Docket Nos. 50-443
50-444

MAR 2 3 1982

Public Service Company of New Hampshire
ATTN: Mr. W. C. Tallman
Chairman and Chief Executive Officer
1000 Elm Street
Manchester, New Hampshire 03105

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP)

This refers to the SALP performed by this office on September 28, 1981 regarding the Seabrook Station, Units 1 & 2 and to the discussions of our findings held with your staff on October 15, 1981. That SALP covers the period of July 1, 1980 through June 30, 1981.

The attached SALP report for your facility is being issued and distributed in accordance with recently established NRC policy. Although this report was prepared under previous criteria, the results have been reclassified under present guidance.

No reply to this letter is required. Your cooperation is appreciated.

Sincerely,

Original Signed By:
Ronald C. Haynes
Regional Administrator

Enclosure: SALP - Evaluation Report

cc w/encl:
John DeVincentis, Project Manager
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
State of New Hampshire
L. Wheeler, NRR, LPM

bcc w/encl:
Region I Docket Room (with concurrences)
Chief, Operational Support Section (w/o encls)

IE01

OFFICE ▶	RI:DPRP	RI:DPRP	RI:DPRP	RI:DPRP	RI:REG:DEP:ADM	RI:REG:ADM
SURNAME ▶	Gallo/clc	Brunner	Keimig	Starostecki	Allan	Haynes
DATE	3/17/82	3/18/82	3/18/82	3-17-82	3/18	3/21/82

8204020478 820323
PDR ADOCK 05000443
A PDR

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY

PERFORMANCE EVALUATION

Seabrook Station, Units 1 and 2

Evaluation Period: July 1, 1980 - June 30, 1981

Board Date: September 28, 1981

FOREWARD

The Region I SALP Board performed this assessment prior to the decision of the Nuclear Regulatory Commission to revise the NRC's program of Systematic Assessment of Licensee Performance. An important change in this revision was to retitle and redefine the performance categories. This change affords better characterization of the staff's evaluations of licensee performance. These revised performance categories were used for this report. The SALP Board formally evaluated the licensee's performance before the revised guidance was available. These initial rankings were subsequently equated with and converted to the new performance categories without formally reconvening the Board.

The performance categories are to be printed in the Federal Register within a few weeks. Each functional area evaluated is characterized as being in one of the following categories:

a. 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.

b. 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.

c. 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 appear to be strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

In characterizing the licensee's performance in a functional area as being in one of the Categories, performance is evaluated against the following criteria:

a. Management involvement in assuring quality,
b. Approach to resolution of technical issues from safety standpoint,
c. Responsiveness to NRC initiatives,
d. Enforcement history,
e. Reporting and analysis of reportable events,
f. Staffing (including management), and
g. Training effectiveness and qualification.

SEABROOK STATION, UNITS 1 AND 2

PERFORMANCE EVALUATION

Region I

LICENSEE PERFORMANCE EVALUATION (CONSTRUCTION)

Facility: Seabrook Station, Units 1 and 2

Licensee: Public Service Company of New Hampshire

Facility Information:

Docket No.	License No./Date of Issuance		Unit No.
50-443	CPPR-135	July 7, 1976	Unit 1
50-444	CPPR-136	July 7, 1976	Unit 2

Reactor Information:	Unit 1	Unit 2
NSSS	Westinghouse	Westinghouse
MWt	3425	3425

Assessment Period: July 1, 1980 - June 30, 1981

Appraisal Date: September 28, 1981

Review Board: R. W. Starostecki, Director, DR&PI, RI
L. L. Wheeler, Licensing Project Manager, NRR
J. H. Joyner, III, Acting Director, DE&TI, RI
G. H. Smith, Director, DEP&OS, RI
E. J. Brunner, Chief, PB#1, DR&PI, RI
A. C. Cerne, Senior Resident Inspector, Seabrook

Attendees: R. M. Gallo, Chief, RPS 1A, DR&PI, RI

PERFORMANCE DATA

Seabrook Station, Units 1 and 2

Assessment Period: July 1, 1980 - June 30, 1981

A. Number and Nature of Noncompliance Items

1. Noncompliance Category:

	Unit 1	Unit 2
Violations	0	0
Infractions	6	0
Deficiencies	0+(1)	0+(1)
Severity IV	3	0
Severity V	6	0

2. Areas of Noncompliance:

	Unit 1 VIO	INF	DEF	SEVIV	SEVV	Unit 2 VIO	INF	DEF	SEVIV	SEVV
Containment Structure	0	0	(1)	0	0	0	0	(1)	0	0
Safety Related Structures	0	1	0	2	0	0	0	0	0	0
Piping and Hangers	0	5	0	1	0	0	0	0	0	0
Electrical	0	0	0	0	1	0	0	0	0	0
Procurement	0	0	0	0	1	0	0	0	0	0
Design & Design Change	0	0	0	0	4	0	0	0	0	0

B. Number and Nature of Construction Deficiency Reports

1. Type of Events:

	Unit 1	Unit 2
A. Personnel Error	0+(1)	0+(1)
B. Design/Fabrication Error	1+(5)	0+(5)
C. External Cause	0	0
D. Defective Procedures	1+(1)	0+(1)
E. Component Failure	0+(3)	0+(3)
X. Other	0	0
Total	2+(10)	(10)

2. Causally Linked Events:

A review of Construction Deficiency Reports for the period July 1, 1979 through June 30, 1981 has identified four CDRs with the same Event Responsibility Code, attributable to technical design errors by the A/E, and having as a common factor the potentially adverse impact upon support for safety class piping systems under severe loading conditions. These four reported items are summarized below:

Docket CDR No.	Report Date	Item Description
79-00-01	11/6/79	Safety Class piping had been seismically analyzed using incorrect Amplified Response Spectra for the supporting structural steel.
80-00-06	12/16/80	A review of the final design of a number of safety class pipe supports has revealed a high percentage of errors.
81-00-03*	1/5/81	Specified weld sizes for structural steel to embed connections did not meet minimum AISC size requirements. (Some affected structural steel supports safety class piping).
81-00-06	5/26/81	Some safety class pipe support drawings have not specified the required length of welds for support members attached to embed plates.

*NOTE: Reported as a potential significant deficiency and subsequently cancelled.

While the analysis of these linked items results in quantitative parameters which have been judged acceptable in terms of interim regional acceptance criteria, it is noted that only one of the above CDR's (79-00-01) was initially identified by the licensee. Two items were a direct result of NRC inspection findings and the other item was precipitated by a "Potentially Generic Issue Data Sheet" originating from Region V. The impact and assessment of these design related, linked CDRs is included in the Performance Analysis for Functional Area No. 13 (Design and Design Changes).

3. Of the twelve Construction Deficiency Reports submitted during the assessment period, seven were reported as potentially reportable. Of these seven, six were evaluated by the licensee to be not reportable under 10 CFR 50.55(e), while the other remains under evaluation. Three of the reportable deficiencies were related to a common component problem, but were reported separately because of different component sizes.

C. Escalated Enforcement Actions

Civil Penalties

None

Orders

None

Immediate Action Letters

IAL No. 80-55 (12/22/80) (AlsO included in Cycle 1 SALP) - Recurrent items of noncompliance in the area of weld repairs pe·formed by the piping subcontractor (Pullman-Higgins). Stop-work order on weld repairs issued by licensee on 12/24/80 and rescinded on 2/6/81 after initiation of corrective actions documented in the licensee response to the IAL.

D. Management Conferences Held During Past Twelve Months

No enforcement related meetings with licensee management were conducted during the assessment period; however, the following management conferences were held:

-- July 3, 1980 (Also included in Cycle 1 SALP) - a routine meeting held with licensee management at the Seabrook site at NRC request to discuss construction status, Construction Deficiency Reporting, the NRC enforcement policy, resident inspection and independent measurement programs, SALP, and the licensee implementation of the Seabrook QA program.

-- March 12, 1981 - a special meeting held with licensee management at the Seabrook site at NRC request to discuss the results of the NRC board convened to evaluate the licensee's performance from January 1 to December 31, 1980 as part of the NRC's Systematic Assessment of Licensee Performance (SALP) Program.

E. Licensed Activities

Activity on Unit 1 varied during the assessment period, while Unit 2 remained in a slowdown until the end of June 1981 when improved cash flow from the sale of a percentage of Seabrook ownership resulted in increased construction activity. The total site work force has increased from approximately 2500 to 4200 personnel during the assessment period, with a lowpoint of about 2000 personnel resulting from an ironworker strike from July to September, 1980. Week long strikes by painters in May 1981 and by pipefitters in June 1981 had little effect upon the overall construction schedule.

In April 1981 PSNH announced revised scheduled construction completion dates with the new Fuel Load Date for Unit 1 being November 1983 (an 11 month delay) and February 1986 for Unit 2 (a 16 month delay). During the assessment period the completion percentages for Unit 1 increased from 37% to 51%, and for Unit 2 from 7% to 8%.

Major construction activities for Unit 1 included the arrival and installation of the Reactor Pressure Vessel, steam generators, and pressurizer; mobilization of the instrumentation contractor; balance of plant cable pulling and turbine erection; the commencement of Class 1 piping installation; and the continuation of safety-related piping, safety-related structure erection, electrical raceway and component installation, and containment concrete wall placements. Boring for the nonsafety intake and discharge cooling water tunnels was completed in February and June, 1981 respectively and concrete tunnel liner activities have commenced. Unit 2 construction activities have been confined to containment liner erection and varied levels of work in areas common to both units.

F. Inspection Activities

Eleven onsite combined inspections for both units and one inspection devoted only to Unit 1 construction were conducted during the assessment period. Six of these inspections were accomplished by the resident inspector alone; two by regional based inspectors; and four were resident inspector originated with regional inspector input. A total of 829 inspector-hours were expended during the period in the inspection of Unit 1 activities and 161 inspector-hours on Unit 2. Four Region IV Vendor Inspection Branch 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. The construction resident inspection program has been in effect for the entire assessment period.

Construction inspection activities have been concentrated in the areas of containment and safety-related structure erection, piping and component installation, and electrical activities. To a lesser degree, the licensee's procurement and reporting programs have received inspection attention. While no inspections were specifically devoted to quality assurance, design or licensee corrective actions, aspects of these areas, as they related to other technical areas or previous inspection findings, were reviewed routinely and periodically documented in inspection reports throughout the assessment period.

G. Investigation Activities

While no formal investigations were performed, four inquiries into allegations/concerns were conducted and documented, as appropriate. While certain facts relative to all four 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.

H. Cycle 1 Versus Cycle 2 Statistical Data Overlap

The respective assessment periods for Cycles 1 and 2 provide a six month overlap period, July 1 - December 31, 1980. Eight noncompliance items were identified during this overlap period with five of them categorized in the "Piping and Hangers" functional area. Two of these five infractions were recurrent items of noncompliance and led to the issuance of Immediate Action Letter (IAL) 80-55 and the resultant stop-work order on pipe weld repair activities. This contributed significantly to the below average rating assigned to this functional area for Cycle 1. The Cycle 2 analysis of this area places a greater weight upon data from the six month span after the overlap, where the results of licensee corrective actions could be fully evaluated.

Two of the noncompliance items identified during the overlap period had been categorized in Cycle 1 functional areas which have been eliminated in the Cycle 2 format. For the Cycle 2 analysis, these two items have been recategorized as follows:

-- Deficiency for Units 1 and 2 in the "Liners" area (Cycle 1) is tabulated in the "Containment Structure" area (Cycle 2).

-- Infraction for Unit 1 in the "Concrete" area (Cycle 1) is tabulated in the "Design and Design Changes" area (Cycle 2).

This recategorization is highlighted in any affected functional area performance analysis sections and is deemed advantageous to the overall evaluation since the Cycle 2 format is more amenable to the assignment of enforcement and other relevant data to the most meaningful functional areas, which best represent overall licensee performance.

Where Cycle 2 functional areas have no corresponding Cycle 1 subject, the performance analysis sections utilize Cycle 1 summaries somewhat modified from the Cycle 1 SALP. For example, analysis of the "Containment Structure" area contains a summarization of data for the Cycle 1 portion which was extracted from two Cycle 1 areas ("Liners" and "Concrete") which have been eliminated in the Cycle 2 format.

While the existence of a six month overlap period may appear to distort the relevance of data compiled from that period, both the evaluation process and the resulting analysis summarization presented for each functional area acknowledge any significant data overlap.

Seabrook Station, Units 1 and 2

Assessment Period: July 1, 1980 - June 30, 1981

Functional Area	Category 1	Category 2	Category 3
1. Quality Assurance		X	
2. Site Preparation & Foundations	X		
3. Containment Structure		X	
4. Safety-related Structures		X	
5. Piping & Hangers		X	
6. Safety-related Components		X	
7. Electrical		X	
8. Instrumentation	No basis for evaluation		
9. Fire Protection	No basis for evaluation		
10. Preservice Inspection	No basis for evaluation		
11. Corrective Actions and Reporting		X	
12. Procurement		X	
13. Design and Design Changes			X
14. Training	X		

Seabrook Station, Units 1 and 2

Assessment Period: July 1, 1980 - June 30, 1981

1. QUALITY ASSURANCE

Analysis

a. Cycle 1 - While only one inspection specifically directed toward quality assurance activities of the licensee (corrective action) and subcontractors (document control) was conducted and only one item of noncompliance was identified in the area of document change controls, every construction inspection (total of ten) during the assessment period examined and evaluated quality assurance/control as it related to the other functional areas. In addition to the one item of noncompliance mentioned above, nine other items of noncompliance, although categorized in other areas, represented failures of site contractor QA/QC programs in that actual nonconforming construction conditions were either not checked or missed by the appropriate contractor's quality program.

b. Cycle 2 (106 hr., 11%) - Each inspection during this assessment period has provided the opportunity for evaluation of the quality assurance program and licensee and contractor QA/QC activities. While no items of noncompliance were documented against the QA Program, findings in other functional areas have revealed cases where the responsible QC program failed to identify deficient field conditions. However, since the end of the Cycle 1/Cycle 2 overlap period, only one noncompliance item fits into this category and it could be attributed to an individual welding inspector's error as opposed to a programmatic problem.

While the number of different contractors onsite, each with their own QA program still presents the potential for managerial and interface control problems, increasingly stronger direction from the YAEC QA organization, as exhibited by the use of the QA stop work authority discussed in Functional Area No. 4, increases in the field QA surveillance staff (i.e., the addition of six QA engineers over this assessment period) and the number of site audits by corporate-staff QA engineers, and the greater involvement of UE&C corporate QA personnel in the solution of programmatic problems, all have contributed to an adequately functioning QA organization, structure, and concept at Seabrook Station.

Conclusion

Category 2

2. SITE PREPARATION AND FOUNDATIONS

Analysis

a. Cycle 1 - Substructure and foundation work were essentially complete. Backfill operations were witnessed and records reviewed as part of inspection activities associated with service water piping and electrical duct bank installations. No items of noncompliance were identified.

b. Cycle 2 (7 hr., 1%) - No major site prep or foundation operations were conducted. One inspection was performed in the areas of soil backfill and compaction for service water pipes and application of below grade water seal membrane and protective cover on the diesel generator and waste process buildings. The placement and inspection of fill concrete activities were also periodically reviewed during the assessment period. No items of noncompliance were identified.

With inspection activities conducted by an independent onsite testing group complimenting contractor quality control and with the construction manager providing additional QA surveillance over work in this area, the licensee has organizationally provided for a structured program to assure quality performance in this functional area.

Conclusion

Category 1

3. CONTAINMENT STRUCTURE

Analysis

a. Cycle 1 - Since the subject "Containment Structure" was not a functional area for Cycle 1, the following applicable sections from analyses of the "Concrete" and "Liners" areas have been excerpted.

Six inspections were conducted into containment concrete activities. While no items of noncompliance were cited against containment shell concrete, one noncompliance with regard to rebar cutting internal to Unit 1 containment was issued. The licensee also issued a potentially reportable Construction Deficiency Report regarding cadweld deficiencies during the assessment period. This resulted in a 100% redundant inspection of all existing and new cadwelds by UE&C over the existing inspection activities of Perini. This redundant inspection program continued for over eight months.

Four inspections of containment liner erection activities were conducted for each unit with an additional inspection on the Unit 2 liner only. One item of noncompliance was issued for the welding of temporary attachments onto painted liner surfaces. This deficiency was applicable to both units, but corrective action was effectively implemented prior to the conclusion of the inspection.

b. Cycle 2 (217 hr., 22%) - A total of eight separate inspections were conducted during the Cycle 2 assessment period into containment structure activities, to include rebar installation, concrete placement, and liner erection. Six of these inspections, as well as the identification of the one item of noncompliance (a liner deficiency which was corrected prior to the conclusion of the inspection), occurred during the Cycle 1 overlap. More recent inspections have concentrated upon the technical aspects of cadweld splicing operations, fostering concerns over both the high cadweld rejection rate (contributed to somewhat by the acceptance criteria in use at Seabrook) and the resultant large number of replacement splices and their placement within the Unit 1 containment shell. Neither of these concerns, however, has resulted in any enforcement actions, to date.

Routine activities, primarily rebar installation and concrete placement for the Unit 1 containment shell and liner erection for Unit 2, appeared to proceed at a pace consistent with quality constraints and inspection requirements. Both licensee management and A/E engineering personnel exhibited judicious handling of periodic construction problems (i.e., the evaluation of potential concrete

voids caused by placement equipment breakdown). The improvement in overall performance noted in portions of this functional area during Cycle 1, appears to have held and contributed to an adequate performance through the end of Cycle 2.

Conclusion

Category 2

4. SAFETY-RELATED STRUCTURES

Analysis

a. Cycle 1 - While six inspections were conducted for Unit 1 structures during the assessment period, only one of these was applicable to Unit 2 also. Two items of noncompliance were identified. One, involving nonconforming stud weld conditions and lack of QC inspection, resulted in procedural changes, but also required testing of already installed embed plates and further evaluation of the identified nonconforming stud location. The other infraction, involving the installation of high strength bolted connections on structural pieces with flame cut slots, resulted in the issuance of a potentially reportable CDR with attendant testing and evaluation.

b. Cycle 2 (76 hr., 8%) - Eight inspections, all in Unit 1, were conducted during the assessment period with the identification of three items of noncompliance. Four of these inspections and one item of noncompliance concerning evidence of flame cut slots in structural steel connections were part of the Cycle 1 overlap. The two more recent noncompliances, both Severity Level IV, identified such deficient field conditions as undersized fillet welds, improper length bolts in high-strength structural connections, and plug welding repair of structural beams at variance with AWS Code requirements. While the plug welding problem had as its basis an incorrect design philosophy rather than field errors, its combination with the more generic bolt length issue results in categorization of the noncompliance in this area. Other inspector concerns over the adequacy of controls over grinding operations on structural steel members were addressed by the licensee without issuance of enforcement action.

During the assessment period, the licensee has successfully utilized its stop work authority to institute procedural changes and retrain personnel in identified areas of concern, such as structural welding. The resultant structural weld "traveler" documentation and inspection program, currently in use, has not only provided better consistency in welding operations, but also promoted the greater involvement of construction supervisory personnel in attaining quality welds. New construction techniques, such as tension-set bolting, have been adequately qualified and controlled. A licensee identified, potential 50.55(e) item (subsequently cancelled), concerning the structural adequacy of some cooling tower beams in which rebar had shifted, was extensively evaluated to include testing of beam mock-ups. While the A/E's actions in dispositioning this beam problem indicated a thorough attention to detail, the inattention to proper concrete preplacement considerations and placement techniques, which led to the problem, point out the need, as do the noncompliance items in this functional area, for continual licensee emphasis upon proper procedural and supervisory control over routine, daily structural construction activities.

Conclusion

Category 2

5. PIPING AND HANGERS

Analysis

a. Cycle 1 - Eight inspections in Unit 1 and one inspection common to both units were conducted of activities relative to this functional area during the assessment period. Six items of noncompliance, all relative to the activities of the same contractor (Pullman-Higgins), were identified. Four of these infractions, two of which were recurrent items of noncompliance, involved inadequacies in the contractor pipe weld repair program and led to the issuance of Immediate Action Letter (IAL 80-55), documenting the licensee's issuance of a stop work order on all weld repairs performed by Pullman-Higgins. The other two infractions involved hanger erection/welding defects and inadequate QC stud weld inspections. The hanger noncompliance, identifying weld and erection defects after the acceptance of a hanger by QC personnel, was issued after action by the licensee to resolve the problems. This also led to a licensee stop work order on Pullman-Higgins hanger installation activities. The stud weld noncompliance resulted in a reinspection of all applicable embed plates, further testing, and the replacement of several failed stud welds.

b. Cycle 2 (165 hr., 17%) - Ten inspections of Unit 1 and two inspections common to both units were conducted in this functional area. While six items of noncompliance were identified, five of them, including the two recurrent items which led to the issuance of IAL 80-55, were included in the overlap period and considered as part of the Cycle 1 evaluation noted above. The licensee's corrective actions in the pipe weld repair area appear to have been effective based upon inspections since January 1981.

The one new noncompliance concerned failure to use a qualified weld procedure for piping/containment flued head welding and had as its bases misinterpretation of the ASME Code requirements and an A-E/Contractor interface misunderstanding relative to material impact testing. While other licensee identified problems in the area of weld rod control have required replacement of certain completed field welds, the conduct and control of pipe welding activities over the last half of the assessment period has been generally good. Of particular note are the licensee's extensive evaluations and quality-oriented position relative to problems identified on shop fabricated pipe. Recent inspections into the in process and completed erection of pipe hangers have also resulted in generally acceptable findings; however, review of the plans and proposed procedures for the welding installation of the supports for RCPB crossover leg piping has identified some technical concerns which remain currently unresolved.

At the end of the assessment period detailed procedures were being finalized and an intensive training program conducted in preparation for commencement of the Class 1, RCPB loop pipe welding installation utilizing a machine-orbiting, pulsing gas tungsten arc welding process. The imposition of hold points for several informational radiographic shots, beyond code requirements, to be taken during the loop welding not only illustrates licensee and contractor attention to quality considerations, but also characterizes the overall improvement in quality emphasis which has been noted to occur over the last six months of this Cycle 2 assessment period.

Conclusion

Category 2

6. SAFETY-RELATED COMPONENTS

Analysis

a. Cycle 1 - Four inspections into items common to both units and two inspections unique to Unit 1 were conducted during the assessment period. Most safety related components were in storage either in place or warehouse controlled. Therefore, inspection activities were concentrated in the areas of maintenance and storage, although shipping condition, rigging HVAC installation, and RPV safe end examination were also witnessed. No items of noncompliance were identified. One Construction Deficiency Report involving NSSS gate valve deficiencies was reported.

b. Cycle 2 (95 hr., 9%) - Twelve inspections, to include five of Unit 2 components, were conducted during the assessment period. Since the end of the overlap period, the RPV, steam generators, pressurizer, polar gantry crane, and safety-related pumps and tanks have been installed. The erection planning and process, warehouse and in-place storage conditions, and conformance of component and support configurations to design and seismic considerations were routinely evaluated for selected items. An inspection of the offsite storage facility in Newington, N.H. was also conducted.

While no items of noncompliance were identified, several questions relating to ASME requirements for bolted supports (i.e., RPV and regenerative heat exchanger) and NSSS component welding criteria have led to either field modification of installed parts or reanalysis to justify existing conditions. The causal factors for such necessary actions range from an isolated fabrication error to misinterpretation of code requirements. While the facts have to date not justified enforcement actions, unresolved items remain open on certain of these issues.

The CDR involving NSSS gate valve deficiencies from Cycle 1 has been expanded to encompass more valves of different sizes. Two additional CDRs have thus been reported and testing is still in progress. The licensee reporting of these valve deficiencies predated by several months the publication of this generic issue by the NRC in IE Bulletin 81-02 and its supplement.

Conclusion

Category 2

7. ELECTRICAL

Analysis

a. Cycle 1 - Since this functional area had been divided into two functional areas for Cycle 1 evaluation, both respective analyses are provided below.

One inspection of electrical equipment was conducted during the assessment period. Specifically, the welding of supports for the diesel generator motor control centers and control cabinets was examined. The maintenance and storage of several pump motors was checked routinely during other inspections. No items of noncompliance were identified. One potentially reportable CDR regarding defective switch contacts was later determined by the licensee not to be applicable to equipment at Seabrook Station.

Two inspections in the electrical tray and wire area were conducted during the assessment period. Specific areas examined included cable tray and support erection, duct bank installation, power strut welding, embedded conduit installation, and kwik bolting activities. No safety-related cable was pulled. No items of noncompliance were identified.

b. Cycle 2 (58 hr., 6%) - Three inspections by the resident inspector into Unit 1 electrical activities were conducted during the assessment period with the identification of one item of noncompliance--the failure to install properly supported electrical boxes within containment. Reclarification of the design mounting details were provided, contractor reinspections scheduled, and corrective action effectively implemented prior to the conclusion of the inspection.

No safety-related cable has yet been pulled. Routine inspection items have included cable tray, conduit, and support installation; material design and certification relative to seismic qualification; plant layout relative to the single failure criterion; and component support erection and in-place motor maintenance. No additional enforcement items or unresolved safety questions have been identified in these areas.

Conclusion

Category 2

8. INSTRUMENTATION

Analysis

a. Cycle 1 - No inspections were conducted and no enforcement items issued in this area. The instrumentation contractor mobilized onsite during 1980, but no safety-related work was accomplished.

b. Cycle 2 (0 hr., 0%) - No safety-related instrumentation installation took place during the assessment period. While no inspections were conducted, the status of procedures, planned operations (i.e., tube bending), and Part 21/50.55(e) requirements relative to instrumentation material purchase and erection were discussed with licensee and contractor personnel.

Conclusion

No basis for evaluation.

9. FIRE PROTECTION

Analysis

a. Cycle 1 - No inspections were conducted in this area.

b. Cycle 2 (0 hr., 0%) - No inspections were conducted in this area.

Conclusion

No basis for evaluation.

10. PRESERVICE INSPECTION

Analysis

a. Cycle 1 - No inspections were conducted in this area. While certain construction activities (i.e., additional NDE in lieu of future hydrostatic line testing and weld design to facilitate future ISI) were in progress, no work directly related to this functional area was accomplished.

b. Cycle 2 (0 hr. 0%) - While no direct inspections were conducted in this area, examination of the in-process installation of a particular pipe support revealed conditions which would have precluded acceptable pipe weld inservice examination. Since procedural and 10 CFR 50.55(a) criteria were being violated, a noncompliance was written. However, the design interface problems contributing to this problem indicate that the enforcement item could be better categorized and analyzed under the design functional area. Recent documentation and commitments provide assurance that licensee/A-E interfacing has resulted in the promulgation of current and correct guidelines on ISI as it affects ongoing construction.

Conclusion

No basis for evaluation.

11. CORRECTIVE ACTIONS AND REPORTING

Analysis

a. Cycle 1 - One inspection was conducted into the adequacy of the licensee 10 CFR 50.55(e) evaluation and reporting program. No items of noncompliance were identified and the licensee was generally responsive to reporting requirements, including timely responses to Notices of Violation and IE Bulletins. However, an NRC concern was identified near the end of the assessment period regarding the licensee reliance on individual contractor analysis to determine the applicability of 50.55(e) to any nonconforming conditions. Additional actual and potential CDRs were then reported and the licensee initiated action to proceduralize the method of analysis of 50.55(e) data, utilizing a "board review" concept.

b. Cycle 2 (125 hr., 12%) - Four inspections have specifically reviewed licensee reporting requirements with regard to 10 CFR 50.55(e). All inspections during the assessment period have resulted in examinations of licensee corrective actions with regard to specific inspection or reported findings. The two recurrent items of noncompliance identified in the piping area both were issued during the Cycle 1 overlap period and provided basis for the concern over the effectiveness of licensee corrective action during Cycle 1.

Since the end of the overlap period, no recurrent items of noncompliance or enforcement items unique to this functional area have been identified. While the "board review" concept for review of 50.55(e) data has not yet been procedurally defined, the licensee has emphasized review responsibility above the contractor level and has disseminated review guidance down to the contractor level. The lack of a formal method of assuring that deficiencies identified at the contractor level have received thorough consideration for reportability is still a concern and an open unresolved item. However, the evidence gathered from inspection in this area has indicated that once identified above the contractor level, all potential CDRs receive an extensive evaluation and complete, justifiable disposition.

The licensee has been generally responsive to all NRC identified technical concerns and this has contributed to an adequate corrective action program through the end of Cycle 2.

Conclusion

Category 2

12. PROCUREMENT

Analysis

a. Cycle 1 - There was no distinct analysis of this subject as a separate functional area during Cycle 1.

b. Cycle 2 (49 hr., 5%) - Two inspections into the procurement activities for Unit 1 material and components were conducted during the assessment period with one item of noncompliance identified with regard to a supplier's failure to meet specification NDE requirements for large diameter anchor bolts. While questions into the adequacy of material documentation on site have been raised, in all cases the adequacy of the items has been substantiated by presentation of further data, documentation, or technical analyses.

The program for record retrieval for purchased material certification at Seabrook Station is particularly noteworthy in that computerization, an elaborate indexing system, and microfilmed record storage have provided an expeditious means of verifying procured item acceptability.

Conclusion

Category 2

13. DESIGN AND DESIGN CHANGES

Analysis

a. Cycle 1 - While there was no distinct analysis of this subject as a functional area during Cycle 1, analysis of the Cycle 1 "Management" area provided some insight into the interfacing problems relative to the A/E design specifications and the diverse number of implementing contractor programs as they affect design considerations.

b. Cycle 2 (84 hr., 8%) - Each inspection during this assessment period has provided the opportunity for evaluation of the project design and design changes being implemented. Four items of noncompliance were identified. One, involving inadequate design controls over the field authority for rebar cutting, occurred during the Cycle 1 overlap period and was categorized in the since eliminated "Concrete" functional area of Cycle 1. The licensee was not in full agreement with the NRC position that this issue was in violation of Appendix B criteria, but corrective action was implemented.

The other three noncompliances have been identified in inspections since January 1981 and included the failure to consider Code ISI requirements (previously discussed in the Preservice functional area), failure to provide appropriate weld acceptance criteria for skewed ASME fillet welds, and failure to provide pipe support weld length criteria in the design drawings (reported a a 50.55(e) item and included in the discussion of CDRs in paragraph B.2). While corrective actions appear to have been effectively initiated for each of these citations, a common factor involving the issuance of incomplete or incorrect final design criteria raises concerns since design errors may not be detected during plant construction. Other issues, such as the rework required on the RPV and regenerative heat exchanger supports (mentioned in the functional area No. 6) and waiver of original weld NDE requirements for the crossover leg pipe support welding (mentioned in functional area No. 5) without proper consideration of lamellar tearing potential, have as their bases aspects of a breakdown in the design program.

Consideration of the causally linked events discussed in paragraph B.2 of the Performance Data section adds to the concern over the number of design-related problems identified during this assessment period. The organizational structure at Seabrook necessitates translation of the given A/E design criteria (i.e., the drawings and specifications) into a large number of different and varied contractor program and procedural requirements. This not only complicates the interface controls where design questions are involved, but also makes audit and inspection functions more difficult.

Recent actions by the licensee have provided for a better programmatically defined system of liaison between the different engineering disciplines and the responsible A/E home office staff for approval of engineering changes. YAEC home office engineering personnel are also becoming more directly involved in questions generated by the field which require engineering evaluation. These actions in conjunction with the submittal of the Seabrook Station FSAR on June 29, 1981 may provide a more positive means for analyzing and adequately controlling both the existing design and design changes in accordance with the tendered design for Seabrook Station.

Conclusion

Category 3

14. TRAINING

Analysis

a. Cycle 1 - While no inspections were conducted specifically in this area during the assessment period, training for activities categorized in other functional areas was observed and certain training records reviewed. During 1980, a full time position of site Indoctrination and Training Coordinator was established under UE&C control. No enforcement items were issued.

b. Cycle 2 (8 hr., 1%) - No specific inspections were conducted into this functional area. However, training sessions on specific subjects were observed and training data was reviewed, particularly where identified in corrective action requirements for deficient areas. UE&C training data for the various contractors indicates an average of almost 900 man-hours each week during the assessment period was devoted to personnel training. The heavy emphasis upon Contractor craft and QC training was reflected in the disposition of nonconformance reports where retraining of the affected individuals was routinely directed and in the weekly training reports, which exhibited direct management involvement in the contractor training programs.

The licensee has recently shifted control of the training program to a PSNH training coordinator with greater emphasis upon formal classes and scheduled blocks of instruction. This further verifies the licensee commitment to the use of training as an important tool in quality construction. While the overall effectiveness of a training program can only be measured in the results produced in other areas, the licensee's established training program at Seabrook Station is at least certainly pointed toward achieving those better results.

Conclusion

Category 1

INSPECTION HOURS SUMMARY

Assessment Period: July 1, 1980 - June 30, 1981

	FUNCTIONAL AREA	INSPECTION HOURS (Units 1 and 2 Combined)	
1.	Quality Assurance	106	(11%)
2.	Site Preparation and Foundations	7	(1%)
3.	Containment Structures	217	(22%)
4.	Safety-Related Structures	76	(8%)
5.	Piping and Hangers	165	(17%)
6.	Safety-Related Components	95	(9%)
7.	Electrical	58	(6%)
8.	Instrumentation	0	(0%)
9.	Fire Protection	0	(0%)
10.	Preservice Inspection	0	(0%)
11.	Corrective Actions and Reporting	125	(12%)
12.	Procurement	49	(5%)
13.	Design and Design Changes	84	(8%)
14.	Training	8	(1%)
	TOTAL:	990	

CYCLE 1 NONCOMPLIANCE HISTORY

Assessment Period: January 1 - December 31, 1980

INSPECTION NUMBER	UNIT	SEVERITY	FUNCTIONAL AREA	SUBJECT
443 and 444/ 80-03	1, 2	INFRACTION	QUALITY ASSURANCE	FAILURE TO CONTROL CHANGES TO ASSURE REVISION OF AFFECTED CONTRACTOR PROCEDURES
	1	INFRACTION	SAFETY-RELATED STRUCTURES	FAILURE TO CONDUCT A REQUIRED STUD WELDING INSPECTION
443/80-04	1	INFRACTION	PIPING AND HANGERS	FAILURE TO PROVIDE SEQUENCE FOR EXAMINATION OF PIPE WELD REPAIRS TO ASSURE CODE COMPLIANCE
443 and 444/ 80-05	1, 2	INFRACTION	ENVIRONMENTAL	INADEQUATE ENVIRONMENTAL CONTROL PROGRAM
	1, 2	DEFICIENCY*	ENVIRONMENTAL	FAILURE TO CONTROL DEWATERING WATER TURBIDITY
	1, 2	DEFICIENCY	ENVIRONMENTAL	EXCEEDING CONSTRUCTION PERMIT TURBIDITY DISCHARGE
443/80-06	1	INFRACTION	CONCRETE	FAILURE TO PROVIDE APPROPRIATE CRITERIA FOR THE INSPECTION OF EQUIPMENT GROUTING
443/80-07	1	INFRACTION	PIPING AND HANGERS	FAILURE TO INITIATE NONCONFORMANCE REPORT AND REVIEW AND DISPOSITION STUD WELD NONCONFORMING CONDITIONS
443/80-10	1	INFRACTION	PIPING AND HANGERS	FAILURE TO INSTALL PIPE SUPPORT WELDS IN ACCORDANCE WITH DRAWINGS
	1	INFRACTION	SAFETY-RELATED STRUCTURES	FAILURE TO ASSURE THAT PURCHASED STRUCTURAL STEEL CONFORMS TO CODE REQUIREMENTS
443 and 444/ 80-11	1, 2	DEFICIENCY	LINERS	FAILURE TO COMPLY WITH PROCEDURES WHEN WELDING ON PAINT
	1	INFRACTION	PIPING AND HANGERS	FAILURE TO COMPLY WITH REQUIREMENTS WHEN MAKING A WELD REPAIR OF PIPING
	1	INFRACTION*	PIPING AND HANGERS	MISSING INSPECTION SEQUENCES ON FIELD WELD REPAIR PROCESS SHEETS
443/80-12	1	INFRACTION*	PIPING AND HANGERS	FAILURE TO PERFORM PIPE BASE METAL REPAIR WELDING AND FINAL NDE IN ACCORDANCE WITH ASME AND SPECIFICATION REQUIREMENTS
443/80-13	1	V	CONCRETE	FAILURE TO CONTROL AND DOCUMENT THE ENGINEERING REVIEW AND APPROVAL OF A FIELD INITIATED DESIGN CHANGE

NOTE: * - Recurrent Item of Noncompliance

CYCLE 2 NONCOMPLIANCE HISTORY

Assessment Period: July 1, 1980 - June 30, 1981

INSPECTION NUMBER	UNIT	SEVERITY	FUNCTIONAL AREA	SUBJECT
443/80-07	1	INFRACTION	PIPING AND HANGERS	FAILURE TO INITIATE NONCONFORMANCE REPORT AND REVIEW AND DISPOSITION STUD WELD NONCONFORMING CONDITIONS
443/80-10	1	INFRACTION	PIPING AND HANGERS	FAILURE TO INSTALL PIPE SUPPORT WELD IN ACCORDANCE WITH DRAWINGS
	1	INFRACTION	SAFETY RELATED STRUCTURES	FAILURE TO ASSURE THAT PURCHASED STRUCTURAL STEEL CONFORMS TO CODE REQUIREMENTS
443 and 444/ 80-11	1, 2	DEFICIENCY	CONTAINMENT STRUCTURE	FAILURE TO COMPLY WITH PROCEDURES WHEN WELDING ON PAINT
	1	INFRACTION	PIPING AND HANGERS	FAILURE TO COMPLY WITH REQUIREMENTS WHEN MAKING A WELD REPAIR OF PIPING
	1	INFRACTION*	PIPING AND HANGERS	MISSING INSPECTION SEQUENCE ON FIELD WELD REPAIR PROCESS SHEETS
443/80-12	1	INFRACTION*	PIPING AND HANGERS	FAILURE TO PERFORM PIPE BASE METAL REPAIR WELDING AND FINAL NDE IN ACCORDANCE WITH ASME AND SPECIFICATION REQUIREMENTS
443/80-13	1	V	DESIGN AND DESIGN CHANGES	FAILURE TO CONTROL AND DOCUMENT THE ENGINEERING REVIEW AND APPROVAL OF A FIELD INITIATED DESIGN CHANGE
443/81-01	1	IV	SAFETY-RELATED STRUCTURES	FAILURE TO FOLLOW PROCEDURE IN ACCEPTANCE OF AN UNDERSIZED FILLET WELD
	1	V	DESIGN AND DESIGN CHANGES	FAILURE TO INCLUDE APPROPRIATE WELD ACCEPTANCE CRITERIA IN THE FIELD DRAWING
443/81-02	1	V	PROCUREMENT	FAILURE TO PERFORM MAGNETIC PARTICLE EXAMINATION ON THREADED ANCHOR BOLTS
443/81-03	1	V	DESIGN AND DESIGN CHANGES	FAILURE TO PROVIDE WELD LENGTH CRITERIA FOR PIPE SUPPORT INSTALLATION
	1	IV	SAFETY-RELATED STRUCTURES	FAILURE TO CONTROL STRUCTURAL BOLTING AND WELDING TO CODE AND PROCEDURAL REQUIREMENTS

NOTE: * - Recurrent Item of Noncompliance

INSPECTION NUMBER	UNIT	SEVERITY	FUNCTIONAL AREA	SUBJECT
443/81-05	1	V	DESIGN AND DESIGN CHANGES	FAILURE TO CONSIDER CODE ISI REQUIREMENTS FOR INSTALLATION OF PIPE SUPPORT WELDS
	1	IV	PIPING AND HANGERS	FAILURE TO UTILIZE PROPERLY QUALIFIED WELD PROCEDURE
443/81-07	1	V	ELECTRICAL	FAILURE TO INSTALL PROPERLY SUPPORTED ELECTRICAL BOXES

CONTRUCTION DEFICIENCY REPORTS

Assessment Period: July 1, 1980 - June 30, 1981

CDR No.	Report Date	Subject	Area
80-00-02*	10/7/80	Flame Cutting of Structural Beam Slotted Holes	B
80-00-03*	10/8/80	Shifting of Rebar in Cooling Tower Beams	D
80-00-04	10/30/80	Failure of 3" Valves to Seal	E
80-00-05*	12/9/80	Hilti 1" Kwik Bolt Strength Deficiency	B
80-00-06	12/16/80	Pipe Support Design Deficiencies	B
81-00-01*	1/14/81	Torque Relaxation in Hilti Kwik Bolts	D
81-00-02*	1/26/81	Improper NDE on Pipe	A
81-00-03*	1/5/81	Undersized Fillet Welds on Structural Connections	B
81-00-04	2/12/81	Failure of 4" Valves to Seal	E
81-00-05	5/21/81	Level Control Failure in the Volume Control Tank	B
81-00-06	5/26/81	Unspecified Weld Lengths on Pipe Support Design Drawings	B
81-00-07	6/17/81	Failure of 6"-18" Valves to Seal	E

*NOTE: Reported as Potential Deficiencies and subsequently cancelled.