U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-443/82-06

Docket No. 50-443

License No. CPPR-135 Priority _____ Category A

Licensee: Public Service of New Hampshire

1000 Elm Street

Manchester, New Hampshire 03105

Facility Name: Seabrook Station, Unit 1

Inspection at: Seabrook, New Hampshire and Framingham, Massachusetts

Inspection conducted: June 21 - July 2, 1982

Inspector:

for S. K. Chaudhary, Reactor Inspector — 8/15/82 date signed

A. E. Finkel, Reactor Inspector — Aug 14, 1982

L. M. Narrow, Reactor Inspector — 8/16/82 date signed

S. D. Reynolds, Reactor Inspector — August 16, 1982

R. H. Harris, NDE Technician — aug 16, 1982

J. P. Durr, Chief, M&PS, EIB — 8/15/82 date signed

Approved by: S. D. Ebneter, Chief, Engineering Inspection Branch — 8/19/82 date signed

Inspection Summary:

Inspection on June 21 - July 2, 1982 (Report No. 50-443/82-06)

Areas Inspected: An announced Construction Assessment Team inspection of the Seabrook facility and the Yankee Atomic Electric Company offices by five regional based inspectors. The Mobile NDE Van and one regional based technician were employed in conjunction with the team inspection. The areas of project management, quality assurance, design control, construction control and nondestructive testing were inspected. The inspection involved 614 inspector-hours on-site and in-office.

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Results: Nine violations were identified in the five areas inspected (Section 4.3.1, failure to follow procedures for the qualification of auditors; Section 4.3.2, inadequate waterstop specification; Section 5.3.1, failure to properly process ECA's (design change documents); Section 5.3.2, failure to properly review NCR design changes; Section 5.3.3, failure to distribute design documents to the area of use. Section 6.3.2, failure to provide proper directions to pipe welders; Section 6.3.6, failure to reaudit deficient areas; Section 7.3.3, failure to provide adequate protection for equipment in storage; Section 9, failure of welds to meet ASME III Code acceptance criteria.)

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2. Inspection Scope

The NRC initiated a Construction Assessment Team (CAT) inspection of the Seabrook Station on June 21, 1982. The inspection was conducted by five regional based specialist inspectors for a period of two weeks. In addition, to the CAT inspection, the Region I Nondestructive Examination (NDE) Van was used to perform independent examinations.

The purpose of the CAT inspection was to evaluate the licensee's project management effectiveness. This was done by performing detailed examinations in the areas of project management, quality assurance, construction control, and design control.

The NDE van is capable of duplicating the nondestructive tests performed by the licensee to satisfy industry codes and regulatory requirements. The NRC independent test results are evaluated relative to the codes and requirements and also compared to the licensee's test results. This provides a high degree of assurance that the licensee's NDE program is accurate and effective.

3.0 Project Management

3.1 Organization

Public Service of New Hampshire (PSNH) is the licensee of record for the Seabrook project. They have delegated the authority for project overview to the Yankee Atomic Electric Company (YAEC). YAEC provides engineering and quality assurance management to the project.

United Engineers and Constructors (UEC) is the architect-engineer for the balance of plant construction. They also are the construction manager responsible for coordinating and supervising the various subcontractors who actually perform the work. UEC performs limited quality assurance services to the project as described in Section 4.0.

The Seabrook project presents several unique or different characteristics from other nuclear construction. One is the organizational structure of a defacto licensee, namely YAEC, with only limited participation by PSNH. Another being the construction manager role by UEC and essentially all work being subcontracted. Last of all, being the size of the project in manpower, approximately 8,000 people.

The construction manager approach presents some rather obvious problems in interface control between the manager and contractors and between contractors. It requires an effective manager, control systems, and open communications between participants.

3.2 Areas Inspected

This inspection examined some of the management interfaces, the communications network associated with project management, and management control procedures.

This was accomplished by interviewing the UEC project manager, and the Perini, Pullman-Higgins, Pittsburgh-Desmoines, and Fischback project managers. Also, informal interviews were conducted with area superintendents, discipline superintendents, foremen, and craftsmen.

Contractor Interface Incident Reports (CIIR) and Construction Deficiency Reports [10 CFR 50.55(e)] were reviewed as examples of control procedures. In addition, the Nonconformance Report (NCR) trending program for UEC was reviewed.

3.3 Findings

3.3.1 Project Interviews

The inspector selected four subcontractor project managers for interviews. The purpose of the interview was to determine the effectiveness of the overall management of the project. Topics discussed were as follows:

- Is UEC responsive to subcontractor identified problems?
- Is there adequate interface control and communications between subcontractors, UEC, and each other?
- Are there unique problems associated with a project of this size?
- How is scheduling controlled and are the subcontractors properly consulted?
- Is the release of equipment from storage by UEC timely such that it does not cause delays and jeopardize the equipment?
- Are engineering problems expeditiously processed and resolved?

The concensus was that the UEC system was responsive to their needs and that interface and communications were adequate. The only problem area identified was that the engineering staff was not as responsive as they would like them to be. This causes work scheduling problems.

The inspector then interviewed the UEC project manager and discussed similar topics as described above. It became apparent from this and the preceding interviews that the efficient management of the subcontractors and the many interfaces depends on a "team spirit".

The interviews disclosed that there is direct subcontractor to subcontractor communication which promotes problem solving at the lowest level. The UEC area superintendent is the first level of defined interface between the manager (UEC) and the subcontractor and many of the interface problems are solved at this level. This arrangement requires every participants cooperation to make it successful. Personality conflicts will render the system ineffective.

All of the managers interviewed were aware of this fact. The NRC recognizes that effective management promotes problem recognition and solution which helps to assure that the facility will meet design requirements.

3.3.2 Control Procedures

Contractor Interface Incident Reports (CIIR) are used to record problems identified by one subcontractor but within the purview of another. These are documented and transmitted to UEC for logging, any necessary engineering disposition, and determination of the responsible subcontractor.

The review disclosed that, in some cases, the engineering disposition directed that a Nonconformance Report (NCR) or an Engineering Change Authorization (ECA) be issued. These documents are part of the formal design and nonconformance control systems and require followup and closure control. The UEC procedure does not provide for a positive check to assure that the directed disposition was carried out (i.e., the NCR or ECA was issued). Further investigation could not identify any instance where this had actually happened, however, this is viewed as a program significant weakness.

The review of the Construction Deficiency Report (CDR) control procedures showed that each subcontractor has procedures in place to record and transmit potential deficiencies to UEC. The site project engineering staff is responsible for reviewing all NCR's for potential CDR's. The inspector interviewed six engineers in two discipline for the criteria they used to determine the reportability of an item. In every case, they were unaware of the criteria setforth in 10 CFR 50.55(e). This is viewed as a program weakness.

The YAEC site quality assurance group has established an NCR review system as an overview above and beyond the prescribed program. Each NCR is reviewed for the criteria of 10 CFR 50.55(e) and where appropriate referred to a qualified engineer for final determination. Without this overview, there is no assurance the prescribed system could effectively satisfy the regulatory requirements.

The UEC Field Superintendent - Quality Assurance (FS-QA) is responsible for performing a trend analysis on NCR's to identify common cause failures. The current practice is to trend the previous months NCR's without regard to other months. This is considered to be a program weakness in that significant trends can develop over greater time spans.

Conclusion

The project management has established an effective communications network and interface control. The effectiveness of these systems is dependent upon the cooperation of the individual subcontractor managers and the UEC project manager.

Control procedures have not been sufficiently analyzed to assure they are complete or properly implemented; however, this does not appear to have resulted in regulatory violations. It is regarded as a program weakness.

4.0 Quality Assurance

4.1 Organization and Description

Public Service Company of New Hampshire (PSNH) which has overall responsibilities for quality assurance (QA) has delegated the establishment and implementation of the QA program to Yankee Atomic Electric Company (YAEC). PSNH maintains cognizance of the QA program by quarterly QA Evaluation Reports from YAEC, by quarterly QA Management Meetings with YAEC and by representation on selected audits of YAEC, contractor and subcontractors.

YAEC has assigned responsibility for the three levels of QA on site as shown below. Off-site QA activities are not shown since they were not included in the inspection.

Level 1 - Quality Control (QC) is implemented by each subcontractor for his activities and by United Engineers and Constructors, Inc. (UE&C), the Construction Manager, for receiving inspection and storage.

Level 2 - UE&C performs surveillance of Level 1 activities on civil and structural work including the containment liner. YAEC performs surveillance on all other Level 1 activities.

Level 3 - YAEC audits activities of Level 1 and 2 organizations and by each contractor and subcontractor of Level 1 and 2 activities performed by their organizations.

YAEC surveillance is carried out by a Field QA Group on site under the direction of a Manager (FQAM) who reports to the Manager, Construction QA (QAM) in the YAEC corporate office. YAEC audits are performed by auditors reporting to the QAM and assigned to the corporate office. The QAM reports to the Director, of Quality Assurance who in turn reports to the Vice President, Seabrook Project.

UE&C surveillance and QC are performed by a Field QA group, on site, under the direction of a Field Superintendent, QA (FS-QA). The FS-QA reports to the corporate Manager, Reliability and Quality Assurance (R&QA) through the Manager, Project QA.

4.2 Areas Inspected

The inspection included YAEC audit and surveillance programs and UE&C surveillance and QC programs. A tour of the site was made to observe the status of construction and as-built condition of the work.

For each program the inspector reviewed written policies and procedures; interviewed management and selected QA personnel; and reviewed selected documents. Policies and procedures were reviewed for conformance to regulatory requirements. The requirements for independence of the QA/QC organizations; for qualification, indoctrination and training of personnel; and for management control of quality activities were reviewed in depth. Management interviews discussed the managers reponsibility, authority and management support; inter-relationships both internally and with other contractors/subcontractors; staffing; and problem solving activities. Other interviews discussed experience, indoctrination and training; problems encountered; and management support. Documents reviewed included audit and surveillance reports, schedules and logs; personnel qualification and training records; records of corrective action; reports to management; and records of management meetings.

4.3 Findings

4.3.1 QA Training and Qualification

The inspector reviewed training and qualification records of selected personnel assigned to the UE&C Field QA Group. Records of ten people were reviewed. Six of them were certified as qualified for Level 2 Surveillance. However, the certification did not identify the activities for which they were qualified to perform surveillance. This is contrary to UE&C Corporate Standard No. II-3, "Qualification and Certification of Inspection, Testing and Surveillance Personnel, Section 2.4.6 which states that "The qualification of personnel shall be documented in an appropriate form, including the following information for each employee: -- Activities qualified to perform -". This is a violation of 10 CFR 50, Appendix B, Criterion V which requires that activities affecting quality be prescribed by appropriate procedures and accomplished in accordance with those procedures. (443/82-06-01)

4.3.2 Waterstop Installation Procedures

During the site tour the inspector observed that the waterstops installed in walls of Unit 2 fuel storage building had been displaced in some locations so as to encroach on the reinforcing steel. Drawings, specifications and the manufacturers instructions were reviewed to determine the installation requirements and the matter was discussed with UE&C engineers. Drawing 9763-F-101696 states that waterstop is to be located between near and far face reinforcing. Except for the manufacturers instructions on field splicing of joints no other instructions on waterstop installations were available. This is contrary to Criterion V which requires that activities affecting quality be prescribed by appropriate procedures (443/82-06-02).

4.3.3 Audit Review

The inspector reviewed selected YAEC site QA surveillance reports during January to June 1982. Twenty-three weekly reports of surveillance of Pullman-Higgins (P-H) were reviewed. Twenty-two deficiencies were identified on these reports in connection with information required to be shown on process sheets used by welders. Review of records and discussions with YAEC disclosed no corrective actions taken to correct the cause of these repetitive deficiencies.

The inspector reviewed YAEC site audits of P-H during June 1981 to April, 1982 and identified the following:

- Audit No. SA 508CS158, June, 1981 - Eighteen deficiencies identified indicating weaknesses in implementation of the P-H QA program. Weld monitoring was shown as a repetitive deficiency also identified by YAEC surveillance and P-H internal audits.

- Audit No. SA 565CS184, November and December, 1981 - Fourteen deficiencies were identified. YAEC letter of transmittal recommended that a more comprehensive indoctrination training and assessment program be established and that more corporate support to the field be provided.

- Audit No. SA573CS188, November 1981 - January 1982 - fourteen deficiencies were identified. The transmittal letter recommended more corporate involvement by P-H to assure more effective management control of the QA program.

- Audit No. SA 598CS203, April, 1982 - Twenty deficiencies were identified. This audit identified two primary areas of concern: material identification and weld monitoring. The letter also stated that P-H Management was less than effective in taking corrective action in the above areas.

Responses by P-H to these audits provided acceptable corrective action for the individual deficiencies but did not acknowledge or respond to the recommendations for correction of programmatic or repetitive problems. During this period, three additional audits of P-H were conducted for verification of corrective action. Individual deficiencies were being corrected acceptably. In one case, more corporate support was again recommended.

An audit of P-H corporate activities was conducted in March 1982. P-H management was found to be more heavily involved than anticipated, nevertheless, the findings of Audit No. SA573CS188 were considered to be valid and unchanged.

The inspector reviewed records of actions taken by YAEC to correct the P-H management and programmatic deficiencies identified during YAEC surveillance and audits. The following records were examined:

- YAEC quarterly Quality Assurance Evaluation Reports to the licensee. The February 1982 report discussed the lack of P-H Corporate support and stated that a meeting had been scheduled with P-H Vice President of Quality Assurance to outline actions required to resolve this matter. The April, 1982 report discussed the results of the P-H Corporate audit.

- YAEC weekly reports to management. The reports of January 8, 1982, January 21, 1982, March 12, 1982 and May 28, 1982 discussed the above-mentioned meeting (January 6, 1982), P-H management actions, and a meeting with the P-H site management concerning lack of timely and positive corrective action.

- Management Quarterly QA Review Meetings. The P-H program weakness was discussed during the January 14, 1982 meeting.

- Site meeting with P-H, June 24, 1982. The lack of adequate and timely corrective actions was discussed. Major concerns identified were weld monitoring and material identification. P-H stated that QA operations would be strengthened by assignment of two corporate personnel. YAEC Field QA group was directed to perform daily surveillance of weld monitoring.

The inspector discussed the P-H deficiencies and YAEC efforts to obtain their correction with YAEC management. The problems had been identified by YAEC site QA and audit personnel as well as by P-H internal auditors during mid-1981 and on numerous occasions thereafter. YAEC management was aware of the problems and had attempted to obtain corrective action by P-H at least since January, 1982.

As of June 28, 1982, the major concerns, weld monitoring and material identification, were still unresolved and were still attributed to lack of adequate supervision. Failure to resolve these deficiencies despite the attention of both YAEC and P-H shows a lack of effective YAEC management and is a significant weakness in the QA program.

The inspector reviewed the YAEC audit and field surveillance program. Selected audit reports, surveillance reports, and personnel records were reviewed. Interviews were conducted with selected personnel in the audit and surveillance groups. Personnel interviewed were found to be knowledgable in their

fields and with good technical background. The audit reports were well prepared and it was apparent that thought had been given to repetitive findings and to the programmatic aspects of findings. Recommendations in the transmittal letters showed evidence that consideration had been given to the cause of identified deficiencies. The qualification of audit and surveillance personnel and the quality of the audit reports are a strength of the audit program.

4.3.4 Management Audits YAEC

The inspector reviewed YAEC Management Audit reports for 1981 and 1982. Reports 81-1 & 2 and 81-3 audited corrective action and No. 82-1 audited design control activities. Discussion of these audits with YAEC management disclosed that previous management audits of the entire QA program had not been of sufficient value to management. The scope of the audits had been restricted in 1981 and 1982 in order to obtain information which would be of more value for overall control of the QA program.

The inspector questioned the adequacy of audits restricted to one phase of the program in meeting the FSAR and ANSI-45.2 requirements for an annual audit of the QA program by management. He was informed that arrangements have been made for performance of future audits under the interutility cooperative program, which will correct this deficiency. The inspector had no further questions concerning this item.

4.3.5 YAEC Field QA Program

The YAEC field QA program was reviewed by examination of QA procedures; discussions with the Field QA Manager (FQAM), the Manager, Construction QA (QAM), and field QA engineers; and by review of QA records. The FQAM has the primary responsibility for QA activities on site. He is reponsible for supervision and direction of YAEC surveillance activities. He maintains cognizance of other QA/QC activities by periodic meeting's with other QA/QC managers, attendence at construction meetings and informal discussions with home office QA and engineering personnel. The FQAM stated that personnel turnover was very small and that he had no problem obtaining management approval for additional personnel. This was supported by discussions with YAEC management.

The inspector reviewed records of surveillance and of Level 1 activities by UE&C, FBM and Johnson Controls. Surveillance records of P-H are discussed in section 4.3.3. The inspector also reviewed records of stop work notifications issued by YAEC.

No violations were identified.

4.3.6 UE&C Field QA Program

UE&C is responsible for Level 1 inspections of receiving and storage and for Level 2 surveillance of civil and structural work. The program was reviewed by discussions with the Field Superintendent - QA (FS-QA), review of procedures and review of records. The FS-QA stated that there was very little turnover of personnel. A minimal amount of overtime was put in, primarily for shift change and for receiving inspection of current. He had no problem in obtaining approval to hire additional people when necessary. The inspector reviewed selected personnel qualifications and training records. (Certification of surveillance personnel is discussed in Section 4.3.1.) The remaining personnel were well qualified for their assigned duties. Except as noted in 4.3.1, no violations were identified.

Conclusions

The QA program is based on acceptable QA policies and procedures. Audit and surveillance personnel are well qualified. Audits and surveillances are scheduled and controlled, are conducted in a planned and effective manner and are reported with attention to programmatic problems and recommendations for corrective action. Management is supportive of QA activities. However, management actions to obtain correction of programmatic weaknesses in the P-H QA program were not effective as shown by repetitive deficiencies in weld monitoring and material deficiencies and by failure of P-H corporate management to provide additional and more effective control.

5.0 Design Control

5.1 Organization

The responsibility for engineering and design for the plant has been delegated by the licensee (PSNH) to United Engineers & Constructors (UE&C). Except for minor field design changes, all major engineering and design efforts are concentrated in UE&C's home office in Philadelphia, Pennsylvania. To facilitate an efficient engineering and construction schedule, UE&C maintains a staff of field engineers on site. This field engineering organization is divided into several groups on the lines of various engineering discipline, e.g., civil/structural mechanical, electrical. The site engineering organization is managed and directed by a site engineering manager (SEM) who is responsible for all the site engineering effort. It is SEM's responsibility to provide technical direction and support in the interpretation of design documents, resolve design problems and nonconformances, and provide and approve minor design changes through his engineering staff supervised by lead discipline engineers.

5.2 Areas Inspected

Due to the absence of original design activities on site, the inspection was limited to the audit of controls on design change activities. A special emphasis was placed onto determination of the adequacy of programmatic management controls exercised over the design change process, effectiveness of such controls, and the technical validity of approved changes. The primary vehicle for design changes is the Engineering Change Authorization (ECA) notices issued and approved by on site or home office project engineering depending on the definition of the change as minor or major. Certain categories of Nonconformance Reports (NCR also indirectly effect a design change. Although the design changes effected through the NCRs are indirect, nonetheless, they are changes to an approved design, and have a major impact on th overall design of the item, structures and/or systems. Therefore, a review and evaluation of NCRs were also included in the area of design change control.

5.2.1 Engineering Change Authorizations (ECAs)

The ECA authorizes a change and/or modification in an approved design document, and provides construction a working document prior to receipt of the revised document. The approved ECAs take precedence over previously approved design, and are only used when revision of drawings, specifications, procedures or other design/project documents require revision. Depending on the nature of the change, an ECA may be initiated and approved by site, Boston, or Philadelphia engineering offices, but must be controlled and distributed by site engineering only.

5.3.2 Request for Information (RFI)

The RFI provides a written means for contractors to obtain additional information, interpretation or clarification of design, but does not change the letter or intent of a design document. RFIs are used when oral responses are not sufficient or proper, and no exception or changes are made to engineering/ design document.

5.3 Findings

5.3.1 ECA Review

To determine the technical adequacy of and the procedural control exercised over the initiation, resolution, and approval of ECAs, the inspector randomly selected over one hundred ECAs that were approved and issued, or were in the approval cycle. The sample consisted of a cross-section of ECAs from all areas. These ECAs were reviewed for conformance to procedural requirements such as: proper format; adequate problem description; proper resolution; clarity and legibility; and the proper approval.

The inspector determined that the ECAs generally conformed to the above requirements, however, some ECAs disclosed that, on more than one occasion, they were initiated or prepared, dispositioned, and approved by the same individual. (ECAs #100080D; 100082D; 100092B; 520206A.) The procedure controlling preparation, approval and issuance of ECAs requires that an ECA must be checked by another engineer and approved by the Lead Discipline Engineer at site for minor ECAs, and the Supervisor Discipline Engineer in the home office for major ECAs.

Furthermore, an RFI (#520198A) was used to grant an exception from a design requirement.

The above constitute a violation of Criterion III of Appendix B to 10 CFR 50. (443/82-06-03)

5.3.2 NCR Review

The inspector reviewed NCRs to determine their effect on design. They were reviewed for: the controls exercised over these indirect but de-facto design changes; adequacy of technical resolution; evidence of independent reviews; the effect of disposition on design; and the approval of such disposition. Over one hundred NCRs covering a broad range of nonconformances and from several subcontractors were reviewed for any apparent trend of recurring nonconformances and/or lack of adequate problem resolution.

5.3.3 NCR Disposition

The inspector determined that the NCRs containing design change information, such as "accept-as-is" or "repair" dispositions, were not independently reviewed by the original design group to assure the adequacy and technical validity of the disposition. The nonconformance review board, the final approving authority of NCRs, did not have the necessary technical expertise nor did it provide an independent technical review by a competent engineer and/or the original design group before approving an NCR disposition.

This is a violation of Criterion III of Appendix B to 10 CFR 50. (443/82-06-04)

5.3.4 Document Control

The inspector examined the system of distribution and control of approved design documents for use by site personnel. This audit was performed in conjunction with the audit of design control. The inspector noted that on June 30, 1982, the ECA change log (Log #8) in use at the controlled document station was dated June 13, 1982. The June 23, 1982, edition of the log had been issued, but was not available, and was not in use. Although the correct log was in place before the inspector left the site, measures to preclude recurrence were not available. This is a violation of 10 CFR 50, Appendix B, Criterion VI. (443/82-06-05)

6.0 Piping Contractor (Pullman-Higgins (P-H))

6.1 Organization

Pullman-Higgins (P-H) is a division of Pullman Power Products Division (Williamsport, Pa.) of Pullman, Inc.

P-H is responsible for field fabrication of piping systems to meet United Engineers and Constructors (UEC) specifications and applicable ASME and B31.1 requirements.

6.2 Areas Inspected

Inspection focused on P-H ASME pipe welding to verify system and personnel adequacy and to evaluate the implementation effectiveness of approved procedures by responsible personnel. Included in the inspection was a review of the YAEC surveillance and auditing activities of P-H welding activities.

Specific areas inspected included filler metal controls, QC Inspection activities, interview of welders and welding foremen, welder training and performance qualification, QC weld monitoring, machine

GTA butt welding, ANI/P-H interface for welder qualification and pipe welding, and control of austenitic stainless steel welding to avoid sensitization. Tours of the site were made to observe pipe welding and welder performance qualification testing. The inspector reviewed procedures and specifications for conformance to regulatory requirements and to determine their effectiveness in providing measures to control special processes.

6.3 Finding

6.3.1 Welder Training and Performance Qualification

The NRC Inspector reviewed the welder performance procedures used by P-H for welders qualified on-site and off-site to insure that welding is accomplished by qualified personnel. A detailed analysis was made of the controls exercised in the maintenance of identification during welding and evaluation of the test assemblies. The NRC Inspector attended a typical indoctrination course where a recently qualified welder is instructed to understand those portions of the Field Weld Process Sheet and the Weld Rod Stores Requisition applicable to the welder. The welder is instructed in the Pullman Power Products PH001, dated 12/15/81, "Instructions for Welders".

A review was made of the P-H 6/21/82 Qualified Welder List which indicated that 95 of the current 364 welders were qualified by welding test assemblies off-site under P-H QC Supervision. All, except 3, welded P-H Standard Welding Test SWT #1. Welders qualified off-site were trained and tested at UA Welding Schools at Seabrook, N.H.; Cleveland, Ohio; Terre Haute, Indiana; or Pasco, Washington.

All of the Seabrook, N.H., test assemblies were radiographed by P-H at the Seabrook Site. The disposition sheets for the RT are maintained with the ASME PQR document.

Currently (since 6/82), welders qualified off site are photographed by the P-H QC Welding Inspector supervising the welding and the photographs are referred to at time of employment at the Seabrook Site.

No violations were identified.

6.3.2 Review of Instructions to Welders

The NRC Inspector discussed with P-H the lack of clarity in the gas tungsten arc welding (GTAW) portion of "Directions to the Welder," provided by the welding parameter table which is Attachment 5 to PH001 and which is issued by the Weld Rod Issue Stations with all filler metal. P-H indicated changes would be made to the presentation of the GTAW parameters to provide more

explicit information for the welding of consumable inserts and other GTAW welding. Included with the proposed changes to PH001 would also be a review of the method of presenting the GTAW joulian electrical parameters in the WPS documents.

The NRC Inspector interviewed a number of welders and welding foremen to review information on their training, qualification testing, and understanding of the variables indicated in the ASME welding procedure specification (WPS) documents. Specific questions were asked, such as, what are the WPS requirements for acceptable oxygen level in purge gas. Results of these interviews indicated that the P-H welding foremen and welders have not been trained in the purpose and content of these documents that constitute the ASME WPS. Both the P-H general welding specifications (e.g., GWS-III) and P-H Welding Procedure Specifications (e.g., IT1-III-1-KI-12) are needed to constitute the complete list of essential, non-essential and supplementary essential variables required by the ASME Code. QW-100.1 and QW-200.1 indicate that the manufacturer or contractor shall prepare written WPS documents to provide direction to the welder while making welds to Code requirements. Contrary to this requirement, the welder cannot receive directions from the WPS documents when neither the welders nor the welding foremen who technically assist the welders are instructed in the P-H GWS and P-H WeldingProcedure Specifications documents. Inspection indicated that these documents were physically available for reference by the welders at the QC Welding Inspectors Stand, but, as the welders did not know of the existence of these documents, they could not provide "directions to the welder" as required by ASME Section III NA-4133.9 and Sections IX QW 100.1 and QW 200.1 (a). Failure to meet the above itemized ASME Code requirement constitutes a violation of 10 CFR 50 Appendix B, Criterion IX. (443/82-06-06)

6.3.3 Welding Filler Metal Control Review

A review was made of the filler metal control system including initial indication of filler metal type on the P-H ISO drawing, storage of filler metal at the Rod Issue Stations, issuance control measures and return of stubs and unused filler metal. Personnel in the QA Engineering Process area and in Rod Rooms #4 and #1 were interviewed to determine their understanding of the control measures.

No violations in the filler metal control system were identified.

6.3.4 Machine Orbiting GTAW

The NRC Inspector reviewed the status of the subject welding activities previously reported in combined reports 50-443/81-07; 50-444/81-06 and report 50-443/81-13. The following welds have

been completed and meet ASME radiographic soundness requirements in the as-welded condition as of the dates indicated:

RC-8-01,	F 0101	3/24/82
,	F 0102	3/24/82
,	F 0103	3/17/82
RC-5-01,	F 0101	4/02/82
,	F 0102	3/29/82
,	F 0103	3/29/82
RC-2-01,	F 0101	4/19/82
,	F 0102	4/21/82
,	F 0103	4/12/82
RC-11-01,	F 0102	4/28/82
,	F 0103	4/23/82
,	F 0104	4/30/82

These welds will be re-radiographed for final ASME acceptance following ISI grinding.

No violations were identified.

6.3.5 Authorized Nuclear Inspector (ANI) Interface with P-H

The inspector interviewed three Royal Insurance Company ANI's and their supervisor to review their activities in welder qualification, routine weld hold point inspections, and to solicit information on any specific areas of concern for the quality of pipe welds currently being produced. The ANI's provide routine unannounced surveillance inspection of the P-H Site Training and Qualification Test Shop. They insure that the stencil numbers assigned are not duplication of existing stencils. They check union card identification, but do not specifically verify the welder's picture badge identification. They check the test assemblies for permanent fixturing and proper stenciled identification of test assemblies. The ANI follows NCA 5254 and ANSI N 626.2 - 1976 Paragraph 4.2.9.

The ANI's have questioned the qualifications and called for requalification testing of three welders during erection of the Seabrook Site.

The inspector checked 6 ANI interoffice memoranda that indicated ANI review of WPS and PQR documents and the ANI chronological log lists for this activity dated 6/9/80 and 6/18/82. A cursory review of the ANI log entries was made by the inspector.

Although the activities of the ANI third party inspection is not included under the purview of the NRC, their activities provide additional inspection to the onsite welder qualification program. An indication of a level of compliance for this item is not applicable.

6.3.6 Review of Audits of P-H Welding Activities

The inspector reviewed YAEC weekly surveillance reports numbers 163 to 175 for the period 2/27/82 to 5/22/82 and interviewed the YAEC personnel performing the surveillance. A weekly activity report is made and YAEC-Framingham is informally kept up to date with the surveillance information.

The inspector reviewed YAEC Audit Reports SA 598CS203 (November 24, 25, 1981 - December 3, 8, and 30, 1981 - January 6, 7, and 19, 1982) and SA 596CS202 (March 8-10, 1982). Audit Report SA 598CS203 indicated, as one of the areas of concern, that P-H was not conducting weld monitoring in compliance with their QA Procedure Requirements stated in Document X-10 paragraphs 5.1, 5.2, and 5.3. Paragraph 5.2 requires monitoring each welder at a minimum of once every three months (which is a relaxation of a previous requirement for monthly monitoring). Further review of YAEC Audits and Surveillance of P-H activities is reported in paragraph 4.0.

Review of P-H Internal Auditing Reports 7035-1-81 and 7035-2-81 reported deficiencies in weld monitoring. Audit Report 7035-1-82 identified weld monitoring (which had previously been identified as a deficient area) as an Audit Check Off Item but indicated that this item was not checked due to "lack of time".

A review was made of internal P-H correspondence R. Wise/ R. Davis to File 5/18/82 which re-reviewed and categorized weld monitoring records on file and made recommendations based on the review. The discrepancies identified in existing records were mainly (1) showing discrepancies signed off as reviewed with no comment, (2) incomplete and questionable record entries, (3) travel speed, amperage and voltage outside the range of the WPS. P-H recommendations from this review include improved training in the requirements of Procedure X-10 and revisions to the WPS documents to broaden the parameter ranges. The NRC inspector requested that a review be made of the effect of changes in joulian heat input ranges on notch toughness requirements and sensitization (where applicable) and to generally review the clarity of parameter tables for consumable insert fusion and GTAW. (As further stated in paragraph 6.3.1.)

The failure to reaudit the deficient weld monitoring area is contrary to 10 CFR 50, Appendix B, Criterion XVIII and a violation. (443/82-06-07)

6.3.7 Control of Sensitization in Austenitic Stainless Steel Weldments

The NRC inspector review FSAR paragraphs 5.2.3.4, UE&C Specification 9763-MPS-1 Rev. 6, paragraph 6.0 and 9763-WS-1, Rev. 7, paragraph 3.1.3 commitments to the control of weld sensitization

in response to R.G. 1.44. The NRC inspector asked the licensee and UE&C for documentation which established explicit limiting controls to inhibit sensitization. The P-H welding specifications can not be adequately reviewed for compliance to the commitments to R.G. 1.44 without such a document. No documentation was made available to adequately answer these questions.

This is considered an unresolved item until a response is received and reviewed by the NRC (UNR 443/82-06-08).

6.3.8 Remedial Actions to Mitigate Welding Defects

The NRC inspector reviewed the methods currently being employed by P-H and UE&C to evaluate and minimize welding defects. Records are currently kept and continuously updated of X-Ray Reject rate percentages and totals for each welder. Specific welder defect trends are recorded (where applicable) to indicate what types of defects are being produced by specific welders. This information is used to assist welding foremen and welding engineers in providing on-the-job additional instruction and to point out specific techniques which need more training. Both paid and unpaid additional training for welder upgrading is available at the site. Monthly Welder Training Upgrade Summary Sheets were review by the inspector.

An overtime hours assignment program based on radiographic quality records, previously discussed, provides incentives for welders to produce better quality and to take advantage of training and upgrading programs.

Conclusion

This is considered a program strength.

6.3.9 Observation of Welding Activities

The following piping field welds were visually examined during fabrication operations and the quality records were reviewed for conformance to the applicable codes, standards, specifications and licensee/contractor welding procedure requirements:

CS-432-01-R-1, FW 0102
CS-429-02-R-3, FW 0204
CS-366-03-R-2, FW 0304
ICC-859-1-152, FW 0501
FW-4609-08, FW 0803

The welders, welding foreman, and QC inspectors were interviewed to review the interactions between them as applicable for the field welding operations.

No violations were observed.

7.0 Electrical Contractor (Fischback-Boulos-Manzi-N.H.) (FBM)

7.1 Organization

Fischback-Boulos-Manzi-N.H. (FBM) is the subcontractor for the installation of the electrical equipment at the Seabrook Nuclear Site. FBM has issued a quality assurance program plan that complies with the 18 Criteria of the Code of Federal Regulation 10 CFR 50, Appendix B, except for the following criteria which have been retained by the licensee.

-- Criteria III Design control
-- Criteria XIII Handling, Storage, and Shipping
-- Criteria XVIII Audits

The FBM program for electrical installation is described in their Quality Control Manual (QCM), Quality Assurance Procedures (QAP) and Field Engineering Construction Procedures (FECP).

The inspector reviewed the above FBM proceures and determined, except as noted, that their program describes the method that FBM will follow in complying with regulatory requirements.

Handling storage and shipping of equipment is the responsibility of United Engineers and Constructors (UEC) except for the period of time that a UEC contractor is performing work on the item. Accordingly, FBM is required by specification to provide procedures for approval by UEC describing their methods of satisfying these requirements.

7.2 Areas Inspected

The inspector reviewed the quality assurance program, personnel training, audits, and nonconformance reports. He interviewed supervisory and craft personnel concerning the technical aspects of their work and inspected equipment storage and installation practices.

7.3 Findings

7.3.1 Records and Procedures Review

On a random sample basis the inspector selected the quality control inspection records, installation procedures and personnel training records associated with the Diesel Generators, cable activities, NCR's, personnel training, and housekeeping. The inspector verified that FBM had written procedures which defined the foregoing activities.

No violations were identified.

7.3.2 Training

During the review of the FBM training program the inspector identified that two distinct training programs are given by FBM to its personnel. The quality control inspection training program is in accordance with the requirements of ANSI N45.2.6 entitled, "Qualification of Inspection, Examination, and Testing Personnel," and is defined in the FBM Quality Control Training Plan. This program implements the training and indoctrination requirements of FBM QAP-101SB1.

The training program for the construction personnel, foreman level and up, is given by the construction training group and complies with FBM procedure FECP-103, Revision 3.

During the inspection of the electrical equipment installed at the 21'6" level of the control building, the inspector observed FBM electrical craft personnel walking on energized safety related equipment while performing installation work on overhead safety related cable trays. The inspector questioned the craft person and his foreman as to the requirements for performing work in the area. Specifically, what prerequisites are required when working near or on top of energized safety related equipment. The FBM foreman and the craft person stated that they didn't know of any special requirements for working in this area. The inspector was informed by FBM management that the foreman was new and had not completed his training course. The foreman stated that he had until July 2, 1982 to familiarize himself with the procedures as outlined in his training course. The inspector verified that FBM procedure FECP-103 allows a foreman to perform work while reading the procedures outlined in his training course.

Conclusion

The FBM training course for construction personnel, procedure FECP-103, allows construction foreman and higher level personnel to perform safety related work before they are thoroughly familiar with the procedures. This item is considered a program weakness of the construction training program.

7.3.3 Handling, Storage and Shipping

Storage of safety related electrical equipment was inspected for in-plant storage and warehouse compliance with site procedures.

The in-plant storage of the Westinghouse Instrument Racks and SSPS Cabinet at the 75' elevation of the control room were inspected for B level storage configuration by the inspector. The equipment did not comply with the storage requirements of

UEC procedure FGCP No. 6, Revision 1, nor with the storage requirements of ANSI N45.2.2 entitled "Packing, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants" paragraph 2.7.2; level B storage. The areas of concern by the inspector were the physical protection and airborne contamination requirements.

There was inadequate physical protection of the equipment in an area of heavy construction activity. Inspection of the cabinets revealed heavy dirt and dust infiltration of the printed circuit boards, connectors and cabinet surfaces. The floor penetration seals were not in place and the dust covers over the equipment were not sealed at the bottom of the cabinet installation. The sealing of the dust covers would not normally be required with this type of equipment except that the power cables for the heaters were brought through the cabinet doors, thus requiring the doors to be open. This violated the dust and dirt sealing protection of the cabinet door. This equipment requires "B" level storage with special precautions for dust protection.

Warehouse "A" and "C" are "B" level storage areas with an "A" level storage area connected to the warehouse complex. Inspection of the "A" and "C" warehouses disclosed that they did not meet the requirements of a "B" level storage area. The inspector noted that signs were not posted identifying the area, cigarette butts were found throughout the warehouse, and high levels of dirt and trash were found. The design of the warehouse is such that the "A" and "C" (level "B" storage) warehouses are separated by "B" warehouse (level "D" storage). The doors which separated the "A" and "C" warehouses from the "B" warehouse were open during the inspection thus bringing the level "B" warehouses to the level "D" condition.

The "A" level storage area of the warehouse complex did not meet the requirements of UEC procedures No. 8, Revision 4, entitled, "General Housekeeping During Construction of Nuclear Plants," nor ANSI N45.2.2 paragraph 3.2.1(7). The electrical equipment and valve operators in the A level storage area did not have protective covers over the seals or connectors of the equipment. The dirt and dust was at the same level as that of the outside warehouse storage area with trash intermixed with equipment in open boxes. At the time of the inspection, the level "A" storage area was being used to store equipment that did not require "A" level storage. This practice contributed to the deterioration of "A" level storage area.

The above conditions were identified by the licensees audit function during 1981 and 1982 and by UE&C quality control in Nonconformance Report No. 843, dated, February 20, 1981. The areas were cleaned, but positive corrective action was not taken by management to correct the program so that the identified condition would not recurr.

This is a violation of 10 CFR 50, Appendix B, Criteria XVI, Corrective Action. (443/82-06-09)

7.3.4 Audits

The inspector reviewed the audit program that the licensee conducted on Fischback-Boulos-Manzi-NH (FBM) and determined it was in compliance with the requirements of ANSI N45.2.12. The inspector reviewed the audit schedule for 1981 and 1982, and the latest audit report performed by the licensee, dated May 20, 1982. During the audit a documentation control problem was identified by the licensee which has caused the FBM organization to implement a new method for issuing drawings and changes to the field. This system was put into effect on June 28, 1982, and the inspector was not able to determine the effectiveness of the program due to the period of time its been in operation. The licensee is reviewing the effectiveness of the program and will close out the audit finding, if acceptable, as part of their routine audit program. (Reference Audit SSCA No. 0567)

The inspector reviewed the audits performed by FBM for 1981. The inspector verified that the audit findings have been corrected by FBM and verified by the licensee.

Conclusion

The licensee and FBM are performing audit in accordance with the requirements of ANSI N45.2.12 with documented reports, followup action and scheduled audits.

No violations were identified.

8.0 Instrumentation Contractor Johnson Controls, Incorporated

8.1 Organization

Johnson Controls, Incorporated (JCI) is the instrumentation subcontractor for the Seabrook Nuclear Site.

8.2 Areas Inspected

The inspector reviewed the Quality Assurance Program, the Quality Control Procedures and the Field Instrumentation Construction Procedures for compliance with the Code of Federal Regulation 10 CFR 50, Appendix B, as they apply to this site. JCI has issued their program and it has been approved by the licensee.

The present level of work completed by JCI has been the installation of instrumentation trays, seismic mounts and tubing. Since the major installation effort has been in the area of trays, the inspector reviewed the JCI audit, training program, construction procedures and installed safety related instrumentation trays.

8.3 Findings

8.3.1 Audits by Licensee and JCI

The inspector reviewed the audit schedule for 1982 prepared by the licensee and JCI home office organization. The schedules define the area to be inspected and the period of time the audit will take place.

The inspector reviewed audit report No. SA577C5192 and verified that the audit was performed as scheduled, findings were identified and follow up action did occur. Items that were opened in the audit have been identified in a tracking system that was developed to follow the progress of the open audit finding.

Conclusion

Very little safety related work has been performed by JCI and much of their program could not be evaluated at this time. It appears that from the work completed the JCI audit system is performing as described in their Quality Assurance Program.

No violations were identified.

8.3.2 Training Program

The JCI training program has been initiated as described in Field Instruction Construction Procedure (FICP) 201, Revision 1. In discussion with JCI personnel the inspector verified that they received the training as documented in their training

records. The inspector reviewed the lesson plans that the JCI training coordinator uses in his training class and they appear to cover the scope of work that is presently being performed by JCI.

Conclusion

The training program presently being given to the JCI personnel is adequate for the scope of work that is being performed. The inspector informed the training coordinator that as JCI becomes more involved with areas that have energized equipment, additional training may be required.

No violations were identified.

8.3.3 Construction Procedures

The inspector reviewed the JCI construction procedures for the installation of cable trays and seismic mounts. The inspector reviewed the applicable engineering documentation for compliance with the design criteria and quality control requirements. On a random sample basis the inspector selected the following area for inspection verification.

-- FICP-601, Revision 0, "Installation/Fabrication Package". FP #45329-01
-- FICP-1007, Revision 1, "Installation of Concrete Anchors". FP #44883-02
-- FICP-1102, Revision 0, "Installation Inspection Procedures Within Seismic Structures". FP #48540

The inspector verified that the above procedures incorporated the engineering and quality control inspection requirements as described in JCI quality assurance program plan.

Conclusion

The construction procedures comply with the program requirements.

No violations were identified.

8.3.4 Installed Instrumentation Trays

The inspector reviewed the installation procedures and drawings for the tray installations in the cable vault area and cooling tower building elevation 22' West. An inspection of these areas indicated that the seismic mounts and cable trays were being installed, but were not completed. Of the hardware installed, the inspector verified that the installation was in accordance with the drawings and that hold points were inspected by quality control.

Conclusion

Johnson Controls, Incorporated has a quality control program with inspection and construction procedures that reflect their quality assurance program. The installed safety related hardware was in accordance with their documentation, but since very little safety related installations, less than 2%, has been installed and accepted the inspector could not make an assessment of JCI overall program. Future inspection of this vendor will be performed to evaluate the effectiveness of his overall program.

9.0 Independent Measurements - NRC Nondestructive Examinations and Quality Records Review of Safety Related Piping System

This independent verification inspection was conducted during the weeks of June 21, 1982 through July 2, 1982 using Region I Mobile NDE laboratory. This inspection was conducted by a Region I Engineering Technician in conjunction with two (2) NDE technicians contracted from Wisconsin Industrial Testing Company under the supervision of NRC.

The purpose of this examination was to verify the adequacy of the licensee's quality control program. This was accomplished by duplicating those examinations required by the licensee and evaluating the results. In addition to the required examinations, pipe wall thickness measurements and hardness test were performed.

A random sampling was made by the NRC resident inspector and was intended to provide a representative sample of piping systems, components, pipe size, materials, shop and field welds to AWS and ASME Class 1, 2, and 3 Codes. The items selected were previously accepted by the licensee based on vendor shop or onsite NDE records by licensee contractors.

9.1 Nondestructive Examination Procedures

The inspector audited the following nondestructive examination procedures to ascertain compliance with ASME B&PV Code, Section III winter 1977.

Pullman Power Products

(1) 1X-MT-3-W77 Rev. 02 Magnetic Particle Examination (Yoke Method) dated 1-27-82
(2) 1X-PT-1-W77 Rev. 03 Liquid Penetrant Examination date 12-5-80
(3) 1X-RT-1-W77 Rev. 03 and 05 Radiographic Examination (Butt welded pipe) dated 2-10-81
(4) 1X-UT-3-W77 Rev. 0 (thickness measurement) dated 7-27-78

Dravo Corporation	Shop Fabrication Pipe
(1) ASME III-MP Rev. 06 (Prod & Yoke Method)	Magnetic Particle Examination dated 3-15-77
(2) ASME III-DP Rev. 05	Dye Penetrant Examination dated 3-14-77
(3) ASME III-RT Rev. 10	Radiographic Examination dated 3-17-77

Also audited were related procedure qualifications for the above NDE procedures designated

ASME-III-RT dated 12-16-75
ASME-III-MP dated 12-16-75
ASME-III-DP dated 12-16-75

No violations were identified.

9.2 Material Traceability

Thirty-six document packages were reviewed for the following:

-- Material Certification, including weld wire
-- NDE results
-- Fabrication record - shop and field
-- Drawings (Isometric)
-- Physical properties

Examinations were performed using NRC procedures with addenda written specifically for compliance to the Licensee's PSAR commitment to ASME B&PV Code, Winter of 1977 for onsite fabrication. The intent was to duplicate to the extent practicable the techniques and methods of the original examinations.

9.3 Nondestructive Examination

The following examinations were performed:

Radiography - twenty-nine welds were examined by radiography using an Iridium 192 source per NRC Independent measurements procedure NDE-5, Rev. 0, addenda sb-1-5-1. Welds examined were ASME Class 1, 2, and 3 carbon and stainless steel.
Results: the following welds required evaluation.

CBS 1206-01	F 0105
E2936-156A	M
CBS 1206-01	F 0104
CS 369-10	F 1006
SI-204-02	F 0202
CBS-1202-07	F 0708

Welds SI-204-02 F0202, CS-369-10 F1006, and CBS-1202-07 F0708, do not meet the acceptance criteria of the ASME III Code, paragraph NB/NC 5300. Identified were areas of slag, incomplete fusion and incomplete penetration. Weld CS-369-10 F1006 has a rejectable linear indication which appears in the NRC's and the licensee's radiographs. This was missed by the licensee's reviewer and is a violation of 10 CFR 50, Appendix B, Criterion IX (443/82-06-10).

Weld SI-204-02 F0202 has linear indications which appear in the NRC radiograph but not the licensees. This can be accounted for by differences in techniques. The licensee's radiographs appear to meet the ASME Code requirements.

Weld CBS-1202-07 F0708 has a linear indication which was identified by the licensee as acceptable. The NRC does not concur with this evaluation at this time.

These items are considered unresolved pending further review by the NRC (443/82-06-11).

Magnetic Particle - ten (10) welds were examined per NRC procedure NDE-6, Rev. 0 and addendum SB-1-6-1. Samples included eight (8) class 3 ASME welds and two (2) AWS Codes welds.
Results: All areas examined were found acceptable per applicable procedure and acceptance criteria.

Liquid Penetrant - Twenty-four (24) welds were examined per NRC procedure NDE-9 Rev. 0 and addendum SB-1-9-1. Samples examined included ASME Class 1, 2, and 3 welds.
Results: All areas examined were found acceptable per applicable procedure and acceptance criteria.

Thickness Measurement - Thirty-two (32) weldments, and adjacent pipe material were examined per NRC procedure NDE-11, Rev. 0 using a NORTEC NDT thickness gauge. Minimum wall thickness was determined by using ASTM standard pipe sizes and thickness chart.
Results: All areas examined were within tolerance requirements.

Ferrite Measurements - Twenty-two (22) welds were checked for ferrite content using a type II Ferrite Indicator (Severn Gauge).
Results: All measurements were within acceptable limits.

Hardness Measurements - Twenty-two (22) areas were checked for hardness (base material adjacent to welds) using the Equo-tip hardness tester per NRC procedure NDE-12, Rev. 0. Hardness numbers were converted to Brinnell and the approximate tensile strength determined by use of conversion tables.
Results: All areas examined were within acceptable limits.

Visual Examination - Forty (40) weldments and adjacent base material were visually inspected for weld reinforcement, overall workmanship and surface condition.
Results: All areas inspected were acceptable.

10. Summary

The overall project appears to be adequately managed; however, the inspection has identified two areas that demand attention. Of the nine violations cited, three are in the area of design control. This fact, in conjunction with the management meeting held on April 8, 1982, concerning design control, supports the conclusion that site design control requires immediate management attention.

Further, the significant weaknesses identified are indicative of a laxity on managements part not to pursue problems and programs aggressively. The problem being the identification of deficiencies in the welding program and the programs being the CIIR's, and CDR's.

11. Unresolved Items

Unresolved items are matters about which more information is required to determine if they are acceptable, violations, or deviations. Unresolved items are discussed in Section 6.3.7 and 9.3.

12. Significant Weaknesses

A significant weakness is a matter which is not a violation, unresolved, or a deviation. It represents a condition, that if left uncorrected, could contribute to the violation of a regulatory requirement. Significant weaknesses are discussed in Sections 3.3.2, 4.3.3, and 7.3.2.

13. Exit Interviews

Exit interviews were held on June 25 and July 2, 1982 with members of the licensee's staff (denoted in Section 1). The inspectors discussed the inspection scope and presented their findings.

IDENTIFICATION		EXAMINATION							
Spool/System	Weld No.	Radiography	Magnetic Particle	Liquid Penetrant	Thickness	Ferrite	Hardness	Weld Reinforcement	Alloy Analyzer
RC 2936-707 ASME Class 2	F	Accepted	N/A	Accepted	Accepted	Accepted	Accepted	Accepted	N/A
12" SS	B	N/A	"	"	"	"	"	"	"
SI 2936-1210 ASME Class 2	1210	Accepted	"	"	"	"	"	"	"
10" SS	H	"	"	"	"	"	"	"	"
CBS 2936-331 ASME Class 2		N/A	"	"	"	"	"	"	"
6" SS	B	Accepted	"	"	"	"	"	"	"
Structural Beam	3C176AA	N/A	Accepted	N/A	N/A	N/A	N/A	N/A	N/A
AWS	--	--	--	--	--	--	--	--	--
2936-593	C	Accepted	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Attachment 1

IDENTIFICATION		EXAMINATION							
pool/System	Weld No.	Radiography	Magnetic Particle	Liquid Penetrant	Thickness	Ferrite	Hardness	Weld Reinforcement	Alloy Analyzer
RHR 2936-670 ASME Class 2	160-05 F0502	Accepted	N/A	Accepted	Accepted	Accepted	Accepted	Accepted	N/A
12" S/S	--	--	--	--	--	--	--	--	"
CC 2936-1998 ASME Class 3	840-06 F0602	N/A	Accepted	N/A	Accepted	N/A	N/A	Accepted	"
8" C/S	C	"	"	"	"	"	"	"	"
RHR 2936-1122 ASME Class 1	162-01 F0103	Accepted	N/A	Accepted	"	Accepted	Accepted	"	"
6" SS	--	--	--	--	--	--	--	--	--
RC 2936-1295 ASME Class 1	97-02 F0203	Accepted	N/A	Accepted	Accepted	Accepted	Accepted	Accepted	N/A
8" S/S	F	"	"	"	"	"	"	"	"
SI 2936-677 ASME Class 2	251-01 F0105	"	"	"	"	"	"	"	"
2" SS	D	"	"	"	"	"	"	"	"
CS 2936-181 ASME Class 2	369-10 F1006	Reject	"	Accepted	Accepted	Accepted	Accepted	Accepted	"
8" S/S	D	Accepted	"	"	"	"	"	"	"
CBS 2936-132 ASME Class 2	1202-07 F0708	Rejected	"	"	"	"	"	"	"
14" SS	D	N/A	"	"	"	"	"	"	"

IDENTIFICATION		EXAMINATION							
Spool/System	Weld No.	Radiography	Magnetic Particle	Liquid Penetrant	Thickness	Ferrite	Hardness	Weld Reinforcement	Alloy Analyzer
SI 2936-1148 ASME Class 1	204-02 F0202	Reject	N/A	Accepted	Accepted	Accepted	Accepted	Accepted	N/A
10" SS	--	--	--	--	--	--	--	--	"
CC 2936-1024 ASME Class 3	797-03 F0301	N/A	Accepted	N/A	"	N/A	"	"	"
24" CS	D	"	"	"	"	"	"	"	"
SW 3098-269 ASME Class 3	1810-03 F0404	N/A	"	"	"	"	"	"	"
24" CS	B	"	"	"	"	"	"	"	"
DG 2936-816 ASME Class 3	4374-05 F0501	"	N/A	Accepted	"	"	"	"	"
4"/6" S/S/CS	D	"	Accepted	N/A	"	"	"	"	"
RC 2936-620 ASME Class 2	LUGS	N/A	N/A	Accepted	Accepted	Accepted	Accepted	Accepted	N/A
SS	FGHI	"	"	"	"	"	"	"	"
CBS 2936-315 ASME Class 2	1204-02 F0203	Accepted	"	"	"	"	"	"	"
8" SS	E	"	"	"	"	"	"	"	"

						Reinforcement Analyzer			
2936-189 ASME Class 2 8" SS	F0405 J	Accepted "	N/A "	Accepted "	Accepted "	Accepted "	Accepted "	Accepted "	N/A "
CBS 2936-659 ASME Class 2 14"/8" SS	1214-01 F0101 D	" "	" "	" "	" "	" "	" "	" "	" "
RHR 2936-156 ASME Class 2 8" SS	L M	Accepted "	" "	" "	" "	" "	" "	" "	" "
CBS 2936-589 ASME Class 2 8" SS	1206-01 F0105 K	Accepted	N/A "	Accepted "	Accepted "	Accepted "	Accepted "	Accepted "	N/A "
RC 2936-620 ASME Class 2 16"/12" SS	58-01 F0101 K	Accepted "	" "	" "	" "	" "	" "	" "	" "
CC 2936-383 ASME Class 3 4" CS	752-02 F0202	N/A "	" "	N/A "	" "	N/A "	" "	" "	" "