U. S. NUCLEAR REGULATORY COMMISSION

Region 1

Report No. 50-423/82-04

Docket No. 50-423

License No. CPPR-113 Priority -- Category A

Licensee: Northeast Nuclear Energy Company

P. O. Box 270

Hartford, Connecticut 06101

Facility Name: Millstone Nuclear Power Station, Unit 3

Inspection at: Waterford, Connecticut

Inspection conducted: March 1 - 31 and April 1 - 9, 1982

Inspectors: J. C. Mattia 4/20/82
J. C. Mattia, Senior Resident Inspector date signed

date signed

Approved by: T. Elsasser 4/28/82
T.Elsasser, Chief, Reactor Projects date signed
Section 1B, DPRP

Inspection Summary:
Unit 3 Inspection on March 1 - 31 and April 1 - 9, 1982, Report No. 50-423/82-04
Areas Inspected: Routine, onsite regular and backshift inspection by the resident inspector (144 Hrs). Areas inspected were pipe erection, non-destructive examination of piping, electrical penetration installation, training, open items, and reports to the NRC.

Violations: Two - Failure to follow design requirements when installing RHR Pump (detail 15); and failure to follow the requirements of training procedure for the continuing education of Field QC Personnel (detail 16).

DETAILS

Persons Contacted

Northeast Utilities Service Company (NUSCO)

B. Carlson,Assistant Project Engineer (Berlin)
F. Comstock, QC Construction Technician
K. Gray, Construction QC Supervisor
D. Hoisington, Construction Engineer
W. Langdon, Construction Engineer
K. Murphy, QC Construction Specialist
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, QC Program Administrator (Boston)
R. Bernard, Assistant Manager - Field QC (Boston)
J. Carty, Head Site Extension Group
R. Flodstrom, Assistant Superintendent Field QC
F. Froscello, Field QC Inspector
N. Hammer, Field QC Inspector
W. MacKay, Resident Manager
G. Marsh, Senior Engineer, Welding/NDE
M. R. Matthews, Assistant Superintendent Field QC
W. Orr, Senior Field QC Engineer
L. Peterson, Chief Inspection Field QC Supervisor
R. Reams, Materials Supervisor
B. Sicotte, Field QC Inspector
R. Singh, Senior Field QC Engineer
K. Snyder, Senior Field QC Engineer
G. G. Turner, Superintendent, Field QC
W. Welch, Field QC Inspector
G. Wilson, Field QC Inspector

The inspector also conferred with other licensee and contractor personnel during the course of 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 or 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 and equipment preservation.

3. Licensee Action On Previous Inspection Findings

a. (Closed) Violation (423/81-02-05): S&W Procedure NEAM 38 required that design documents be revised and re-issued within six months after the sixth Engineering and Design Coordination Report (E&DCR) has been issued against the document. The NRC inspection identified only one instance (Specification #279) whereby this rule was not adhered to. The licensee's comprehensive review of this violation identified many unrevised design documents. These were corrected by December 31, 1981. A computerized tracking system was also established to indicate when the sixth E&DCR was issued against a design document, and the due date for incorporation. The inspector reviewed the latest computer listing (dated 3/9/82), and randomly selected several drawings, specifications and weld procedures to verify, with the site document control organization, that the "six & six" rule was complied with. No violations were identified.

b. (Closed) Violation (423/81-14-02): Four 4160 Volt Switch Gear Panels (NJS-US-6A, -6B,-7A &-7B) did not have their heaters energized as required by the manufacturer. The inspector verified that the four panel heaters have been energized. The inspector also reviewed S&W Inspection Report No. X1000625 which indicated that the heaters were energized on November 25, 1981, and that S&W Engineering, on 1/18/82, had stated that no damage had been done to the panels by not having heaters energized from May to November of 1981. It is now a requirement that Field QC witness or verify the initial maintenance of all Category I equipment received.

c. (Open) Violation (423/81-12-04): The inspector continued his review of the S&W Field QC verification of E&DCR posting to determine if the E&DCR Manual posting is under control. The following QC verification and resblts were reviewed:

Week Ending Date	Posting Error
1/29/82	1.1%
2/5/82	2.4%
2/12/82	1.2%

The new system for posting is scheduled to be in place the month of April, and will be monitored by the resident inspector in subsequent inspections.

4. Licensee Action On Significant Deficiency (423/80-00-01)

The licensee reported to NRC on February 25, 1980, a significant design deficiency in accordance with 10 CFR 50.55(e) requirements. The report indicated that a design error had been found on some S&W design drawings. The drawings did not show the required 3/8" orifices, which provide the demarcation between the safety class 1 and 2 pressure boundary. The inspector reviewed the licensee's report and the associated S&W documents and found several discrepancies, which are as follows:

- The Northeast Utilities Report (AEC-MP3-205, dated Feb. 25, 1980) states that there were 19 instances where 3/8" orifices shown on the flow diagram did not appear on the fabrication isometrics. The S&W interoffice memorandum, dated January 19, 1982, states that there were 16 omissions, not 19.

- The Northeast Utilities Report (AEC-MP3-205) states that 14 spool pieces were fabricated and delivered to the site. The S&W interoffice memorandum, dated January 19, 1982, indicates that 12 spool pieces were delivered, and four of the listed 12 are to be site fabricated.

- The Northeast Utilities Report states that E&DCR #P-P-2588 has been issued by S&W to have the 14 already fabricated spool pieces reworked. The E&DCR lists only eight spool pieces, and was amended by E&DCR #P-P-2718 to delete two of the eight because two had the orifices installed.

- The inspector also found one fabrication drawing (CP-407-385 Rev. 1, issued 7/23/81) which did not show the required orifice.

The inspector informed the licensee that their final report and various S&W documents need to be amended so that there is agreement as to which specific spools are required to be reworked. This item is considered open. (423/80-00-01).

5. Repair Of Reactor Coolant Loop Piping

The inspector observed the numerous repairs (excavation, welding and liquid penetrant examination) on the reactor coolant loop closure pieces. The repairs were a result of the unacceptable liquid penetrant indications after machining the weld end preps on site. The spool pieces involved were identified as LP1-EC1 and LP3-EC2. The inspector verified that the repairs were in accordance with the Stone & Webster requirements specified in Report #P2000195. No violations were identified.

6. Welding Of Safety Related Structural Steel

The inspector inspected the welding activities associated with the installation of the structural steel in the ESF Building at elevation 25' to verify compliance with AWS D1.1 and S&W Weld Technique Sheet W70G, Rev. 4. No violations were identified.

7. Welding Of Containment Electrical Penetrations

The inspector observed the activities associated with the welding of three containment electrical penetrations identified as Weld Joints CI-CLP-E, Field Welds #57, #60 and #72. The welding was in accordance with S&W Weld Technique W86K, Rev. 1 and Specification Requirements 2412.100-247.

The inspector noted that the as deposited weld bead (Tungsten Inert Gas Process) had what appeared to be an excessive amount of oxidation on the edges. The gas purge was verified that it within the prescribed parameter. The oxidation was to be easily removed by wire brushing. The licensee is investigating the possible causes, and is contemplating performing a shop coupon weld test to duplicate the conditions in the field. This item is unresolved pending licensee evaluation (423/82-04-02).

8. Welding Of Safety Related Pipe & Supports

The following Weld Joints in various stages of completion were inspected for compliance with ASME Code, S&W Specification 968, and various S&W Weld Technique Sheets:

Weld Joint Identification	Location	Weld Technique
CI-S1L-10, Field Weld #1	ESF Building	W12F, Rev. 3
S1H-750-75-2, Field Weld #7	Containment	W12E, Rev. 4
CI-RSS-E1-AD, Field Weld #125	ESF Building	W5S, Rev. 2
CI-RSS-E1A, B, C, & D, Field Weld #124, 128 and 129	ESF Building	W5S, Rev. 2
CI-QSS-1. Field Weld #31	" "	W24G, Rev. 2
CI-RHS-6, Field Weld #40	" "	W22F, Rev. 3
CI-CCP-1-PSST-092, Field Weld #23, 24, 25 and 26	Containment	W20T, Rev. 1
CI-S1H-501, Field Weld #15	Containment	W12E, Rev. 4
CI-CHS-20, Field Weld #6	Auxiliary Bldg.	W12F, Rev. 3
CI-CHS-25, Field Weld #25	Auxiliary Bldg.	W12F, Rev. 3
CI-CHS-661A, Field Weld #2	Containment	W12F, Rev. 3
CI-CHS-661A, Field Weld #3	Containment	W12F, Rev. 3

No violations were identified.

9. Installation Of Surface Mounted Plates

The inspector reviewed Specification C924 which required prequalification on-site test program results for drilled-in anchors for bolt sizes 3/8", 2/3", 5/8", 3/4" and 1". The test and results are documented in S&W E&DCR #F-S-2314. This test was conducted in May-July, 1979. An inspection of various installed surface mounted plates in the ESF Building and discussions with various site personnel were conducted. The inspector determined that formal procedures for the installation of drilled-in expansion type concrete anchors and Richmond inserts were not available. The licensee stated that they had previously identified this in an audit, and that S&W currently has two Field Construction Procedures in the review and approval cycle. The inspector verified this, and that the two Field Construction Procedures (FCP 299 & 309) have been written and are in the review cycle. This item is considered unresolved pending issue of the procedures (423/82-04-01).

10. Housekeeping Inside Containment Building

The inspector noted that the Containment Building did not meet the cleanliness requirements as stated in the S&W Housekeeping Procedure #PCMP 1.4. Discussions held with the licensee indicated that they had previously identified this specific violation as well as other areas in the plant. The inspector reviewed the licensee's Surveillance Reports of March 10, 11, and 19, 1982 which identified several areas of noncompliance. A licensee follow-up surveillance was also performed on March 30-31, 1982, to verify S&W's corrective action.

11. Emergency Evacuation Drill

The inspector attended a pre-drill meeting to discuss the site emergency evacuation procedure. On March 9, 1982, a site evacuation drill was performed. The MS-3 resident inspector and the two resident inspectors from MS-1 & 2 observed this drill. The execution of the drill was satisfactory. In one hour and nine minutes, there were 2,558 people evacuated from the site and accounted for. The licensee identified two items during the drill which will require corrective action:

1. The evacuation siren cannot be heard in all areas of the jobsite. (Note: this problem was anticipated and a search team was available and used during the drill to assure that everyone on site was evacuated).

2. The lack of control of the siren at the security supervisor's office. During the drill the initial announcement of evacuation was made while the siren was blowing, resulting in a garbled message.

Corrective action has been completed for the above two items.

12. Electrical Tray Support Bolting

The inspector requested the licensee to verify that the power strut spring nut (catalog No. PS-9227) deficiency reported at the River Bend Unit 1 site did not exist at MS-3. At River Bend, there were approximately 2000 of these particular spring nuts with a particular serrated pattern which failed when load tested. The investigation by the licensee indicated that to date, the power strut PS-9227 is not used on MS-3, but there is an application for them in the Hydrogen Recombiner Building. The River Bend cognizant person (S&W) stated that these spring nuts were found to be acceptable when load tested if they are used in conjunction with the Power Strut company's embedded strut type PS-280ST, and torqued to 60 ft. lbs. This requirement will be adhered to when installation commences in the Hydrogen Recombiner Building.

13. Nondestructive Examination

The inspector observed a liquid penetrant examination being performed in accordance with S&W Procedure QAD-9.31ML, Revision 0. The examination was of a completed root weld for electrical penetration CI-CLP-E, Field Weld #72. There were 3 indications found and properly dispositioned by the examiner.
No violations were identified.

14. Reactor Coolant Loop Piping Activities

The inspector observed portions of rigging activities for placing the final Reactor Coolant Loop #1 pipe closure pieces. After final placement, the inspector inspected the fit-up of the spool pieces prior to welding. No violations were identified.

15. Installation Of Residual Heat Removal Pumps

The inspector observed craftsmen leveling the Residual Heat Removal (RHR) Pump in Cubicle A, which he had noticed on past tours as having been leveled. Upon questioning the craftsmen, he was informed that they were told to obtain a .002" maximum tolerance between all three mounting pads. This criteria was obtained from their foreman. The inspector reviewed the following documentation to determine if the .002" tolerance was the required acceptance criteria:

- Field QC Inspection Report #M1000425 for original installation of RHR Pump (3RHS-P1-A). This inspection was performed on 12/22/81, and leveling and alignment was signed off as being acceptable. A sketch was attached to the report, listing the measured values. The top of all 3 support pads/plates were listed as absolutely level (measured to be 0.000"). However, the gap between the guide plate and support plate varied between .000" to maximum of .100". (Note: The Design Drawing EV-52A, Rev. 5, does not state what the allowable gap should be).

- S&W Design Drawing EV-52A, Rev. 5.

- E&DCR #F-J-6640 was issued January 11, 1982, to allow the machining of the bottom of the guide plate to accommodate the unevenness of the support plate at the pump mounting locations. This E&DCR also allowed the use of a shim under the guide plate and support plate. (Note: This is a change to what the Design Drawing EV-52A, Rev. 5, currently depicts).

- The RHR Pump is manufactured by Ingersoll-Rand, and is supplied by Westinghouse as part of the NSSS scope. The installation instructions supplied for this pump state that the pump casing horizontal flange is to be flat to within .030" in any direction.

The inspector informed the cognizant S&W supervision that grinding the support plate in order to establish a level condition was contrary to the requirements of Design Drawing EV-52A, as modified by E&DCR F-J-6640. The inspector also asked if the material thickness of the support plate had been measured. The reply was that it had not. A subsequent measurement by S&W QC found that the support plate had been ground below the required minimum thickness. A Nonconformance & Disposition Report #1236 was issued for grinding the support plate beyond the tolerances allowed in ASTM A6.

The inspector informed the licensee that the acceptance criteria (0.002" shim) used by the craftsmen for the allowable gap between the guide plate and support plate is not shown in any of the applicable design documents.

The inspector also informed the licensee that the above is a violation of 10 CFR 50, Appendix B, Criterion V (423/82-04-03).

16. Training of Field QC Inspectors

The inspector performed an inspection to verify that the Field QC Inspectors are continuing to be educated in accordance with the requirements of S&W Procedure QAD-2.1, "QA Department Continuing Education System," Rev. A, issued September 6, 1978. The inspector reviewed the following documents maintained by FQC:

-- Six-month education requests for July - December 1981, and January - June 1982.

-- Continuing education (CE) attendance reports for all presentations held for July - December 1981 and January - February 1982.

-- Monthly CE presentation forecast for July - December 1982, and January - February 1982.

The inspector informed the licensee that the following are examples where the requirements of QAD - 2.1 were not adhered to:

- Section 4.2.3 states that the FQC Superintendent shall determine educational requirements for personnel under his authority, and the selection of personnel to attend CE presentations. Contrary to this, there was no objective evidence that personnel were pre-selected to attend CE presentations.

- Section 5.3 states that approved CE presentations shall be presented in accordance with the monthly presentation forecast, and changes to the monthly forecast will be made in writing through systems services. Contrary to the above, there were six courses scheduled that were neither held nor was the schedule revised. The specific courses not held and their scheduled times as documented on the issued monthly forecast were as follows:

Course No.	Course Title	Month Scheduled
28-JBC-0161	S&W Standard NQA Program 1-74A	Dec. 1981
63-JOE-0600	Nonconformance & Disposition Rpt.	Nov. 1981
63-JFE-0650	Engineering & Design Coordination Report	Nov. 1981
28-SCF-0050	Principles Of Quality Concrete	Oct. 1981
28-KEB-0090	Guide To Training Coordinator Responsibilities	Jan. 1982
28-SAG-0080	MS-3 Containment	Feb. 1982

- The attendance at two courses was low considering the number of QC personnel involved in the activities. The following lists the courses and number of attendees:

Course No. & Title	No. Attendees	Remarks
28 IAF 0020 - Welding Process	1	There are approx. 20 QC personnel involved directly or indirectly with welding activities.
121795028SBC0020 - Test For Slump	2	The attendees were the training coordinator and the Senior QC Engineer for the civil/structural group.

- Section 5.4.1 of QAD-2.1 states that copies of attendance reports shall be kept at the CE presentation location. According to S&W Field QC, there were three courses held in October 1981. The attendance reports were not available during this inspection period. The course was presented by someone from the S&W Boston Office. The specific courses were as follows:

Course No.	Course Name
28-FCE-0030	Magnetic Particle Testing
28-FCE-0020	Liquid Penetrant Testing
28-IEE-0500	Visual Weld Inspection

The licensee was informed that the above is a violation of the requirements of 10 CFR 50, Appendix B, Criterion II (423/82-04-04).

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 7 and 9.

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.