ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION

Region I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

SEABROOK STATION, Units 1 and 2

September 13, 1982

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I. INTRODUCTION

a. Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect the available observations on an annual basis and evaluate licensee performance based on those observations with the objectives of improving the NRC Regulatory Program and licensee performance.

The assessment period is August 1, 1981 through July 31, 1982. The prior assessment period was July 1, 1980 through June 30, 1981. The one month gap between assessment periods does not impair the current evaluation as no significant findings were identified during that time frame. Significant findings from the prior assessment are discussed in the applicable Performance Analysis (Section IV) functional areas.

Evaluation criteria used during this assessment are discussed in Section III below. Each criterion was applied using the "Attributes for Assessment of Licensee Performance," contained in NRC Manual Chapter 0516.

b. SALP Attendees:

Review Board Members

R. Starostecki, Director, Div. of Project and Resident Programs (DPRP)
G. Smith, Director, Div. of Emergency Preparedness and Operations Support (DEPOS)
T. Martin, Director, Div. of Engineering and Technical Programs (DETP)
E. Brunner, Chief, Reactor Projects Branch No. 1, DPRP
L. Wheeler, Project Manager, Licensing Branch No. 3, NRR
R. Gallo, Chief, Reactor Projects Section 1A, Projects Branch No. 1
A. Cerne, Sr. Resident Inspector

Attendees

R. Keimig, Chief, Reactor Projects Branch No. 2, DPRP

c. Background

Public Service Company of New Hampshire (PSNH) applied for a license to construct and operate the Seabrook Station (DNs 50-443 and 50-444) on July 9, 1973, and was issued Construction Permits (CPPR-135 and CPPR-136) on July 7, 1976. Each reactor is a Westinghouse four-loop, PWR rated at 1198 MWe and is housed in a reinforced concrete containment structure. The units are arranged using a "slide-along" concept with certain structures common to both units.

d. Licensee Activities

Activity on both units increased steadily during the assessment period with Unit 2 progressing from an extended slowdown at the end of the prior assessment period to a current manual work force of over 800 personnel. The Unit 1 manual work force likewise increased from approximately 4000 to over 5000 personnel, bringing the total site strength (manuals and nonmanuals) to over 7600 personnel. The only strike during this period, a week long walkout by the sprinkler fitters, affected only the fire protection system erection and had no effect upon the overall construction schedule.

While the published licensee fuel load dates, November 1983 - Unit 1 and February 1986 - Unit 2, have not changed during the assessment period, Unit 1 construction is currently six months behind schedule and a detailed licensee program reevaluation is projected by the fall of 1982. The completion percentages have increased from 52% to 72% for Unit 1 and from 9% to 17% for Unit 2 during the assessment period.

Major construction activities for Unit 1 included reactor coolant loop piping installation; erection of the containment liner dome; installation of the control board panels and commencement of wiring; the start of safety-related cable pulling and instrument tubing erection; and the continuation of safety-related piping, safety-related structure erection, electrical raceway and component installation, instrumentation support and tray erection, and containment shell concrete placement. With boring for the nonsafety cooling water tunnels completed, concrete tunnel liner activities have also continued. Unit 2 construction has centered on structural activities with major progress on the turbine building frame, containment liner and internal wall erection, and work in areas common to both units.

e. Inspection Activities

Ten onsite combined inspections for both units and one inspection devoted only to Unit 1 constructions were conducted during the assessment period. One of these inspections included a trip to the Yankee Atomic Electric Company (YAEC) corporate offices. Five inspections were accomplished by the resident inspector alone; one by a regional based inspector; and five were resident inspector originated with regional inspector input. A total of 788 inspector-hours were expended during the period in the inspection of Unit 1 activities and 162 inspector-hours on Unit 2. Additionally, one Construction Assessment Team (CAT) inspection of Unit 1 to evaluate the licensee's project management and to include use of the NRC NDE Van to perform independent examinations was conducted. An additional 614 inspector-hours were devoted by the CAT to Unit 1 inspection. Three Region IV Vendor Programs Branch (VPB) inspections were also conducted at the UE&C corporate office in Philadelphia with a portion of those inspections directed toward A/E activities relative to Seabrook Station. One of these inspections included a visit to the Seabrook site by a VPB inspector.

The construction resident inspection program has been in effect for the entire assessment period. A second NRC resident inspector is scheduled for assignment to the Seabrook resident office by October, 1982. Time devoted to the different areas of construction inspection is listed in Table 3.

f. Licensing Activities

Major NRC licensing activities during the assessment period included docketing of the FSAR on October 5, 1981; issuance of the Draft Environmental Statement in May, 1982; ASLB Prehearing Conferences in May and July, 1982; and ongoing meeting and NRC site visits related to the issuance of the Safety Evaluation Report scheduled for November, 1982. Notwithstanding the present November, 1983, Unit 1 Fuel Load Date and an expected licensee schedule reevaluation, the NRC is using a projected Unit 1 construction completion date of May, 1984 for planning and establishing licensing milestones.

II. SUMMARY OF RESULTS

SEABROOK STATION

Functional Areas	Category 1	Category 2	Category 3
1. Soils and Foundation	x		
2. Containment and Other Safety Related Structures		x	
3. Piping Systems and Supports			x
4. Safety Related Components		x	
5. Support Systems	x		
6. Electrical Power Supply and Distribution		x	
7. Instrumentation and Control Systems	x		
8. Licensing Activities		x	
9. Project Management Effectiveness		x	

III. CRITERIA

The following criteria were used as applicable in evaluation of each functional area:

1. Management involvement in assuring quality.
2. Approach to resolution of technical issues from a safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

To provide consistent evaluation of licensee performance, attributes associated with each criterion and describing the characteristics applicable to Category 1, 2, and 3 performance were applied as discussed in NRC Manual Chapter 0516, Part II and Table 1.

The SALP Board conclusions were categorized as follows:

Category 1 Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2 NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3 Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appeared strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

IV. PERFORMANCE ANALYSIS

1. Soils and Foundation

Analysis

An independent onsite testing group complements both contractor quality control and construction manager QA surveillance in providing a structured program to assure quality performance in this functional area. Past inspections and assessments have verified this with no adverse findings or unresolved safety concerns.

During the current assessment period, no major soils or foundation work was conducted. However, the increased activity in Unit 2 structural erection up from the foundation level and site work common to both units, such as blast monitoring and service water pipe backfill and compaction, have provided a basis for evaluation. Inspections of these and related activities, such as membrane water proofing and grouting of foundation leak chase channels, have identified no violations. Technical analysis of and responsiveness to NRC concerns in the area of groundwater leakage to the Units 1 and 2 equipment vaults have been thorough and timely. Licensee actions in response to IE Circular 81-08 (Foundation Materials) were reviewed and both engineering and construction controls were determined to be adequate.

A regional inspector accompanied licensee and NRR geologist personnel on of the two nonsafety cooling water tunnels to examine roc m previous geologic conclusions. Geologic mapping of nel formations represents not only a sound engineering p but also evidence of management involvement in the planning o activities necessary to assure construction quality.

Conclusion

Category 1

Board Recommendation

None

2. Containment and other Safety Related Structures

Analysis

A prior assessment noted improvement in the overall performance in this functional area, but reinforced the need for continual licensee emphasis upon proper procedural and supervisory control over routine, daily structural construction activities.

During the current assessment period, ten inspections were conducted of such items as concrete batching and testing; concrete placement, reinforcing steel, and cadwelding; structural steel erection, bolting, and welding; containment liner erection, NDE, and stud welding; and building design and structure/support engineering interfaces. One violation was identified in the failure to install adequate welds for two structural support connections within the Unit 1 containment. This problem related directly to joint design and corrective action adequately addressed the programmatic issues from the standpoint of the contractor, A/E, and QC responsibilites.

Licensee quality assurance for construction in this functional area includes contractor level 1 QC, Construction Manager level 2 surveillance, and YAEC level 3 audits. This tiered concept, relying on organizational independence, has been advantageously used by licensee management to check and control the work of the primary structural contractor, for whom this project represents their first nuclear construction effort and first interface with nuclear quality assurance. In this regard the personnel strength of the UE&C level 2 QA staff has been successfully utilized to provide redundant inspection capability to contractor personnel in specific problem areas.

The construction manager has implemented several new structural construction applications, technically innovative to nuclear work, such as the use of high-strength tension set bolting and the utilization of a superplasticizer additive as a concrete admixture. While the analysis of these techniques illustrates a sound approach to new construction practices, several NRC issues and unresolved items identified during the assessment period represent concerns over licensee commitments to existing construction standards. Specific NRC concerns with regard to guidance in ACI documents (eg: multiple and nonstaggered cadweld splices; containment dome concrete placement planning), the ASME Code (eg: testing of curved bar cadwelds with sister splices), and USNRC Regulatory Guides (eg: the inspection program for seismic category 2 over 1 installations; hoisting equipment load testing) were raised. While an A/E post-construction inspection and as-built review ("beam verification program") is planned to confirm the adequacy of the structural building members to carry the specific support loadings and configurations with which they interface, undue reliance on the as-built program without in-process structural checks has been raised as an NRC concern.

The licensee has already responded to several of these issues with acceptable programmatic approaches to the specific concerns. Problems in structural welding and AWS Code interpretations, once identified, have been acceptably pursued by licensee engineering and QA personnel. However, at the contractor level there exist some misconceptions about how rigorously AWS Code requirements must be applied to structural construction. Such standard AWS or AISC building code items are elevated from recommended practices to enforceable requirements based upon licensee commitments to these codes. Increased licensee emphasis upon and construction manager involvement in the routine structural activities of all site contractors may be necessary to reinforce this position. The construction manager in particular must control such activities to assure "nuclear quality" construction.

Two potential CDRs were reported in this functional area and subsequently cancelled. Neither represented a programmatic failure.

Conclusion

Category 2

Board Recommendation

Refer to the Board Recommendation in Functional Area No. 9.

3. Piping Systems and Supports

Analysis

While six violations were identified in this functional area during the previous SALP assessment, improvement had been noted in both the licensee and contractor attention to quality over the latter part of that assessment period.

Ten inspections, primarily in Unit 1, have been conducted in this area during the current assessment period. Five violations were identified by the resident inspector. One of these noted a questionable pipe support installation and was coupled with a similar electrical support problem to represent a failure of the respective QC inspection processes. The other four violations identified NSSS supports with nonconforming, undersized welds; a failure to adequately control a containment piping penetration welding process; a failure to consider thermal pipe growth in pipe support modification details; and a design failure in specifying undersized fillet welds for pipe whip restraints. These latter two violations contributed significantly to the NRC decision to hold a management meeting with the licensee and A/E personnel to discuss concerns in the design and design change control areas (Section V.4 of this report).

Licensee and A/E corrective actions have included establishing guidelines for pipe support installation to assure free thermal pipe growth, publishing generic fillet weld design sizing criteria, and redesignating the code boundaries and material impact requirements for containment piping penetration welds. Unlike the violations identified during the previous assessment, all but one of the current violations relate more directly to the deficiencies in the guidelines and engineering criteria provided to the piping contractor rather than to the performance of the contractor, Pullman-Higgins (P-H).

Additional problems were raised by NRC findings that P-H was openly using construction practices in conflict with UE&C specifications. In light of this, the licensee commenced a program audit of contractor procedures and more deficiencies were identified. The fact that these and other licensee audit findings of specific problem areas in the P-H program were apparently not being effectively resolved was noted as a weakness in the CAT inspection (Functional Area No. 9)

Other CAT findings relating to the piping area were a violation in the training of welders and welding foremen to the specific information provided by the Welding Procedure Specification (WPS) documents; a violation in the failure by P-H auditors to reaudit a deficient weld monitoring area; and a violation in that NRC radiographic reexamination to ASME, Section III acceptance criteria rejected a piping weld previously accepted by P-H NDE personnel. The inclusion of these specific CAT findings into the evaluation of this area is deemed more appropriate than their disucssion in functional area No. 9.

Pullman-Higgins has recently made several site management/organizational changes. Corporate QA auditors are now permanently assigned to the site. The degree of YAEC second and third level QA activities in the piping and support area has also increased. This added attention appears to be benefiting and expediting corrective actions and the licensee stop work authority has been successfully utilized in this regard. It should also be pointed out that one of the program strengths identified by the CAT inspection was the trending of welder defects and the welder training and upgrading programs.

While licensee management appears to be committed to improvement in the performance in this functional area, both on the part of the direction given to the piping contractor and implementation by the Pullman-Higgins organization, the identification of eight violations and one weakness noted by the CAT, when coupled with a history of less than acceptable corrective action in this area, indicate that further NRC inspection is required to evaluate the overall piping and support program effectiveness and to confirm licensee responsiveness to these NRC concerns.

Conclusion

Category 3

Board Recommendation

Perform additional inspections to confirm the adequacy and effectiveness of the most recent licensee corrective actions.

4. Safety Related Components

Analysis

No violations were identified during the previous assessment period. Several open items in this area were satisfactorily resolved with either rework of component field installations or analysis to justify the existing conditions. Storage inspections resulted in acceptable findings.

During the current assessment period, seven component inspections were conducted and no violations were identified. The CAT inspection identified one violation in the improper storage of electrical equipment, both in place and in the warehouses. Inadequate physical protection of equipment in areas of heavy construction activity, questionable controls over warehouse storage levels and practices, and the inability to prevent recurring problems in this area -- all these items highlight an NRC concern in the area of component physical protection, particularly from airborne contaminants. While the licensee initiated immediate action to correct the identified storage problems, their official reply to the noncompliance is still pending and the item is still open.

One potential CDR was reported on the station control batteries, but was later analyzed to be not reportable. Another CDR, additionally reported under 10CFR21, involves the binding or seizure of the contact carriers of certain electrical motor control starters. Planned corrective action includes a field inspection and modification, as necessary, to the retrofit requirements of the component suppliers.

With regard to generic-type, component deficiencies (eg: IE Bulletin identified), the licensee tracking and follow-up program was found to be somewhat deficient in that any questionable equipment, if not currently planned for use at Seabrook, was not "flagged" from future procurement, either for the remainder of construction or during plant operations. The licensee has committed to the establishment of some formal mechanism to track such items. This issue is still open.

Licensee analysis and reporting of component failures under 10CFR50.55(e) appears to be generally adequate and, with a few exceptions, timely. The UE&C vendor inspection program is working and recent improvements have been made in the transmittal of procurement requirements and data to the site receiving inspectors to assure that supplied material complies with important specification criteria.

Conclusion

Category 2

Board Recommendation

None

5. Support Systems

Analysis

This functional area was not analyzed on a distinct basis during prior assessments.

During this assessment period, random inspections of supporting systems were conducted. These comprised only about 1% of the total NRC inspection program. Specifically examined were HVAC erection and components, equipment drainage design and installation, fire protection procurement and QA, and field coating application.

A question regarding the quality of supplied material for the plant fire protection system was adequately addressed from both a technical and management view by licensee directed reaudits of the supplier. This was verified by the NRC Vendor Programs Branch. Other NRC questions of a more general nature on coating application and precoat cleaning and on AWS welding as applied to the HVAC contractor have received adequate attention and analysis. No violations were identified and there are currently no open items.

The HVAC contractor was relieved and replaced with another near the middle of this assessment period. Management involvement in assuring a smooth transfer of records and coordinated QA coverage was noteworthy. This transfer was dictated for both schedule and quality reasons. Recent YAEC level 2 surveillance findings in the area of HVAC erection further dictate continued licensee management and QA emphasis upon quality HVAC construction.

Conclusion

Category 1

Board Recommendation

Refer to the Board Recommendation in Functional Area No. 9.

6. Electrical Power Supply and Distribution

Analysis

During the last assessment period, raceway and support erection were the primary activities. One violation was identified and corrective action was effectively implemented.

During this assessment period, eight inspections were conducted in this functional area, as general electrical installation activities have increased significantly. Four violations were identified: one involved the failure to assign responsibility for accomplishing beam modifications necessitated by raceway support attachment; another identified the failure of electrical support inspection to identify a nonconforming condition; a third indicated that manufacturer's specifications were not followed in the station control battery installation; and the last questioned the adequacy of the inspection program for installed cable tray.

While corrective action was either taken or is ongoing on the first three items, the last violation was disputed by the licensee on the basis of their position that the identified deficiencies do not compromise the integrity of the cable tray system and that their present installation inspection program is adequate. A recent FSAR amendment clarifies the position that cable trays at Seabrook are nonsafety-related structural members, purchased to specific performance requirements. This position is still under evaluation by the NRC .

A weakness identified during the CAT inspection involved the electrical contractor allowing supervisors and foreman to direct construction activities involved with safety-related equipment prior to completion of their scheduled training. Other NRC questions in this functional area, some of which are still open, involve cable tray hardware acceptance, tray and cable seismic and environmental qualification packages, and a design issue on the cable connections to the station control batteries.

One potential CDR on cable tray strut column cap welding was subsequently cancelled. Two other CDRs involve a design deficiency in the nonseismic specification of raceway supports for safety-related cables in the refueling water storage tank area and design discrepancies between data and the design allowables for bolted strut connections; this latter CDR is also a Part 21 report.

With the increased activity in this functional area, the licensee QA surveillance staff has grown commensurately larger. Some of their findings (eg: termination inspections for associated circuits) have precluded what may have become significant future problems.

On the other hand, contractor first level QC has not been totally effective in preventing the types of problems identified in the NRC violations. This coupled with the issue of questionable training of first level electrical supervisors indicates that even further licensee QA attention may have to be devoted to this area.

Several of the open technical issues (eg: cable tray classification and qualification; design interface on cable/battery terminal loading) also require additional management attention to achieve resolution. While the licensee has been generally responsive to the NRC concerns in this area, the rapid growth of electrical installation activities and the work force dictate increased management involvement to steer this work in a quality direction.

Conclusion

Category 2

Board Recommendation

Refer to the Board Recommendation in Functional Area No. 9.

7. Instrumentation and Control Systems

Analysis

Since no safety-related instrumentation installation took place, there was no basis for evaluation during prior assessment periods.

Four inspections were conducted in this functional area during the assessment period. One violation was identified involving the failure to erect instrumentation supports to design requirements. Planned corrective action entails rework and bolt replacement for approximately thirty tubing supports. Other NRC inspection items in this area involve AWS welding questions, tubing support erection tolerances, and support design configurations. All these issues have been satisfactorily resolved. CAT inspection in this area, though limited by the low percentage of safety-related installations, resulted in no unacceptable findings.

NRC inspections of the instrumentation contractor's (Johnson Controls) record packages have found complete and well organized and documented installation/fabrication planners and support records. The quality of field welding is noteworthy in that it goes beyond minimum weld acceptability and applies craft workmanship to weld appearance also. Discussions with craft foreman have found them knowledgeable.

An NRC concern regarding the lack of YAEC level 2 inspectors to survey the instrumentation and control (I&C) work was recently resolved with the assignment of two inspectors to assist the lead QA engineer. Management involvement to prevent generic problems that arose in other disciplines from recurring in the I&C area appears evident.

Conclusion

Category 1

Board Recommendation

None

8. Licensing Activities

Analysis

Evaluation of this functional area is based upon a review of licensing activities in the following areas:

-- Radiological protection
-- Environmental protection
-- Physical security
-- Plant operations crew manning

With regard to overall management control, there is evidence of planning and assignment of priorities, and decision making appears to be at a level that ensures management review. Typical areas where management involvement was evident were physical security and environmental protection.

For environmental protection, specific consideration was made of the program for low level chlorination of the cooling water. Management involvement has been aggressive, and resources appear to be ample and effectively used.

In the area of physical security, applicant management attention appears to be aggressive as evidenced by the amount and effective use of resources allocated to this area. For crew manning, the applicant has made an alternative proposal to the STA requirements of NUREG-0737. This proposal is currently under NRC staff review. In the area of radiological protection, applicant plans for the procurement of monitoring equipment do not appear to fully account for the requirements of NUREG-0737.

The applicant has responded in almost all cases to NRC requests and initiatives in a manner that is technically sound. Issues have been resolved in a timely manner. Responsiveness to NRC initiatives related to construction scheduling needs to be more timely.

The training organization for crew operators appears to be staffed with well qualified instructors, and is organized to provide high quality training.

Staffing in the area of radiological protection requires some attention as evidenced by the applicant plans to provide approximately half the health physics technicians typically required for similar projects elsewhere in the industry (ie: two-unit sites).

Conclusion

Category 2

Board Recommendation

None

9. Project Management Effectiveness

Analysis

An NRC Construction Assessment Team (CAT) inspection of Seabrook Station was conducted to evaluate the licensee's project management effectiveness through a detailed examination of project management, quality assurance, construction control, and design control. Five regional-based, specialist inspectors were dedicated for a period of two weeks on site with additional time spent in office reviewing procedures in order to conduct this assessment. Nine violations were identified; also, both program strengths and weaknesses were noted. Four of the violations and two program weaknesses are listed and evaluated under other functional areas because of their technical relation to those areas.

The other CAT findings have been generally categorized into areas where additional management attention is required -- design control, corrective action, and training. These concerns are discussed, as appropriate, in the various SALP sections. Also noted were program strengths identified by the CAT (welder training and upgrade, the licensee audit and surveillance program, and management support of quality assurance) which are similarly discussed and analyzed in this or other functional areas.

The Seabrook project organizational structure is complex; YAEC acts as agent for the license (PSNH) in providing engineering and quality assurance management to the project. UE&C is both the A/E and Construction Manager, supervising the construction activities of many contractors. Each contractor has its own QA and administrative/management program which not only governs the activities of that contractor at Seabrook, but also represents an extension of the particular parent corporation's policies (eg: electrical contractor -- Fischbach-Boulos-Manzi procedures reflect Fischbach & Moore corporate policy; piping contractor -- Pullman-Higgins (P-H), procedures reflect Pullman Power Products corporate policy).

The large number of contractors with diverse QA programs present unique control problems to the construction manager. While the project management appears to have established an effective communications network, the effectiveness of the interface and control systems is dependent upon the cooperation of the individual contractor managers and the UE&C resident construction manager. The CAT analysis of the relationship between the construction manager and contractors found pluses in the responsiveness of the UE&C system to contractor needs and in the solution of problems at a level closest to the work.

On the other hand, the analysis of site personnel implementation of procedures represent an area where weaknesses are evident. The CAT inspection identified the Contractor Interface Inspection Report and Construction Deficiency Report programs as areas where existing procedural controls or effective training were not adequate. The existence of a comprehensive

YAEC QA overview of the CDR program, however, has prevented actual problems from arising in this area. Resident inspections also have identified disciplines (eg: piping - area No. 3) where UE&C specifications were not being followed, apparently because the individual contractor's program did not require work to proceed precisely as dictated by the specifications. Additionally, the lack of emphasis on utilizing manufacturer's specifications in the procedural implementation and inspection of equipment installation has resulted in nonconforming configurations in at least one area (electrical - violation noted in area No. 6). Another electrical area finding relates to the lack of procedural assignment of work responsibility for activity involving a structural and electrical contractor interface (also a violation in area No. 6). These problematic procedure issues indicate at least a partial failure of the project controls being implemented by the construction manager. It should be pointed out that only in a few cases have these procedural inadequacies led to hardware deficiencies and this is to the credit of both construction supervisory and QA personnel.

The CAT inspection found the QA program to be 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. In fact, the qualification of audit and surveillace personnel and the quality of the audit reports are strengths of the audit program. Management is supportive of QA activities. However, management actions to obtain correction of programmatic weaknesses in the P-H QA program has not yet been 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.

Three of the CAT violations in this functional area represent design control problems. Several of the resident inspector identified violations in functional area No. 3 also indicate failures in the design or design change control area. During the last assessment period, the design area was assessed as Category 3 and a management meeting (paragraph V.4) was held to discuss continuing NRC concerns. While corrective actions appear to be effective in improving the current controls in the design area, the recent implementation of these corrective actions has not provided the time or opportunity to identify and correct all prior issues. Consequently, items attributable to previous errors in the design area have been identified (eg: three of the seven CDRs in Table 1 are design related). Certain currently unresolved resident inspection findings fall into this same category.

These design control concerns, when considered in the context of project management effectiveness, coupled with the procedural implementation weaknesses discussed in this functional area and the violation and/or code compliance concerns discussed in other functional areas, necessitate a broader examination of the overall program by the licensee.

Specifically, the licensee should assess/review his program to ascertain how completely and effectively FSAR design commitments are translated into the actual procedures used in the field to construct the plant.

Although no FSAR deviations appear evident at this time and while the overall project appears to be adequately managed, the complexity of the Seabrook organizational structure places additional pressure on the licensee to ensure effective project management. Consequently, licensee verification of the construction controls and processes is very important and should be considered as another measure.

Conclusion

Category 2

Board Recommentation

Solicit licensee commitment to mount an independent verification that FSAR, program, and engineering criteria have been and currently are being translated into construction and inspection documents and are being implemented.

V. SUPPORTING DATA AND SUMMARIES

1. Construction Deficiency Reports (CDRs)

Seven CDRs were submitted by the licensee during the assessment period. After evaluation, four were determined to be not reportable. All deficiencies are listed in Table 1 and were analyzed for causal links. They were individually evaluated as part of the functional area that they represented.

No causally linked CDRs were identified.

2. Investigation Activities

While no formal investigations were performed, nine inquiries into allegations/concerns were conducted and documented, as appropriate. While certain facts relative to all nine allegations were substantiated, in no case did any of the inquiries result in substantive negative findings, conditions adverse to quality construction or unresolved safety questions.

3. Escalated Enforcement Actions

None.

4. Management Conferences

a. October 15, 1981 - a special, announced management meeting at NRC request to discuss the results of the Region I SALP board convened to evaluate licensee performance from July 1, 1980 to June 30, 1981. (Combined Meeting Report 443/81-11 and 444/81-09)

b. April 8, 1982 - a special, announced management meeting at NRC request to discuss corrective actions taken in response to NRC concerns in the design and design change control areas. The following licensee actions were noted:

- -- establishment of an Engineering Change Authorization (ECA) task force
- -- A/E site engineering reorganization
- -- initiation of an A/E Engineering Assurance audit program
- -- increased YAEC engineering program and audit participation

(This meeting is documented in Combined Inspection Report 443 & 444/82-03)

TABLE 1

CONSTRUCTION DEFICIENCY REPORTS
(8/1/81 - 7/31/82)

SEABROOK STATION

CDR No.	DEFICIENCY	CAUSE CODE
** 81-00-10	Design discrepancies between test data, catalog data, and design allowables for cable tray support systems	B
* 81-00-11	Seepage of electrolyte from station control battery covers	F
* 82-00-01	Error in the reinforcement design of a structural wall in the Unit 1 Emergency Feedwater building	B
* 82-00-02	Shop weld failures in cable tray Power Strut column caps	F
** 82-00-03	Binding or seizure of Gould motor control starters	E
* 82-00-04	Discrepant results for concrete admixture tests	A
82-00-05	Design deficiency in the nonseismic specification of raceway supports for the safety-related cables associated with the Refueling Water Storage Tank instruments and valves	B

* Reported as Potential Deficiencies and subsequently cancelled
** Also reported under 10CFR21

Cause Codes
A Personnel Error
B Design Error
C External Cause
D Defective Procedures
E Component Failure
F Fabrication Error

TABLE 2

ENFORCEMENT DATA
(8/1/81 - 7/31/82)

SEABROOK STATION

A. Number and Severity Level of Violation

1. Severity Level

Severity Level I	0
Severity Level II	0
Severity Level III	0
Severity Level IV	14
Severity Level V	5*
Total	19*

*Two of the Level V Violations were cited against both Units 1 & 2; all others were Unit 1 alone.

B. Violations vs. Functional Area

	Functional Area	Severity Level IV	Severity Level V
1.	Soils and Foundation	0	0
2.	Containment and other Safety Related Structures	1	0
3.	Piping Systems and Supports	7	1
4.	Safety Related Components	1	0
5.	Support Systems	0	0
6.	Electrical Power Supply and Distribution	2	2
7.	Instrumentation and Control Systems	1	0
8.	Licensing Activities	-	-
9.	Project Management Effectiveness (CAT)	3	2
	TOTALS	15	5

Note: One violation was cited in each of two functional areas; thus the totals sum to one more than the 19 violations actually issued.

TABLE 2 (Cont'd)

c. Listing of Violations

REPORT	SUBJECT	SEV.LVL.	FUNC.AREA
443/81-09	Inadequate structural support welds	IV	2
443/81-09	Nonconforming NSSS support welds	IV	3
443/81-12	Incorrect instrumentation support installation	IV	7
443/81-14 & 444/81-11	Design failure to consider thermal pipe growth	V	3
443/82-01	Raceway support modification not delegated	V	6
443/82-02	Improper piping penetration welding process	IV	3
443/82-02	Undersized welds specified for whip restraints	IV	3
443/82-03 & 444/82-03	Questionable cable tray inspection program	V	6
443/82-03	QC failure in pipe and electrical support inspections	IV	3 & 6
443/82-04	Nonconforming control battery installation	IV	6
443/82-06	Procedural violation in documenting auditor qualification	V	9
443/82-06	Inadequate waterstop specification	V	9
443/82-06	Failure to properly process ECAs	IV	9
443/82-06	Failure to review NCR design changes	IV	9
443/82-06	Improper distribution of the ECA Change Log	IV	9
443/82-06	Inadequate direction to pipe welders	IV	3
443/82-06	Failure to follow up weld monitor deficiencies	IV	3
443/82-06	Inadequate protection of equipment in storage	IV	4
443/82-06	Code rejectable weld defect	IV	3

TABLE 3

INSPECTION HOURS SUMMARY (8/1/81 - 7/31/82)

SEABROOK STATION

	Functional Area	Hours	% of Time
1.	Soils and Foundation	31	2
2.	Containment and other Safety Related Structures	232	15
3.	Piping Systems and Supports	261	17
4.	Safety Related Components	127	8
5.	Support Systems	21	1
6.	Electrical Power Supply and Distribution	220	14
7.	Instrumentation and Control Systems	58	4
8.	Licensing Activities	-	-
9.	Project Management Effectiveness	614	39
	TOTALS	1564 hours	100%