

Mr. B. D. Kenyon  
President - Nuclear Group  
Northeast Utilities Service Company  
c/o Mr. Richard T. Laudenat  
Director - Nuclear Licensing Services  
P.O. Box 128  
Waterford, CT 06385

March 11, 1997

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. M95469)

Dear Mr. Kenyon:

The Commission has issued the enclosed Amendment No. 134 to Facility Operating License No. NPF-49 for the Millstone Nuclear Power Station, Unit No. 3, in response to your application dated May 23, 1996, as supplemented July 17 and December 4, 1996.

The amendment modifies the description of the time constants associated with the Overtemperature Delta-T and Overpower Delta-T calculations used to establish the trip setpoints and the time constant used in the rate-lag controller for Steam Line Isolation, Steam Line Pressure Negative Rate-High.

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

Sincerely,

Original signed by:

James W. Andersen, Project Manager  
Special Projects Office - Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures: 1. Amendment No.134 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

March 11, 1997

Mr. B. D. Kenyon  
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Northeast Utilities Service Company  
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A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to be "JW Andersen", written over the typed name.

James W. Andersen, Project Manager  
Special Projects Office - Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures: 1. Amendment No. 134 to NPF-49  
2. Safety Evaluation

cc w/encls: See next page

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Millstone Nuclear Power Station  
Unit 3

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Northeast Utilities Service Company

Millstone Nuclear Power Station  
Unit 3

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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. 134  
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 May 23, 1996, as supplemented July 17 and December 4, 1996, 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. 134 , 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Phillip F. McKee  
Deputy Director for Licensing  
Special Projects Office  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: March 11, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 134

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following pages of the Appendix A, Technical Specifications, with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

2-9

2-11

3/4 3-31

Insert

2-9

2-11

3/4 3-31

TABLE 2.2-1 (Continued)

TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE  $\Delta T$

$$\Delta T \frac{(1 + \tau_1 S)}{(1 + \tau_2 S)} \frac{1}{(1 + \tau_3 S)} \leq \Delta T_0 (K_1 - K_2 \frac{(1 + \tau_4 S)}{(1 + \tau_5 S)} [T \frac{1}{(1 + \tau_6 S)} - T'] + K_3 (P - P') - f_1(\Delta I))$$

- Where:
- $\Delta T$  = Measured  $\Delta T$  by Reactor Coolant System Instrumentation;
  - $\frac{1 + \tau_1 S}{1 + \tau_2 S}$  = Lead-lag compensator on measured  $\Delta T$ ;
  - $\tau_1, \tau_2$  = Time constants utilized in lead-lag compensator for  $\Delta T$ ,  $\tau_1 \geq 8$  s,  $\tau_2 \leq 3$  s;
  - $\frac{1}{1 + \tau_3 S}$  = Lag compensator on measured  $\Delta T$ ;
  - $\tau_3$  = Time constants utilized in the lag compensator for  $\Delta T$ ,  $\tau_3 = 0$  s;
  - $\Delta T_0$  = Indicated  $\Delta T$  at RATED THERMAL POWER;
  - $K_1$  = 1.20 (Four Loops Operating); 1.20 (Three Loops Operating);
  - $K_2$  = 0.02456;
  - $\frac{1 + \tau_4 S}{1 + \tau_5 S}$  = The function generated by the lead-lag compensator for  $T_{avg}$  dynamic compensation;
  - $\tau_4, \tau_5$  = Time constants utilized in the lead-lag compensator for  $T_{avg}$ ,  $\tau_4 \geq 20$  s,  $\tau_5 \leq 4$  s;
  - $T$  = Average temperature, °F;
  - $\frac{1}{1 + \tau_6 S}$  = Lag compensator on measured  $T_{avg}$ ;
  - $\tau_6$  = Time constant utilized in the measured  $T_{avg}$  lag compensator,  $\tau_6 = 0$  s;

TABLE 2.2-1 (Continued)

TABLE NOTATIONS (Continued)

NOTE 3: OVERPOWER  $\Delta T$

$$\Delta T \frac{(1 + \tau_1 S)}{(1 + \tau_2 S)} \left( \frac{1}{1 + \tau_3 S} \right) \leq \Delta T_0 (K_4 - K_5 \frac{(\tau_7 S)}{(1 + \tau_7 S)} \left( \frac{1}{1 + \tau_6 S} \right) T - K_6 \left[ T \left( \frac{1}{1 + \tau_6 S} \right) - T'' \right] - f_2 (\Delta I))$$

- Where:
- $\Delta T$  - As defined in Note 1,
  - $\frac{1 + \tau_1 S}{1 + \tau_2 S}$  - As defined in Note 1,
  - $\tau_1, \tau_2$  - As defined in Note 1,
  - $\frac{1}{1 + \tau_3 S}$  - As defined in Note 1,
  - $\tau_3$  - As defined in Note 1,
  - $\Delta T_0$  - As defined in Note 1,
  - $K_4$  - 1.09,
  - $K_5$  - 0.02/°F for increasing average temperature and 0 for decreasing average temperature,
  - $\frac{\tau_7 S}{1 + \tau_7 S}$  - The function generated by the rate-lag compensator for  $T_{avg}$  dynamic compensation,
  - $\tau_7$  - Time constants utilized in the rate-lag compensator for  $T_{avg}$ ,  $\tau_7 \geq 10$  s,
  - $\frac{1}{1 + \tau_6 S}$  - As defined in Note 1,
  - $\tau_6$  - As defined in Note 1,

**TABLE 3.3-4 (Continued)**

**TABLE NOTATIONS**

- \* Time constants utilized in the lead-lag controller for Steam Line Pressure-Low are  $\tau_1 \geq 50$  seconds and  $\tau_2 \leq 5$  seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.
- \*\* The time constant utilized in the rate-lag controller for Steam Line Pressure-Negative Rate-High is greater than or equal to 50 seconds. CHANNEL CALIBRATION shall ensure that this time constant is adjusted to this value.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 134

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 May 23, 1996, as supplemented July 17 and December 4, 1996, the Northeast Nuclear Energy Company, et al. (NNECO), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 3, Technical Specifications (TS). The requested changes would modify the description of the time constants associated with the Overtemperature Delta-T and Overpower Delta-T calculations used to establish the trip setpoints and the time constant used in the rate-lag controller for Steam Line Isolation, Steam Line Pressure Negative Rate-High. The July 17 and December 4, 1996, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the original Federal Register notice.

2.0 BACKGROUND

During a review of the TS, NNECO realized that time constants used in the Overtemperature Delta-T and Overpower Delta-T calculations were set nonconservatively. NNECO realized that the time constants should be treated as limiting values as opposed to their existing practice of treating them as nominal values. Additionally, a review of the TS also revealed that the Steam Line Isolation, Steam Line Pressure Negative Rate-High time constant was incorrectly stated as being less than or equal to 50 seconds as opposed to correctly indicating greater than or equal to 50 seconds.

3.0 EVALUATION

3.1 Overtemperature Delta-T and Overpower Delta-T

NNECO proposed to modify the description of the time constants used in the Overtemperature Delta-T and Overpower Delta-T calculations as described in Notes 1 and 3 of TS Table 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints." The modification would replace the current equal sign with a notation that indicates the direction of conservatism associated with the time constant.

NNECO's current practice is to treat the time constant values utilized in the Overtemperature Delta-T and Overpower Delta-T calculations as nominal settings and to allow the instrumentation to be adjusted to within a calibration tolerance of the specified time constants. As a result of NNECO's discussions and analysis with Westinghouse, it was determined that the time constants should be treated as limiting settings, thus, the instrumentation would then be adjusted conservatively with respect to these time constants.

Two of the time constants,  $\tau_1$  and  $\tau_2$ , associated with Overtemperature Delta-T, are used to adjust the measured Delta-T by the Reactor Coolant System Instrumentation. This proposed change would modify the setting of  $\tau_1$  (currently  $\tau_1 = 8$  seconds), which is contained in the numerator of the Lead-Lag Compensator on the Measured Delta-T equation, to be greater than or equal to the safety analysis assumption ( $\tau_1 \geq 8$  seconds). The setting of  $\tau_2$  (currently  $\tau_2 = 3$  seconds), which is contained in the denominator of the Lead-Lag Compensator on the Measured Delta-T equation, is being revised to be less than or equal to the safety analysis assumption ( $\tau_2 \leq 3$  seconds). These changes will result in a smaller Delta-T, which would shorten the delay time to initiate a reactor trip. Additionally, both changes are consistent with NUREG-1431, Revision 1, Westinghouse Standard Technical Specifications (STS). Therefore, the staff finds the proposed inequality changes associated with  $\tau_1$  and  $\tau_2$  acceptable.

Time constants,  $\tau_4$  and  $\tau_5$ , associated with Overtemperature Delta-T, compensate the OverTemperature Delta-T setpoint for the rate of change in T-average. The proposed change would revise the setting of  $\tau_4$  (currently  $\tau_4 = 20$  seconds), which is contained in the numerator of the Lead-Lag Compensator for the T-average Dynamic Compensation equation, to be greater than or equal to the safety analysis assumption ( $\tau_4 \geq 20$  seconds). The setting of  $\tau_5$  (currently  $\tau_5 = 4$  seconds), which is contained in the denominator of the Lead-Lag Compensator for T-average Dynamic Compensation equation, is being revised to be less than or equal to the safety analysis assumption ( $\tau_5 \leq 4$  seconds). These changes will result in a conservative indicated Delta-T at Rated Thermal Power. The staff notes that in a safety evaluation dated January 31, 1991, the staff reviewed the Overtemperature Delta-T parameters, which included the revision of  $\tau_4$  from the then stated value of 33 seconds to 20 seconds. The 1991 review found the change to be acceptable and concluded that the effect of the Overtemperature Delta-T changes will be a marginal increase in the time at which the trip occurs and that while the existing operating margin will be decreased, reductions in operating margin had been adequately evaluated by NNECO and will continue to ensure the safe operation of the plant. In addition, the inequality changes associated with  $\tau_4$  and  $\tau_5$  are consistent with the practice of NUREG-1431, Westinghouse STS. Therefore, the staff finds the proposed inequality changes associated with  $\tau_4$  and  $\tau_5$  acceptable.

Time constant,  $\tau_7$ , associated with Overpower Delta-T, is used in the rate-lag compensator for T-average. The proposed change would revise the setting of  $\tau_7$  (currently  $\tau_7 = 10$  seconds), which is contained in the numerator and denominator of the Rate-Lag Compensator for T-average Dynamic Compensation equation, to be greater than or equal to the safety analysis assumption ( $\tau_7 \geq 10$  seconds). This change will result in a conservative setting of the rate-

lag compensator for T-average. Additionally, this change is consistent with NUREG-1431, Westinghouse STS. Therefore, the staff finds the proposed inequality change associated with tau7 acceptable.

### 3.2 Steam Line Isolation, Steam Line Pressure Negative Rate-High

NNECO proposed to modify Note (\*\*) to TS Table 3.3-4, "Engineered Safety Features Actuation System Instrumentation Trip Setpoints." The note currently indicates that the time constant utilized in the rate-lag controller for Steam Line Pressure Negative Rate-High is less than or equal to 50 seconds. NNECO proposed to reverse the inequality in the note to reflect a time constant "greater than or equal to 50 seconds." NNECO stated that this change will result in a conservative calibration of the rate-lag controller for Steam Line Isolation, Steam Line Pressure Negative Rate-High.

A letter from NNECO to Westinghouse dated May 17, 1996, indicated that based on the background information pertaining to Millstone Unit 3, the existing TS did not correctly identify the direction of conservatism for the steam line negative rate-high, rate-lag controller. The inequality description in the Millstone Unit 3 TS associated with Steam Line Pressure Negative Rate-High should be greater than or equal to ( $\geq$ ) 50 seconds, as opposed to less than or equal to ( $\leq$ ) 50 seconds as it now reads. In a letter dated July 3, 1996, from Westinghouse to NNECO, it is indicated that Westinghouse reviewed the information on Millstone Unit 3 and agreed that the correct connotation for the time constant should be greater than or equal to 50 seconds.

In correspondence dated July 17, 1996, NNECO provided the NRC with a copy of the July 3, 1996, correspondence. In a letter from NNECO dated December 4, 1996, NNECO provided additional information used to determine the time constant tau.

The staff has reviewed this information and agrees that the inequality sign should be changed to greater than or equal to 50 seconds. This will result in a conservative calibration and correct setting of the rate-lag controller for Steam Line Isolation, Steam Line Pressure Negative Rate-High. Therefore, the staff finds the proposed inequality description change to "greater than or equal to" acceptable.

### 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 a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (61 FR 30639 dated June 17, 1996). 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.

## 6.0 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 Contributor: D. Spaulding

Date: March 11, 1997