

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-336/85-01

Docket No. 50-336

License No. DPR-65 Priority - Category C

Licensee: Northeast Utilities Company
P. O. Box 270
Hartford, Connecticut

Facility Name: Millstone Nuclear Power Station, Unit 2

Inspection At: Waterford, Connecticut

Inspection Conducted: January 7-11, 1985

Inspectors: A. A. Varela
A. A. Varela, Lead Reactor Engineer

February 20, 1985
date

Contract Personnel: M. E. Nitzel
E.G.&G. Idaho, Inc. S. L. Morton

Approved by: Jacques P. Durr
J. P. Durr, Chief, Materials and
Process Section, EPB

2/26/85
date

Inspection Summary: Inspection on January 7-11, 1985 (Report No. 50-336/85-01)

Areas Inspected: Special announced inspection by one region-based inspector and two NRC contractor personnel of licensee actions in response to NRC/IE Bulletins 79-02, Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts; 79-04, Incorrect Weights of Velan Swing Check Valves; 79-07, Seismic Analysis of Safety Related Piping, 79-14, Seismic Analyses for As-Built Safety Related Piping Systems; and verification of design analyses and work performed in modifications affected by these bulletins. The inspection involved 74 inspector-hours at the licensee's corporate office, 24 inspector-hours at the Millstone Unit 2 plant and 24 inspector hours of in-office review by the inspectors.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Northeast Utilities Company (NUSCO)

- *E. A. DeBarba, Systems Manager, Generation Mechanical Engineering
- *M. L. Childers, Licensing Engineer
- *M. Kupinski, Manager, Piping Systems Engineer
- *T. J. Mawson, Supervisor, Generation Mechanical Engineering
- D. D. McCory, Supervisor, Procurement - QA Engineering
- *G. W. McElhone, Betterment Construction QA Supervisor
- *K. M. Siccles, Project Engineer
- S. Stadnick, Plant Engineer
- *T. Starr, Engineer

Bechtel Engineering - Gaithersburg Office Personnel

- *L. H. Eng, Engineering Supervisor
- *G. K. Wang, Project Engineer
- *S. C. Ward, Senior Engineer
- *R. Williams, Senior Engineer
- *D. M. Wos, Engineer

*Denotes attendees at Exit Meeting

2. Inspection Purpose and Scope

The purpose of this inspection was to review with cognizant and responsible licensee and architect-engineer (AE) representatives at the engineering office and at the plant the completeness of the responses to NRC/IE Bulletins 79-02, "Pipe Support Base Plate Designs Using Expansion Anchor Bolts"; 79-14, "Seismic Analysis for As-Built Safety Related Piping Systems"; 79-07, "Seismic Stress Analysis of Safety Related Piping"; and 79-04, "Incorrect Weights for Swing Check Valves manufactured by Velan Eng. Corp." The scope of the inspection included a review of correspondence, engineering design, and quality assurance documentation relating to inspection, testing and modifications satisfying requirements and licensee commitments with respect to the bulletins. A walkdown inspection of the plant pipe systems verified repairs relating to IEB 79-02, 79-14, and 79-07.

3. Review Criteria

The latest revision of the subject bulletins was used to define actions by the utility. In addition, Temporary Instructions (TI) 2515/28 and 2515/29 were used to further define inspection requirements relative to IEB 79-02 and 79-14, respectively. Applicable sections of the Code of Federal Regulations (10 CFR 50) were used to provide guidance regarding legal requirements.

4. Review of Licensee Responses

The inspectors reviewed bulletin responses available from NRC files prior to the inspection. Any items requiring further discussion were noted as items to be addressed while at the corporate office or plant site.

The inspectors reviewed additional material provided by the licensee during the inspection. The material relating to IEB 79-02 consisted of additional procedures governing inspection, testing, maintenance and modification of piping supports, base plates and concrete anchor bolts. Sample calculations of concrete anchor bolt loads were reviewed and samples requiring modification were chosen for detailed field inspection and QA/QC documentation follow-up. The additional material relating to IEB 79-14 consisted of special procedures governing the field walkdown of piping systems and current piping system isometric drawings. Samples of engineering evaluations of nonconformances found during the IEB 79-14 effort were also reviewed. Additional information relating to IEB 79-07 consisted of a sample stress analysis revised due to the requirements of this bulletin. Additional information for IEB 79-04 consisted of review of correspondence identifying the valves in question and discussions with the A-E's designers on corrective actions for nonconformances resulting from incorrect weights of other than Velan swing check valves. The pertinent documents described above for IEB 79-02, 79-04, 79-07 and 79-14 are listed in the following tables.

TABLE 1. ENGINEERING DOCUMENTATION REVIEWED

<u>Document</u>	<u>Description</u>
11867-014-P-001, Rev. 1	Implementation procedure for as-built configuration of nuclear safety related piping
11867-014-C-001, Rev. 1	IEB 79-02 design guidelines for Millstone 2
11867-014-P-003, Rev. 2	Procedure for piping stress analysis performed by subcontractor
11867-014-P-002, Rev. 1	Procedure for pipe support/restraint design review by subcontractors
QCI-79-02-2, Rev. 1	Procedure for ultrasonic examination of anchor bolts
QCI-79-02-1, Rev. 2	Procedure for inspection of Category I pipe support base plates and anchor bolts
Stress Prob. 101	Walkdown package for stress prob. 101

TABLE 1. (continued)

Document	Description
Stress Prob. 114	Walkdown package for stress prob. 114
Stress Prob. 35	Walkdown package for stress prob. 35
413207	IEB 79-02 inspection report for support number 413207
427047	IEB 79-02 inspection report for support number 427047
79-176-169GM	Engineering evaluation of discrepancies from walkdown of reactor coolant system
--	Walkdown package for IEB 79-14 inspection of the reactor coolant system
Stress Prob. 25	Input data and output results for piping stress prob. 25
G/ME-79-566	4-27-79 Levy to Debarba letter regarding IEB 79-04
--	4-30-79 Council to Grier letter regarding IEB 79-04
76-545-65GM	Revised stress analysis for Volume Control Tank charging and bypass piping
G/ME-79-507	Technical letter regarding seismic analysis of Millstone 2 piping using ADLPIPE
MP2-CE-3968	Technical letter regarding seismic load combinations
G/ME-79-578	Technical letter regarding piping system support calculations
--	5-7-79 Council to Grier letter regarding IEB 79-07 response
--	5-11-79 Council to Reid letter regarding IEB 79-07 response
--	5-23-79 Council to Reid letter regarding IEB 79-07 response

TABLE 2. IEB 79-02 SUPPORT CALCULATION PACKAGES REVIEWED

<u>System</u>	<u>Calculation Number</u>	<u>Detailed Inspection</u>
AFW	505259	No
	405344	No
	405345	No
	413123	Yes
	413207	Yes
HPSI	301080	Yes
FW	413121	Yes
	413118	Yes
SURGE	408014	No
SW	427047	Yes

NOTE: AFW = Auxiliary Feedwater System
HPSI = High Pressure Safety Injection
FW = Feedwater
SURGE = Reactor Coolant Surge Line
SW = Service Water

"Detailed Inspection" denotes whether the review of the support calculation was supplemented with a detailed field inspection.

4.1 Inspection Findings

The review of the documents listed in Tables 1 and 2 did not conclusively demonstrate that all IEB 79-02 requirements had been met. In particular, this bulletin requires that the operability of each Category I system be assured. As part of this assurance, Item 4 of the bulletin requires verification that design requirements for concrete anchor bolts are met. This can be accomplished by a testing program including all concrete anchor bolts or one of the suggested sampling techniques included in the bulletin. Other techniques could be approved with adequate justification. The licensee representative's verbal responses and the previously mentioned documents indicated that all concrete anchor bolts that were accessible were tested; however, evidence was not presented that would provide assurance that the population of inaccessible anchor bolts on some systems was sufficiently small to maintain functionality. Additional information should be supplied which will show:

1. The total number of inaccessible supports
2. The systems on which each of these supports are installed
3. The total number of inaccessible concrete anchor bolts on each system containing inaccessible supports
4. Adequate statistical evidence regarding anchor bolt test results that will assure the functionality of each system - the number of anchor bolts tested/requiring replacement in each system with inaccessible supports
5. A description of how each inaccessible support was addressed under the IEB 79-14 requirements.

The licensee agreed to supply the information above in a timely manner.

Subsequent information was furnished by the licensee in telephone calls of January 22 and 23, 1985. The information presented indicates that this type of study was performed, but the supporting engineering information was unavailable for review by the NRC. This is an unresolved item, (336/85-01-01.)

5. Verification Walkdown Inspection

A physical inspection of portions of plant systems selected by the inspection team was conducted. The purpose of this walkdown was to verify samples of piping systems and supports for compliance to as-built conditions as described in the licensee's documentation and to verify repairs or modifications to piping, pipe supports and/or baseplates required by the subject bulletins. The following piping systems were examined:

TABLE 3. PIPING SYSTEMS FIELD VERIFIED

<u>System</u>	<u>Stress Problem Number</u>	<u>Drawing</u>	<u>Location</u>
Feedwater	25	11867•014•SK•P•02505 Rev. C	Turbine Building
Feedwater	25	11867•014•SK•P•02503 Rev. C	Turbine Building
Feedwater	25	11867•014•SK•P•02504 Rev. C	Turbine Building
Feedwater	25	11867•014•SK•P•02502 Rev. C	Turbine Building
Feedwater	25	11867•014•SK•P•02501 Rev. C	Turbine Building
Auxiliary Feedwater	101	11867•014•SK•P•10103 Rev. B	AFW Pump Room Terry Turbine Room
Auxiliary Feedwater	101	11867•014•SK•P•10102 Rev. C	Turbine Building
Service Water	114	SK-M-690 Rev. 4	Intake Structure

Findings: No violations were identified.

6. Records of Licensee Quality Assurance Activities

A review was undertaken to evaluate licensee management involvement and control in assuring quality in activities undertaken in response to the subject bulletins. The licensee's QA audits and audits performed by an outside independent agency of Bechtel, Gaithersburg, engineering services were observed to be thorough and technically sound. They were specifically directed to Bechtel's work on NRC/IEB 79-02 and 79-14 for Millstone Unit 2. Audit number NEU-A01274 by NUSCO incorporates the above audit by Nuclear Audit and Testing Company (NATCO) number NQA-80-001. The audit findings of two deficiencies and two observations were adequately responded to. Corrective actions were reviewed and approved by NUSCO.

Additionally, the plant specific activities relating to inspection, testing, pipe support repairs and documentation thereof were observed to have been controlled by the licensee. His in-process verification, surveillance and audit reports were reviewed. Seventy-five such reports were observed to reflect satisfactory licensee involvement and his approach to resolution of technical issues from a safety standpoint.

No violations were identified in the above record review. Based on the preceding paragraphs, the inspectors conclude that licensee has adequately responded to NRC/IE Bulletins 79-02, 79-04, 79-07 and 79-14. These bulletins are considered closed.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, violations or deviations. An unresolved item identified during this inspection is discussed in paragraph 4.1.

8. Exit Interview

The inspectors met with licensee and A-E representatives (denoted in paragraph 1) at the conclusion of the inspection on January 11, 1985, at the Berlin, Connecticut corporate office. The inspector summarized the scope and findings of the inspection. The licensee acknowledged the inspector's comments and committed to provide additional documentation relating to the IEB 79-02, as identified in paragraph 4.1. At no time during this inspection was written material provided to the licensee by the inspector except for a request for technical information.