

# NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY  
WESTERN MASSACHUSETTS ELECTRIC COMPANY  
NEW YORK WATER POWER COMPANY  
NORTHEAST UTILITIES SERVICE COMPANY  
NORTHEAST NUCLEAR ENERGY COMPANY

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July 15, 1992

Docket No. 50-336  
814180

Re: Inservice Inspection Program  
10CFR50.55a(g)

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 2  
Second Ten-Year Inservice Inspection Testing Program  
Revision to Previous Relief Request

The purpose of this letter is to revise certain portions of a previous letter dated October 17, 1991,<sup>(1)</sup> in which Northeast Nuclear Energy Company (NNECO) responded to the NRC Staff's request for additional information regarding the second ten-year inservice test (IST) program at Millstone Unit No. 2.

### Background

In a letter dated October 30, 1987,<sup>(2)</sup> supplemented by letter dated August 26, 1988,<sup>(3)</sup> NNECO submitted the second ten-year interval IST Program for Millstone Unit No. 2. These letters also requested relief from testing requirements that were determined to be impractical or would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety, and proposed alternatives to provide an acceptable level of quality and safety.

The NRC Staff reviewed and subsequently provided NNECO with the Safety Evaluation (SE), Technical Evaluation Report (TER), and associated findings in a letter

- (1) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2 Response to Request for Additional Information Second 10-Year In-Service Inspection Testing Program," dated October 17, 1991.
- (2) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2 Inservice Inspection Testing Program," dated October 30, 1987.
- (3) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2 Inservice Inspection Testing Program (TAC #59265)," dated August 26, 1988.

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dated July 19, 1990.<sup>(4)</sup> Relief from certain testing requirements was granted with specified conditions as provided in Table 1 of the SE. The IST Program was also found to be acceptable for implementation, provided the omissions and inconsistencies identified in the SE and in Appendix C of the TER were addressed within six months of the receipt of the SE.

In a letter dated January 28, 1991,<sup>(5)</sup> NNECO provided the additional information to the NRC Staff, as requested. This letter supplemented and clarified information that had been identified in the Staff's SE and contractor's TER.

Later, in a letter dated June 18, 1991,<sup>(6)</sup> the NRC Staff requested additional information. This information was provided as requested in NNECO's letter dated August 9, 1991.<sup>(7)</sup> Changes to the IST Program, which superseded certain information previously provided, were specifically identified.

During a telephone conference between NRC Staff and NNECO personnel on August 19, 1991, the Staff requested additional information to clarify certain relief requests which had been submitted previously. In a letter dated October 17, 1991,<sup>(8)</sup> NNECO provided the clarifying information as requested.

Attachment 1 to this letter contains a revision to our relief request IWP-1, previously submitted in the October 17, 1991, letter. This revision to relief request IWP-1 deletes all reference to special consideration or expanded vibration limits for IST of the service water pumps and supersedes the IWP-1

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- (4) J. F. Stolz letter to E. J. Mroczka, "Second Ten-Year Inservice Testing Program and the Granting of Relief From Testing Requirements Determined to be Impractical for Millstone, Unit 2 (TAC 75977)," dated July 19, 1990.
  - (5) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2, Second Ten-Year Inservice Inspection Testing Program Response to NRC Staff Request (TAC 75977)," dated January 28, 1991.
  - (6) G. S. Vissing letter to E. J. Mroczka, "Millstone Unit 2, Request for Additional Information Regarding Relief Concerning Second Ten-Year Inservice Testing Program (TAC No. 79688)," dated June 18, 1991.
  - (7) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2, Response to Request for Additional Information, Second 10-Year Inservice Inspection Testing Program," dated August 9, 1991.
  - (8) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2 Response to Request for Additional Information Second 10-Year Inservice Testing Program," dated October 17, 1991.

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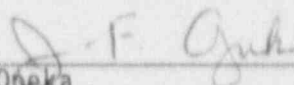
information previously provided in Footnotes 1, 2, 3, and 6. NNECO's review of service water pump operating history over the past two years indicates that the vibration limits, applicable to other similar rotating equipment, can now be effectively implemented for the service water pumps. Further, the service water pump casing and motor stand assemblies are being considered for replacement over the next several years. If this replacement occurs, improved designed casing and motor stand assemblies will likely be installed which are designed to reduce the motor response to small changes in balance. Thus, the potential for reduction in availability, caused by insignificant changes in pump motor balance, is reduced. This relief request revision is consistent with the guidelines of ASME Operating and Maintenance Standard OM-6.

We trust the submittal of this information will provide the NRC Staff with the information to complete their review of NNECO's request for relief from certain ASME Code testing requirements. NNECO respectfully requests consideration toward issuance of the SE at your earliest convenience, but no later than August 14, 1992.

Should you have any further questions relating to this issue, please contact my staff.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

  
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J. F. Opeka  
Executive Vice President

cc: T. T. Martin, Region I Administrator  
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2  
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, & 3

Docket No.

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Second Ten-Year Inservice Inspection Testing Program  
Revision to Previous Relief Request

IWP-1

July 1992

<u>Relief Request No.</u>	RR-IWP-1 (Revised 2-21-92)
<u>Components Affected</u>	All safety-related pumps
<u>Code Reference</u>	Article IWP-4510 Article IWP-3210, Table IWP 3100-2 (Vibration)
<u>Code Test Requirement</u>	Measure during each in-service test, displacement vibration amplitude (mils)
<u>Basis for Relief</u>	<p>Experience has shown that measurement of overall vibration amplitude in mils does not provide the desired early warning of pump degradation. Vibration amplitude is adequate for measuring unbalance, misalignment, and other low frequency failure modes. It does not give early warning of bearing degradation since the magnitude of higher frequency vibrations created by such degradation is 10 to 1,000 times lower than the normal pump movements. Experience at Northeast Utilities has shown that monitoring pump vibration velocity (in/sec) provides earlier warning of pump degradation. Collection and review of vibration "signatures" (plots of vibration velocity vs. frequency) over a range from slightly below running frequency to several times running frequency provides optimal early warning of pump degradation.</p> <p>Absolute maximum limits are set for each pump.</p>
<u>Alternate Testing</u>	<p>For centrifugal pumps, measurements will be taken in a plane approximately perpendicular to the rotating shaft in two orthogonal directions on each accessible bearing housing and one measurement will be taken in the axial direction on each thrust bearing housing.</p> <p>For reciprocating pumps, the location will be on a bearing housing of the crankshaft, approximately perpendicular to both the crankshaft and the line of plunger travel.</p> <p>On vertical line shaft pumps, measurements will be taken on the upper motor bearing housing in three orthogonal directions including one axial direction</p> <p>Vibration will be monitored during each in-service test using equipment which collects vibration velocity signatures over a range from less than one-third running speed to at least eight times running speed.</p>

Overall vibration velocity (in/sec Peak) will be compared to the following acceptance criteria:

1. Acceptable Range - less than 2.5 times Reference Velocity and less than 0.325 inches per second (Peak)
2. Alert Range - 2.5 to 5 times Reference Velocity or greater than 0.325 inches per second (Peak)
3. Required Action Range - Greater than 5 times Reference Velocity or greater than 0.70 inches per second (Peak).

Reference Velocity shall be the average overall velocity determined during an in-service test at reference conditions when the pump is known to be operating acceptably.

In addition to the above quantitative analysis of overall vibration levels vibration signatures will be reviewed at least quarterly to identify potential bearing degradation or other developing faults. When potential faults are identified, action, as required for a pump in the Alert Range of vibration will be initiated.