

January 10, 1995

Mr. John F. Opeka
Executive Vice President, Nuclear
Connecticut Yankee Atomic Power Company
Northeast Nuclear Energy Company
Post Office Box 270
Hartford, CT 06141-0270

Dear Mr. Opeka:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. M90331)

The Commission has issued the enclosed Amendment No. 101 to Facility Operating License No. NPF-49 for the Millstone Nuclear Power Station, Unit No. 3, in response to your application dated September 9, 1994, with clarifying information provided by letter dated October 5, 1994.

The amendment revises the Technical Specifications to modify surveillance requirements by increasing the acceptance criterion for the closure of the main steam isolation valves from 5 seconds to 10 seconds.

A copy of the related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

Vernon L. Rooney, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures: 1. Amendment No. 101 to NPF-49
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in black ink, appearing to read "Vernon L. Rooney".

Vernon L. Rooney, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-423

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Mr. John F. Opeka
Northeast Nuclear Energy Company

Millstone Nuclear Power Station
Unit 3

cc:

Ms. L. M. Cuoco, Senior Nuclear Counsel
Northeast Utilities Service Company
Post Office Box 270
Hartford, Connecticut 06141-0270

Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

J. J. LaPlatney
Haddam Neck Unit Director
Connecticut Yankee Atomic Power Company
362 Injun Hollow Road
East Hampton, Connecticut 06424-3099

First Selectmen
Town of Waterford
Hall of Records
200 Boston Post Road
Waterford, Connecticut 06385

Kevin T. A. McCarthy, Director
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127

P. D. Swetland, Resident Inspector
Millstone Nuclear Power Station
c/o U.S. Nuclear Regulatory Commission
Post Office Box 513
Niantic, Connecticut 06357

Allan Johanson, Assistant Director
Office of Policy and Management
Policy Development and Planning Division
80 Washington Street
Hartford, Connecticut 06106

Donald B. Miller, Jr.
Senior Vice President
Millstone Station
Northeast Nuclear Energy Company
Post Office Box 128
Waterford, Connecticut 06385

S. E. Scafe, Vice President
Nuclear Operations Services
Northeast Utilities Service Company
Post Office Box 128
Waterford, Connecticut 06385

F. R. Dacimo, Nuclear Unit Director
Millstone Unit No. 3
Northeast Nuclear Energy Company
Post Office Box 128
Waterford, Connecticut 06385

Nicholas S. Reynolds
Winston & Strawn
1400 L Street, NW
Washington, DC 20005-3502

Burlington Electric Department
c/o Robert E. Fletcher, Esq.
271 South Union Street
Burlington, Vermont 05402

R. M. Kacich, Director
Nuclear Planning, Licensing & Budgeting
Northeast Utilities Service Company
Post Office Box 128
Waterford, Connecticut 06385

M. R. Scully, Executive Director
Connecticut Municipal Electric
Energy Cooperative
30 Stott Avenue
Norwich, Connecticut 06360

J. M. Solymossy, Director
Nuclear Quality and Assessment Services
Northeast Utilities Service Company
Post Office Box 128
Waterford, Connecticut 06385

David W. Graham
Fuel Supply Planning Manager
Massachusetts Municipal Wholesale
Electric Company
Post Office Box 426
Ludlow, Massachusetts 01056



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

DOCKET NO. 50-423

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 101
License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northeast Nuclear Energy Company, et al. (the licensee), dated September 9, 1994 as supplemented October 5, 1994 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

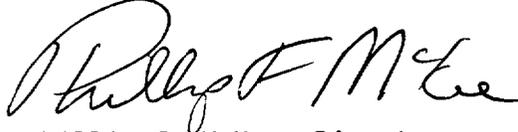
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.101 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Phillip F. McKee, Director
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: January 10, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 101

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised page is identified by amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 7-9

Insert

3/4 7-9

PLANT SYSTEMS

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.5 Each main steam line isolation valve (MSIV) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

MODE 1:

With one MSIV inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

MODES 2, 3, and 4:

With one MSIV inoperable, subsequent operation in MODE 2, or 3, or 4 may proceed provided the isolation valve is maintained closed. Otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.5.1 Each MSIV shall be demonstrated OPERABLE by verifying full closure within 10 seconds in Modes 1, 2, and 3 when tested pursuant to Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

4.7.1.5.2 Each MSIV shall be demonstrated OPERABLE by verifying full closure within 120 seconds in Mode 4 when tested pursuant to Specification 4.0.5. The provisions of Specification 4.0.4 are not applicable for entry into MODE 4.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 101

TO FACILITY OPERATING LICENSE NO. NPF-49

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated September 9, 1994, as supplemented October 5, 1994, the Northeast Nuclear Energy Company (the licensee), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 3 Technical Specifications (TS). The requested changes would increase the acceptance criterion for main steam isolation valve (MSIV) maximum closure time from 5 seconds to 10 seconds. The October 5, 1994, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

Background: Millstone Unit 3 is a four-loop Westinghouse PWR located five miles southwest of New London, CT. It has a dual containment. The primary containment is of steel-lined concrete construction. During normal operation its pressure is maintained at 14.0 psia. The containment design pressure is 45 psig. The maximum calculated peak accident pressure is 38.49 psig. The event resulting in the maximum peak accident pressure is a double-ended rupture (DER) of a hot leg.

Millstone Unit 3 has four steam generators (S/G). A 30-inch MSIV (located outside containment) is provided in the main steam line from each S/G (located inside containment) to the main steam header (located outside containment). The primary purpose of a MSIV is to rapidly isolate the associated S/G in the event of main steam line break (MSLB). A MSLB can occur either inside or outside containment. Redundant and diverse instrumentation is provided to sense a MSLB and automatically isolate the MSIVs. For a MSLB outside containment, the MSIV isolation must occur in time to limit the release of the main steam (secondary coolant) to a value which provides acceptable radiological dose consequences. For a MSLB inside containment, the isolation must occur in time to limit the steam release to a value that will not result in containment overpressure (a pressure exceeding the ASME Code design value), or in a containment temperature response more severe than the conditions for which safety-related electrical equipment in the containment is environmentally qualified. A main feedwater line break may present a

challenge to the containment and its equipment similar to that of a MSLB. However, for Millstone 3, the MSLB presents the more limiting challenge to the containment. In addition to the containment response concerns, fuel cladding integrity concerns may define a minimum isolation time limit for MSIV closure in the event of an accident or transient. This is because fuel cladding integrity may be affected by departure from nucleate boiling (DNB) which depends on reactor coolant system (RCS) pressure, which in turn may be influenced by containment pressure. The present Millstone Unit 3 TS specify that MSIVs must close in ≤ 5 seconds. This time limit is based on assumptions used in the original fuel and containment MSLB licensing analyses, with an allowance for instrumentation time delay. For Millstone Unit 3 the worst-case LOCA presents a more severe containment peak pressure challenge than the worst-case MSLB. With the minimum MSIV closure time increased to 10 seconds, the worst case LOCA would still present a more limiting challenge to containment than a MSLB.

Fuel Cladding Integrity: The feedwater line break and MSLB were reanalyzed assuming a total steam line isolation time of 11.8 seconds (1.8 seconds for instrument response, plus 10 seconds for the valve stroke time).

A feedwater line break is a heatup transient in which the peak reactor coolant system (RCS) pressure is a concern. The results of the licensee's reanalysis of the most limiting feedwater line break event indicates that the peak RCS pressure was unchanged from the current FSAR analysis. With regard to the main steam line break, both a four loop operation and a three loop operation were reanalyzed. The results of the analyses indicate that more than 30 percent margin to DNB was predicted for both the four loop and three loop operation. Thus, the acceptance criteria for the main steam line break will be met conservatively. In response to the staff question relative to steam generator water inventory during a steam line break with delayed MSIV closure, the licensee stated that an evaluation has been performed which estimates that more than 50 percent of the pre-accident water inventory will remain inside of the three intact steam generators. The staff considers that this is acceptable because the secondary heat sink will be maintained following a main steam line break accident for adequate decay heat removal.

MSLB Containment Pressure and Temperature Response Reanalysis: The licensee has requested that the minimum allowable MSIV closure time be extended to 10 seconds. The request is based on analyses that supersede the original licensing analyses that were performed in support of Amendment 59. Amendment 59 increased the allowable containment subatmospheric pressure range. For Amendment 59 the licensee reanalyzed the limiting fuel and containment MSLB events using an 11.8 seconds MSIV closure time (10 seconds plus 1.8-sec assumed instrument delay time). The new analyses indicated that the additional steam released in a design basis MSLB, due to the additional 5 seconds, will not cause: (a) the worst-case, analyzed, containment peak accident pressure to exceed the containment design pressure, or (b) the containment temperature response to exceed conditions acceptable under the terms of the 10 CFR 50.49 "EQ" analyses. The LOCTIC code was used to calculate the MSLB containment temperature and pressure responses. The results indicated that, notwithstanding the increased MSLB consequences, the design basis LOCA continues to be the most severe containment peak pressure

event, and that peak pressure is within the containment design limit. The reanalyses also determined that the current EQ profiles for MSLB temperature and radiation remain bounding. The MSLB case resulting in the highest peak containment pressure was found to be a double-ended rupture occurring at 25 percent power with a failure of one ESF power bus. The resulting peak containment pressure is 34.14 psig. The MSLB case resulting in the highest temperature (336°F) was found to be a double-ended rupture occurring at 75 percent power, with an MSIV failure to close. For this event, the containment liner inside surface temperature remained below 240°F.

Subcompartment Effects: An increase in MSIV closure time would not be expected to result in an increase in subcompartment differential pressures associated with MSLBs. The main steam line is not routed through any portion of the S/G compartment and is not considered in the (subcompartment) analyses (Ref. FSAR 6.2.1.2.3).

High Energy Line Break (HELB) Dynamic Effects: The licensee's September 9, 1994, application states that the increased closure time has no adverse "mechanistic" (i.e., pipe whip, jet impingement) effects because the closure time is not a parameter in the HELB analysis.

Radiological Consequences - MSLB Outside Containment: The licensee's application states that the MSIV closure time is not a factor in the radiological dose calculation for a MSLB. This is correct. In the event of a MSLB outside containment, the primary source of radioactivity, primary to secondary coolant leakage is assumed to be apportioned among all S/Gs in a manner that maximizes the calculated dose (Ref. SRP 15.1.5, App. A). The primary to secondary coolant is thus assumed to escape via the unisolated break with coolant leakage occurring continuously for an 8-hour period while the plant is being brought to cold shutdown. Accordingly, the time of closure of the three MSIVs which do not fail to close has little effect on the results of the dose analysis.

Containment Summary: - Containment accident response analyses previously reviewed and accepted by the staff in support of Amendment 59 demonstrated acceptable containment pressure and temperature consequences using a 10 second MSIV closure time. On the basis of those findings and the above discussions, the proposed amendment is acceptable.

3.0 EXIGENT CIRCUMSTANCES

Pursuant to 10 CFR 50.91(a)(6), the licensee requested the proposed amendment on an exigent basis. The proposed changes would revise the Technical Specifications to modify surveillance requirements by increasing the acceptance criterion for the closure of MSIVs from 5 seconds to 10 seconds. At the time the changes were requested, Millstone 3 was shutdown and had been unable to meet the 5 second criterion. In order to resume plant operations Millstone 3 was required to meet the operability requirements of the Technical Specifications for the MSIVs. Repeated efforts to meet the required closure time had been unsuccessful. Ultimately the MSIVs were tested successfully to

the 5 second criterion, however historical difficulties in meeting the criterion made the requested change advisable. The successful testing of the MSIV in this instance obviated the need for exigent treatment of this request.

Notice of the staff's proposed determination that this proposed amendment involves no significant hazards consideration was published in the Federal Register on September 19, 1994 (59 FR 47960). Given that this notice has provided 30 days notice as required by 10 CFR 50.91(a)(2), there is no need for the Commission to make a final determination that the proposed amendment does not involve a significant hazards consideration.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (59 FR 47960). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: W. Long
C. Liang

Date: January 10, 1995