 67 items were identified with an A1 or A2 priority. The team reviewed these overdue A1 and A2 items and determined them not to be safety significant.

c. Conclusions

Safety systems selected for review exhibited good material condition and those system engineers interviewed and accompanied on walk downs were knowledgeable of the present and historical status of their system. Problems found during walkdowns were being adequately identified either in the ACR or WR processes and the licensee had adequately addressed the initial safety significance of issues in a timely manner.

Although problem resolution for the safety-related systems reviewed was adequate and overall, improvement and progress, was noted in licensee response to degraded conditions, NAESCO continued to allow a backlog of overdue work requests and ACR programmatic corrective actions to increase. Based on longstanding material issues, weaknesses continued to be noted in timeliness of corrective action and continued focus was warranted on identification and response to degraded equipment (e.g., PASS panel, RMS, OE response to Copes/Vulcan)

2.2 General Problem Resolution

a. Scope (40500)

The team reviewed issues contained within NAESCO's ACR program. The team reviewed initial identification and characterization of problems and their risk significance, elevation of problems to management, root-cause analysis or cause determinations, disposition of operability/reportability issues, and implementation of corrective actions including evaluation of repetitive conditions. The review was against criteria contained in applicable NAESCO corrective action program procedures and criteria contained in 10 CFR 50, Appendix B.

b. Observations and Findings

b.1 Operations-Problem Resolution

Operations actions to resolve procedural and equipment related adverse conditions have been generally effective at preventing recurrences. However, efforts to correct some longstanding human performance issues with tagging errors and component mis-positionings have been less effective as evidenced by repeated adverse trends in these two areas during the past two refueling outages.

ACR 99-1892 was written in April 1999 to document a specific tagging error associated with a service water valve that occurred during the 1999 refueling outage (OR06). A common cause analysis was assigned to Operations to assess this event and five other tagging related ACRs that occurred during OR06. The licensee's common cause analysis found that the conclusions and recommendations presented were similar to recommendations made in previous tagging evaluations. The team reviewed the previous tagging common cause assessment (ACR 97-1588), completed following the 1997 refueling outage (OR05), and agreed with this finding. Specific areas of repetitive recommendations identified by the team and the licensee's assessment included: tagging errors made by temporary outage supervisors not familiar with the tagging process, lack of adequate preparation time for outage master tagouts (MTO), and dependence on station initiatives to correct human performance errors.

The team reviewed and evaluated 28 ACRs associated with the specific tagging events identified in the licensee's common cause analysis. None of the events resulted in damage to safety-related plant equipment or a violation of Technical Specifications. One resulted in an electrical shock to a worker for which the licensee took immediate corrective actions. The majority were written to document administrative errors that were identified by workers during the conduct of the maintenance activities. Corrective actions have been identified for the upcoming refueling outage to evaluate the practice of using temporary outage supervisors, to improve Maintenance's involvement in MTO development and review, and to implement planned site-wide human error prevention improvements.

ACR 99-2740 was written in June 1999 to document an adverse trend in the number of mispositioning events from within Operations. A common cause evaluation was assigned to Operations to assess this trend. The evaluation was not completed at the time of this inspection, therefore the team could not evaluate the licensee's planned corrective actions to prevent recurrence.

The team reviewed ACR 97-0580 written in March 1997 that documented a previous, similar trend in component mispositionings. The common cause analysis completed in response to ACR 97-0580 concluded that human error was associated with a majority of the events that were evaluated. However, none of the corrective actions assigned in response to the ACR addressed human error prevention. The two recommended corrective actions ACR 97-0580 included tighter controls on component out of position tracking and trending future mispositioning events. The team found that the corrective actions implemented in 1997 to prevent mispositioning events had been narrowly focused on correcting a small subset of mispositioning events involving procedure usage and were not effective at addressing the human performance issues, as evidenced by a repeated adverse trend of mispositioning events in June 1999.

The team found that Operations resolution of the human performance aspects of the tagging errors and component mispositionings was weak. Operations was relying on site-wide efforts to resolve the human performance aspects.

b.2 Maintenance - Problem Resolution

An event team formed by the licensee to evaluate the June 1999 failure of the C service water (SW) pump identified that two of the planned corrective actions following the August 1998 failure of the B SW pump were not properly implemented. Specifically, the shaft vibration readings were not taken regularly for the C SW pump, and the purchase order to procure the new pump shafts and replacement pumps was not timely. These corrective actions could have prevented the failure of the C SW pump. In addition, the team noted weaknesses in the timeliness of the licensee's corrective actions for longstanding deficiencies in the post-accident sampling system (PASS) and radiation monitoring system.

b.3 Engineering

The team reviewed ACR 98-3436 associated with the Automatic Transfer of Inverter 1 EDE I-1A to DC Supply. NAESCO had identified a recurring problem with the nuclear steam system supplier (NSSS) furnished inverters automatically transferring to the DC system on high AC voltage as far back as 1986. In 1994, NAESCO identified that the inverter high AC voltage trip would actuate when the DC link voltage reached 140 volts, corresponding to an AC supply exceeding 506 Volts. This high voltage would normally coincide with a plant shutdown when the station bus voltages tended to be higher. The team verified that design change request (DCR) 95-050, dated October 6, 1996, had provided the engineering justification to power the NSSS inverters directly from the DC system. The team confirmed that the calculations associated with that DCR correctly concluded that the battery chargers could recharge the batteries with the extra inverter DC load. The team also confirmed that operating procedure OS1000.04, Plant Cooldown From Hot Standby to Cold Shutdown, had been revised to direct the operators to manually transfer the inverters to their DC supply during plant shutdown.

During 1998, three separate instances occurred where an NSSS inverter automatically transferred from the normal AC supply to the DC supply during periods of high AC voltage. The last event occurred (ACR 98-3436) at 100% power during a diesel generator (DG) surveillance test using procedure OX1426.01, DG 1A Monthly Operability Surveillance. Corrective actions for this ACR associated with the operating procedures for this NSSS inverter high voltage trip problem appeared narrowly focused.

As an example, the team noted that the procedure revisions for operation of the DG provided a precaution in the beginning of the procedure describing the problem at the 480 Volt system level (where the inverters receive their AC power) but failed to provide a caution in the body of the procedure where manipulation of the DG controls would affect the 4160 Volt system, and thus the 480 Volt system, too. The licensee responded to this observation by issuing ACR 99-3412 to provide clear direction for handling the condition of high voltage induced by diesel generator testing.

The team reviewed ACR 98-0573 associated with Battery Surveillance Testing. The licensee had reported in Licensee Event Report (LER) 98003-00, Class 1E 125 Volt Battery Surveillance Testing, that they had incorrectly interpreted Technical Specification 4.8.2.1.e for the battery surveillance discharge testing required near the end of battery life. The licensee had found that, at times in the past, they had missed performing the service test while performing the performance test. This potential Technical Specification violation has been addressed by the NRC in inspection report 50-443/98-02 as a minor violation. The team confirmed that the problem had been entered into the ACR process as ACR 98-0573. This ACR indicated that NAESCO would submit a Technical Specification change request, consistent with the LER. During this inspection, NAESCO indicated its original LER would be revised because the batteries were to be replaced and they would delete the commitment to request a change to the applicable Technical Specification. The team confirmed that the safety-related batteries were reaching the end of their qualified life and confirmed the batteries were scheduled for replacement. The team had no concerns with NAESCO's plans for this revised approach and confirmed that NAESCO was still carrying the licensing action as an open item.

The team reviewed NAESCO's action on ACR 99-1160, Westinghouse AR Relay. NAESCO had identified a problem with failure of the Westinghouse AR switchgear relays during surveillance of the diesel generator sequencer. They had found a problem with the contacts making up and documented this problem in LER 99001-00 and ACR 99-1160. NAESCO had obtained the existing relays from the Unit 2 sequencer and installed them during the previous outage. The team reviewed the problem evaluation which identified the cause as off-gassing of the relay case gasket during years of storage without being operated. The original relays installed in Unit 1 had not exhibited this problem because of the contact cleaning action of applying 125 Volts to the contacts during the refueling outage surveillances. The team reviewed the corrective actions taken by NAESCO and found them to be very comprehensive.

The team reviewed NAESCO's actions on ACR 98-0743, Potential for Cross Contamination. NAESCO had identified a potential cross contamination on the instrument racks and documented the concern in ACR 98-0743. NAESCO had closed the ACR with no action required based on their review which led them to believe that the un-numbered drain valves were not used. The team considered that the ACR was inappropriately closed. However, NAESCO did raise the concern again during their review of engineering work request (EWR) 98-0173 when they realized the potential to over-pressurize the common drain connection on instrument rack (IR) 18B. NAESCO issued ACR 99-0782 to address that issue. NAESCO initiated EWR 99-0245 on June 25, 1999 to modify the instrument racks in response to ACR 99-0782.

The team noted that NAESCO experienced repeated operations problems during routine testing of the primary auxiliary building (PAB) fans. This matter was reviewed and discussed in NRC Inspection No. 50-443/99-01, dated April 20, 1999. The NRC concluded that NAESCO failed to implement adequate corrective actions to improve PAB fan system performance. Also, the NRC identified that PAB fans were not properly tested for an extended period of time and that multiple disciplines allowed this practice to occur. Further, when this matter was brought to the MRT's attention, it was initially categorized as a trend only ACR indicating a narrow focus by the MRT. The NRC treated these items as non-cited violations.

b.4 Plant Support

Problem resolution for RP, Chemistry, EP, and Security was good, overall. In EP corrective actions were effective in that recurrence was low and of minor significance. Security, had 27 ACRs related to procedure issues in 1999, up from 17 from last year. The increase was a result of the low threshold philosophy. In chemistry, there were ACRs regarding RMS set-points errors, sampling and configuration control, procedural and administrative issues (i.e., logging errors and clarity of the logs). Security and Chemistry do not have effective methods for trending repetitive ACRs and, therefore, have been challenged regarding effective problem resolution of repeat problems. The RP group has been in general proactive in identifying and correcting radiation protection problems.

The RP group has revised several of its key procedures to ensure issues identified are entered into the ACR process for resolution. The group reviewed all ACRs for 1997 and 1998 and inter-compared the results in order to identify trends. Also, a specific review of outage ACRs was conducted.

Adverse trends were noted by Emergency Preparedness through the results of emergency drills, self-assessments, and quality assurance audits. In one example, EP identified and trended several ACRs (ACRs 98-2438, 98-2439, 98-2515, 98-1578, 98-2660) regarding response timeliness of Emergency Response Organization (ERO) personnel. In a second example, EP, during a self-assessment, identified repetitive and widespread lapses in training of the ERO. The training lapses ranged from re-qualification of respirators to physical examinations across the entire Seabrook ERO. EP performed a root-cause analysis for each example to correct each problem. The root-cause analyses were detailed and the corrective actions were effective. Recurrence was not evident.

Longstanding issues remain in Chemistry and Engineering regarding the PASS and RMS. Chemistry, integrated with other departments such as system engineering, has longstanding, unresolved items associated with the Radiation Monitoring System (RMS), and Post-Accident Sampling System (PASS). Regarding the RMS, most of the problems which cause spurious alarms and generate ACRs have been identified. Corrective actions such as replacing electronics, detectors, capacitors or changing set-points, have been performed on some radiation monitors that need attention. Regarding the PASS, NAESCO placed the PASS on the Maintenance Rule Improvement Plan in 1998 and identified apparent causes, recently established a task team to trend and assess the problems, and corrected some of the problems. Notwithstanding the efforts of NAESCO, the problems associated with the RMS and PASS are longstanding and resolution is not complete. Risk significance of the items varied. For example, ALARA (as low as reasonably achievable) considerations exist relative to the PASS, but none were of high significance relative to safety. The number of unresolved or extended items is dependent on several variables such as understanding the problem, resource support, and management involvement and attention.

NAESCO had issued an ACR in May 1998 (ACR 98-1530) associated with personnel training issues. The ACR identified approximately 40 issues dealing with training and qualification from 1996 and 1997 and an additional 21 from 1998 (as of the date of the ACR). NAESCO provided data from the ACR data base for 1998/1999 training issues and identified that a total of 109 ACRs involved some aspect of training or qualification. Further review by NAESCO, when questioned by the team, indicated sixty-three of the ACRs involved problems with personnel not attending scheduled training. Sixteen of the ACRs involved expiration of training of personnel but no work requiring qualification was conducted. However, twenty of the ACRs involved performance of work by individuals after their qualification. The May 1998 ACR did not identify any generic corrective actions other than performance of a common cause analysis which had not been completed as of the end of the inspection (August 1999). This common cause was rescheduled several times and is scheduled to be completed by September 30, 1999, as a result of review in June 1999.

NAESCO identified additional training and qualification matters for which ACRs were issued after the May 1998 ACR. NAESCO took corrective actions on these items including re-performance of the work as appropriate. Examples of issues identified by NAESCO, after issuance of the May 1998 ACR, included issues involving nuclear system operations department individuals not meeting qualifications requirements to stand watch, an example of an individual reviewing and approving procedures not qualified to perform 10 CFR 50.59 reviews, performance of non-destructive examinations by a non-certified individual, and conduct of training by an individual not qualified to conduct training.

Although NAESCO had placed the issue into the corrective action system, based on the number of qualification and training issues identified in May 1998, NAESCO was slow to identify the number of training and qualification issues as an adverse trend and take timely corrective actions to evaluate this issue and implement broad based corrective action to prevent recurrence.

10 CFR 50, Appendix B, Criterion XVI, states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective equipment, and nonconformances are promptly identified and

corrected. In the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective actions taken shall be documented and reported to the appropriate levels of management.

The team noted that NAESCO documented in its May 14, 1998, Adverse Condition Report (ACR 98-1530) that the lack of a valid personnel qualification database has impacted the Seabrook organization and that the inability to easily verify personnel have current training, qualifications, and medical requirements to perform tasks at the station hampers efficiency and has resulted in unqualified personnel performing work.

A selective review of the items included in the ACR training and qualification data base indicated that NAESCO took compensatory actions on individual issues. For example, for those training issues where personnel had performed work and were not qualified (e.g, qualification had expired), NAESCO re-qualified the individuals and/or re-performed the work by qualified individuals. NAESCO also developed several corrective actions including development of a training WEB page to allow supervisors to review selected training records for matters such as qualifications to perform 10 CFR 50.59 reviews, status of on-the job training (OJT), and temporary supervisor qualifications.

The team noted that as of August 13, 1999, broad based corrective action to address the lack of a valid personnel data base had not been taken in that the recommended common cause analysis had not yet been completed and that the analysis was scheduled to be completed by September 30, 1999. Corrective actions taken to address this matter had not been documented. The team noted that NAESCO placed the item in its corrective action system, initiated various compensatory measures and expects to complete its common cause analysis by September 30, 1999.

The team identified that failure to assure that a condition adverse to quality, (i.e., the lack of a valid personnel qualification database that has resulted in the inability to easily verify personnel have current training, qualifications, and medical requirements to perform tasks to preclude performance of work by unqualified personnel) was promptly identified and corrected and that the corrective actions taken were documented was a violation of 10 CFR 50, Appendix B, Criterion XVI. However, consistent with Appendix C of the NRC Enforcement Policy, this Severity Level IV violation is being treated as a Non-cited violation. This violation is in the NAESCO corrective action program (ACR 98-1530). (**NCV 50-443/99-10-01**)

c. Conclusions

Overall, NAESCO's resolution of problems was generally adequate. However, additional corrective action was sometimes required to complete the resolution of the problem. Generally, Operations was effective at resolving procedural and equipment related adverse conditions but was not effective at resolving human performance issues involving errors in the tagging program and component mispositionings. Maintenance performance in the area of problem resolution was mixed. For example, although the maintenance rule improvement plan for the MSIVs was thorough and the corrective actions assigned appeared to resolve the outstanding issues with the MSIV actuator hydraulic system failures, performance on selected other longstanding equipment degradation issues was not as good.

In the area of engineering, the corrective actions for the B SW pump were not properly implemented resulting in a subsequent failure of the C SW pump. The planned corrective action to monitor the C service water pump shaft vibration was not properly implemented resulting in an unexpected pump failure. There were problems with corrective actions for repeat operations problems for PAB fans and personnel response to problems with PAB fan testing. Corrective actions with high voltage inverter problem was narrowly focused. The revised plan for resolution of the DC surveillance testing was adequate. The Westinghouse AR relay resolution was very good. The potential cross contamination on the instrument racks was inappropriately closed following the first ACR review. The corrective actions for PASS and radiation monitoring system were not timely in resolving longstanding deficiencies with these systems.

In general, the plant support groups have demonstrated adequate problem resolution. Root cause analyses were performed by EP to resolve self-identified adverse trends. Most actions taken to correct issues in Security and Chemistry have been effective, with the exception of PASS and RMS. However, a voluminous amount of ACRs and ACR extensions appears to hinder trending of repetitive issues and contribute to overdue or longstanding ACRs. Immediate and interim corrective action for apparent qualification issues were not apparent and a common cause analysis for numerous training issues has been open for over a year.

A Non-cited violation of 10 CFR 50, Appendix B was identified and involved failure to assure that a condition adverse to quality (i.e., the lack of a valid personnel qualification database that has resulted in the inability to easily verify personnel have current training, qualifications, and medical requirements to perform tasks to preclude performance of work by unqualified personnel) was promptly identified and corrected, and that the corrective actions taken were documented was a violation of 10 CFR 50, Appendix B, Criterion XVI. This violation is in NAESCO's corrective action program (ACR 98-1530). (**NCV 50-443/99-10-01)**

3.0 Operational Experience (OE) Review Program

a. Inspection Scope (40500)

The team reviewed the implementation of the programs utilized by NAESCO for identifying and closing out action items associated with the operational experience (OE) program. The team selected safety-significant items for review and evaluated NAESCO's effectiveness to assess the information, to inform appropriate personnel of the results, and to initiate corrective actions for information obtained both within and outside the station organization. The team considered significant operating event reports and notifications; 10 CFR Part 21 notifications; NRC bulletins, generic letters, and information notices; and reports issued by other facilities under NAESCO's control or from similar facilities (with respect to design and vintage).

b. Observations and Findings

b.1 General

NAESCO established and implemented a management policy and procedure for review of operating experience. The procedure provided guidance for receipt, evaluation, and

action on OE items. The team found that OE items were appropriately received and a screening for applicability was performed by the OE group. During the screening, the OE items were prioritized for purposes of applicability evaluation. If the OE group believed it could evaluate the OE item, it performed the applicability evaluation based on its assigned priority. Otherwise, the item was transferred to a cognizant group for applicability evaluation with an recommended priority. The procedure provided for prioritization of OE items for applicability evaluation as high priority (i.e., immediate action needed and directly affects nuclear safety, personnel safety or plant reliability), moderate priority (i.e., needs timely resolution, is assigned if it appears to affect plant availability or is of high regulatory significance, and should be evaluated within six months), and routine priority (i.e., no adverse affects on nuclear or personnel safety and should be reviewed within 12 months). The OE group formerly placed applicable items in its action item tracking system and more recently placed the items in its ACR process for tracking and trending of corrective actions. The items were consistently disseminated to the station staff.

The team reviewed applicability evaluations completed by NAESCO for NRC Information Notices (IN) issued in 1998 and 1999. The evaluations were thorough and appropriately assessed the applicability to Seabrook Station. There were seven overdue action items associated with past OE items that were entered into the action item tracking system, but not into the ACR process. Some dated back to 1997. Six of the seven were awaiting action by Engineering and one by Maintenance. The team reviewed the overdue items and did not identify any safety issues. These items were moderate priority and were not reviewed within the expected time period in the procedure. Although no immediate safety matters were identified, and the OE items were screened for evaluation, the failure to review OE items in a timely manner could result in NAESCO not taking prompt action on an important issue.

The team noted a good initiative to be the daily discussion of OE at the 8:00 a.m. morning manager's meeting. OE events were placed on an electronic bulletin board for immediate site-wide distribution. The SORC was briefed on recent OE items, NRC Information Notices, and recent industry events.

b.2 Operations

The team found good use of OE in Operations. OE was routinely addressed in pre-job briefs. The team noted a good discussion of OE at an observed pre-shift briefing, good use of operating experience by shift management, and a posted electronic OE bulletin board.

b.3 Engineering

The team reviewed the interface between the Operating Experience (OE) group and the engineering departments. The team sampled some of the evaluations of OE performed by engineering. The Operating Experience (OE) group provided notice of external operating experience to engineering. The team reviewed examples of the engineering evaluations, including Westinghouse Nuclear Service Advisory Letters, and found them adequate. The team verified that ACRs were opened as appropriate in response to those evaluations. One example was identified (i.e., instrument rack potential cross contamination) where a previous ACR and OE experience reviews from the mid-eighties had not been considered in the evaluation of the problem prior to this inspection. (See Section 2.0 for additional details.)

b.4 Maintenance

There was good use of OE in the development of the maintenance rule improvement plan for the MSIVs. However, the team identified a longstanding OE recommendation for Copes-Vulcan air operated valve (AOV) diaphragms that had not been evaluated.

A November 1992 licensee evaluation of an industry Significant Event Report (SER) on failures of Copes-Vulcan AOVs concluded that the existing and planned preventive maintenance activities would prevent a similar occurrence at Seabrook Station. Preventive maintenance activities, including periodic replacement of the valve diaphragms, existed for the feedwater control AOVs. However, no such preventive maintenance activities existed for the other Copes-Vulcan AOVs. Copes-Vulcan AOVs are used in many applications at Seabrook Station including the reactor coolant, chemical volume control, safety injection, residual heat removal, and main steam systems. NAESCO's SER evaluation stated that other AOVs would be evaluated for like preventive maintenance. However, no action item was created to track the closure of this recommended action.

NRC Information Notice 95-34, Air Actuator and Supply Air Regulator Problems In Copes-Vulcan Pressurizer Power-Operated Relief Valves, dated August 25, 1995, identified problems with these valves. Although licensee's were not required to take action on the IN, NAESCO's evaluation of this OE item identified similar recommendations as in 1992 to evaluate other Copes-Vulcan AOVs for preventive maintenance and for periodic replacement of the AOV diaphragms. Action items were assigned to Technical Support to complete these tasks. The action items were extended numerous times. ACR 99-0492 was written in February 1999 to assign corrective actions that replaced the IN action items. The ACR corrective actions were extended two additional times and are currently scheduled for completion on or about September 22, 1999. The team noted that this was nearly seven years since the recommendations were first identified.

NAESCO's evaluation of the SER identified a vendor recommended 5 year replacement interval for the Copes-Vulcan AOV diaphragms. At the time of the inspection, NAESCO was unable to determine if the vendor recommended diaphragm replacements have been performed on any of the other safety-related Copes-Vulcan AOVs, other than the feedwater control valves. NAESCO confirmed that there were no safety evaluations performed for the identified potential failure mechanisms identified in the industry SER or information notice. NAESCO also stated that the existing AOV testing program would identify degraded conditions and initiate corrective actions prior to a potential valve failure. They also noted that there have been no instances at Seabrook where an AOV failed and challenged valve performance. NAESCO's recent reviews of the industry OE databases have also not found any new problems.

The team evaluated the safety significance of the potential failure of Copes-Vulcan AOVs due to lack of vendor recommended preventive maintenance. Copes-Vulcan AOVs are used in safety and nonsafety-related applications in the reactor coolant, chemical volume control (CVCS), safety injection, residual heat removal, and main steam systems. The AOVs in each of these systems are designed to fail in the safe direction (i.e., valves that provide a containment isolation function would fail shut). NAESCO identified that failures of certain valves in the CVCS could result in a loss of reactor coolant pump seal return flow. If the condition were not corrected, seal leakoff would be maintained by flow through the system relief valves. NAESCO has replaced about 30% of the diaphragms in the affected valves and is creating a Repetitive Task work order (RTS) to replace other diaphragms. The RTS will be scheduled during the work week process as appropriate and the frequency for replacement will be determined by monitoring. NAESCO indicated that their existing AOV team would re-evaluate this area. The team evaluated the safety significance of the potential failure of Copes-Vulcan AOVs to be minimal. However, licensee performance in not resolving this longstanding OE recommendation was poor.

10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions," states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to this requirement, and notwithstanding NAESCO's assertions that there have been no documented failures of Copes-Vulcan AOVs at Seabrook Station, NAESCO failed to promptly evaluate its Copes-Vulcan AOVs to assure conditions adverse to quality were identified (e.g., lack of preventive maintenance, including periodic replacement of the valve diaphragms) following identification of a potential failure mechanism through industry operating experience review. This matter is considered a Severity Level IV violation and is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy. This violation is addressed in NAESCO's corrective action program as ACR 99-3429. **(NCV 50-443/99-10-01)**

b.5 Plant Support

There was good use of operational experience by plant support groups including radiation protection, chemistry, effluent and environmental monitoring, fire protection and security. In general, operational experience was discussed at morning meetings and was discussed in routine continuing training.

Radiation protection, chemistry (including effluent and environmental), security, and emergency preparedness demonstrated adequate review and implementation of operational experience (OE) items. Security was aware of and used 2 information notices and external OE for benchmarking and program enhancement. Chemistry used external OE to support problem resolution of the PASS and RMS.

Chemistry implemented industry guidelines in programs and procedures where appropriate, with one exception. The exception was identified by a quality assurance audit and an ACR was generated. Chemistry and Security attend counterpart meetings to maintain current industry practices and operating experiences as did RP and fire protection.

c. Conclusions

Overall, NAESCO collected and distributed OE information to station groups for action and the station groups were using the information to make program enhancements. However, some OE items were overdue for review in that applicability evaluations had not been performed consistent with procedure recommended guidance. This could result in NAESCO not taking prompt action on an important OE issue. The team found good use of OE in Operations. NAESCO provided OE notes to engineering with adequate engineering evaluations conducted and engineering opening ACRs as appropriate. One example was identified (i.e., instrument rack potential cross contamination) where a previous ACR and OE experience was not used in the evaluation of the problem resolution. Also, a number of OE items were overdue for review.

The plant support groups, including radiation protection, chemistry effluent and environmental monitoring, fire protection, security, and emergency preparedness, have demonstrated adequate review of operational experience (OE) items. In general, OE items were discussed at morning meetings and in routine continuing training. Plant support groups reviewed OE items for applicability and action. Corrective actions were adequate and OE items were managed in an effective and timely manner.

Use of OE by Maintenance was mixed. There was good use of OE in the development of the maintenance rule improvement plan for the MSIVs. However, a longstanding OE recommendation for Copes-Vulcan AOV diaphragms had not been acted on by NAESCO. NAESCO's failure to take prompt corrective action to evaluate the need for preventive maintenance activities on Copes-Vulcan AOVs for preventive maintenance is a violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Actions. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Appendix C of the NRC Enforcement Policy (ACR 99-3429). **(NCV 50-443/99-10-01**)

4.0 Self-Assessment Activities

4.1 Station Department Self-Assessment Activities

a. Inspection Scope (40500)

The team evaluated NAESCO's self-assessment program to assess the effectiveness of internal departmental reviews in identifying and correcting problems and enhancing established programs and processes. The team reviewed selected self-assessment reports and interviewed cognizant personnel to follow-up on self-assessment findings, causal evaluations, and corrective action prioritization and timeliness.

The review was with respect to guidance contained in station self-assessment program procedures and 10 CFR 50, Appendix B.

b. Observations and Findings

b.1 General

North Atlantic Management Manual (NAMM) Policy 1.6 describes the policy for self-assessment and self-checking at Seabrook station. Management expectations regarding self-assessment are provided in Procedure NM 12300, Self-Assessment Guideline. The procedure provided for four types of self-assessments including routine, pre-emptive, reactive, and periodic. Consistent with NM12300, station departments had established some variation of an approved self-assessment procedure as provided for in station procedure NM12300 and had generally conducted self-assessments based on the guidance in its specific procedure. However, the procedure expectations were not consistently implemented across the departments. In particular, some departments did not have a clearly established annual schedule for self-assessment. Further, as of the date of the inspection, some departments had not performed any self-assessments for calendar year 1999 (e.g., electrical engineering) while other departments had performed numerous self-assessments. In addition, effectiveness reviews of each departments' self-assessments were not consistently performed as outlined in procedure NM12300. Further, the quality of self-assessments varied between departments and ACRs were not consistently written for self-assessment findings that appeared to be suitable for inclusion in the ACR process.

In general, Assessment reports were candid and appeared to reflect the findings and observations of the assessors and indicated that management was receiving an unbiased perspective of the plant's quality achievement and deficiencies.

b.1 Operations

The team noted good quality self-assessments that were conducted in 1999 on the cumulative effect of operator work-arounds, logs and log keeping, the self-assessment program, and a tagging common cause evaluation. However, there was no identified topics for self-assessments. Although each crew was tasked with conducting three self-assessment each calendar quarter, no specific areas for assessment were targeted. There was no schedule for conducting periodic self-assessments of selected programs. As a result, some programs and processes have never been subjected to a self-assessment.

NAESCO conducted an evaluation of the Operations self-assessment program in May 1999 and identified several deficiencies, including: many of the recommendations which come out of the self-assessment process are not acted on, many corrective actions have either not been completed or their completion has not been documented, and a general lack of understanding of the program by Operations personnel. In addition, the team identified that ACRs were not consistently being submitted for deficiencies identified as a result of a self-assessment. In some cases, this contributed to the lack of follow-up on self-assessment corrective actions.

b.2 Engineering

The technical support department had established a Technical Support “Team-2000" improvement plan to assess the effectiveness of the self-assessment activities and the engineering department had established an Engineering Self-Improvement Plan. The engineering department plan contained self-assessments in six areas including Design change process; Commitment tracking; Temporary modifications; Engineering management; Equipment performance and material condition; and resource management and priorities.

Although the engineering plan set a goal of one assessment per month, implementation by the individual engineering departments varied. Technical support and mechanical design engineering had identified their plan for the year and were on schedule to complete their self-assessments. Numerous self-assessments were completed in technical support and mechanical engineering and issued as engineering self-assessment reports (ESARs). However, electrical engineering had not identified nor had they completed any self-assessments for 1999 prior to this inspection.

NAESCO’s engineering assurance self-assessments (ESAR 99-002) of the effectiveness of its ESAR process identified that ESAR generated recommendations were not being consistently tracked in the action item tracking and trending system (AITTS). An ACR was issued for this self-identified item and engineering management responded with a memorandum to the engineering managers and supervisors (CEM 99-236) reminding them of the need to document the ESAR recommendations in AITTS.

ESAR 99-011, Coordination Self-Assessment, was the first annual engineering assessment of temporary modifications (TMODS) performed as a corrective action to Nuclear Oversight Audit 98-A-03 (performed the first quarter of 1998). At the time of the self-assessment, there were 10 TMODs installed that were greater than 6 months old. By July 1999, the number had grown 16. The teams review found that NAESCO did not question what, if any, combined effects of the 16 modifications on the plant may exist. The review also did not question the justification for restarting the plant from the outage with TMODs in place. NAESCO agreed that there was no formal review for either item. However, the NAESCO indicated they relied on the Mode Change Form which directed operators to review open TMODs. The Station Operations Review Committee assigned an action item to review their procedure for potential enhancements for performing a combined effects review.

b.3 Maintenance

Maintenance performance in conducting self-assessment was generally good. An annual plan was developed with specific areas to be assessed. The team reviewed

several completed self-assessments and found them to thorough and well documented. The maintenance managers discussed the self-assessment findings and recommendations at weekly department meetings. However, self-assessment recommendations were not consistently being entered into the ACR process. The team also noted that the Instrument and Controls Department had completed only three self-assessments in 1999, while other departments had completed six to eight.

b.4 Plant Support

Overall self-assessment in the RP area was very good. A procedure (JD0999.906, Rev. 2, Chemistry, Waste Services and Health Physics Group Self-Assessment Procedure) was established to conduct self-assessments and provided detailed guidance and a list of planned assessments was established. The assessments were of good scope and depth. RP had established specific performance indicators to periodically evaluate the RP department.

There was also overall good self-assessment in chemistry, effluents, environmental including a schedule and plans. Good problem identification was noted with problems entered into the ACR process. The Chemistry (including Effluents and Environmental), used the same procedure (JD0999.906, Rev. 2, Chemistry, Waste Services and Health Physics Group Self-Assessment Procedure) to conduct self-assessments. The self-assessments, were broad in scope and generally followed a check list.

The Chemistry group self-assessments identified problems and occasionally, ACRs were generated as a result. Corrective actions and problem resolution were not always effective and some issues were found to be repetitive.

The EP group had a clearly defined departmental procedure (EPDP-12, Emergency Preparedness Department Self-Assessment Program) which was used to conduct self-assessments. EP had a clearly established schedule of areas to be reviewed. Self-assessments identified program strengths but focused on adverse trends in overall personnel accountability regarding re-qualification. Self-identified deficiencies were entered into the CAP as ACRs. Corrective actions were timely and effective.

The Security group had an aggressive self-assessment program. Formal self-assessments and daily spot check self-assessments were performed. The spot check assessments were effective in that identified deficiencies were noted and immediate actions were taken. Annual self-assessments were performed using department procedure (SDI0014.00, Security Self-Assessment Program). Security had a clearly established schedule of areas to be evaluated. However, ACRs were not always generated as a result of self-identified deficiencies.

Although the fire protection group did not have a defined schedule for self-assessment, the group performed numerous self-assessments. Action was taken (e.g., initiating ACRs) for identified findings.

The licensing group also performed various self-assessments to assess trends in NAESCO regulatory performance to determine if the periodic NAESCO reviews adequately identify NRC issues and trends. NAESCO recently performed a review of the NRC's Plant Issues matrix to evaluate potential trends.

c. Conclusions

NAESCO implemented a generally well defined self-assessment program. However, performance was mixed in that some departments had not established schedules, findings were not always entered into the ACR process, and evaluation of the effectiveness of the self-assessment process was not always performed. Operations performance in conducting self-assessments was mixed. There was no defined schedule for conducting periodic self-assessments of important aspects of the operations programs. ACRs were not consistently submitted for deficiencies identified during self-assessments and recommended corrective actions were not always being acted on.

Maintenance performance in conducting self-assessments was generally very good. Assessments were self-critical and well documented. Results of self-assessments were shared among the various disciplines within the maintenance department.

Engineering self-assessments, conducted in response to the engineering self improvement plan, were a beneficial initiative and were producing good recommendations for improvement.

Overall, the RP, Chemistry, Environmental, Effluents, Emergency Preparedness, and Security, FP groups performed adequate self-assessments to evaluate each area.

4.2 Quality Assurance Audits Including Offsite Audits

a. Inspection Scope (40500)

The team reviewed Quality Assurance oversight of station activities including the effectiveness of the station's corrective action process. The review was with respect to Technical Specification 6.4.3.8, Audits. The team specifically focused on the effectiveness of audits of the corrective action program and the QA group's review and follow-up of ACRs. The team interviewed QA personnel, sampled audits conducted over the past two years, and discussed the conduct and results with audit personnel. The team also reviewed offsite audits of the QA Program and its effectiveness.

b. Observations and Findings

QA surveillance and audit reports were candid and indicated that management was receiving an unbiased perspective of the plant's quality achievement and deficiencies. Audits were generally of very good scope and depth and ACRs were routinely written for deficient conditions. A two year audit plan was established and the QA group conducted audits of the corrective action effectiveness as specified in Technical Specifications. The program ensured that the major functional areas (e.g., corrective actions, Appendix B, security, fire protection, emergency planning, operations, engineering, radiation control, maintenance) were reviewed as required by NAESCO's quality assurance audit program.

Quality Assurance Audits in the area of Chemistry, Effluents, Environmental, Emergency Preparedness, and Security were effective in that identified deficiencies from previous audits were evaluated to determine if corrective actions and problem resolution was timely. Also, self-assessments were evaluated to determine if identified deficiencies

were corrected in a timely manner. Deficiencies identified in the most recent audits were entered into the CAP as ACRs.

The QA group efforts have been very good at identifying problems and areas for improvement. However, previous QA efforts have not aggressively tracked and monitored identified weakness to ensure timely corrective actions were completed. In particular, similar findings were identified in repetitive corrective action audits indicating corrective actions for identified findings have not been fully effective.

The Quality assurance group recognized this issue and initiated several actions to improve tracking of items identified via quality assurance reviews. The QA group was reorganized to provide better oversight of activities and in September 1998 initiated a monthly report to management to summarize the overall effectiveness of the corrective action program at the station. In addition, the QA group has initiated action to track and determine the status of findings. Further, station management has identified QA ACRs as ACRs to be monitored for timely completion.

There was no clearly defined QA plan to aggressively monitor the efforts and effectiveness of the recently established Corrective Action Task team. However, a plan was subsequently completed.

Offsite auditing groups have periodically audited the effectiveness of the station's corrective action program including the effectiveness of the quality assurance group. Findings were provided to senior management and corrective actions initiated.

c. Conclusions

QA audits were an effective element of the self-assessment process and were critical and thorough in evaluating station program areas. However, repetitive issues were noted in follow-up audits of program areas indicating lack of effectiveness in correcting problems. Also, the repetitive issues (e.g., procedure adherence) indicated the QA program did not aggressively track and monitor corrective action issues identified in its audits to ensure deficiencies in its audits were properly resolved. Station and QA management has since initiated actions to improve oversight of its findings. This issue is further discussed in Section 7.0 of this report.

5.0 Onsite and Offsite Safety Review Committee Activities

5.1 Inspection Scope (40500)

The team reviewed safety committees and interviewed elected committee members. The team evaluated the effectiveness of the safety committees by reviewing committee minutes, audits, or other actions initiated by the committees as they relate to risk significance, major corrective action successes, or failures. The team attended selected safety committee meetings.

5.2 Station Operations Review Committee (SORC)

a. Inspection Scope (40500)

The team attended SORC meetings on July 28 and August 11, 1999, interviewed the SORC chairman and secretary, and reviewed minutes of past meetings. The review was with respect to criteria contained in Technical Specification 6.4.1, Station Operation Review Committee. The team also reviewed the use of Station Qualified Reviewers (SQRs) with respect to criteria contained in Technical Specification 6.4.2 .

b. Observations and Findings

SORC membership and alternates were identified by the Station Director and SORC Chairman, respectively, and quorum requirements were met based on review of recent past meeting minutes. Performance of the SORC was adequate and meet minium Technical Specification requirements.

The team noted that the SORC members had obtained preparatory information for those items that had been identified on the SORC schedule for the meetings attended by the team. Depending upon the subject, either the entire SORC or a SORC sub-committee received these materials two weeks prior to the meeting for their review. There were also some last minute presentations brought before the board for discussion. The team noted there was little debate on the items presented at the July 27 meeting and no vote of the members were taken. Items were approved by negative consent. The team did not identify any safety concerns with the topics being presented. However, the conduct of July 27 meeting did not appear to be conducive to active discussion and airing of individual SORC member concerns.

This observation contrasted to the August 11 meeting where there was active questioning and discussion by the SORC members and also an acknowledgment of agreement on the individual items discussed by the SORC members present. Based on these observations, the team considered performance to be inconsistent.

At the August 11th meeting, SORC also reviewed a number of temporary modifications (TMODs) that were presented for their 90 day re-evaluation. Of the 23 temporary modifications installed, five were re-evaluated at that meeting. Discussion between the SORC members and alternates discovered a discrepancy in the engineering assumption of intent for one of the modifications which will probably require a minor modification for resolution SORC assigned an action item to develop a recommendation for revising station procedures to include a provision for performing a periodic assessment of the combined effect on the plant of all installed TMODs.

As an alternate to SORC, Seabrook Technical Specification 6.4.2 permits Station Qualified Reviewers (SQRs) to act for SORC in designated procedure reviews. The SQR list was maintained on the Seabrook Station local area network. The team noted that NAESCO was in the process of a self-assessment of the SQR program in response to ACR 99-1464 and had identified one individual that had not completed all the required training for SQR status.

The team reviewed the approval for maintenance procedure LX0556.05, Station Battery Performance Discharge Test, which had been identified in ACR 98-0573 discussed above. The team confirmed that the 50.59 screening and the SQR independent review were performed by station staff listed on the SQR list maintained on the station local area network.

c. Conclusions

The SORC was conducted with appropriate regard to safety and oversight of plant activities and performance of the SORC was adequate to meet minium Technical Specification requirements. However, areas for improvement were noted. SORC members did not always actively participate in the discussion of the items being presented and members were not always polled to seek approval or opinions on matters before the SORC. The SQR program was found to be operating in accordance with the Technical Specification charter.

5.3 Nuclear Safety Engineering Group (NSEG)

a. Inspection Scope (40500)

The NSEG implements the requirements of Technical Specification 6.2.3, Independent Technical Reviews. The team reviewed the activities performed by the NSEG to assess its involvement in supporting the safe operation of the plant, reviewed NSEG meeting minutes, and reviewed assessment activities performed by NSEG. The team reviewed NSEG conformance with the requirements of Technical Specification 6.2.3.2, Function, and 6.2.3.2 Records.

b. Observations and Findings

The team found that NSEG was fulfilling its responsibilities as specified in Technical Specification 6.2.3, Independent Technical Reviews. In addition, NSEG was implementing its purpose and function as outlined in Seabrook Administrative Procedure NM 11270, Rev. 5, Nuclear Safety Engineering Group Operation, and its charter.

Part of NSEG's function, as outlined in Technical Specification 6.2.3.2, is to provide reviews of, among other matters, plant operating characteristics, plant operations, modifications, maintenance, surveillance to verify independently that these activities are performed safely and correctly and that human errors are reduced as much as practical. NSEG provided numerous OE issues to station departments which were subsequently incorporated into the corrective action process and department training programs. In addition, presentations on OE matters were made to the SORC. However, there were limited instances noted where NSEG evaluated internal plant events or independently identified areas for improvement, exclusive of OE. In addition, the NSEG administrative

procedure had not been updated to show NSEG's current reporting structure within the site organization.

c. Conclusions

Although NSEG was implementing its station review requirements under the station Technical Specifications, there were limited instances noted where NSEG had performed independent evaluation of station activities and identified areas for improvement indicating NSEG was not being fully utilized to improve station corrective action program performance.

5.4 Nuclear Safety Audit Review Committee (NSARC)

a. Inspection Scope

The team reviewed the performance of the NSARC via discussions with selected board members including the Chairmen and Vice-Chairman, review of meeting minutes, and review of the internal and external audits of the NSARC. The review was with respect to criteria contained in Technical Specification 6.4.3, Nuclear Safety Audit Review Committee. Areas reviewed included composition, alternates, meeting frequency, quorum, and oversight activities.

b. Observations and Findings

NSARC leaders exhibited significant determination to improve overall performance at Seabrook and had implemented actions to improve NSARC's efficiency and effectiveness. Selected review of recent 1999 meeting minutes indicated NSARC met its quorum and meeting frequency. NSARC adopted a more stringent quorum requirement than that contained in the Technical Specifications. Areas of expertise for NSARC members were clearly identified and membership was approved by senior management.

NSARC recently developed an NSARC manual, revised the NSARC procedure to provide improved guidance, and developed and provided clearly described expectations for station interface. NSARC assigned members as mentors to subcommittees, identified lead reviewers for topics before NSARC, and provided for routine discussion of selected topics of interest to NSARC, most notably the effectiveness of corrective actions. In addition, membership has been changed to provide for a fresh perspective on station performance.

A notable observation was a station presentation to NSARC on the station's probabilistic risk assessment to familiarize the NSARC with risk significant systems and components an the station. Station departments (e.g., technical support) gave presentations on events.

c. Conclusion

Selective reviews identified that NSARC was implementing requirements as outlined in Technical Specifications. NSARC implemented numerous actions to improve the efficiency and effectiveness of the committee.

5.5 General Conclusion - Onsite and Offsite safety Review Committees

Historical review indicated onsite and offsite safety review committees have not been fully effective in resolving lingering corrective action program weaknesses (e.g, human performance issues, mispositioning, tagging, degraded conditions etc.). However, NAESCO has initiated numerous actions to improve the effectiveness of safety review committees and the corrective action program as discussed in Section 7 of this report.

6.0 Corrective Actions for Non-Cited Violations and Items of Comparable Significance Within NAESCO's Corrective Action Program

a. Inspection Scope (40500)

The team reviewed NAESCO's response to selected non-cited violations to assess how they were handled in the corrective action process. The following non-cited violations were reviewed:

- NCV 99-02-01, a Westinghouse relay issue documented in LER 99-001 and dispositioned in NRC Inspection report 50-443/99-02. (LER 99-001)
- NCV 97-06-07 Inoperable Turbine Gland Seal Condenser Exhaust Radioactive Gaseous Effluent Monitor (LER 97-13)
- NCV 99-04-01, Failure of timely activation of the facilities during off-hours as described in its SSPEP and Drill and Exercise Procedure

b. Observations and Findings

Regarding the Westinghouse relay issue, the team confirmed that the problem had been entered into the ACR process as ACR 99-0573. NAESCO properly dispositioned this NCV and had taken appropriate corrective actions to prevent recurrence. The team selectively reviewed and verified that the corrective actions noted in the ACR had been completed.

Regarding the effluent (97-06-07) and EP (99-04-01) related NCV's, the NCV's were entered into the CAP as ACRs and corrective actions were reasonable and addressed the identified problems. Corrective actions were timely and reporting requirements were met. Regarding NCV 99-04-01, response to and corrective actions taken was immediate. The corrective actions were reviewed and documented in NRC Inspection Report 50-443/99-04. Regarding both NCVs, responsibility for implementing corrective actions was appropriately assigned, including necessary changes to procedures and practices. Corrective actions were fully implemented and cause determination was commensurate with safety and risk significance.

c. Conclusions

Performance regarding corrective actions for NCVs was good. NCVs were entered into the corrective action program and corrective actions were implemented, as appropriate.

7.0 Miscellaneous Corrective Actions Issues

a. Scope (40500) (Corrective Action Program Enhancements)

The team meet with NAESCO management and discussed initiatives to improve the effectiveness of the station's corrective action program.

The team reviewed the historical performance and effectiveness of NAESCO's CAP over the past two years. Specifically, the team evaluated the numbers and areas of problems identified in NRC Inspection Reports, the CAP and NAESCO's actions to address the program deficiencies identified.

b. Observations and Findings

NAESCO's corrective action program exhibited mixed performance over the past two years. Both NRC and licensee internal and external reviews have identified deficiencies and areas for improvement over this time period. Attachment 1 to this report identifies examples of corrective action program weaknesses and deficiencies identified and documented in NRC inspection reports over the past two years. In general, the items identified involved failure to place issues into the corrective action system, failure to adequately review degraded conditions, and failure to implement adequate corrective actions to prevent recurrence. In April 1998, the NRC took escalated enforcement action for issues associated with lack of effective corrective actions for degraded conditions.

In response to the problems and areas for improvement identified by internal and external reviews, NAESCO initiated various corrective actions to improve the effectiveness of its corrective action programs. The following identifies a number of actions taken/initiated:

- Based on reviews conducted in 1996, NAESCO established and implemented a Short Term Change Management Plan for Technology Based Human Error Prevention, Detection, and Correction to prevent human errors. The plan was revised and was implemented in 1997.

- Also in 1997 NAESCO established and implemented a Technology Based Human Error Prevention, Detection and Correction Performance Measurement and Trend System Project. This project reviewed and evaluated, in part, the trend analysis efforts at Seabrook and established the stations Performance Indicator Panels (PIPs) to improve trend analysis. This project was implemented throughout 1997.

- In February 1997, station management established a Corrective Action Group consisting of ten individuals including a manager. The group reported to the Station Director.

- In early 1997, Change Management plans were established and implemented to further improve the corrective action process. This resulted in the development of the Management Review team, and creation of the Operations Experience Manual.

- In December 1997, the Corrective Action Group completed and published the results of its first Station Common Cause Analysis. A consultant was used to support the effort. Among other matters, the analysis provided a breakdown of reported problems from recent ACRs in key areas and provided information on the organizations assessment capabilities. It also provided an analysis of station organizations and identified strengths and areas for improvement. The analysis provided various data including self-identification and corrective action effectiveness evaluations.

- In December 1997, NAESCO senior management provided its expectations regarding the corrective action program to all NAESCO employees.

- In January 1998, NAESCO established and implemented a Change Management Plan for Human Performance Monitoring. This plan was designed to implement Human Performance monitoring at Seabrook.

- In February 1998, NAESCO established a Change Management Plan for the Corrective Action Fix It Now Team. The team was established to resolve a large backlog of open ACR evaluations and corrective actions.

- In February 1998, NAESCO established and implemented a 90 Day Improvement Plan to take quick action to reverse a perceived decline in performance including performance in corrective actions. The plan included critical success factors and specified responsible individuals and target dates. NAESCO published an evaluation of the plan's effectiveness in May 1998 and concluded that the plan accomplished its key aspects.

- In May 1998, NAESCO completed and published its second common cause analysis. This analysis continued the efforts of the 1997 analysis to identify global organizational and programmatic issues, their causes, and to provide recommendations for improvement in the conduct of business and operation at Seabrook. It included the status of previous improvement recommendations and provided additional recommendations for improvement.

- In January 1999, station management established a Task Team to review Corrective Action and Human Performance. The team was a multi-discipline team formed to develop responses and recommend actions for areas for improvement identified in the human performance and corrective action programs.

- In February 1999, the report of the Corrective Action Human Performance Task Team was issued. The report contained areas for improvement and recommended corrective actions.

- In March 1999, NAESCO established and implemented a Change Management Plan for Corrective Action Program Group OR06 Activities. This document provided a detailed plan to improve corrective action performance during the recent refueling outage. This plan provided for establishment of an ACR Screening Team to review and evaluate ACRs to lesson the burden on the Management Review Team and provide for enhanced

interface of station departments with the corrective action group. It also provides for development of "Hot button" performance indicators to track problems expected to be potentially encountered during the outage based on previous experience.

- In May 1999, NAESCO published a Change Management Plan for Implementation of the Corrective Action/Human Performance Task team Recommendations (issued February 1999). This plan was endorsed by NAESCO management.

- In June 1999, NAESCO published a summary of its third Common Cause Analysis with its recommendations.

- In June 1999, NAESCO implemented revisions to its ACR procedure to provide specific criteria for completion of ACR evaluations and corrective actions. NAESCO also set due dates on its historical backlog of overdue items.

- Most recently, NAESCO established a multi-discipline Task Implementation Team to aggressively implement the May 1999 recommendations of the Change Management Task Team for Corrective Actions, Human Performance and Self-Assessment. Management expectations for the team were outlined in a July 1999 memorandum to all station personnel and included development of an understandable vision of what corrective action, human performance, and self-assessment programs should accomplish; accelerate implementation of the change management plan for corrective action and human performance; development and implementation of a centralized self-assessment plan; development of proper measures of implementation effectiveness; integration of programs; and recommend and make improvements in each area as agreed by the Corrective Action/Human Performance task team. The task team was observed to have established a draft charter and schedule for their activities.

Based on the above, NAESCO has initiated and taken numerous actions to improve the adequacy and effectiveness of the Seabrook station's corrective action program. NAESCO's efforts has resulted in improvement of the corrective action program as indicated in Section 1 of this report. Most notably, NAESCO has, since February 1998, reduced its corrective action backlog by 50% and reduced its open evaluation backlog by 75% while continuing to maintain a low threshold, high volume ACR program. In addition, NAESCO revised and improved its ACR process to improve processing of identified issues and concerns, established the corrective action group, and significantly enhanced tracking and trending of corrective action program effectiveness including backlog. Nevertheless, although performance has improved, indications of lingering weaknesses in the corrective action program at Seabrook continue to be identified as indicated in Attachment 1 and indicate the need for further improvement efforts in the corrective action program at Seabrook.

The team noted that as part of its oversight of the corrective action process at Seabrook, Station Management meets every Friday to conduct a 30 day look ahead of upcoming corrective action issues. Reviewed during the meetings are Significance level A and B ACRs, operability determinations, nonconformance reports, and seven specific categories of ACRs of interest to management. In addition, every other Thursday, Station management reviews open corrective actions and key performance indicators.

c. <u>Conclusion</u>

NAESCO has established and implemented numerous initiatives to improve its corrective action, human performance, and self-assessment programs. These initiatives have resulted in improvement in NAESCO's programs in the aforementioned areas as well as its capabilities to track and trend performance data. Despite these improvements, some lingering problems (e.g., issuance of ACRs for identified concerns, adequacy of corrective actions to prevent recurrence) continue in the corrective action, human performance, and self-assessment programs at Seabrook. NAESCO has initiated additional action to address these matters and further improve performance. Since these efforts are recent, their effectiveness could not be fully evaluated.

8.0 Management Meeting Summary

Meetings were held periodically with licensee management during this inspection to discuss inspection observations and findings. A summary of preliminary findings was discussed at the conclusion of the onsite inspection on July 26, 1999. The exit meeting was held at the Seabrook Station at the conclusion of the inspection on August 13, 1999. The team provided a summary of its finding and observations. NAESCO acknowledged the findings.

PARTIAL LIST OF PERSONS CONTACTED

North Atlantic Energy Service Corporation
*T. Feigenbaum, Executive Vice President - Nuclear
*W. Diprofio, Unit Director
*J. Grillo, Assistant Station Director
*J. Adams, Mechanical Maintenance Manager
*R. Andersen, Manager, Work Control and Outages
D. Bergeron, Electrical Design Engineering Manager
R. Bergeron, Engineering Assurance Engineer
B. Beuchel, Project Manager, NSARC Electrical and Licensing Subcommittee Chairman
*R. Campo, Engineering Supervisor, Balance of Plant
T. Carter, AC System Engineer
*W. Cash, Health Physics Department Manager
*M. Charmichael, Nuclear Oversight Manager
D. Conti, Fire Protection Supervisor
*D. Covill, Supervisor, Oversight Group
*R. Cox, Configuration Control Manager
*M. DeBay, Assistant Operations Manager
*W. Dickson, Engineering Services Supervisor
S. Dodge, Compliance Group
R. Faix, Engineering Supervisor
*J. Gallagher, Senior Chemist
*T. Grew, Technical Training Manager
L. Henson, DC System Engineer
J. Hill, Operations Supervisor
*G. Kotkowski, Acting Electrical Design Engineering Manager
*W. Leland, Chemistry and Health Physics Group Manager
K. Letourneau, Electrical Engineer
*M. Makowitz, Corrective Action Program Manager
J. Malone, Training Supervisor
*R. Messina, Security Supervisor
T. Nichols, Technical Support Manager
*M. O'Keefe, Operating Experience Manager
*M. Ossing, Licensing Engineer
*J. Peschel, Regulatory Compliance Manager
*P. Richardson, Performance Consulting Group Manager
*J. Ross, Electrical Systems Engineering Supervisor
P. Searfoorce, Component Engineer
*G. Sessler, EFW System Engineer
B. Seymour, Security Manager
D. Sherwin, Maintenance Manager
P. Stroup, Manager of projects
*E. Sovetsky, Technical Projects Supervisor
*G. StPierre, Operations Manager
*D. Tailleart, Emergency Preparedness Manager
*R. Thurlow, Health Physics Technical Supervisor
*M. Toole, Instrumentation and Controls Manager
*J. Vargas, Director of Engineering
P. Welch, Performance Control and Business Planning Supervisor
*J. West, RMD Supervisor

B. White, Mechanical Engineering Manager
*D. White, NSARC member
M. Yergeau, Sr. , Senior Mechanical Engineer

*denotes those in attendance at the exit interview on August 13, 1999

The inspection team also contacted other individual.

U.S. Nuclear Regulatory Commission

C. Anderson, Chief Reactor Projects Branch 5, Division of Reactor Projects, NRC Region I
J. White, Chief, Radiation Safety and Safeguards Branch, Division Of Reactor Safety, NRC Region I
R. Larson, Senior Resident Inspector, Seabrook Station
J. Brand, Resident Inspector, Seabrook Station

INSPECTION PROCEDURES USED

IP 40500	Effectiveness of Licensee Controls for Identifying, Resolving, and Preventing Problems

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

50-443/99-10-01	NCV	Failure to implement corrective actions, as required by 10 CFR 50, Appendix B, for Copes-Vulcan valve issues and training and qualification issues

Discussed

50-443/99-02-01	NCV	Westinghouse AR relay issue.
50-443/97-06-07	NCV	Inoperable Turbine Gland Seal Condenser Exhaust Radioactive Gaseous Effluent Monitor
50-443/99-04-01	NCV	Failure of timely activation of the facilities during off-hours as described in its SSPEP and Drill and Exercise Procedure

LIST OF ACRONYMS USED

ACR	Adverse Condition Report
AR	Action Request
CCE	Common Cause Evaluations
CFR	Code of Federal Regulations
CAP	Corrective Action Program
DCR	Design Change Request
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ESAR	Engineering Self-Assessment Report
FSB	Fuel Storage Building
HP	Health Physics
IP	Inspection Procedure
KPI	Key Performance Indicator
MRT	Management Review Team
NDE	Non-destructive Examination
NRC	Nuclear Regulatory Commission
NSRC	Nuclear Safety Review Committee
OERE	Operating Experience Reference
OR05	Refueling Outage # 5
PAB	Primary Auxiliary Building
PII	Performance Improvement International
QA	Quality Assurance
QC	Quality Control
RCA	Radiologically Controlled Area
RCE	Root Cause Evaluation
ROR	Radiological Occurrence Report
RP&C	Radiological Protection and Chemistry
SADR	Self-Assessment Documentation Report
SI	Safety Injection
SORC	Station Operations Review Committee
SSOE	Seabrook Station Operating Experience
SWS	Service Water System
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

Attachment 1

NRC FINDINGS ASSOCIATED WITH CORRECTIVE ACTION
PROGRAM EFFECTIVENESS
(August 1997 - March 1999)

A review of Seabrook Station's performance history identified the following findings in the area of Corrective Action Program Adequacy and Effectiveness.

- August 1997 - An NRC report identified that the self-assessment program was judged to provide good findings but the finding were not always adequately addressed and corrected. (NRC Inspection 50-443/97-80) .

- August 1997 - An NRC report identified problems with use of the deficiency tag system and the corrective action process. (NRC Inspection 50-443/97-05)

- April 1998 - NRC Inspections 50-433/97-07 and 50-443/97-08 identified issues dealing with lack of timely or adequate corrective actions associated with degraded conditions (e.g., lack of effective action on a degraded condition involving the residual heat removal system and the positive displacement charging pump and emergency feed water). Also, problems were identified with multiple failures of the control building air conditioning system. In April 1998, the NRC took escalated enforcement action associated with several of these matters.

- July 1998 - An NRC report identified problems with lack of timely review of an issue associated with steam pressure protection channels and NAESCO had not completed scheduled corrective actions for a valve problem. (NRC Inspection 50-443/98-04).

- September 1998 - An NRC report identified that an ACR was not initially written to evaluate improperly stored nitrogen bottles. The ACR was subsequently approved without considering all potential generic concerns (50-443/98-05).

- November 1998 - An NRC report identified that adverse condition reports were not issued in a timely manner for matters such as an out of specification condition on a charging pump, unplanned entry into the fire main break procedure, and issues associated with service water pump flanges. (NRC Inspection 50-443/98-06)

- September 1998 - An NRC report identified that NAESCO's breaker maintenance program was good, work requests and Adverse Condition Reports were well documented, and corrective actions were appropriate and timely. There was good self-assessment of medium and low voltage breakers. But reviews of circuit breaker Information Notices was narrowly focused. (NRC Inspection 50-443/98-07)

- December 1998 - An NRC report identified that fuel handing problems were not communicated to the fuel handling supervisor. (NRC Inspection 50-443/98-09)

- April 1999 - An NRC inspection identified that multiple station personnel failed to recognize and question an improper pre-conditioning activity performed on primary auxiliary building fans. In addition, NAESCO failed to implement adequate corrective action to prevent recurrence of repeated primary auxiliary building fan test failures. (NRC Inspection 50-443/99-01)

- June 1999 - An NRC review did not identify any problems with NAESCO's Corrective Action program. Th NRC noted NAESCO properly placed items into the system. (NRC Inspection 50-443/99-02)

- May 1999 - An NRC report identified generally good engineering performance. However, plant component cooling water (PCCW) equipment deficiencies were not entered into NAESCO's corrective action program, there was lack of a plan to resolve PCCW system flow balance issues in the long term, past reviews of the emergency diesel equipment to support the preventative maintenance optimization program were not always thorough and there were missed opportunities to address degraded performance of EDG air start valve. (50-443/99-03)