

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

Region I

Report No. 50-423/81-12

Docket No. 50-423

License No. CPPR-113 Priority -- Category A

Licensee: Northeast Nuclear Energy Company

P. O. Box 270

Hartford, Conn. 06101

Facility Name: Millstone Nuclear Power Station, Unit 3

Inspection at: Waterford, Conn.

Inspection conducted: September 28-30 and October 1-23, 1981

Inspectors: J. C. Mattia 11/2/81  
J. C. Mattia, Senior Resident Inspector date signed

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Approved by: T. C. Elsasser 11/13/81  
T. Elsasser, Chief, Reactor Projects date signed  
Section 1B, DRPI

Inspection Summary:

Unit 3 Inspection on September 28-30 and October 1-23, 1981 (Report No. 423/81-12)  
Areas Inspected: Routine inspection by the Resident Inspector of work activities associated with pipe erection, concreting, structural support welding and document control. The inspector also performed plant inspection tours and reviewed licensee action on previously identified items. The inspection involved 95 inspection hours, including six off-shift hours by one NRC inspector.

Results: Of the five areas inspected, two items of noncompliance were identified in the following areas: (1) Failure to take adequate corrective action in repairing significant deficiencies for component cooling heat exchanger (paragraph 4d). (2) Inadequate document control of design documents (Paragraph 8).

## DETAILS

### 1. Persons Contacted

#### Northeast Utilities Service Company (NUSCO)

M. Bellman, QA Engineer Technician  
A. Colello, Senior QA Engineer  
F. Comstock, FQA Technician  
D. Diedrick, Quality Assurance Manager  
K. Gray, Construction QA Supervisor  
K. Murphy, QA Construction Technician  
S. Orefice, New Site Construction Superintendent  
J. Putnam, Senior Construction Engineer  
T. Sullivan, Resident Engineer - New Site Construction  
S. Toth, System Superintendent Generation Construction

#### Stone and Webster Corporation S&W)

F. Bearham, QA Program Administrator  
C. Hall, Materials Engineer  
R. Flodstrom, Assistant Superintendent FQC  
J. G. Kappas, Superintendent of Construction  
W. MacKay, Resident Manager  
G. Marsh, Senior Engineer, Welding/NDE  
M. R. Matthews, Assistant Superintendent Field QC  
R. Rudis, Engineering Assurance Engineer  
F. Sullivan, Senior Resident Engineer  
G. G. Turner, Superintendent, Field QC  
W. Vos, FQC Engineer

The inspector also conferred with other licensee and contractor personnel during the course of the inspection.

### 2. Plant Tours

The inspector observed work activities in progress, completed work and construction status in several areas of the plant. The inspector examined work for any obvious defects or noncompliance with regulatory requirements of license conditions. Particular note was taken of the presence of Quality Control Inspectors and Quality Control evidence such as inspection records, material identification, nonconforming material identification, housekeeping & equipment preservation. Specifically, the inspector observed various preparations for concrete operations for the following:

- Cooling water discharge tunnel (form erection, rebar placement, membrane installation & curing).
- Auxiliary, ESF, main steam valve & fuel building slabs & wall (form erection, rebar placement & concrete placement).

No items of noncompliance were identified.

### 3. Containment Dome Concrete Activities

The inspector observed portions of the concrete placement (No.C-3831) of the dome "cap" above elevation 159'-8" which was placed without exterior form work. The inspector verified that for the portions he observed, the requirements of S&W field construction procedure FCP-267 were complied with. The following are the specific items inspected:

- Verified that the preplacement inspection B7QC had been performed.
- That the inspection personnel were located in close proximity to the truck discharge and final placement location.
- The quality requirements of the concrete being placed were verified by testing near the point of placement and at the mixing trucks. The inspector verified that the delivered concrete met the specification requirements for the placement as to mix design slump, air and temperature.
- Consolidation was adequate.
- That the dome liner was monitored during concrete placement to insure that buckling of the liner did not occur.
- Verified that the "pour" card was properly completed prior to actual placement.
- The dome cap finishing was in accordance with ACI 301, Section 10.5 requirements.

No items of noncompliance were identified.

### 4. Licensee Action On Previous Inspection Findings

- a. (Closed) Unresolved item (423/81-05-01): In-core instrumentation piping underneath vessel not adequately supported during erection of piping; also the RPV mirror insulation was not protected to prevent graffiti by the crafts. The inspector verified that corrective action was taken and that it was adequate. The corrective action consisted of taping in-core piping to pipe supports and limiting access to area by placing control signs at entrance to the vessel.
- b. (Closed) Unresolved item (423/81-02-23): S&W project procedure qualification manual (PQM) matrix required updating to include new addenda to Section IX of ASME Code. The inspector reviewed the latest PQM matrix for each of the following weld procedures, to verify that the applicable code dates (ASME IX 1980 Edition with addenda through winter of 1980) were reviewed by S&W and when required the procedure was requalified.

<u>Weld Procedure No.</u>	<u>PQM Matrix Latest Revision</u>
W 100A	16
W 100B	15
W 200A	10
W 200B	10
W 200C&D	14

- c. (Closed) Unresolved Item (423/81-01-22): A procedure to control radiographic film processing both manual & automatic had not been developed. S&W issued Quality Control Instruction (QCI) FM3-D9.41-010, on August 10, 1981, to delineate the requirements for processing (manual & automatic) radiographic film. The inspector reviewed the procedure and also a S&W memorandum, dated 9/3/81 which indicated that two training sessions were held to familiarize personnel with the requirements of QCI FM3-D9.41-010.
- d. (Open) Unresolved Item and Construction Deficiency (423/80-04-01 & 80-00-03): On April 15, 1980, the licensee informed the NRC of a significant construction deficiency. S&W examination of the component cooling heat exchanger support steel weldments at the site indicated they were not in conformance with the purchase specifications. The supports were fabricated by Tower Iron Works. In accordance with the licensee's significant deficiency report, dated May 8, 1980, all weld deficiencies were noted and recorded in S&W Non-conformance and Disposition Report (N&D) No. 0169. The inspector reviewed the many N&D Reports associated with this repair, but could not verify that the required repairs to the support cross braces had been accomplished. The following N&D reports associated with the repairs were reviewed by the inspector:

- N&D 0130	issued 5/29/79
- N&D 0169	" 5/29/79 (superceded 0130)
- N&D 0203	" 10/19/79
- N&D 0420	" 10/19/79 (superceded 0203)
- N&D 0498	" 5/29/79 (superceded 0169)
- N&D 0529	" 5/29/80 (superceded 0498)
- N&D 0647	" 12/6/80

S&W field quality control had verified that the action necessary to disposition these N&D's and been completed, inspected and found acceptable. Therefore, the inspector requested that S&W determine on a one-to-one basis that all repairs had been accomplished. The S&W inspection of the documentation revealed that eight weld defects associated with the support cross braces (4 undercuts, 3 overlaps, and 1 gouge) were not repaired. The inspector informed the licensee that the handling of the repairs of this significant deficiency was contrary to Criterion XVI of 10 CFR 50 Appendix B. (423/81-12-01)

#### 5. Containment Fire

On September 10, 1981, a fire occurred inside the containment on off-shift hours. A visual inspection indicated that the fire was mainly concentrated between elevation 51'-6" and 102', and between azimuths 78° and 123°. Damage appeared to be limited to the liner plate (severe buckling) and to seven pipe spools which were in the immediate area of the fire. In order to assess the damage to the containment liner and concrete, S&W had an opening of approximately 20" x 20" cut out of the damaged portion of the liner. The inspector observed the cutting of the liner, and also visually inspected the concrete in this area. This item is considered unresolved pending completion and inspection of repairs of the fire-damaged items. (423/81-12-02)

#### 6. Concrete Anchors

During a plant tour, the inspector observed that two craftsmen were drilling anchor holes with a rotary percussion-type drill, equipped with a grounding device to shut the drill off when it comes in contact with reinforcing steel. In this particular location, the craftsmen were on their 39th hole, and had only found one drilled hole where rebar was not encountered. The drilling was for anchors to be used for the support of the boron bottoms coolant preheater as depicted on design change E&DCR #F-S-4466. The S&W specification No. 924 allows for the probe drilling when a heavy density of reinforcing steel is encountered. On two occasions, the inspector has noticed some variances from the specification requirements by the crafts, which can be contributed to the many holes having to be drilled. The inspector informed the licensee that this approach for locating rebar interferences should be re-evaluated. This item is considered unresolved pending review of licensee's evaluation: (423/81-12-03).

## 7. Safety Related Piping Erection

- a. The following weld joints, which were in various stages of welding, located in the containment building were inspected to verify compliance with welding and installation procedures, and code requirements:

- (1) 3CDS-010-104-2 Field Weld #18-1 was in the process of welding and was approximately 1/3 complete. The inspector observed the welding & cleaning of one pass. The weld data card for this weld joint was reviewed to verify that all required hold points were accomplished and signed off by appropriate personnel. The inspector also verified that the welding was in accordance with weld technique procedure (W21, Revision 2).
- (2) 3SIL-010-45-1 Field Weld #9 was in the process of welding and was approximately 1/2 complete. The inspector observed the welding, verified that the welding parameters were in accordance with the weld procedure technique sheet W12F, Rev. 2 requirements.
- (3) 3RCS-029-17-1 Field Weld #3 was in the process of welding and was approximately 1/2 complete. The inspector observed the welding, verified that the welding complied with the requirements of weld procedure technique sheet W13B, Rev. 3.

No items of noncompliance were identified.

- b. The inspector observed the liquid penetrant examination of in-core instrumentation of weld joints #293, 309, 295 & 296. The examination was conducted in accordance with S&W Procedure QAD-9.32.

No items of noncompliance were identified.

- c. The following weld joints which were being welded in the pipe fabrication shop were inspected to verify compliance with the applicable welding procedure & pipe fabrication specification No. 968:

- (1) Weld joint 3RHS-002-262 Field Weld #1 was in the process of fit-up for welding. The inspector inspected the fit-up for proper alignment & that tack welding was in accordance with weld procedure technique sheet W22E, Rev. 3.
- (2) Weld joint 3SIH-002-50-2 Field Weld #29 was being welded and was approximately 1/2 done. The inspector verified that requirements of weld procedure technique W13A, Rev. 1 were adhered to. The weld data card was also reviewed to verify that the inspection hold points were accomplished and that the correct welding material was used.

No items of noncompliance were identified.

- d. The following weld joints located in the engineered safety features building were inspected to verify compliance with the applicable installation and welding procedures:

- (1) Weld joints 3SIH-004-38-2 Field Weld Nos: 27 & 28. The two weld joints were approximately 3/4 finished and were additional weld joints due to mislocation with wall penetration. The rework was in accordance with construction revision notice SIH-7-001 & SIH-7-002. The inspector verified that the welding was in accordance with weld procedure technique sheet W12F. A review was also conducted of the weld data cards for each of the weld joints.
- (2) Weld joint 3FWA-003-33-3 Field Weld #7 was approximately 3/4 finished. The inspector verified that welding was in accordance with the requirements of weld technique W21U, Rev.2. The weld data card was also reviewed.
- (3) Weld joint 3QSS-012-25-2 Field Weld #1 was approximately 3/4 finished. The inspector verified that welding was in accordance with weld technique W12F requirements. The weld data card was also reviewed.

For all the above weld joints, the inspector also reviewed the welder's qualification records to verify that he was qualified to perform the welding in accordance with the applicable weld procedure.

No items of noncompliance were identified for the above items.

- e. The inspector observed the welding of the supports for the containment recirculation heat exchanger which is located in the ESF building. The welding being performed was a result of a design change, E&DCR #F-J-3899, which deleted the dowel shear and substituted a fillet weld. The required weld per E&DCR was a 3/8" fillet staggered (2 inch length with a 5" pitch) along the weld joint. The inspector noted that the welder was not staggering the weld but was welding a full fillet along the joint. The welder had received verbal instructions to not stagger the weld from his supervisor. The inspector informed the licensee that deviations from the design documents, even though in this case it was not detrimental since it is considered as increased strength due to overwelding, should not occur unless authorized by a design change. The inspector had no further questions at this time.
- f. The inspector observed the welding of pipe restraint CH-RSS-10A Field Weld Joints #7 & 8, located in the containment. The inspector verified that the welding was in accordance with the weld procedure technique sheet W85Q, Rev. 1.

No items of noncompliance were identified.

## 8. Document Control

The inspector conducted an inspection of several drawing stations to verify that the current design drawing and the applicable design changes (E&DCR) are being used in the construction areas. The control of drawings and design changes at the job site is to be in accordance with Stone & Webster's construction methods procedure (CMP) No. 11.1-9.80. The inspector took a random sample of drawings and their applicable design changes at four different drawing stations and compared them with the master file of current drawings and design changes kept by the S&W document group. The results of this inspection are as follows:

- a. Drawing Station #40, located in the control building and is used by the electricians & heating & ventilating subcontractor.

The inspector sampled eleven category 1 drawings and their associated design changes and found discrepancies with two of the eleven. The following are the specific discrepancies noted:

Drawing EE-34JB-3

This drawing had two E&DCR's posted (FM-3809 & PSE-1010) as being valid but the master file indicated that they have been voided by E&DCR #PE-3509. This E&DCR was not posted on drawing as required by CMP 11.1-9.80, nor was there a copy of this E&DCR at the station. Also, the two voided E&DCR's were at the station and were not voided.

Drawing EE-42V-2

This drawing did not have any E&DCR's posted. However, the master file indicated that E&DCR #FS-4613, which was issued May 13, 1981, is a current and valid design change and should have been posted.

- b. Drawing Station #58, located in the ESF building and is used by the pipefitters.

The inspector sampled eight category 1 drawings and their associated design changes and found discrepancies with seven of the drawings. The following are the specific discrepancies noted:

Drawing EP-17J-5

This drawing had six (E&DCR) design changes and one nonconforming report (N&D) posted on it. In accordance with the master log, two additional design changes FP-5167 & FP-5374 should have been posted. In addition, the posted nonconformance report #N&D-0929, was not at the drawing station as required.

Drawing EP-17K-5

This drawing had nine (E&DCR) design changes posted on it. In accordance with master log the following discrepancies were noted;

- Two additional design changes FP-5374 & FP-5167 should have been posted.

-- Design change FP-5347 was posted but was not voided. This E&DCR was superceded by E&DCR PSP-1373, which was also posted on the drawing.

Drawing EP-19K-6

This drawing had two design changes (E&DCR) posted on it. In accordance with the master log, only one design change should be posted. The incorrect E&DCR posted was #FP-5167.

Drawing EP-71D-5

This drawing had four design changes (E&DCR) posted on it, which was in agreement with the master log. However, one of the E&DCR's, #PS-P-1059 was not at the station.

Drawing EP-71G-5

This drawing had two design changes (E&DCR) posted on it, which was in agreement with the master log. However, one of the posted E&DCR's #PS-P-1059 was not at the station.

Drawing EP-79G-3

This drawing did not have any design changes posted on it. However, the master log indicated that there should have been E&DCR #FP-3855 posted on it.

Drawing EV-16C-3 (sheet 3)

This drawing had six design changes (E&DCR) and one vendor information request posted on it. The postings were in agreement with the master log except one additional design change, E&DCR #FJ-5349, which should have been posted.

- c. Drawing Station #63, located in the containment building and is used by the pipefitters.

The inspector sampled three drawings and applicable design changes and found no discrepancies at this station.

- d. Drawing Station #44, located in the containment building and is also used by the pipefitters.

The inspector sampled eight category 1 drawings and the applicable design changes and found discrepancies with three of the eight drawings. The following are the specific discrepancies noted:

Drawing EP-82E-6

This drawing had four design changes (E&DCR) posted against it. However, in accordance with the master log, there should only be two. The two incorrect E&DCR's, #FP-3853 & #FP-3855, posted are for design drawing #EP-82D.

Drawing EP-82B-11 (sheet 2)

This drawing had two design changes (E&DCR #PP-3700 & #FP-5383) posted on it. However, in accordance with the master log, there should have been four. The two missing E&DCR's were #FP-4792 & #PSP-P-1119.

Drawing EP-74E-5

This drawing had six design changes posted on it. The master log indicated that this revision No. 5 of the drawing was incorrect. The current revision is No. 6 with only two design changes (E&DCR #PSP-1119 & PSP-1160) posted against this drawing. The revision No.6 drawing was issued in June, 1981.

The inspector informed the licensee that based upon the large number of discrepancies found on a small sample size of drawings inspected, it appears that his document control as outlined in his QA program is not effective, and that a complete (100% audit) inspection of all safety related design documents for all the controlled distribution is required to determine the cause. The inspector also informed the licensee that this item is contrary to criterion VI of 10CFR50, Appendix B (423/81-12-04).

9. Observation of NUSCO audit of Stone & Webster

The inspector observed portions of the design audit being conducted by NUSCO Quality Assurance organization. The NUSCO Audit, No. AZ 173, was of the S&W design group for the following specific items.

- Follow up of NRC findings in inspection 423/81-02.
- Verify S&W compliance of engineering procedures EAP 6.3 & 6.5.
- Review and discuss S&W structural technique review program as outlined in their procedure STP 11.2.
- Review and discuss the design interface between Boston and site design groups.
- Verify S&W compliance of project procedure NEAM 38 Rev. 6.

For the portions observed, the inspector verified that the NUSCO QA auditors were conducting the audit in accordance with the requirements of the NUSCO QA procedure NQA 1.14.

10. 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 5 & 6.

11. Management Meetings

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