

NORTHEAST UTILITIES



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

General Offices • Seiden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

March 3, 1992

Docket No. 50-423
B14018

Re: 10CFR50.90

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

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Proposed Revision to Technical Specifications
Increased Surveillance Test Intervals and Allowed Outage Times
for the Reactor Protection System and Engineered Safety
Features Actuation System

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend Operating License NPF-49 by incorporating the changes identified in Attachment 1 into the Technical Specifications of Millstone Unit No. 3.

Description of the Proposed Changes

The proposed changes would revise the Millstone Unit No. 3 Technical Specifications to increase the surveillance test interval (STI), allowed outage time (AOT) and channel bypass times for certain instrumentation in the reactor trip system (RTS) and Engineered Safety Features Actuation System (ESFAS). Also, it removes the requirement to perform the RTS analog channel operational test on a staggered basis. It is noted that the Technical Specification changes for the RTS and ESFAS instrumentation similar to those proposed below have been approved by the NRC Staff for Diablo Canyon Units 1 and 2 (Docket Nos. 50-275 and 50-323).

This license amendment request proposes to revise Technical Specifications 3/4.3.1 and 3/4.3.2 as follows:

1. Section 3.3.1, Table 3.3-1, Functional Units 16 and 19

Add new ACTION 13A to allow 6 hours to restore an inoperable channel to operable status before requiring shutdown to HOT STANDBY within the next 6 hours and to allow bypass of a channel for up to 4 hours for surveillance testing, provided the other channel is operable. Make this new ACTION statement applicable to Functional Units 16 (Safety Injection Input from ESF) and 19 (Automatic Trip and Interlock Logic), rather than ACTION 10.

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2. Section 4.3.1.1, Table 4.3-1, Functional Units 2 Through 4 and 6 Through 14
 - a. Delete note 17 which requires channels to be tested at least every 9 days on a staggered test basis.
 - b. Revise note 18 to indicate that Table 4.3-2 should be reviewed for applicability.
3. Section 3.3.2, Table 3.3-3
 - a. Functional Units 1.c, 1.e, 4.c, 4.d, and 4.e

Delete ACTION 15, which requires that an inoperable channel be placed in the operable condition within 1 hour, and replace with ACTION 20, which requires an inoperable channel be placed in the tripped condition within 6 hours.
 - b. ACTION Statements 14, 22, and 25

Revise ACTIONS 14, 22, and 25 to allow 6 hours to restore an inoperable channel to operable status before requiring shutdown to HOT STANDBY within the next 6 hours and increase the allowed bypassed time from 2 to 4 hours for surveillance testing.
 - c. ACTION 17

Revise ACTION 17 to increase the time a second containment pressure High-3 channel may be bypassed to allow testing of the channel from 2 to 4 hours.
 - d. ACTION 20

Revise ACTION 20.a to increase the time an inoperable channel may be maintained in an untripped condition from 1 to 6 hours. Revise ACTION 20.b to increase the time an inoperable channel may be bypassed to allow surveillance testing of other channels to the same function from 2 to 4 hours. For ACTION 20.b, change "one additional" to "the inoperable."
4. Section 4.3.2.1, Table 4.3-2, Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.b, 5.d, 6.c, 7.d, 7.e, 9.a, and 9.b

Revise the Analog Channel Operational Test entries to increase the STI from monthly to quarterly for all the above functional units generically approved for such change by the NRC via WCAP-1027¹.

5. Tables 3.3-3, 3.3-4, and 4.3-2, Functional Unit 9d

The proposed Technical Specification change will delete Item 9d of the tables and modify Item 5b so that duplication of guidance is eliminated. Both these above items are associated with the steam generator water level high-high signal and, under certain circumstances, keeping both items can lead to conflicting guidance. This potential ambiguity is eliminated by the proposed change.

6. Table 4.3-1 Functional Unit 15

The addition of the *** to Functional Unit 15 in Table 4.3-1 will make the table consistent with Table 3.3-1 by requiring surveillance for the turbine trip/reactor trip interlock when above P-9 interlock setpoint.

Justification for the Proposed Technical Specification Changes

Increasing the STI for the ESFAS instrumentation minimizes the potential number of inadvertent ESFAS actuations and reactor trips during surveillance testing. Less frequent surveillance testing has been estimated to result in 0.5 fewer inadvertent reactor trips, per unit, per year. Also, increasing the surveillance interval enhances the operational effectiveness of plant personnel. The amount of time plant personnel spend performing surveillance testing will be reduced. This allows manpower to be used for other tasks, such as preventive maintenance. The increased AOTs have been shown to result in fewer human factor errors, since more time is allowed to perform actions.

WCAP-10271 results show that the reduction in surveillance testing frequency and the increase in testing interval and maintenance AOTs do not adversely affect public health and safety. The proposed revision will reduce the number of ESFAS actuations and reactor trips and allow NNECO to better manage resources to maintain the plant.

Background

In response to growing concerns of the impact of current testing and maintenance requirements on plant operation, particularly as related to instrumentation systems, the Westinghouse Owners Group (WOG) initiated a program to develop a justification to be used to revise generic and plant-specific instrumentation Technical Specifications. Operating plants experienced many inadvertent reactor trips and safeguards actuations during performance of instrumentation surveillances, causing unnecessary transients and challenges to safety systems. Significant time and effort on the part of the operating staff was devoted to performing, reviewing, documenting, and tracking the various surveillance activities which, in many instances, seemed unwarranted based on the high reliability of the equipment. Significant benefits for operating plants appeared to be achievable through revision of instrumentation test and maintenance requirements.

On February 3, 1983, the WOG submitted (Letter OG-86) WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," to the NRC as the first step in gaining approval of the instrumentation program. WCAP-10271 documents the justification to be used to justify revisions to plant-specific Technical Specifications. The justification consists of the deterministic and numerical evaluation of the effects of particular Technical Specification changes with consideration given to such things as safety, equipment requirements, human factors, and operational impact. The objective is to reach a balance in which safety and operability are ensured. The Technical Specification revisions evaluated were increased test and maintenance times, less frequent surveillance, and testing in bypass.

In July 1983, the NRC requested additional information from the WOG (letter to J. J. Shepard from Cecil O. Thomas, dated July 28, 1983) for continued review. The WOG responded in October 1983 (Letter OG-106, dated October 4, 1983) with responses to the NRC's concerns and Supplement 1 to WCAP-10271 which contains information in addition to that in WCAP-10271. Specifically, Supplement 1 demonstrates the applicability of the justification contained in WCAP-10271 to RTS for two-, three-, and four-loop plants with either relay or solid-state logic. Additionally, this supplement extends the evaluation to topics not addressed in the original WCAP such as the interdependence of surveillance intervals and hardware failure rates.

In February 1985, the NRC issued the Safety Evaluation Report (SER) (letter to J. J. Shepard from Cecil O. Thomas, dated February 21, 1985) for WCAP-10271 and Supplement 1. The SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOTs for test and maintenance, and testing in bypass for analog channels of the RTS. The quarterly testing had to be conducted on a staggered basis.

On November 25, 1985, the NRC issued an operating license for Millstone Unit No. 3. The changes to Technical Specification Tables 3.3-1 and 4.3-1 to increase the AOT for the RTS analog channels and to extend the STI for the analog channel operational tests were approved as a part of the original Millstone Unit No. 3 Technical Specifications issued at the time of the operating license. These changes were in accordance with WCAP-10271 and its Supplement 1, as per the NRC SER dated February 21, 1985.

The SER specifically stated that, for analog channels shared by the RTS and ESFAS, the approved relations applied only to the RTS function. In a letter dated July 24, 1985, from the NRC to L. D. Butterfield, Chairman of the WOG, the NRC Staff provided comments on the draft "Guidelines for Preparing Submittals Requesting Revision of Reactor Protection System Technical Specification." In Enclosure 3 of the letter the NRC Staff provided a broader relaxation of the surveillance for shared components, subject to proper annotation to the surveillance requirements.

On March 20, 1986, the WOG submitted WCAP-10271, Supplement 2, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Systems Actuation System." On May 12, 1987, the WOG submitted WCAP-10271, Supplement 2, Revision 1. Supplement 2 and Supplement 2, Revision 1, specifically demonstrated the applicability of the justification contained in WCAP-10271 to the ESFAS for two-, three-, and four-loop plants with either relay or solid-state systems.

In Appendix D of WCAP-10271, Supplement 2, Revision 1, the results of the evaluation for extending the AOTs for the test and maintenance of the reactor trip breakers and the logic cabinets were presented.

In February 1989, the NRC issued the SER (letter to Roger A. Newton from Charles L. Rossi, dated February 22, 1989) for WCAP-10271, Supplement 2 and Supplement 2, Revision 1. The SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOT for test and maintenance, and testing in bypass for analog channels of the ESFAS. The ESFAS functions approved in the SER were those presented in Appendix A1 of the reference WCAPs. These functions are all included in the Westinghouse Standard Technical Specifications. Staggered testing was not required for ESFAS analog channels, and the requirement was removed from the RTS analog channels.

In a letter dated April 30, 1990, the NRC issued the Supplemental SER (SSER) for WCAP-10271, Supplement 2 and Supplement 2, Revision 1. The SSER approved STI and AOT extensions for the ESFAS functions that were included in Appendix A2 of WCAP-10271, Supplement 2, Revision 1. The functions approved are associated with the safety injection steam line isolation, main feedwater isolation, and auxiliary feedwater pump start signals. The configurations contained in Appendix A2 are those that are not contained in the Westinghouse Standard Technical Specifications. The SSER also approved the extended AOTs for the RTS actuation logic that were required in WCAP-10271, Supplement 2, Revision 1, Appendix D. No changes were approved for the test and maintenance AOTs for the reactor trip breakers.

With the issuance of the SER and SSER, the relaxations for the analog channels of the RTS and ESFAS are now the same, and the special conditions applied to shared analog channels are no longer applicable. The AOTs for test and maintenance of RTS and ESFAS actuation logic are also now the same.

SAFETY ASSESSMENT

In WCAP-10271 and its supplements, the WOG evaluated the impact of the proposed STI and AOT changes on core damage frequency and public risk. The NRC Staff concludes in its evaluation of the WOG evaluation that an overall upper bound increase of the core damage frequency due to the proposed STI/AOT changes is less than 6 percent for Westinghouse Pressurized Water Reactor (PWR) plants. The NRC Staff also concluded that actual core damage frequency increases for individual plants are expected to be substantially less than 6 percent. The NRC Staff considered this core damage frequency increase to be

small compared to the range of uncertainty in the core damage frequency analyses and, therefore, acceptable.

The NRC Staff concluded, in addition, that a staggered test strategy need not be implemented for ESFAS analog channel testing and is no longer required for RTS analog channel testing. This conclusion was based on the small relative contribution of the analog channels to RTS/ESFAS unavailability, process parameter signal diversity and normal operational testing sequencing.

The proposed changes are consistent with the NRC Staff's letter dated February 22, 1989, and April 30, 1990, to the WOG regarding evaluation of WCAP-10271, WCAP-10271 Supplement 1, WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1. The Staff has stated that approval of these changes is contingent upon confirmation that certain conditions are met. Although WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1, apply to the ESFAS instrumentation, it is our interpretation that conditions imposed in the SER for WCAP-10271 and WCAP-10271 Supplement 1 for the RTS instrumentation shall also be applied to the ESFAS where appropriate. NNECO's response to these conditions is provided below:

1. ESFAS SER Conditions (February 22, 1989):

- a. SER Condition: Confirm the applicability of the generic analysis to the plant.

Response:

The generic analyses used in WCAP-10271 and the Supplements are applicable to Millstone Unit No. 3. Millstone Unit No. 3 uses the Westinghouse Process control system and the Westinghouse Solid State Protection System for both the ESFAS and RTS. Both of these systems were specifically modelled in the generic analyses. The ESFAS functional units implemented at Millstone Unit No. 3 are all addressed by the generic analyses and the example changes to the Technical Specifications.

- b. SER Condition: Confirm that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology.

Response:

To verify that the drift is acceptable for the increased surveillance interval, NNECO performed a review of the plant's data sheets over the past year. Based upon this review, it was found that the instrument drift was acceptable and that the increase in surveillance test intervals from one (1) month to three (3) months would not have a significant impact on normal plant operations.

2. RTS SER Conditions (February 21, 1985):

- a. SER Condition: The NRC Staff stated in the RTS SER, dated February 21, 1985, that approval of an increase in STI for the analog channel operational tests from once per month to once per quarter is contingent on performance of the testing on a staggered test basis.

Response:

In the ESFAS SER, this provision was not required for ESFAS channels and the requirement was removed from the RTS channels. The proposed changes remove the staggered testing requirement from the RTS analog channel operational tests.

- b. SER Condition: The Staff stated in the RTS SER that approval of items related to extending STIs is contingent upon procedures being in place to require evaluation of RTS channel failures for common cause and to require additional testing if necessary.

Response:

A procedure to evaluate failures in the RTS channels for common cause and require additional testing as necessary has been implemented by NNECO. This procedure will now be applied to both the RTS and ESFAS channels with quarterly analog channel operational testing.

- c. SER Condition: The Staff stated in the RTS SER that approval of channel testing in a bypassed condition is contingent on the capability of the RTS design to allow such testing without lifting leads or installing temporary jumpers.

Response:

Millstone Unit No. 3 has this design installed that allows plant personnel to test the channels in the bypass mode.

- d. SER Condition: The Staff stated in the RTS SER that for channels which provide dual inputs to other safety-related systems, such as ESFAS, the approval of items that extend STIs and AOTs applies only to the RTS function.

Response:

Now that the ESFAS SER has been issued and all of the relaxations for the RTS analog channels are applicable to the ESFAS analog channels, this condition does not apply.

- e. SER Condition: Same as ESFAS SER Condition 1.b above.

Response:

Same response as provided for ESFAS SER Condition 1.b.

3. SSER Conditions (April 30, 1990):

- a. SSER Condition: Same as ESFAS SER Condition 1.a above.

Response:

Same response as provided for ESFAS SER Condition 1.a above.

- b. SSER Condition: Same as ESFAS SER Condition 1.b above.

Response:

Same response as provided for ESFAS SER condition 1.b above.

Based on the NRC evaluations of WCAP-10271 and its supplements and the discussion of the various SER conditions above, there is reasonable assurance that the proposed changes will not adversely affect or endanger the health and safety of the general public.

Significant Hazards Consideration

This amendment request proposes to revise Technical Specification Tables 3.3-1, 4.3-1, 3.3-3, and 4.3-2 to extend the AOTs and STIs, channel bypass times for the analog channels of the RTS and the ESFAS. Also, it removes the requirement to perform the RTS analog channel operational test on a staggered basis. The other change will eliminate item (9d) of Tables 4.3-2, 3.3-3, and 3.3-4 and modify item (5b) so that duplication of guidance is eliminated. In addition, a footnote is added to Table 4.3-1 to make the table consistent with Table 3.3-1.

NNECO has reviewed the proposed changes in accordance with 10CFR50.92 and concluded that the changes do not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10CFR50.92(c) are not compromised. The proposed changes do not involve a significant hazards consideration because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously analyzed.

The determination that the results of the proposed changes are acceptable was established in the NRC SER and SSER prepared for WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1 (issued by letters dated February 22, 1989, and April 30, 1990).

The changes do cause an increase in the unavailability of the ESFAS and RTS and, thereby, a resultant increase in the core damage frequency (CDF). It has been shown that the increase in the CDF is low (few percent) and is justified in light of the Commission safety goals and the potential benefits to plant operations. It should be noted that the low increase is for the worst case scenario in which the total AOTs are used for maintenance activities. The time taken to perform the test and maintenance activities do not necessarily increase due to the increased AOTs. Therefore, the increased CDF is a theoretical maximum rather than an actual fact. Further, the changes are justified in light of the potential reductions in the inadvertent tripping of ESFAS or RTS functions causing plant perturbations, some of which may result in inadvertent trip. This is an improvement to public safety.

The proposed changes do not result in an increase in the severity or consequences of an accident previously evaluated. Implementation of the proposed changes affects the probability of failure of the RTS but does not alter the manner in which protection is established. The changes related to item 9d of Tables 3.3-3, 3.3-4, and 4.3-2 and to item 15 of Table 4.3-1 do not increase the probability or consequences of an accident previously analyzed.

2. Create the possibility of a new or different kind of accident from any previously evaluated.

The proposed changes will not result in the physical alteration to any plant system or in the plant operating procedures. Therefore, there can be no impact on plant response to the point where a different accident is created.

3. Involve a significant reduction in a margin of safety.

The proposed changes do not alter the manner in which safety limits, limiting safety system setpoints and limiting conditions for operation are determined. The impact of reduced testing other than described above is to allow a longer time interval over which instrument uncertainties (e.g., drift) may act. The commitment to monitor the effects of drift will address this concern. Implementation of the proposed changes is expected to result in an overall improvement in safety, as follows:

- a. Reduced testing will result in fewer inadvertent reactor trips, less frequent actuation of ESFAS components, and less frequent distraction of operations personnel.
- b. Improvements in the effectiveness of the operating staff in monitoring and controlling plant operation will be realized. This is due to less frequent distraction of the operators and shift supervisor to attend to instrumentation testing.

- c. Longer repair times associated with increased AOTs will lead to higher quality repairs and improved reliability.

Based on the above discussions, it has been determined that the proposed Technical Specification revisions do not involve a significant increase in the probability or consequences of an accident previously evaluated; or create the possibility of a new or different kind of accident; or involve a significant reduction in a margin of safety. Therefore, this amendment request does not involve a significant hazards consideration.

Moreover, the Commission has provided guidance concerning the application of standards in 10CFR50.92 by providing certain examples (March 6, 1986, 51FR7751) of amendments that are considered not likely to involve a significant hazards consideration. Although the proposed changes are not enveloped by a specific example, the changes would not involve a significant increase in the probability or consequences of an accident previously analyzed. Implementation of the proposed changes affects the probability of failure of the ESFAS but does not alter the manner in which protection is afforded nor the manner in which limiting criteria are established. In addition, the determination that the results of the proposed changes are acceptable was established in the NRC SER and Supplemental SER prepared for WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1.

Based upon the information contained in this submittal and the environmental assessment for Millstone Unit No. 3, there are no significant radiological or nonradiological impacts associated with the proposed action, and the proposed license amendment will not have a significant effect on the quality of the human environment.


The Millstone Unit No. 3 Nuclear Review Board has reviewed and approved the proposed changes and has concurred with the above determinations.

While the changes proposed in this license amendment request are not required to address an immediate safety concern, NNECO desires to implement the requested changes as soon as possible for Millstone Unit No. 3 to reduce the number of surveillance tests performed at power. NNECO, therefore, requests timely review and approval by the NRC with implementation effective 30 days after issuance of the license amendment.

In accordance with 10CFR50.91(b) we are providing the State of Connecticut with a copy of this proposed amendment.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY


J. F. Opoka
Executive Vice President

U.S. Nuclear Regulatory Commission
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cc: T. T. Martin, Region I Administrator
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2,
and 3

Mr. Kevin McCarthy
Director, Radiation Control Unit
Department of Environmental Protection
Hartford, Connecticut 06116

STATE OF CONNECTICUT)
COUNTY OF HARTFORD) ss. Berlin

Then personally appeared before me, J. F. Opeka, who being duly sworn, did state that he is Executive Vice President of Northeast Nuclear Energy Company, a licensee herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the licensee herein, and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Lorraine J. D'Amico
Notary Public

My Commission Expires March 31, 1993