U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-443/80-12
50-444/80-12

Docket No. 50-443
50-444

License No. CPPR-135
CPPR-136 Priority -- Category A

Licensee: Public Service Company of New Hampshire

1000 Elm Street

Manchester, New Hampshire 03105

Facility Name: Seabrook Station, Units 1 and 2

Inspection at: Seabrook, New Hampshire

Inspection conducted: October 13 - November 21, 1980

Inspectors: J. C. Mattia for — 12/9/80
A. C. Cerne, Resident Inspector — date signed

A. A. Varela — 12/9/80
A. A. Varela, Reactor Inspector — date signed

for F. E. Jupp — 12/23/80
J. D. Reynolds, Reactor Inspector — date signed

Approved by: J. C. Mattia — 12/15/80
J. C. Mattia, Acting Chief, Projects Section, RC&ES Branch — date signed

Inspection Summary:
Unit 1 Inspection on October 13 - November 21, 1980 (Report No. 50-443/80-12)
Areas Inspected: Routine inspection by the resident inspector and two regional based inspectors of work activities relative to pipe and pipe support erection and welding, electrical duct bank construction and cable tray erection, concrete batch plant operation and records, anchor bolt installation, and investigation into concerns about improper site testing practices. The inspectors also performed plant inspection-tours and reviewed licensee action on previously identified items and construction deficiency reports. The inspection involved 103 inspector-hours; including nine off-shift hours, by three NRC inspectors.
Results: Of the six areas inspected, one item of noncompliance was identified in one area (Infraction - failure to perform pipe base metal repair welding and final NDE in accordance with ASME and specification requirements - paragraph 7a).

Region I Form 12
(Rev. April 77)

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Unit 2 Inspection on October 13 - November 21, 1980 (Report No. 50-444/80-12)
Areas Inspected: Routine inspection by the resident inspector and two regional based inspectors of work activities relative to the RPV safe end inspection and an investigation into concerns about improper site testing practices. The inspectors also performed plant inspection - tours and reviewed licensee action on previously identified items and construction deficiency reports. The inspection involved 24 inspector-hours by three NRC inspectors.
Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted

Yankee Atomic Electric Company

F. W. Bean, QA Engineer
B. B. Beckley, Manager of Nuclear Projects (PSNH-Manchester)
P. B. Bohan, Senior Engineer (PSNH)
D. L. Covill, QA Engineer
J. V. Day, QA Engineer
J. DeVincentis, Project Manager (Westborough)
W. J. Gagnon, QA Engineer
D. E. Groves, QA Engineer (Westborough)
R. E. Guillette, QA Engineer (Westborough)
J. H. Herrin, Site Manager (PSNH)
R. C. Julian, QA Engineer
G. F. McDonald, Jr., QA Engineer (Westborough)
W. J. Miller, QA Manager (Westborough)
C. J. Moynihan, QA Engineer
J. F. Nay, Jr., QA Engineer
J. W. Singleton, Field QA Manager
E. D. Sosnowski, Field Engineer (PSNH)
H. E. Wingate, Project Engineer (Westborough)

United Engineers and Constructors (UE&C)

R. H. Beaumont, QA Engineer
R. L. Brown, Assistant Liaison Engineer
J. A. Grusetskie, Assistant Liaison Engineer
M. P. Hanson, Liaison Engineer Manager
R. A. Kountz, Welding Superintendent
R. A. Mills, Assistant Liaison Engineer
R. J. Phelps, Field Superintendent of QA
L. R. Wade, Assistant Field Superintendent of QA
T. P. Vassallo, Civil QA Supervisor
J P. Zabielski, Concrete Superintendent

Perini Power Constructors (PPC)

R. W. Johnson, Supervising QA Engineer
G. E. Myers, Technical Advisor
D. H. Nilsen, Chief Civil Inspector
J. Patterson, QA Engineer
A. G. Schroeder, Lead Structural Inspector
R. G. Swanson, Batch Plant Inspector

Pullman-Higgins (Pullman)

R. G. Davis, Field QA Manager
R. R. Donald, QC Supervisor
D. Geske, NDE Supervisor
J. Godleski, QA Records Engineer
R. M. Johnson, QA Process Engineer
C. D. Lyon, QC Inspector
C. Scannell, Chief Field Engineer
D. M. Septelka, Lead Hanger Engineer

C. P. Blouin, Inc.

G. Langley, Field QA Manager

Pittsburgh Testing Laboratory (PTL)

H. Ruffner, Site Manager

Westinghouse

C. E. Walker, Liaison Engineer

2. Plant Tours (Units 1 and 2)

The inspectors observed work activities in-progress, completed work and plant status in several areas of the plant during general inspections of the plant. The inspectors examined work for any obvious defects or non-compliance with regulatory requirements or license conditions. Particular note was taken of presence of quality control inspectors and quality control evidence such as inspection records, material identification, nonconforming material identification, housekeeping and equipment preservation. The inspectors interviewed craft personnel, supervision, and quality inspection personnel such as personnel were available in the work areas.

Specifically, the inspector observed preparation for concrete operations and post-placement curing on a Unit 1 containment wall placement at the west penetration area. He noted slight containment wall thickness variations (approximately 3/4") for lower lift placements and reviewed UE&C Engineering Change Authorizations (ECA) 01/401E and [illegible]1889B approving and governing these thickness deviations.

The inspector observed HVAC duct work being installed in the Unit 1 Control Building and discussed various noted welding configurations with the sub-contractor QA Manager. He also checked the currentness of a sample of UE&C drawings in their field locations. The installation of coating on the Unit 1 containment liner dome interior was discussed with the responsible licensee field engineer. The inspector was informed of and verified the practice by

the painting contractor to omit paint from any liner areas with questionable surface conditions or potential defects.

Another inspector observed the following Unit 1 construction activities: select soil backfill and compaction for the service water pipes in the area between Units 1 and 2; application of water seal membrane and protective cover below grade on diesel generator and waste process buildings; preparation preceding concrete for the Primary Auxiliary Building south wall; containment spray pipe alignment and weld prep in the equipment vault safety injection pump tank weld and fit-up; containment interior slab at Elev. 25'/concrete preparations; and rebar installation in the containment exterior wall.

No items of noncompliance were identified; however, one item remains unresolved as discussed below:

An inspector observed four consecutive cadweld splices on a vertical outer-layer #18 rebar for the Unit 1 containment building exterior wall. These splices were identified as number 170 Rs and were noted to occur between Elev. 4.5' and about 8.5'. Later the inspector was informed by contractor that other similar series of cadweld splices exist in the containment wall vertical and diagonal rebar. These were the result of replacing a rejected cadweld splice, when cut out, with two cadweld splices. Upon inspection and rejection of any replacement cadwelds, their successive replacement by two new splices has resulted in situations where a series of cadweld splices now exist where originally only one was required. The inspector requested that the extent and locations where a series of more than two cadweld splices has been provided when only one was originally detailed to be defined, evaluated, and justified taking into account the acceptable concrete crack size resulting from potential excess strain accumulation across each location where series of splices exist on one rebar. The inspector also questioned what causes have been attributed to the numerous visual rejections of cadweld splices and what corrective actions have been taken by the licensee to reduce this reject rate.

Subsequently, it was learned that a UE&C ECA (10/0041B) is to be issued changing the method by which cadweld end void measurements are taken to bring these measurement techniques in line with the ERICO intent and avoid the unnecessary conservatism leading to the high reject rate and multiple replacement splices.

Pending review by the NRC of the requested justification for acceptance of existing numerous cadweld splices in series without any apparent specified limit; NRC examination of the new cadweld void measurement techniques; and NRC evaluation of any further licensee corrective action, if justified, this item is unresolved (443/80-12-01).

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (443/80-03-03): Failure to conduct required stud weld inspections. the inspector reviewed Perini Nonconformance Report (NCR) 844, Revision 3 and determined that the licensee had identified the embed plates installed without QA inspection and has documented any nonconforming stud spacing found by ultrasonic examination after embedment. He also reviewed UE&C ECA 01/1373F which incorporates the as-built details of the nonconforming plates for consideration in the design of the attached components.

Perini Quality Assurance Procedure QAP 10.14, Revision 2, establishes a system for tagging all acceptable items that have passed stud weld inspection and cross referencing the inspection report number on the tag.

Since the acceptability of existing embeds has been addressed and will be considered in future design and since corrective action appropriate to the problem has been initiated, the inspector has no further questions on this issue.

(Closed) Unresolved Items (443/80-09-01): Evaluation of powder actuated fastener use on structural steel; and (444/80-11-02): Contractor interface on containment floor leveling concrete cracks.

The inspector reviewed documentation (Fischbach-Boulos-Manzi Deficiency Report, DR-007) indicating the acceptability of all installed power actuated fasteners which were determined not to conform to the criteria established by UE&C ECA 01/1840A. Also, prior discussion with the licensee had indicated the acceptability of the existence of cracking in the leveling fill under the Unit 2 containment liner floor. Justification for the technical adequacy of existing conditions in the case of both these unresolved items has been provided.

However, since each of the above items involved the question of potential problems in areas where separate contractors interface (e.g., electrical contractor's use of fasteners on structural contractor's accepted steel; and containment liner contractor's installation of liner over concrete that has cracked after acceptance by the civil contractor), the question of the adequacy of the existing contractor interface program remains. This is further highlighted by the newly opened unresolved item discussed below.

During the general inspection of the electrical duct bank installation, discussed further in paragraph 10 of this report, the inspector noted that concrete cover over the 4" ducts on bank 5BR was 2" less than typically detailed on UE&C drawing F101303, Revision 2. Since the concrete has since been placed, licensee and contractor inspections have confirmed this deviation with measurements on the currently exposed end of the duct bank (i.e., the construction joint). However, it was and still is not clear whether

responsibility for the proper duct cover lies with the civil or electrical contractor. Apparently, while the proper duct placement is the electrical contractor's problem, the licensee has tentatively identified the root problem to be an improper duct bank foundation invert elevation, which is the civil contractor's responsibility. This issue is further complicated by passage of the duct bank through a nonsafety (construction aid) retaining wall with the box out provided at apparently the wrong elevation, also.

The inspector did verify through a drawing review and discussion with UE&C engineering personnel that the nonsafety wall will have no adverse impact upon the safety-related duct bank, taking into account seismic events, after the plant is in operation. He also checked the safety-related material aspects of the wall (i.e., the wall concrete is considered fill material) by reviewing the Perini Concrete Inspection Package.

However, the programmatic aspects of this problem, as in the two previously mentioned unresolved items, highlight potential problems in site contractor interface controls. The inspector recognizes licensee corrective action based upon the unresolved interface issue of the 80-11 report may not have had time to be fully implemented. But both the programmatic and general site applicability of interface controls and the identified problems warrant immediate licensee action and further NRC audit and evaluation. Pending the accomplishment of both, this item is unresolved (443/80-12-02).

4. Investigation into Concerns on PTL Site Testing

On October 14 and 15, 1980, a former employee of Pittsburgh Testing Laboratory (PTL) at Seabrook expressed his concerns to the NRC resident inspector regarding perceived violations of ASTM and ANSI standards and ASME B&PV Code, Section III, Division 2. The individual, hereafter referred to as the alleger, had already presented these concerns to the licensee and an investigation by the licensee was currently in progress. No allegation as to the existence of specific nonconforming material or defective construction was made. Responses to these concerns have been generated by the licensee's investigation and input from UE&C and PTL. Two NRC inspectors conducted an independent investigation into the concerns based upon both the technical interpretation of codes and standards governing safety-related testing performed by PTL and independent verification of PTL records, personnel qualifications, and management practices of Seabrook. Their observations follow:

a. The alleger stated to the NRC resident inspector that PTL had no program for calibration of wire-cloth sieves used in testing soil or aggregate for particle size determination. The inspector has considered recent correspondence within NRC, between PTL and ASTM, and also between the NRC and PTL, and concludes that the alleger has misinterpreted the intent of ASTM E-11 regarding need for calibration of sieves. This allegation does not impact on safety-related work at

Seabrook because neither critical particle size nor critical gradation are significant requirements for soil and concrete aggregates at Seabrook.

b. The alleger stated to the NRC resident inspector that 6" long rulers issued by PTL to technicians engaged in concrete slump testing are inadequate when testing concrete over 6" slump. The inspector has evaluated the requirements of ASTM, C143 standard for measuring the slump of safety-related conventional concrete used at the Seabrook site. Since special high slump concrete has been used infrequently on safety-related work at Seabrook the need for longer rulers is confined to those special cases. The inspector confirmed the use of 12" rulers in those cases and the programmatic use of the Pour Card to identify to PTL management what maximum slump is allowed, so proper rulers can be issued.

c. The alleger stated to the NRC resident inspector that the unit weight test taken on the first (of each mix) concrete batch produced each day is not representative of the total concrete batched that day. The inspector has considered the following in his independent evaluation of this allegation on concrete testing:

-- PSAR commitments to codes and standards.

-- Regulatory guides.

-- ASME III Division 2 code on concrete mix design, selection of mix proportions and concrete construction - testing and examination.

-- UE&C and Perini concrete specifications for batching concrete and performance testing.

It appears that this allegation is technically unfounded since no requirement exists for more than one unit weight test each day for each mix produced.

d. The alleger stated to the NRC resident inspector that ASTM E329 standard implies that at least one supervising laboratory technician should be at the batch plant to supervise such activities as blending of aggregates. The inspector's review shows that the scope of this standard for concrete inspection and testing makes no implication that blending of aggregates (by the batch plant operator of different sizes from separate aggregate hoppers) must be under a supervising laboratory technician. The three levels of management and supervision identified in section 4 of the standard do not address batch plant supervision; neither does section 5 on concrete inspection and testing identify tests for the blending of aggregates. This allegation appears to be technically unfounded.

e. The alleger stated to the NRC resident inspector that PTL has no program for proficiency testing in accordance with ANSI 45.2.6 and ASME III, Division 2, Appendix VII.. The inspector has independently evaluated the above codes and has reviewed PTL's personnel indoctrination, training, and qualification records for the alleger, as an example. These records indicate that this individual fulfilled requirements of the above codes and PTL procedures when he commenced work for PTL in August 1976 as a Level I concrete inspection technician. His advance to Level II inspector is supported by records attesting to his proficiency in ASTM concrete and soil testing as demonstrated by written examinations. His continued proficiency as Level II inspector at Seabrook is supported by certification records required by PTL procedures. The above appears consistent with the NRC inspector's interpretation of ANSI 45.2.6 and ASME III, Division 2, and their references to SNT-TC-1A for personnel performing concrete testing and inspection.

Another inspector reviewed the records of two former and one present PTL technician. There exists no evidence that other PTL technicians have received inadequate training or testing inappropriate to their qualification. When the PTL method of personnel testing is viewed in the context of the overall training and performance evaluation program, no conflicts or deviations from the referenced codes appear to exist.

f. The alleger's contention that the required Cement and Concrete Reference Laboratory (CCRL) reinspection of the PTL testing laboratory on site had been cancelled could not be verified. The inspector reviewed the previous CCRL Report of March 7, 1978 and noted that a new inspection had been scheduled for December, 1980 prior to expiration of the governing three year time frame of ASTM E329.

g. An allegation concerning supervisory duties for the PTL concrete coordinator without appropriate ASTM qualification appears to be unfounded since neither management nor the technicians perceive the concrete coordinator to be a supervisor. The inspector confirmed that PTL management perogative had instituted the concrete coordinator position to assist accountability of concrete testing where multiple placement sites were established during a single day. This position is sometimes rotated among different technicians and no supervisory duties accompany it.

h. The alleger indicated that no senior level II is available to oversee soils work. However, the inspector verified that both the PTL Site Manager and the Lead Soils Technician are certified Level II Soils Technicians and that both are involved in the training and qualification of other soils technicians and the supervision of field soils work.

i. The alleger's contention that certain soils technicians received inadequate on-the-job training is based in part upon his concern in paragraph h above, which was found to be invalid. The inspector also examined the qualification records of one of the named soils technicians and reviewed the PTL Training Manual and PTL Quality Control Procedure QC-PQ-2. The inspector noted that one of the phases for qualification includes a performance demonstration by the individual for all required ASTM tests he must perform as a field soils technician. The inspector also confirmed that PTL management had conducted a check of personnel resume' records to establish authenticity of the statements and indicated that this review had no adverse impact upon the present certification of any PTL employees.

In addition to the nine concerns addressed above, the alleger expressed certain other concerns directly to the licensee. These were communicated to the NRC by the licensee. Followup action by the licensee and review by the NRC have led to no substantive findings or valid concerns of safety-related material or practices.

No items of noncompliance or unresolved safety concerns were identified as a result of this investigation.

5. Followup of Licensee Potential 50.55(e) Report

On October 8, 1980 licensee reported to the NRC Region I office by phone a potential significant deficiency. The deficiency is associated with Unit 1 and Unit 2 cooling tower compartment concrete beams at Elev. 53'. When repairing major voids that exposed reinforcing steel, it was discovered that rebar stirrups were closer to concrete surface than permitted by code. The inspector reviewed nonconformance reports, observed some repairs previously undertaken, and discussed with cognizant personnel of the contractor, constructor, and the licensee the cause, required interim corrective action and recommended disposition. Perini NCR 1019 has been revised several times to reflect void repair, recommend interim action, and report on the extent of apparent rebar cage movement which occurred during concrete placement made on June 27, 1980.

The investigations undertaken following each quality controlled interim corrective action are observed to have received adequate engineering and managerial evaluation, NCR Review Board recommendation, and technical justification. Studies are continuing and licensee has requested extension of time to provide a final report on this significant deficiency, based upon testing in progress and further evaluation.

No items of noncompliance were identified in the above interim actions. However, the final report of this potential significant deficiency will be reviewed when testing and final evaluation has been completed. This is an unresolved item (443/80-12-05).

6. Reactor Pressure Vessel (RPV) Safe End Inspection (Unit 2)

The NRC inspector conducted a visual inspection of a nozzle weld joint preparation on the Unit 2 RPV. Four areas on nozzle 301-121B, 90° apart and approximately 6-8" in length by 4-6" in width were cleaned of corrosion inhibitor to verify the presence and sufficiency of the Ni-Cr-Fe "buttering" as previously reported in Westinghouse Electric Corporation Inspection Report PE-RPV-3507.

Both the ID and the OD were examined visually using a variable indirect lighting technique. The Westinghouse report was verified in that the variations in coloration between the austenitic stainless steel and the Ni-Cr-Fe (Inconel type) filler metal were sufficient to permit measurement on the OD and ID of the extent of the "buttering".

No items of noncompliance were identified.

7. Safety-Related Piping (Unit 1)

a. Welding

The inspector observed welding of the following pipe spools:

-- 1-CS369-01, Field Welds - F0102, F0103, F0104, and F0105.
-- 1-CS-369-10, Field Welds F1001 and F1005.
-- 1-CBS-1216-05, Field Weld F0503.
-- 1-CBS-1214-06, Field Weld F0601, Repair 1.
-- 1-CBS-1226-04, Field Lug Welds F0431 thru F0438.

Field Weld Process Sheets, Isometric Drawings, and Weld Rod Stores Requisitions were checked to verify identification, documentation, and inspection of criteria procedurally required for quality welding. Actual welding conditions and conduct, the sequence of operations, interpass temperature controls, and the use and documentation of purge dams were all spot-checked. The inspector also noted the presence or availability of QC welding inspectors and checked their inspection verification of hold point items on the weld process sheets.

Where applicable, cutting operation and weld joint preparation documentation were examined for conformance with Pullman Procedure X-9, Revision 4, and grinding on the weld repair noted above was witnessed. The applicable Welding Procedure Specification (WPS 27-III-8-0B-12) for the above lug welds was checked against its Procedure Qualification Records (PQR 109 and 110) to confirm qualification in accordance with the essential variables of the ASME Boiler and Pressure Vessel (B&PV) Code, Section IX.

Based upon a potential construction deficiency report issued from the Summer site, the licensee agreed to do informational, random radiographic examination (RT) of the lug to pipe partial penetration welds, where code requirements only require liquid penetrant examination (LPT). The inspector indicated that this spot-RT would provide a reasonable degree of assurance that the "burn-thru" problems which had occurred at Summer, would not go undetected if present here at Seabrook.

All above items were evaluated with regard to the requirements established in the following documents:

-- ASME B&PV Code, Section III, Subsections NC and ND (1977 Winter Addenda).

-- UE&C Specification 006-248-51, Revision 6.

-- Pullman General Welding Standard GWS-111, Revision 2.

No items of noncompliance were identified in the above areas; however, an item of noncompliance with regard to base metal repairs is discussed below:

On an earlier inspection, the inspector had noted a large arc strike on a stainless steel spool piece (1-CBS-1202-1-151-14"-5) caused by a damaged welding cable coming in contact with the pipe. This had already been identified by the licensee program and was awaiting disposition on Pullman NCR 344.

During this inspection, the inspector noted repair had been completed, examined the relevant records, and discussed the sequence of events with contractor and licensee QA personnel. Since disposition of the NCR indicated removal of as little of the pipe as possible, only approximately one inch of the pipe (and arc strike) was cut out necessitating a base metal repair to remove the arc strike tail. After the cutting operation, the new weld end preps (1-CBS1202, Field Weld F0708) were visually examined, but not given a formal document LPT. Since these end preps were in such close proximity (approximately ½") to the arc strike, the inspector questioned whether formal LPT should have been required. He later learned an informational LPT was accomplished, but not documented.

On the base metal repair weld (1-CBS1202, Field Weld F0709) for the arc strike tail, the inspector determined that the applicable Field Weld Process Sheet called for a fillet weld and use of WPS 27-III-8-OB-12. Discussion with contractor QC personnel indicated that classification of this repair weld as a fillet was incorrect, and that the referenced WPS that was used was inappropriate for the welding of the repair area. Additionally, UE&C Specification 006-248-1, Revision 4 requires a LPT on the final weld surface of a stainless steel pipe base metal repair. The Field Weld Process Sheet calls for RT only, and only RT was accomplished.

The inspector informed the licensee that the failure to perform a required LPT and the use of an unqualified WPS and classification of an incorrect joint design for the subject base metal repair welding operation, represented a noncompliance with 10 CFR 50, Appendix B, Criterion V. This is an infraction (443/80-12-03).

b. Pipe Supports

The inspector checked the in-place welded condition of the following pipe supports and compared them with their Pullman detail drawings:

-- 369-SH-06-RG-07
-- 1216-SG-56
-- 360-SG-26 and 27
-- MS1201-SG-05

Pullman Hanger Field Weld Process Sheets and Support Inspection Checklists, where complete, were examined for documentation of the correct weld joint status. Pullman procedure IX-6, Revision 2 was reviewed for installation requirements and ASME, Section III, Subsection NF and UE&C Specification 006-248-8 (Revision 3) quality criteria were spot-checked.

No items of noncompliance were identified.

c. Miscellaneous

The inspector reviewed the status of pipe and pipe support erection and documentation for the CBS (1214, 1216, and 1226) lines within the containment liner dome where coating operations had commenced. He also checked the general configuration of Safety Injection Pipe Spool (1-SI-250-2-1501-4"-3) against its Dravo Sketch, E2936-640. The NDE process for the structural lug attachment welds on this pipe was correctly identified.

The inspector noted a piping flange/bolted connection in the CBS-1203-2 line which had been disconnected because of welding operation at the other end of the pipe. He checked the bolt and nut material designation against design requirements and reviewed both the Pullman Field Process Sheet Joint Torque Records (1203-JTR-0202 and 0203) and the Pullman governing procedure, IX-5, Revision 3. Both the UE&C P&I Drawing (F805010) and the Dravo Sketch (E2936-150) were examined.

Since the field process sheet for the joint torque operation had already been opened with the first operation signed off when the joint was initially coupled on January 23, 1980, the inspector questioned whether this quality documentation represented actual status with the joint being disconnected, possibly several times, before final installation and torque was accomplished. The licensee in conjunction with Pullman has agreed that final JTR documentation is unnecessary until the joint is ready for final assembly and torque. Commitment was made to revise the Pullman program to correctly identify both current JTR status during construction, and final quality documentation timeliness, so that the completed records represent the actual assembly conditions. The inspector had no further questions in this area.

No items of noncompliance were identified.

8. Structural Steel and Anchor Bolts (Unit 1)

a. The inspector examined the configuration and condition of structural steel members at the following locations and compared them with their applicable drawings.

	Location	Drawings
--	PAB at elev. (-8')	(UE&C) F101549, Revision 2 (Cives) E6, Revision 4
--	N. and S. Equip, Vault at elev. (-32')	(UE&C) F101547, Revision 4 (Les/Cives) E2, Revision 3
--	PAB at elev. (+22') on 5 and 6 Lines	(UE&C) F101550, Revision 3 (UE&C) F101555, Revision 3

Dimensions, welds, anchor bolts, high-strength bolts, bearing plates, wing plates, stiffener plates, and engineering authorization for field modifications were all spot-checked.

No items of noncompliance were identified.

b. The inspector examined various anchor bolt assemblies prior to and immediately after installation at various locations within the Unit 1 containment interior. Since concrete had not been placed, the inspector was able to determine the method of embedded length installation and the fixity of the anchorage back plates and nuts. The requirements for bolt material types and NDE provisions specified in the applicable UE&C drawings and Specification 006-18-1, Revision 4, were checked against the Certified Material Test Reports and NDE Test Reports in the permanent Ryerson record packages. The following anchorages, with bolts from 1" to 2½' diameter, were examined with regard to the above criteria and the drawings specified below:

Anchorage Types

-- CD 56	-- CE 26
-- CD 61	-- CE 39
-- CD 63	-- CE 43

UE&C Drawings

-- F101410, Revision 5	-- F101697, Revision 8
-- F101413, Revision 9	-- F101842, Revision 6
-- F101492, Revision 1	

No items of noncompliance were identified; however, one item remains unresolved as discussed below.

Certain anchorage types had drawing requirements for fixing the back plate at specified dimensions along the anchor bolts by locking the nuts and upsetting the threads. While the drawings were not clear in all cases whether this was to be done by the supplier (Ryerson) or in the field after installation, the inspector found several examples of loose back plates on anchorages installed, but prior to final QA inspection, the inspector indicated that although the QA program for preconcrete placement had an inspection criteria to check anchorages, there was no assurance at the present time that this check included proper back plate dimensional fixity. Also, there was no evidence of any construction, rather than QA, program to install and secure these back plates as per the drawings.

UE&C ECA 01/1972 was issued to clarify when and where anchorage plates are to be locked. The licensee also took action to expand the scope of QA inspection requirements in this area to assure correct installation. However, the inconsistency of past drawing requirements coupled with the lack of a definitive construction program for fixing these back plates raises questions as to the adequacy of previously installed, and now embedded, anchorages.

Pending investigation by the licensee and the presentation of evidence that previously installed anchorages were installed in line with safety-related drawing requirements, this item is unresolved (443/80-12-04).

c. The inspector reviewed the program, methods, and qualification tests for expansion anchor installation for various component and pipe supports. The following documents were examined:

-- UE&C Specification 006-18-17, Revision 1.

-- UE&C Report of Torque Vs. Pretension Test for Hilti Kwik-Bolts at Seabrook, dated March 15, 1979.

-- Pullman Procedure IX-1, Revision 4.

No items of noncompliance were identified.

9. Concrete Batch Plant (Units 1 and 2)

The inspector toured the site concrete batch plant inspecting the aggregate storage, cement storage, and the concrete batching operation. He interviewed batch plant operation and inspection personnel and reviewed records relative to the following test and inspection requirements:

-- Perini QA Batch Plant Inspection Reports.

-- Perini Calibration Data Sheets for the batch plant scales and meters.

-- PTL Central Mixer and Truck Concrete Mixer Uniformity Test Reports.

-- PTL Report ASTM C-40 Organic Impurities.

-- PTL Report ASTM C-566 Total Moisture Content of Aggregates.

-- PTL Report of Water and Ice for Concrete.

Grab sample testing for both admixtures and cement was discussed with QA personnel.

All the above inspection items were evaluated with regard to criteria established in the following documents:

-- ASME B&PV Code, Section II, Division 2-1975.

-- ANSI Standard N45.2.5.

-- UE&C Specifications 006-69-1 (Revision 6) and 69-3 (Revision 6).

-- ASTM Standards (as applicable).

No items of noncompliance were identified.

10. Electrical Duct Bank Construction and Cable Tray Installation (Unit 1)

The inspector reviewed the electrical design and construction aspects of concrete encased, buried duct banks (5BR, 5BQ, 5BT, and 5BS). He examined the method of duct installation, splicing, and fixation in position prior to concrete placement in the field. The following documents were reviewed for procedural and inspection criteria:

-- UE&C Specification 006-48-5, Revision 6.

-- UE&C Drawing M-300228 (SH3A), Revision 6.

-- Fischbach-Boulos-Manzi (FBM) Construction Procedure FECP-517, Revision 2.

-- FBM Quality Control Procedure QCP-517, Revision 5.

The inspector also examined various installed conditions of cable tray in the PAB Equipment Vault area checking support configurations, bolting, hardware, and workmanship.

These cable trays had not yet received QC inspection, but installation details were checked against the following governing documents:

-- UE&C Specifications 006-48-2 (Revision 4) and 109-1 (Revision 2).

-- UE&C Procedures QAS-2 and QAS-3.

-- UE&C Drawing M-300229, Sheet 3A (Revision 5, Sheets 3B and C (Revision 2), Sheet T3 (Revision 4), Sheet T12 (Revision 3), and Sheet T38 (Revision 2).

-- UE&C Drawings F310790 (Revision 5) and F310794 (Revision 4).

-- IEEE Standards 336 and 422.

-- FBM Procedures FECP-503 (Revision 1) and QCP-503 (Revision 2).

With regard to both duct bank and cable tray installation, no items of noncompliance were identified. However, several questions of an engineering and construction practice origin have been presented to the licensee by the inspector. Since many of these questions had to be referred to the UE&C home office for response and also since no noncompliances or unresolved safety concerns have presently been associated with these questions, the inspector has given the licensee time to formulate a complete set of answers and he plans to followup these areas during the next inspection period.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 2, 3, 5 and 8b.

12. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection.