U. S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT/DOCKET NOS.: 50-336/92-29
50-423/92-26

LICENSE NOS.: DPR-65
NPF-49

LICENSEE: Northeast Nuclear Energy Company

FACILITY NAME: Millstone Nuclear Power Station, Units 2 and 3

INSPECTION AT: Waterford, Connecticut

INSPECTION DATES: October 19-23 and November 3-6, 1992

INSPECTORS: _____ 11/25/92
J. Carrasco, Reactor Engineer, Date
Materials Section, EB, DRS

_____ 11/24/92
P. Patnaik, Reactor Engineer, Date
Materials Section, EB, DRS

APPROVED BY: _____ 11/25/92
E. Harold Gray, Chief, Materials Section, Date
Engineering Branch, DRS

Areas Inspected: Inservice inspection (ISI) program and data review including disposition of findings during the third outage of the second period in the second inspection interval of Millstone Unit 2. Also, the snubber surveillance program and the snubber reduction program for Millstone Units 2 and 3 were reviewed.

Results: The licensee's ISI program meets the requirements of the applicable ASME Section XI Code and the NRC regulations. The licensee has an effective snubber reduction program for Units 2 and 3. The licensee is using a unique approach for each unit, based on the physical characteristics and methodology used in the pipe stress analysis. These programs have been tested under a pilot program and are getting adequate support from management. As a result of the assessment of the visual examination procedures for snubbers of Units 2 and 3 and the walkdown of additional snubbers, it is concluded that the visual examination procedures for snubbers on both units are adequate.

1.0 INSERVICE INSPECTION (ISI) PROGRAM (Inspection Procedure IP 73051)

An inservice inspection program is mandated by the ASME Boiler and Pressure Vessel Code, Section XI and is essential to protect public health and safety, in that, it assures structural integrity and leak tightness of the reactor coolant system pressure boundary.

The current outage of Millstone Unit 2 is the third outage of the second period of the second inspection interval. This outage overlaps into the third period. The applicable code for the inspection interval is the 1980 Edition of the ASME Section XI Code, including all addenda up to winter 1981.

The inspection plan for the second period was reviewed against the second ten-year plan to verify that the selected components and their examinations were in compliance with the requirements of the applicable code. The licensee's inspection plan also covered augmented inspections of systems and components from the ten-year plan. The review of the inspection plan for the current refueling outage did not identify any discrepancy.

The licensee had adequate staff to maintain the ISI program, which encompassed coordination of contractors' activities, witnessing inspections, data review, coordinating resolution of findings and record keeping. The ISI related activities were noted to be well organized and had progressed on schedule.

All nonconforming conditions such as flaws and deficiencies discovered during inservice inspection are documented in unresolved indication reports (UIRs) and are reviewed by Northeast Utility Service Corporation (NUSCO) nondestructive examination (NDE) personnel, and are routed to the NUSCO engineering for disposition. The UIRs are reviewed by the NUSCO ISI coordinator, the plant ISI coordinator and the authorized nuclear inspector for completeness and closeout. An automated work order (AWO) is written against an UIR which requires repair or rework. The plant ISI coordinator ensures that corrective action necessary for plant startup is completed as a result of an UIR.

A system modification is handled through the plant design change record (PDCR) process. Any PDCR generated as a result of a modification is routed through the ISI group to specify required inservice inspection on the modification.

2.0 INSERVICE INSPECTION - OBSERVATION OF WORK AND WORK ACTIVITIES (IP 73753)

The inspector observed work activities in progress, and had discussions with personnel during the ISI activities. These observations included the following:

- Magnetic Particle examination of studs used on reactor coolant pump "A".

- Visual examination of welds on safety injection line of reactor coolant piping loop 2A.
- Ultrasonic examinations on inner radii of nozzles in hot and cold leg of #1 steam generator.
- Welding of feedwater nozzle on #2 steam generator to feedwater piping.
- Post-weld heat treatment of girth weld #2-SC-6 on #2 steam generator.

The field crew had the required procedures at the job and the inspector was assured through questioning that the work activities were being performed in accordance with procedures. The personnel performing the examinations were knowledgeable on the content of the examination procedure. The inspector verified that qualifications of the examination personnel were available in the file and that the qualifications were valid.

3.0 INSERVICE INSPECTION DATA REVIEW AND EVALUATION (IP 73755)

The ultrasonic data on the following welds were reviewed to ascertain whether the licensee's recording, evaluating and disposition of findings were in compliance with the applicable code and the NDE procedures.

Component Identification	System	Weld Type
MSA-C-G-2A	Main Steam	Reducer to Elbow
BSI-C-3046	Safety Injection	Elbow to Elbow
BSI-C-4036	Safety Injection	Pipe to Elbow
BPS-C-1021	Pressurizer Surge	Pipe to Elbow
PR-NTH-5	Pressurizer	Nozzle to Head

The review of data was satisfactory. The documentation on calibration blocks for examination of the above welds was reviewed. The blocks were in compliance with the ASME Code Section V, 1980 Edition. The licensee maintained and controlled the blocks properly.

A review of a sample of unresolved indication reports on visual examinations of hangers indicated that the dispositions by the engineering department were acceptable. The licensee generated a plant incident report identifying incomplete inservice examination of Class I vessel nozzle inner radii. The licensee's review indicated that the examination of nozzle inner radii did not meet the updated ASME Section XI Code (1980 Edition with 1981 winter addenda) following the first ten-year inservice inspection in regard to the extent of coverage. Hence, during this outage, the licensee performed supplemental examinations on steam generators to cover one hundred percent of the examination volume by additional scans with various angle beam transducers.

The inspector reviewed the data on the nozzle inner radii examination for the steam generators and found them to be acceptable. The examination on the pressurizer nozzle inner radii is scheduled towards the end of the outage and the reactor vessel inner radii will be done during an outage in 1994.

4.0 CONCLUSION

Based on review of records and interviews with personnel, the licensee's ISI program meets the requirements of the applicable ASME Code Section IX and the NRC regulations for those portions examined. From observation of work, the licensee's nondestructive examination activities are found to comply with the requirements of the applicable procedures.

5.0 EDDY CURRENT EXAMINATION OF STEAM GENERATOR TUBES

A 100% baseline eddy current examination was performed on the Unit 2 replacement steam generator sub-assemblies prior to installation. This examination was conducted in the fabrication facility at the Millstone site. Each tube was examined full length from the hot leg plenum using a bobbin coil probe. A review of test results indicated that the tubing had a number of manufacturing buff marks (MBM) which were introduced into the tubing at the mill as a result of buffing out imperfections produced during the manufacturing process. Almost 33 percent of tubes in #2 steam generator and 4 percent in #1 steam generator contained MBM indications. The other indications noted from the test results were the overexpansions within the tube sheet. The test results indicated approximately five hundred overexpansions in both steam generators.

In summary, there is no concern regarding the structural integrity of steam generator tubes with these indications as found by eddy current examination. The MBM and overexpansion ECT indications do not represent degraded or defective conditions. These ECT indications will be of use in analysis of inservice ECT test data.

The licensee has planned to perform an eddy current examination of twenty percent of the tubes in both steam generators after installation to ensure that there is no damage to steam generator tubes during movement and welding of the steam generators.

6.0 REVIEW OF THE ISI SNUBBER PROGRAM AT MILLSTONE UNIT 2 AND UNIT 3

The purpose of this inspection was to ascertain whether the licensee's snubber inspection schedule and sampling procedures were in conformance with the Technical Specifications and/or the American Society of Mechanical Engineers (ASME) Code Section XI at Millstone Units 2 and 3. To accomplish this purpose, the inspector established the populations of snubbers, reviewed the snubber reduction programs, reviewed the snubber inservice inspection (ISI) procedures for visual examinations, and walked down a limited number of snubbers in both units.

Unit 2

Millstone Unit 2 piping systems have 268 snubbers (125 hydraulic and 143 mechanical). The initial snubber reduction program at Unit 2 was closed in 1990 because the NRC did not approve snubber reduction methodology using ASME Code Case N-411 damping criteria. The NRC disapproval of Code Case N-411 was based on the fact that Unit 2, an older vintage plant, was not analyzed with current seismic spectra and current procedures for seismic analysis. As a result, the licensee has pursued the snubber reduction using alternative technology consisting of passive devices (limit stops). Unlike snubbers, the limit stops have no periodic inservice inspection ISI requirements. At this point, the licensee has completed a pilot sample of Unit 2 piping systems using this alternative technology with acceptable results.

Unit 3

Millstone Unit 3 started up with a total population of 1122 mechanical snubbers on various safety-related piping systems. Of this snubber population, the reduction program eliminated 200 snubbers. Unit 3 used the ASME Code Case N-411 damping criteria, approved by the NRC, as an analytical tool to reduce snubbers.

Based on the analysis above, the inspector concluded that the licensee had an adequate snubber reduction program for Units 2 and 3. The licensee was using a unique approach for each unit, based on the physical characteristics and methodology used in the pipe stress analysis for the specific unit. These programs were tested under a pilot program and were getting an adequate support from management.

6.1 Review of ISI Snubber Procedures for Visual Examination (IP 70370)

For Unit 2, the inspector reviewed station procedure, "Snubber Inspection (Mechanical and Hydraulic)," Number SP 21149, Revision 6. The objective of this procedure was to provide instructions for visual examinations of mechanical and hydraulic snubbers. The procedure also provides guidelines for evaluating snubber deficiencies and determining snubber operability.

The acceptance criteria as presented in the procedure were reviewed and found to be adequate and is in accordance with the Technical Specification 4.7.8, "Snubbers."

To determine the adequacy of the inspection attributes of procedure No. SP 21149, the inspector and the snubber ISI supervisor performed a try-out of the procedure by performing an actual visual examination of hydraulic support No. 413046 with Serial No. 31528 of Main Steam System (MSS), located in the turbine building. During the visual examination of the snubber, observed data were recorded on Eng. Form 21149-6, Page 1, Revision 2, and the results were evaluated in Engineering Form 21149-6, Page 2. In this evaluation, the inspector observed that the actual measured minimum snubber piston setting was equal to the minimum but acceptable setting value prescribed in the design acceptance criteria in Engineering Form 21149-1, Revision 5.

Other inspection attributes were visually inspected, such as abnormal wear, missing or loose parts, damaged parts, misalignment, corrosion fluid level and fluid leakage. No defects were observed.

6.2 Walkdown of Sample Populations of Snubbers

For Unit 2, the inspector visually examined different types of ITT Grinnel hydraulic snubbers; No. 413022A, located in the turbine building with a long extension rod and No. 413081 on the main steam line to the AFW pump. No deficiencies were observed.

To examine mechanical snubbers, the inspector walked-down a sample of the following Pacific Scientific snubbers.

SNUBBER	SYSTEM	LOCATION
512001 Size 1	Main Steam	Enclosure Building, El. 386
512003 Size 0.5	Main Steam	Enclosure Building, El. 386
413135 A & B	Main Steam to AFW Steam Driven Pump	

For Unit 3, the inspector and the licensee's level II inspector walked-down six supports with mechanical snubbers to determine the adequacy of Section 6.2 of the procedure, "Snubber Surveillance Testing," No. SP 3712J, Revision 1. The following inspection attributes listed in Form 3712J-8, were visually inspected; abnormal wear, missing/loose/damaged parts, misalignment, corrosion, abnormal movement and loss of integrity. Snubber 3SWP2PSSP0409 was used to verify Section 6.2 visual examination of mechanical snubbers. During this visual examination, the inspector noticed slight corrosion on snubber 3SWP2PSSP0409 and its pins. The corrosion was noted on Form 3712J-8 and compared against the acceptance criteria, concluding that this corrosion was negligible.

The inspector walked-down additional snubber supports located in the main steam valve building which were properly labeled as 3SWP2PSSP0409, 3MSS4PSSP0401, PMSS4PSSP490, 3DTM4PSSP0054, 3SVV4PSSP018, and 3SPV4PSSP0034. Based on the inspected attributes, no adverse conditions were observed.

6.3 Conclusion

Based on the inspector's assessment of the visual examination procedures for snubbers of Units 2 and 3 and the walkdown of additional snubbers, as described above, the inspector concluded that these procedures were adequate.

7.0 EXIT MEETING

The inspectors met with licensee representatives denoted in Attachment 1, on October 23, and at the conclusion of the inspection of November 6, 1992. The inspectors summarized the scope and findings of the inspection.

ATTACHMENT 1

Persons Contacted

Northeast Nuclear Energy Company

* R. T. Blanchard
** J. Barile
*** L. Baird
*** A. Sylvia

U.S. Nuclear Regulatory Commission

*** A. Asars, Resident Inspector
** D. Dempsey, Resident Inspector

* Present at both exit meetings (October 23 and November 6, 1992)
** Present at exit meeting on October 23, 1992
*** Present at exit meeting on November 6, 1992