

March 14, 1989

Docket No. 50-423

Mr. Edward J. Mrocza
Senior Vice President
Nuclear Engineering and Operations
Northeast Nuclear Energy Company
Post Office Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Mrocza:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. 67365)

The Commission has issued the enclosed Amendment No. 31 to Facility Operating License No. NPF-49 for Millstone Nuclear Power Station, Unit No. 3, in response to your application dated June 15, 1988.

The amendment revises Technical Specification Tables 2.2-1 and 3.3-4 to decrease the reactor trip setpoint and the engineered safety features actuation setpoints for auxiliary feedwater initiation identified as steam generator water level low-low from 23.5% to 18.10% of the narrow range instrument span. These changes increase the margin between the steam generator water level low-low trip setpoint and the normal operating band and reflects the results of a revised calculation of the errors associated with related instrumentation.

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

Sincerely,

/s/

David H. Jaffe, Project Manager
Project Directorate I-4
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 31 to NPF-49
2. Safety Evaluation

cc w/enclosures:
See next page

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Mr. E. J. Mrocza
Northeast Nuclear Energy Company

Millstone Nuclear Power Station
Unit No. 3

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

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.*

DOCKET NO. 50-423

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.31
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 June 15, 1988 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.

*Northeast Nuclear Energy Company is authorized to act as agent and representative for the following Owners: Central Maine Power Company, Central Vermont Public Service Corporation, Chicopee Municipal Lighting Plant, City of Burlington, Vermont, Connecticut Municipal Electric Light Company, Massachusetts Municipal Wholesale Electric Company, Montaup Electric Company, New England Power Company, The Village of Lyndonville Electric Department, Western Massachusetts Electric Company, and Vermont Electric Generation and Transmission Cooperative, Inc., and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

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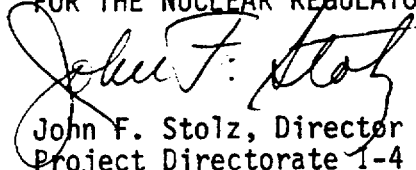
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 31, 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



John F. Stolz, Director
Project Directorate 1-4
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 14, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 31

FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are provided to maintain document completeness.

Remove

Insert

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2-6

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TABLE 2.2-1

REACTOR TRIP SYSTEM INSULATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
1. Manual Reactor Trip	N.A.	N.A.	N.A.	N.A.	N.A.
2. Power Range, Neutron Flux					
a. High Setpoint					
1) Four Loops Operating	7.5	4.56	0	$\leq 109\%$ of RTP ⁰⁰	$\leq 111.1\%$ of RTP ⁰⁰
2) Three Loops Operating	7.5	4.56	0	$\leq 80\%$ of RTP ⁰⁰	$\leq 82.1\%$ of RTP ⁰⁰
b. Low Setpoint	8.3	4.56	0	$\leq 25\%$ of RTP ⁰⁰	$\leq 27.1\%$ of RTP ⁰⁰
3. Power Range, Neutron Flux, High Positive Rate	1.6	0.5	0	$\leq 5\%$ of RTP ⁰⁰ with a time constant ≥ 2 seconds	$\leq 6.3\%$ of RTP ⁰⁰ a time constant ≥ 2 seconds
4. Power Range, Neutron Flux, High Negative Rate	1.6	0.5	0	$\leq 5\%$ of RTP ⁰⁰ with a time constant ≥ 2 seconds	$\leq 6.3\%$ of RTP ⁰⁰ with a time constant ≥ 2 seconds
5. Intermediate Range, Neutron Flux	17.0	8.41	0	$\leq 25\%$ of RTP ⁰⁰	$\leq 30.9\%$ of RTP ⁰⁰
6. Source Range, Neutron Flux	17.0	10.01	0	$\leq 10^+5$ cps	$\leq 1.4 \times 10^+5$ cps
7. Overtemperature ΔT					
a. Four Loops Operating	8.3	5.76	1.67 + 1.17 (Temp + Press)	See Note 1	See Note 2
b. Three Loops Operating	12.0	5.77	1.73 + 1.17 (Temp + Press)	See Note 1	See Note 2
8. Overpower ΔT	4.8	1.22	1.67	See Note 3	See Note 4

⁰⁰Loop design flow = 94,600 gpm (Four Loops Operating); 99,600 (Three Loops Operating)
⁰⁰RTP = RATED THERMAL POWER

MILLSTONE - UNIT 3

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Amendment No. 12

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA)</u>	<u>Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
9. Pressurizer Pressure-Low	5.0	1.77	3.3	≥ 1900 psia	≥ 1890 psia
10. Pressurizer Pressure-High	5.0	1.77	3.3	≤ 2385 psia	≤ 2395 psia
11. Pressurizer Water Level-High	8.0	5.13	2.7	$\leq 89\%$ of instrument span	$\leq 90.7\%$ of instrument span
12. Reactor Coolant Flow-Low	2.5	1.52	0.78	$\geq 90\%$ of loop design flow*	$\geq 89.1\%$ of loop design flow*
13. Steam Generator Water Level Low-Low	18.10	16.64	1.50	$\geq 18.10\%$ of narrow range instrument span	$\geq 17.11\%$ of narrow range instrument span
14. General Warning Alarm	N.A.	N.A.	N.A.	N.A.	N.A.
15. Low Shaft Speed - Reactor Coolant Pumps	3.8	0.5	0	$\geq 97.8\%$ of rated speed	$\geq 94.6\%$ of rated speed
16. Turbine Trip					
a. Low Fluid Oil Pressure	N.A.	N.A.	N.A.	≥ 500 psig	≥ 450 psig
b. Turbine Stop Valve Closure	N.A.	N.A.	N.A.	$\geq 1\%$ open	$\geq 1\%$ open
17. Safety Injection Input from ESF	N.A.	N.A.	N.A.	N.A.	N.A.

**RTP = RATED THERMAL POWER

TABLE 3.4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA)</u>	<u>Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
3. Containment Isolation (Continued)					
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
3) Safety Injection	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.				
b. Phase "B" Isolation					
1) Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
3) Containment Pressure--High-3	3.3	1.01	1.75	≤ 8.0 psig	≤ 8.8 psig
4. Steam Line Isolation					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Containment Pressure--High-2	3.3	1.01	1.75	≤ 3.0 psig	≤ 3.8 psig
d. Steam Line Pressure--Low	17.7	15.31	2.2	≥ 658.6 psig*	≥ 644.9 psig*
e. Steam Line Pressure - Negative Rate--High	5.0	0.5	0	≤ 100 psi/s**	≤ 122.7 psi/s**

TABLE 3.3-4 (Continued)

ENGINEERING SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIPS SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA) Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
5. Turbine Trip and Feedwater Isolation				
a. Automatic Actuation Logic Actuation Relays	N.A.	N.A.	N.A.	N.A.
b. Steam Generator Water Level--High-High (P-14)	3.7	2.33	1.75	$\leq 82.0\%$ of narrow range instrument span. $\leq 82.8\%$ of narrow range instrument span.
c. Safety Injection Actuation Logic	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Valves.			
d. T _{avg} Low Coincident with Reactor Trip (P-4)				
1) Four Loops Operating	N.A.	N.A.	N.A.	$\geq 564^{\circ}\text{F}$ $\geq 560.6^{\circ}\text{F}$
2) Three Loops Operating	N.A.	N.A.	N.A.	$\geq 564^{\circ}\text{F}$ $\geq 560.6^{\circ}\text{F}$
6. Auxiliary Feedwater				
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.
c. Steam Generator Water Level--Low-Low				
1) Start Motor-Driven Pumps	18.10	16.64	1.50	$\geq 18.10\%$ of narrow range instrument span. $\geq 17.11\%$ of narrow range instrument span.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA) Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>	
6. Auxiliary Feedwater (Continued)					
2) Start Turbine-Driven Pumps	18.10	16.64	1.50	$\geq 18.10\%$ of narrow range instrument span.	$\geq 17.11\%$ of narrow range instrument span.
d. Safety Injection	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.				
e. Loss-of-Offsite Power Start Motor-Driven Pumps	N.A.	N.A.	N.A.	$\geq 2800V$	$\geq 2720V$
f. Containment Depressurization Actuation (CDA) Start Motor-Driven Pumps	See Item 2. above for all CDA Trip Setpoints and Allowable Values.				
7. Control Building Isolation					
a. Manual Actuation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Manual Safety Injection Actuation	N.A.	N.A.	N.A.	N.A.	N.A.
c. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
d. Containment Pressure--High 1	3.3	1.01	1.75	≤ 3.0 psig	≤ 3.8 psig
e. Control Building Inlet Ventilation Radiation	N.A.	N.A.	N.A.	$\leq 1.5 \times 10^{-5}$ μ c/cc	$\leq 1.5 \times 10^{-5}$ μ c/cc

TABLE 3.3-4 (Continued)

ENGINEERING SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIPS, SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA)</u>	<u>Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
8. Loss of Power					
a. 4 kV Bus Undervoltage (Loss of Voltage)	N.A.	N.A.	N.A.	≥ 2800 volts with a ≤ 2 second time delay.	≥ 2720 volts with a ≤ 2 second time delay.
b. 4 kV Bus Undervoltage (Grid Degraded Voltage)	N.A.	N.A.	N.A.	≥ 3710 volts with a ≤ 8 second time delay with ESF actuation or ≤ 300 second time delay without ESF actuation.	≥ 3706 volts with a ≤ 8 second time delay with ESF actuation or ≤ 300 second time delay without ESF actuation.
9. Engineering Safety Features Actuation System Interlocks					
a. Pressurizer Pressure, P-11	N.A.	N.A.	N.A.	≤ 1985 psig	≤ 1995 psig.
b. Low-Low T _{avg} , P-12	N.A.	N.A.	N.A.	$\geq 553^{\circ}\text{F}$	$\geq 549.6^{\circ}\text{F}$
c. Reactor Trip, P-4	N.A.	N.A.	N.A.	N.A.	N.A.
d. Steam Generator Water Level, P-14	See Item 5 above for all Steam Generator Water Level Trip Setpoints and Allowable Values.				
10. Emergency Generator Load Sequencer	N.A.	N.A.	N.A.	N.A.	N.A.

"



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 31

TO FACILITY OPERATING LICENSE NO. NPF-49

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

INTRODUCTION

By letter dated June 15, 1988, Northeast Nuclear Energy Company (the licensee) proposed changes to the Millstone 3 Technical Specification Tables 2.2-1, "Reactor Trip System Instrumentation Trip Setpoints" and Table 3.3-4, "Engineered Safety Features Actuation System Instrumentation Trips Setpoints." These proposed changes would decrease the reactor trip and auxiliary feedwater initiation setpoints for "Steam Generator Water Level Low-Low" from 23.5% to 18.10% of the narrow range instrument span. The proposed changes reflect the results of a revised calculation of the error associated with this instrumentation. The corresponding total allowance (TA), allowable value, and "Z" and "S" values in the aforementioned tables would also be revised accordingly. This proposed change would increase the margin between the "Steam Generator Water Level Low-Low" trip and the normal operating band.

DISCUSSION

The existing and revised steam generator water level low-low trip setpoints are calculated by the methodology described in WCAP-10991, "Westinghouse Setpoint Methodology for Protection System, Millstone Unit No. 3," which is the same method used in calculating other setpoints in Tables 2.2-1 and 3.3-4 of the Technical Specifications. This methodology was approved by the NRC staff.

The licensee has evaluated four components associated with the "Steam Generator Low-Low" trip setpoint as follows: 1) the reference leg temperature, 2) environmental allowance for the transmitters, 3) safety analysis limit error, and 4) cabling insulation resistance error. The results of this evaluation are summarized as follows:

- 1) The maximum post-accident reference leg water temperature was assumed to be equal to the maximum calculated containment temperature in the original analysis. The revised analysis considers the effect of the reference leg thermal insulation on the post-accident heatup rate and evaluates the reference leg water temperature 5 minutes into the accident scenario. This is conservative because the FSAR accident analysis expects the steam generator water level low-low reactor trip to occur within 20 seconds following the accident scenario. (The limiting accident is the feedwater

system pipe break described in FSAR Chapter 15, Table 15.2-1). The licensee has also collected plant data that indicates a nominal reference leg temperature of 125°F, rather than the 100°F assumed in the original calculation. Because the span between the initial temperature and the accident conditions temperature is smaller, the heatup error is smaller. The original calculated error associated with reference leg heatup was 5.75%. Based on the new analysis the reference leg heatup error is 0.85%.

- 2) The steam generator water level is monitored by Rosemount and Veritrak transmitters. Westinghouse reported an additional 1.68% environmental allowance error (from 10% to 11.68%) associated with the Veritrak level transmitters. The new setpoint calculation accounts for the updated environmental allowance. The previous calculation did not account for the new environmental allowance error.
- 3) The safety analysis limit used in the design basis accident analysis was 0%. The FSAR erroneously reported a 3% margin to the safety analysis limit for the steam generator level low-low reactor trip. The effect of this error was an extra 3% margin in the steam generator level low-low reactor trip setpoint. This extra 3% is not included in the new setpoint analysis.
- 4) The new setpoint calculation accounts for an additional cabling insulation resistance error, 1.93% for Veritrak transmitters and 2.09% for Rosemount transmitters.

As the Veritrak transmitters exhibit the larger channel statistical allowance (CSA) than Rosemount transmitters, they are the limiting case and were used to determine the setpoint. Based upon the above, the licensee proposed that the new reactor trip setpoint and ESFAS instrumentation trip setpoint (auxiliary feedwater initiation) for the steam generator water level low-low trip setpoint will be 18.10% of narrow range instrument span.

The staff had previously approved the methodology for calculating the reactor trip and Engineered Safety Features Actuation System (ESFAS) setpoints. Therefore the methodology is acceptable. The setpoint is determined by adding an allowance for instrument error (18.10%) to the value of the parameter used in the FSAR analysis (0.0%). Therefore we find the proposed setpoint and the associated changes to the TS Tables 2.2-1 and 3.3-4, to be acceptable.

ENVIRONMENTAL CONSIDERATION

This 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 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 published a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. 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.

CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: March 14, 1989

Principal Contributor:

D.H. Jaffe