

DECEMBER 28 1978

Docket No. 50-336

Mr. W. G. Council, Vice President
Nuclear Engineering & Operations
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06101

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Dear Mr. Council:

The Commission has issued the enclosed Amendment.NN. 46 to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your application dated October 24, 1977, as supplemented by letter dated March 21, 1978.

The amendment modified the existing Technical Specifications by changing the acceptable Resistance Temperature Detector (RTD) response time in the Reactor Protection System from less than or equal to five seconds to less than or equal to ten seconds. This change also affects the computation of the Thermal Margin/Low Pressure trip setpoint.

We understand that you have contracted the University of Tennessee to develop a new method to test the RTD's used at Millstone Unit 2. Your staff has agreed to provide a detailed report on this program within 90 days of the date of this letter. We are most interested in the RTD testing method, the specific results and an analysis of the data in comparison with the previous RTD response time data.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Const. 1
GP
P

7901160017

*SEE PREVIOUS YELLOW FOR CONCURRENCE

Enclosures and cc:
See next page

OFFICE	ORB#4:DOR	ORB#4:DOR	STSG	C-RSB:DOR	OELD	C-ORB#4:DOR
SURNAME	*RIngram	MConner	*DBrinkman	*PCheck	*	RReid
DATE	12/ /78	12/26/78	12/21/78	12/ /78	12/26/78	12/28/78

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Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

* SEE PREVIOUS YELLOW FOR CONCURRENCE

Enclosures and cc:
See next page

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12/26/78

OFFICE	ORB#4:DOR	ORB#4:DOR	STSG	C-RSB:DOR	C-ORB#4:DOR
SURNAME	*RIngram/cb	MCobner	DBrinkman	*PCheck	RReid
DATE	12/ /78	12/26/78	12/ /78	12/ /78	12/ /78

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Nuclear Engineering & Operations
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06101

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Sincerely,

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosures and cc:
See next page

OELD

12/ /78

This amend. only involves a verification of setpoint adequacy. Therefore, no PSB concurrence is required. EJB for P. 10/21/78

OFFICE →	ORB#4: DOR	ORB#4: DOR	STSG	C-PSB: DOR	C-PSB: DOR	C-ORB#4: DOR
SURNAME →	RIngram	MConner		PCheck	GLainas	RReid
DATE →	12/20/78	12/20/78	12/ /78	12/20/78	12/ /78	12/ /78

Northeast Nuclear Energy
Company

-2-

Enclosures:

1. Amendment No. 46
2. Safety Evaluation
3. Notice

cc w/enclosures: See next page

Northeast Nuclear Energy Company

cc w/enclosure(s):
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Town of Waterford
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U. S. Environmental Protection Agency
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Boston, Massachusetts 02203

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Waterford, Connecticut 06385

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U. S. Nuclear Regulatory Commission
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ATTN: Mr. John T. Shedlosky
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cc w/enclosure(s) and incoming
dtd.: 10/24/77 & 3/21/78

Connecticut Energy Agency
ATTN: Assistant Director, Research
and Policy Development
Department of Planning and Energy
Policy
20 Grand Street
Hartford, Connecticut 06106



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

THE CONNECTICUT LIGHT AND POWER COMPANY,
THE HARTFORD ELECTRIC LIGHT COMPANY,
WESTERN MASSACHUSETTS ELECTRIC COMPANY, AND
NORTHEAST NUCLEAR ENERGY COMPANY

DOCKET NO. 50-336

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 46
License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by The Connecticut Light and Power Company, The Hartford Electric Light Company, Western Massachusetts Electric Company and Northeast Nuclear Energy Company (the licensees) dated October 24, 1977, as supplemented March 21, 1978, 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.

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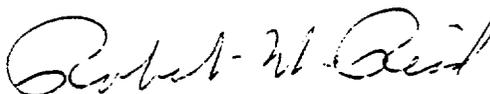
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 46, are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 28, 1978

ATTACHMENT TO LICENSE AMENDMENT NO.

FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

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 area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

2-8

2-9

3/4 3-6

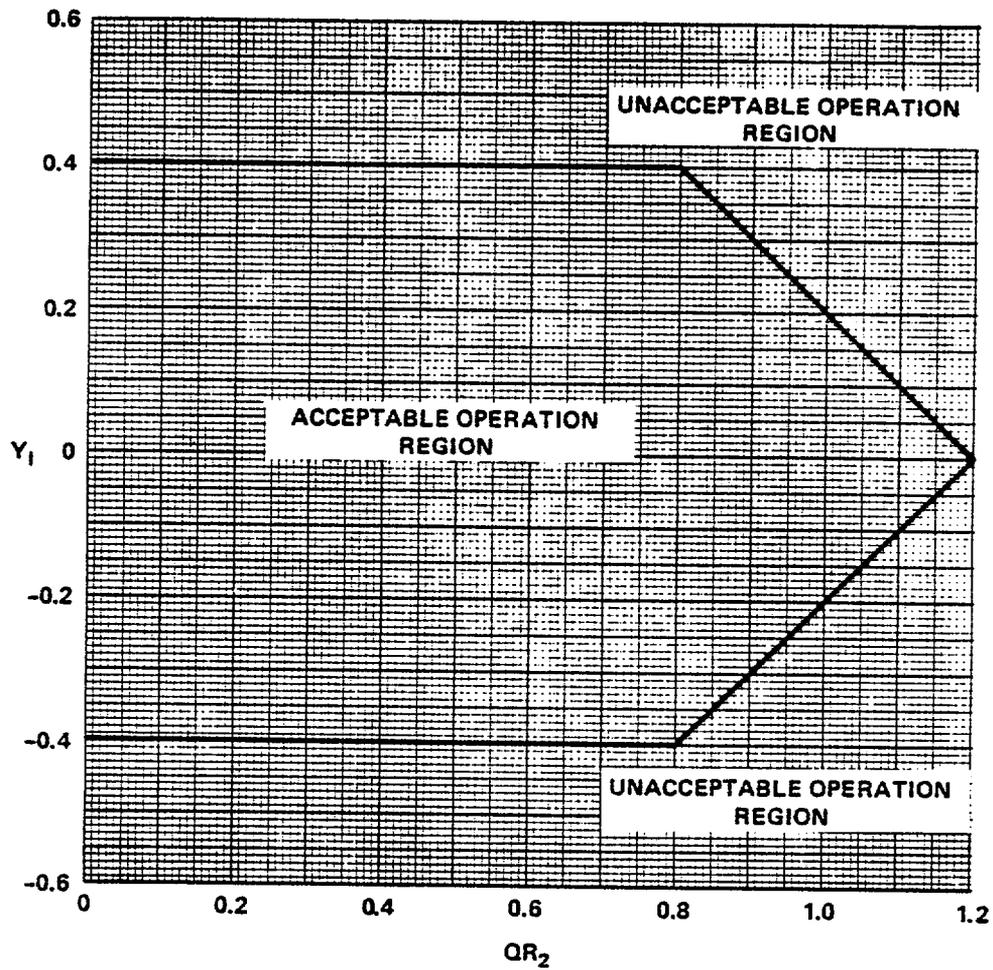


FIGURE 2.2-2
Local Power Density – High Trip Setpoint
Part 2 (QR_2 Versus Y_1)

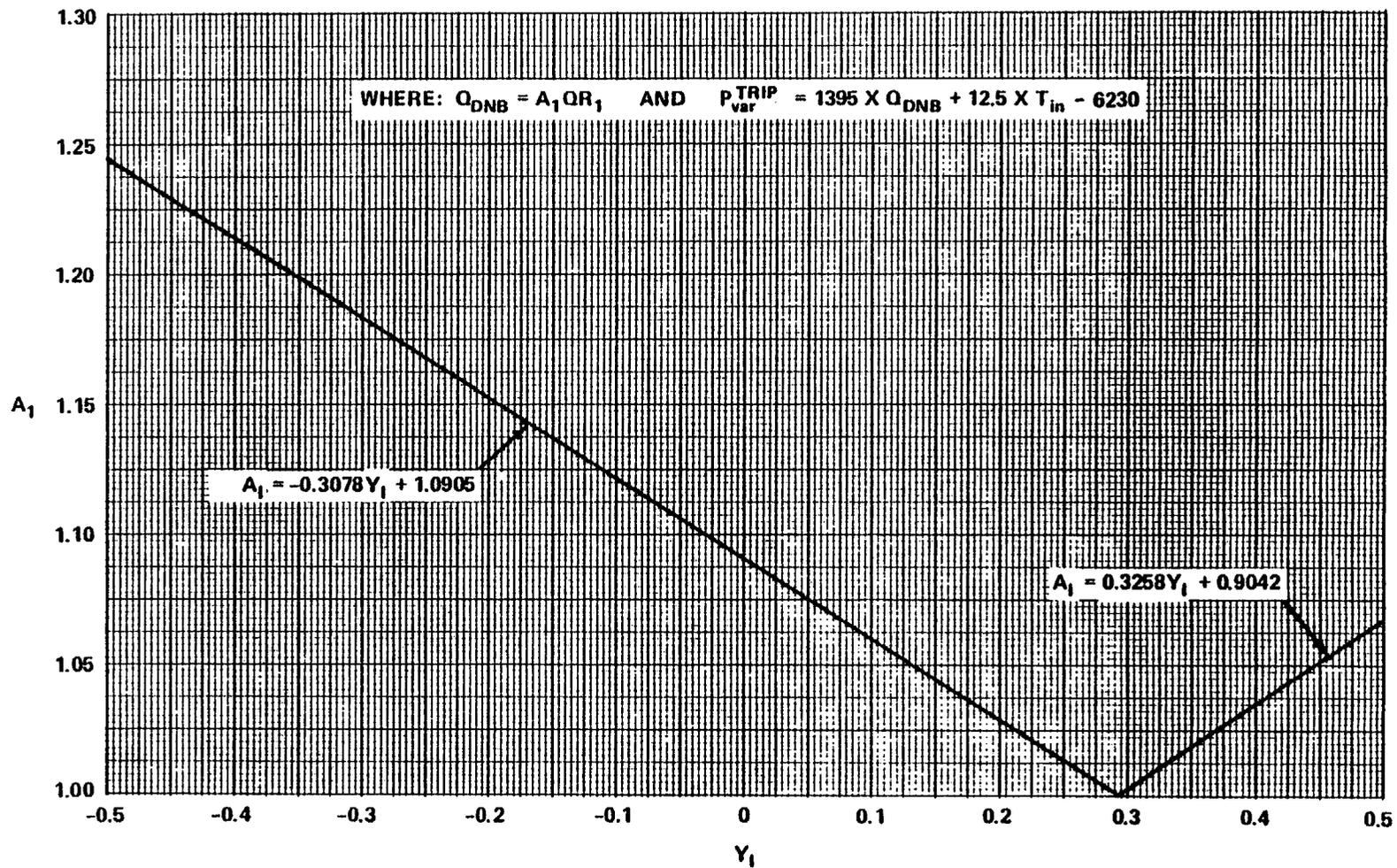


FIGURE 2.2-3
Thermal Margin/Low Pressure Trip Setpoint
Part 1 (Y_1 Versus A_1)

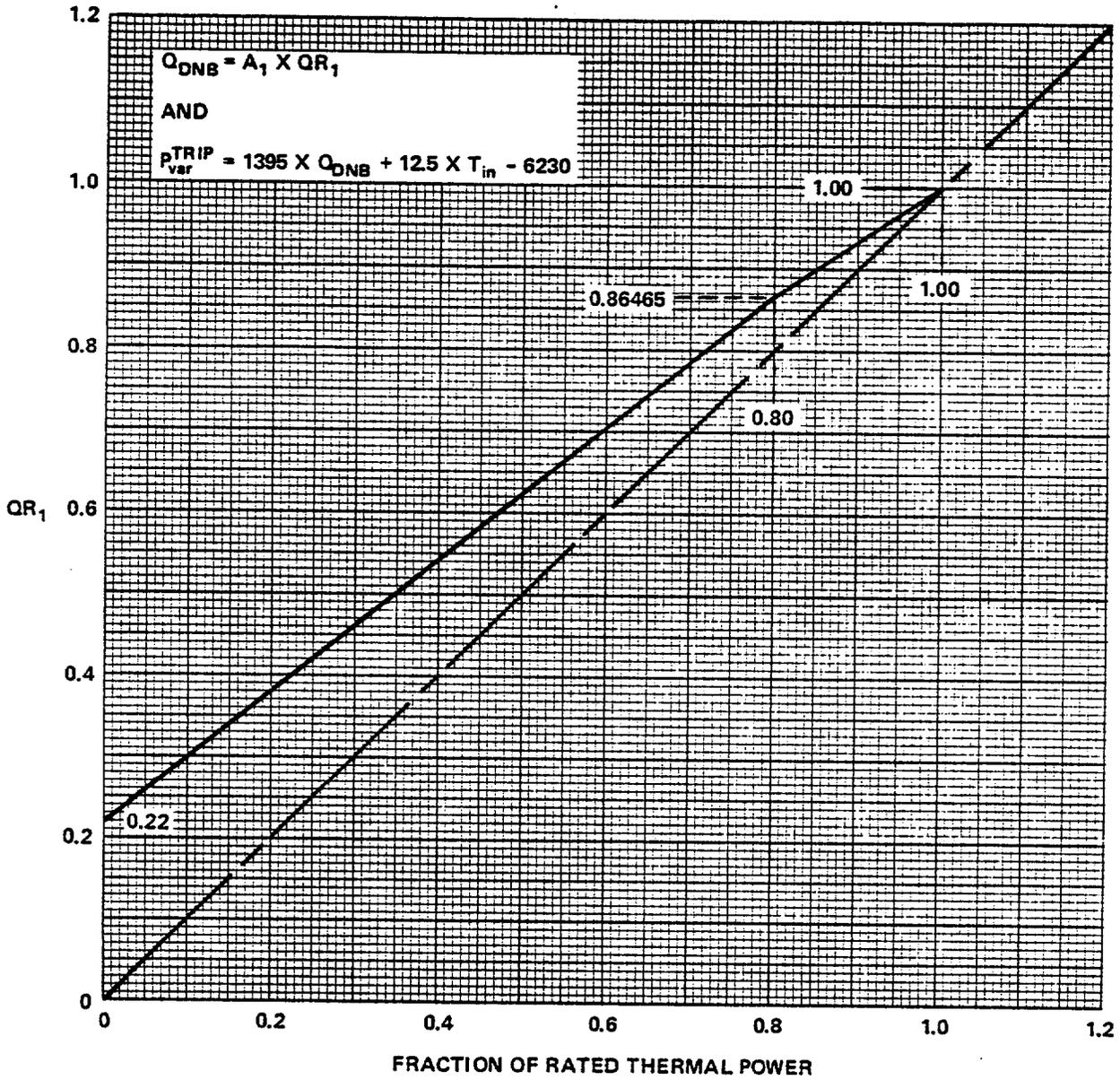


FIGURE 2.2-4
 Thermal Margin/Low Pressure Trip Setpoint
 (Part 2 Fraction of RATED THERMAL POWER Versus QR₁)

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

1. All functional units receiving an input from the bypassed channel are also placed in the bypassed condition.
2. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be removed from service for up to 2 hours for surveillance testing per Specification 4.3.1.1 provided one of the inoperable channels is placed in the tripped condition.

- ACTION 3 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level:
- a. \leq 5% of RATED THERMAL POWER, immediately place the inoperable channel in the bypassed condition, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.
 - b. $>$ 5% of RATED THERMAL POWER, power operation may continue.
- ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, immediately verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, and at least once per 4 hours thereafter.

TABLE 3.3-2

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME</u>
1. Manual Reactor Trip	≤ 2.0 seconds
2. Power Level - High	≤ 0.40 seconds*# and ≤ 10.0 seconds##
3. Reactor Coolant Flow - Low	≤ 0.65 seconds
4. Pressurizer Pressure - High	≤ 0.90 seconds
5. Containment Pressure - High	Not Applicable
6. Steam Generator Pressure - Low	≤ 0.90 seconds
7. Steam Generator Water Level - Low	≤ 0.90 seconds
8. Local Power Density - High	≤ 0.40 seconds*# and ≤ 10.0 seconds##
9. Thermal Margin/Low Pressure	≤ 0.90 seconds*# and ≤ 10.0 seconds##
10. Loss of Turbine--Hydraulic Fluid Pressure - Low	Not Applicable

*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

#Response time does not include contribution of RTDs.

##RTD response time only. This value is equivalent to the time interval required for the RTD's output to achieve 63.2% of its total change when subjected to a step change in RTD temperature.

MILLSTONE - UNIT 2

3/4 3-6

Amendment No. 27, 32, 38, 46



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 46 TO FACILITY OPERATING LICENSE NO. DPR-65
NORTHEAST NUCLEAR ENERGY COMPANY, ET AL
MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2
DOCKET NO. 50-336

1.0 Introduction

By application dated October 24, 1977, as supplemented by letter dated March 21, 1978, Northeast Nuclear Energy Company (NNECO or the licensee) requested an amendment to Technical Specifications (TS) appended to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2 (MNPS-2).

The proposed change to the TS for MNPS-2 consists of increasing the allowed Resistance Temperature Detector (RTD) response time used in the Reactor Protection System (RPS) channels from less than or equal to five seconds to a variable value up to a maximum of ten seconds.

2.0 Background

The MNPS-2 RPS has three trip functions which require an input of the reactor coolant temperature as determined by one or more RTD's. These RTD's, located in instrument wells in the primary coolant system, provide inputs to the "Local Power Density-High," "Thermal Margin/Low Pressure" and "Power Level-High" trip functions of the RPS.

TS 3.3.1.1 requires all RPS trip functions to undergo periodic tests to confirm that their response times are within specified limits. A footnote to Table 3.3-2 defines RTD response time as the time interval required for the RTD's output to achieve 63.2% of its total change when subject to a step change in RTD temperature.

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TS Table 3.3-2 contains the limits for the RPS response times. The instrumentation channel response time has been listed separate from the RTD response time since the issuance of Amendment No. 32 on October 27, 1977. The existing TS requires an RTD response time of equal to or less than 5.0 seconds.

The RTD's initially installed in the RPS were qualified by the manufacturer (Rosemount Engineering Company) to have a response time of less than 5 seconds. The TS response time surveillance requirement states:

"The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3.1."

By letter dated June 15, 1977, NNECO informed us that while performing the first surveillance testing, Rosemount found one of the four RTD's had significant degradation in the response time. As a result, all RTD's were tested and 16 acceptable ones reinstalled in the RPS. This significant degradation in the RTD response time of some of the RTD's prompted NNECO to reanalyze the various limiting safety system settings (LSSS) dependent on instrumentation response times for RTD.

Response times in the range of five to fifteen seconds maximum were reanalyzed in the October 24, 1977 request for a TS change. In their March 21, 1978 letter, NNECO modified the request to limit the response time to less than or equal to ten seconds. In discussions with the licensee, we have indicated that little is to be gained by having a variable RTD response time limit. We suggested that the revised TS specify a maximum RTD response time of 10 seconds. NNECO has agreed to this modification of their request. A similar request has been evaluated and approved for St. Lucie Unit No. 1 in our May 26, 1978 issuance of license Amendment No. 27.

3.0 Discussion and Evaluation

The proposed change in the RTD response time TS requires a reanalysis of the Power Level-High, the Local Power Density-High and the Thermal Margin/Low Pressure (TM/LP) trip setpoints.

3.1 Power Level-High and Local Power Density-High Trip Setpoint Reanalysis

NNECO has reanalyzed the trip setpoints for the Power Level-High and the Local Power Density-High reactor trips with an RTD response time of 10 seconds. This reanalysis shows that the existing setpoints are conservative for these trip functions. Based on our review of the reanalysis, we find that it was properly performed and that it properly accounts for the increase in RTD response time. We find that the reanalysis demonstrates that it is acceptable to increase the RTD response time to less than or equal to ten seconds for these two functions without changing the trip setpoint. Since these two setpoints still meet the criterion upon which the present setpoint analysis was based, we find the continued use of these setpoints acceptable with no reduction in the margin of safety.

3.2 Thermal Margin/Low Pressure Trip Setpoint

The TM/LP trip setpoint provides Departure from Nucleate Boiling (DNB) protection for the core using as inputs the reactor power level, inlet temperature, pressure and axial shape index. Details of the TM/LP circuitry and trip setpoint computation are presented in CENPD-199-CE Setpoint Methodology, April 1976.

Increasing the RTD response time from less than or equal to five seconds to less than or equal to ten seconds has two effects on the TM/LP trip setpoint. First, the shape of the TS Figure 2.2-4 would be modified for low power level operation. (The QR-1 function of Figure 2.2-4 is a function of the TM/LP trip setpoint to account for increased radial peaking due to rod insertion assuming the rods are inserted anywhere up to the power dependent insertion limit.) However, since NNECO proposed Figure 2.2-4 based on a ten second RTD response time for the Cycle 2 reload, and we issued the proposed figure in Amendment No. 38 dated April 19, 1978, no change is required in regard to the shape of this LSSS figure.

The second effect of increasing the RTD response time is to change the value of the end term of the TM/LP equations. At the present time, 6240 psi is subtracted from the computed variable value for the low pressure trip setpoint. Changing the response time from less than or equal to five seconds to less than or equal to ten seconds decreases the term to 6230 psi according to curves supplied by NNECO in their application. Based on our review of their analysis methods for deriving these curves, the methods are acceptable and demonstrate that the changed curves adequately account for new RTD response time with no change in margin to trip. This change has the effect of raising the low pressure trip setpoint by 10 psi for all reactor conditions. This change in trip setting compensates for the five second increase in RTD response time thus there is no change in the safety limit margin of protection.

We find this reanalysis acceptable and hereby change the TM/LP equations on TS pages 2-8 and 2-9 by replacing the value of 6240 psi with 6230 psi.

4.0 Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

5.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 28, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-336

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 46 to Facility Operating License No. DPR-65, issued to Northeast Nuclear Energy Company, The Connecticut Light and Power Company, The Hartford Electric Light Company, and Western Massachusetts Electric Company, (the licensees), which revised Technical Specifications for operation of the Millstone Nuclear Power Station, Unit No. 2 (the facility) located in the Town of Waterford, Connecticut. The amendment is effective as of its date of issuance.

The amendment modifies the existing Technical Specifications by changing the acceptable Resistance Temperature Detector (RTD) response time in Reactor Protection System from less than or equal to five seconds to less than or equal to ten seconds. This change also affects the computation of the Thermal Margin/Low Pressure trip setpoint.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment.

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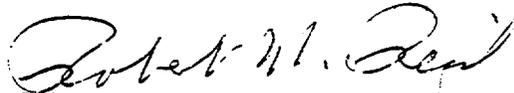
Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR § 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated October 24, 1977, as supplemented March 21, 1978, (2) Amendment No. 46 to License No. DPR-65, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. and at the Waterford Public Library, Rope Ferry Road, Route 156, Waterford, Connecticut. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 28th day of December 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors