

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

Region I

Report No. 50-245/78-37
50-336/78-34

Docket No. 50-245
50-336

License No. DPR-21
DPR-65

Priority --

Category C

Licensee: Northeast Nuclear Energy Company

P. O. Box 270

Hartford, Connecticut

Facility Name: Millstone, Units 1 and 2

Inspection at: Waterford, Connecticut

Inspection conducted: December 4-8, 1978

Inspectors: A N Fasano
A. N. Fasano, Reactor Inspector

12/22/78
date signed

R A Feil
R. A. Feil, Reactor Inspector

12/22/78
date signed

Approved by: AW McLaughlin
for S. D. Ebnetter, Acting Chief, Engineering
Support Section 1, RC & ES Branch

date signed
December 22, 1978
date signed

Inspection Summary:

Inspection on December 4-8, 1978 (Report No. 50-245/78-37; 50-336/78-34)

Areas Inspected: (Unit 1) Routine, unannounced inspection by regional based inspectors of Spent Fuel Rack modification including procurement, receipt inspection, installation, testing and procedural controls. (Unit 2) Followup of Spent Fuel Rack modification unresolved items. The inspection involved 49 inspector-hours on site by two NRC regional based inspectors.

Results: No items of noncompliance or deviations were identified.

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DETAILS

<u>1. Persons Contacted</u>	<u>Title</u>	<u>Organization</u>
<u>Unit 1</u>		
D. Brady	QA Supervisor	C. N. Flagg
*R. Factora	Project Engineer	NUSCO
K. Gray	QA Specialist	NUSCO
*D. Herbert	Unit 1 Supervisor	NNECO
V. Jones	Chemistry Foreman	NNECO
*R. Lucas	Site Construction Coordinator	NUSCO
*G. McElhone	QA Specialist	NUSCO
J. O'Brien	QA Specialist	NUSCO
J. Opeka	Station Superintendent	NNECO
*T. Piascik	Reactor Engineer	NNECO
P. Pzrekop	Engineering Supervisor	NNECO
P. Robert	Project Manager	C. N. Flagg
*W. Romberg	Operation Supervisor	NNECO
*T. Shedlosky	Resident Inspector	USNRC
*K. Thomas	Engineer	NNECO
<u>Unit 2</u>		
*E. Farrell	Superintendent	NNECO
J. Harris	Cognizant Engineer	NNECO

The inspectors interviewed other licensee and contractor personnel.

*denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (50-336/78-16-01): A test procedure and data sheet reference paragraphs for seismic restraints do not correspond. The inspector reviewed the vendor's functional test procedure for the seismic restraints. The vendor's (Paul-Monroe Hydraulics Inc.) test procedure corresponds to the data sheet reference paragraphs as well as the subject matter whereas the contractor's (C. N. Flagg) data sheets corresponded to the vendor's procedure rather than his own installation procedure.

(Closed) Unresolved Item (50-336/78-16-01): An inspection report did not show when the inspection was performed. The date the inspection was performed was determined by the licensee to have been within one day of June 24, 1977. Since the dating of the report presented no safety problem the PORC, upon review, determined to accept the report as is.

(Closed) Unresolved Item (50-336/78-16-03): Records for installation of seismic restraints were not available. There was no requirement that verification of seismic restraint installation be documented. Documents available to the inspector show that verification was made that the pins were pulled allowing the piston to be released. The licensee stated in a progress report dated July 24, 1977, showed that divers of Underwater Laboratories, Inc. visually inspected all restraints to verify that the struts were extended to make contact with the bearing pads.

(Open) Unresolved Item (50-336/78-16-04): Two seismic restraints not making contact with the spent fuel pool wall. The licensee has verified that the restraints have gaps of 3/8" and 3/4" between the struts and the spent fuel pool wall. All restraints were tested by the vendor and met all requirements of the specification for seismic dampers. The suspected cause of the locked pistons is a burr or chip in the restraining pin hole preventing extension of the piston to the liner pad. The licensee plans to manually free the pistons by applying motion or load to the piston by (1) cycling load up or down or side to side, (2) rotating piston or (3) move piston axially with a wedge or lever.

The item will be reviewed on a subsequent inspection.

3. Plant Tour and Plant Status

The inspectors observed work being performed on the spent fuel storage rack installation. The installation included the lowering of the spent fuel storage rack into the spent fuel pool; the leveling of racks; and the performance of drag testing exercises. The spent fuel pool (SFP) was clear allowing excellent visibility of rack installation activities. Discussions with cognizant personnel indicate that a continuing effort is being made to clear the SFP of unnecessary objects suspended along the SFP walls.

The inspectors witnessed the above work for conformance to the installation procedure. The inspection scope and findings are described in the following paragraphs of this report.

The Units 1 and 2 were at power during the inspection period.

New Spent Fuel Storage Racks

The new spent fuel storage racks will increase the Unit 1 fuel assembly storage capacity from 1100 to 2184. This is made possible by the use of high density spent fuel racks replacing the original spent fuel racks. The new racks incorporate B₄C neutron absorber plates between each assembly location to insure subcriticality. The main structure is fabricated of stainless steel. The structures are fixed by restraints abutting directly or indirectly through major fixtures to SFP walls.

The following documents were used as the basis for inspector evaluation of License Compliance to commitments for the procurement receipt, installation, and testing of the new spent fuel storage racks.

- Millstone Nuclear Power Station Unit No. 1, Amendment to Provisional Operating License - Amendment No. 39; Letter to NNECO from NRC, dated June 30, 1977.
- Safety Evaluation and Environmental Impact Appraisal by the Office of Nuclear Reactor Regulations Supporting License Amendment Nos. 39 and 30 to Facility Operating License Nos. DPR-21 and DPR-65 Northeast Nuclear Energy Company, Millstone Nuclear Power Station Units Nos. 1 and 2, Docket Nos. 50-245 and 50-336.
- Northeast Utilities Service Company (NUSCO) Specifications for Fabrication of Spent Fuel Storage Racks for Millstone Unit No. 1, SP-CE-200 and NUS Corporation Project Specification for Spent Fuel Storage Racks, Specification No. 5064-M-200.
- NUSCO Specification for Fabrication of Spent Fuel Storage Rack Seismic Restraint System for Millstone Unit No. 1, SP-CE-201 and NUS Project Specification No. 5064-M-201.

a. Procurement, Receiving, and Inspection Records for the New Spent Fuel Racks

The Quality Control records were reviewed for verification of control of safety related equipment. Records were reviewed for vendor adherence to purchase specifications and specified codes and standards. Inspection records were reviewed for checks and measurement documentation.

The following document package was reviewed, at the site, with respect to the above.

- Quality Control Records for Group 1 - Northeast Utilities Service Company, Millstone Unit No. 1, Spent Fuel Storage Rack Specification No. 5064-M-200, PO No. 504498 - Manufactured by the Portland Company, Job Order No. 4426, Group 1 Arrangement.

This package contains inspection and test reports for dimensions, boron accountability trace numbers, dye penetrant results, water-rust material test checks, dummy fuel load (drag) tests, weld bubble pressure tests, and rack to rack fit up checks. The package was reviewed for documentation of welding procedure and procedure qualification, welding operator qualification, NDT procedures, weld filler material certification, material certification, expendable products reports, records for packaging and shipping, repair documentation, discrepancy records, drawings, cleaning procedure, and rack number correlation.

No items of noncompliance were identified.

b. Construction and Preoperational Fabrication and Testing

The inspector reviewed test procedures with respect to dummy fuel assembly fit, leak testing, and neutron transmission. The procedures contained specific checks and acceptance criteria. The licensee personnel involved in the site testing program were knowledgeable of the neutron transmission requirements and the dummy fuel assembly fit testing.

The following procedures were reviewed with respect to the above:

- High Density Spent Fuel Rack Neutron Absorber Verification, Procedure No. 78-1-44, Revision 0, with Changes 1 and 2.
- Gas and Bubble Formation Testing, Procedure No. QP 800, Revision 0.
- Spent Fuel Rack Removal/Installation Procedure, CNF 7166-1, Revision a.
- Portland Company Test Documentation, December 28, 1976.

The neutron transmission test data was reviewed. The confirmation of absorber plates was met as prescribed in the procedure. High countrates were found at periphery locations. The high countrates were attributed to neutron scatter. The neutrons were from an AmBe source. A BF₃ detector was used for neutron detection.

The dummy fuel assembly fit test was witnessed by the inspectors. The test was performed with a full length dummy assembly. Preliminary tests were run with a three foot long element. The cells tested and witnessed by the inspector met the 50 pound acceptance criteria.

The Millstone Unit 1 new spent fuel storage design includes the use of the B₄C plates that have outgassed in the gamma environment of spent fuel. The new racks are designed to allow gas formation to escape to a vent hole located at the top of the rack assembly.

The Portland Company test documentation was reviewed. The data indicates that the adjustable restraints, designed to maintain contact with the SFP walls/via fixed restraints, have been tested (two units) to 125,000 pounds at two eccentric positions of 90° and 135°. No movement of the restraint plunger was found.

The inspector reviewed CN Flagg and Company documentation with respect to welder, weld procedure and weld specification acceptability as specified in ASME Section IX. Also weld rod certification and issue control was reviewed.

The following documentation was reviewed with respect to the above.

- CN Flagg Tie Plate Weld Number Drawing No. 7166-A-1, Revision 0.
- Sadduk Material Certificate, SFA 5.4.
- ASME, Section 2, Part C - Material Specification.
- Material Traceability Log, Heat Number 462221.
- Welder Material Requisition Form No. 353, November 17, 1978.
- Weld Procedure Specification, GMAW/SMAW, WP 8-24.
- Record of Welder Qualification, October 11, 1978.

No items of noncompliance were identified.

c. Operational Procedures, Chemistry and Surveillance Programs

The inspectors interviewed licensee personnel and reviewed operation procedures with respect to the spent fuel pool for changes required to reflect the new inventory potential of the pool.

The following procedures were reviewed with respect to the above.

- Loss of Water Inventory in Reactor Cavity of Fuel Pool, OP 521, Revision 1.
- Fuel Pool System, OP 310, Revision 11.
- Reactor Building Crane Procedure, OP 347, Revision 0.

The procedures reviewed indicate availability of coolant backup systems and pool water makeup systems. Alarms are located in the control room which will alert the operator of unusual or emergency condition at the pool. The reactor building crane is limited from movement over fuel when the crane operations key is removed. The procedure does not limit movement with the operation key in place. Current practice is to restrict movement of heavy objects over stored fuel assemblies. The licensee plans to add a precautionary statement with respect to crane movement when the crane is in mode 1 operation, unrestricted movement. This is an unresolved item pending the revision of OP 345 (245/78-37-01).

Discussions with the licensee indicate that current practice is to operate the spent fuel pool demineralizer and filter continuously whenever personnel are working in the area. The licensee is evaluating continuous operation versus intermittent operation when no personnel are working in the pool area. The inspector has no further questions on this item at this time.

The inspector discussed, with the licensee, plans for establishing a surveillance program to assure the functioning and integrity of the new spent fuel storage racks. The licensee plans to install three coupons, each coupon having four Boron Carbide (B₄C) plate samples, measuring 5.77" x 3" x 0.22" thick, suspended in the SFP near spent fuel. The sampling of the coupons are planned to be done on a yearly schedule. The testing program remains to be developed. The overall surveillance program will also include scheduled checks on the adjustable seismic restraints and on fuel assembly movement (drag checks). This is an unresolved item pending the development of the surveillance test program (245/78-37-02).

No items of noncompliance were identified.

4. Unresolved Items

Unresolved items are items about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Two unresolved items disclosed during this inspection are discussed in Paragraph 3.

5. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 8, 1978. The inspectors summarized the purpose and the scope of the inspection and the findings.