NORTHEAST UTILITIES

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WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
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Docket No. 50-423
B12015

Dr. Thomas E. Murley
Regional Administrator
Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Reference: (1) T. M. Novak letter to J. F. Opeka, Issuance of Facility Operating License NPF-49, dated January 31, 1986.

Dear Dr. Murley:

Millstone Nuclear P ver Station, Unit No. 3
Changes to the Initial Test Program

The Millstone Unit No. 3 Operating License, NPF-49, contains License Condition 2.C(10), which requires any changes to the Initial Test Program described in Section 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 be reported in accordance with 50.59(b) within one month of such change. Accordingly, Northeast Nuclear Energy Company hereby submits a report containing a brief description of three changes to the Initial Test Program including a summary of the safety evaluation of each change. These changes will be included in a subsequent amendment to the FSAR.

If there are any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

J. F. Opeka

J. F. Opeka
Senior Vice President

W. F. Fee

By: W. F. Fee
Executive Vice President

cc: Mr. J. M. Taylor, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

1/1 IE01

Attachment 1

Description of Change:

The attached FSAR change deletes the requirement for a reactor trip test at the 50% plateau during power ascention testing and substitutes a 10% load swing.

Safety Evaluation:

This safety evaluation addresses a proposed revision to the Millstone Unit 3 FSAR. The revision deletes the requirement for a reactor trip test at the 50% plateau during power ascension testing, and substitutes a 10% load swing as requested by the NRC. This change was recommended for the following reasons:

1. There is no regulatory requirement to perform a 50% reactor trip test.

2. The original Westinghouse testing requirement for a rod drop/negative rate trip test has been deleted.

3. The NRC (Q640.28) requested performance of a 10% load swing at the 50% plateau.

4. The plant challenge of a 10% load swing is significantly less than that of a 50% trip.

5. The time savings in the critical path testing sequence would be approximately 1 day.

This proposed FSAR revision was reviewed with respect to the requirements delineated in 10CFR50.59. This change substitutes a 10% load swing test which is an analyzed transient for a 50% reactor trip test, which is also an analyzed transient, but not necessary to perform. It has been determined not to constitute an unreviewed safety question because it does not:

a) Increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated.

b) Increase the possibility of an accident or malfunction of a different type than any previously evaluated.

c) Decrease the margin of safety as defined in the basis of any Technical Specification.

NRC Letter: June 29, 1983

Question Q640.28 (Section 14.2.12)

Certain startup tests listed below do not specify the power level which the test will be conducted, instead stating that testing be conducted at selected or various power levels. Modify individual test abstracts to include the specific power level at which each of the tests will be conducted. Modify Figure 14.2-6 to indicate which tests will be conducted during power plateau during the startup program, or provide a clarifica stating that these tests will be conducted at power levels consis with Regulatory Guide 1.68, Revision 2.

14 - Loose Parts Monitoring System

15 - Water Chemistry Control

16 - Radiation Survey

28 - Operational Alignment of Nuclear Instrumentation

29 - Process and Effluent Radiation Monitoring System

30 - Core Performance

31 - Power Coefficient Measurements

33 - Ventilation System Operability

34 - Turbine Generator and Feedwater Turbine Operability Test

35 - Calibration of Steam and Feedwater Flow Instrumentation Power

37 - Load Swing Test

Response:

Refer to revised FSAR Table 14.2-2 for the response to this question.

Additional Concerns Identified in Draft SER:

The load swing test (Startup Test 37) should include testing at 50 percent power in accordance with Regulatory Guide 1.68, Appendix A, Section 5.h.h.

Response:

Load Swing Test (Startup Test 37) will not be performed at 50 ~~percent~~ power for the following reasons:

Load Swing Test (Startup Test 37) will be performed at 50 percent power

1. Load Swing Test will be perfo.med at 30, 75, and 100 percent plateaus.

2. A 4 percent Load Swing Test will be performed at 50 percent as part of the power coefficient test (Startup Test 31).

3. The Applicant will conduct a full reactor trip at 50 percent which is significantly more limiting than the 10 percent load swing test.

Refer to revised FSAR Section 14.2.7.7 for the conformance statement for Regulatory Guide 1.68, Revision 2, Appendix A, Section 5.h.h.

730

The Millstone 3 initial test program will comply with Regulatory Guide 1.37. 8

14.2.7.5 Regulatory Guide 1.41, Revision 0 - Preoperational Testing of Redundant Onsite Electrical Power Systems to Verify Proper Load Group Assignments 640.1

The Millstone 3 initial test program will comply with Regulatory Guide 1.41. 8

14.2.7.6 Regulatory Guide 1.52, Revision 2 - Design, Testing, and Maintenance Criteria for Post Accident Engineered Safety Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants

For position on Regulatory Guide 1.52, see FSAR Section 1.8.

14.2.7.7 Regulatory Guide 1.68, Revision 2 - Initial Test Programs for Water-Cooled Nuclear Power Plants

The Millstone 3 initial test program will conform to Regulatory Guide 1.68, except as specified in this section:

640.2

1. During power escalation, testing will be conducted at the 30-percent power level instead of at the 25-percent power level. Westinghouse supplied plants have generic data for the 30-percent level which they do not have at the 25-percent level (Section C.8; Appendix A, Section 5).

2. Load swing testing will be conducted at the 30, 50, 75, and 100 percent plateaus. A 4 percent load swing test will be conducted at the 50 percent plateau as a part of the power coefficient test (see Table 14.2-2, Startup Test 31). Additionally, a full reactor trip at the 50 percent plateau will be conducted (Appendix A, Section 5.h.h). 640.28

3. The MSIV closure test will be performed at less than 20-percent power to demonstrate the proper dynamic response of the plant and to verify proper integrated operation of plant equipment. Plant response to a full power trip will be verified by the generator trip at 100-percent power. Closure of the MSIVs at 100-percent power would not provide any additional information significant enough to warrant subjecting the plant to such a severe thermal transient (Appendix A, Section 5.n.n).

4. The loss of feedwater heaters test will not be performed. Since plant response to load swings and large load reductions is demonstrated in other tests, there is no need to subject the plant to this additional transient (Appendix A, Section 5.k.k).

5. Millstone 3 does not have a partial scram feature (Appendix A, Section 5.j).

Attachment 2

Description of Change:

The attached FSAR change adds a note to the Test Objective and Summary section of Startup Test 25, Shutdown from Outside the Control Room, to take credit for Cold Shutdown demonstration of cooldown using the residual removal system.

Safety Evaluation:

This safety evaluation addresses a proposed revision to the Millstone Unit 3 FSAR. The revision adds a note to the Test Objective and Summary section of Startup Test 25 - Shutdown from Outside the Control Room. This note would allow credit to be taken for Cold Shutdown demonstration of cooldown using the residual heat removal system be equivalent testing as specified in RG 1.68.2 section C.4. Equivalent testing should meet the intent of RG 1.68.2 which states the following:

A. The reactor coolant temperature can be lowered sufficiently to permit the operation of the core decay heat removal system that is to be ultimately used to replace the reactor in a refueling shutdown mode.

B. Operation of this decay heat removal system can be initiated and controlled.

C. A heat transfer path to the ultimate heat sink can be established.

D. Reactor coolant temperature can be reduced approximately 50 degress F using this decay heat removal system at a rate that would not exceed technical specification limits. This cooldown should show that the potential for achieving cold shutdown from outside the control room is available.

During the demonstration, only that equipment for which credit would be taken to perform an actual remote shutdown should be used.

This proposed FSAR revision was reviewed with respect to the requirements delineated in 10CFR50.59 since authorization to take credit for equivalent cooldown testing as addressed in Regulatory Guide 1.68.2 and no actual testing is being deleted from the startup program. It has been determined not to constitute an unreviewed safety question because it does not:

A) Increase the probability of concurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated.

B) Increase the possibility of an accident or malfunction of a different type than any previously evaluated.

C) Decrease the margin of safety as defined in the basis for any Technical Specification.

TABLE 14.2-2 (Cont)

25. STARTUP TEST - SHUTDOWN FROM OUTSIDE THE CONTROL ROOM

Prerequisites for Testing

The plant is at a stable power level greater than or equal to 10 percent generator load.

Individual signoffs in the prerequisites section of the test will ensure that preoperation testing of plant instrumentation, controls, and systems to be used at the remote shutdown panel, is complete. 640.23

Test Objective and Summary

This test will demonstrate the capability of trip and maintain the reactor in a hot standby condition, and place the reactor in cold shutdown, from outside the control room. Control will be transferred from the control room to the remote shutdown panel. With the minimum shift crew, the plant will be shut down and maintained in hot standby for 30 minutes. Pressure and temperature will then be decreased and the residual heat removal system will be placed in operation to cool the plant down to 200°F. 640.23

Acceptance Criteria

The plant can be tripped and maintained in hot standby and cooled down from outside the control room. 640.23

Note: Credit for Cold Shutdown demonstration of cooldown using the residual heat removal system may be taken for equivalent testing performed during the Startup Test Program.

Attachment 3

Description of Change:

The attached FSAR change deletes a reference to performing a psuedo ejected rod test at 30% reactor power.

Safety Evaluation:

To perform the ejected rod test at 30% power requires that the reactor be placed in an abnormal control rod configuration. This testing has caused excessive core tilts at other plants and it ha been recommended by both Westinghouse and INPO to delete this test if credit can be taken for testing performed at other plants of similar design. The attached analysis from Westinghouse shows similarities between Millstone 3 and other plants which have performed this testing.

In addition, Millstone 3 has performed an ejected rod at 0% reactor power during the Low Power Physics Testing Sequence (Startup Test 20 - FSAR Table 14.2-2). The results of the zero power ejected rod test showed that both the ejected control rod worth and the $F_Q^{(Z)}$ value to be less than the safety analysis limits.

This proposed FSAR revision was reviewed with respect to the requirements delineated in 10 CFR 50.59. This change:

(1) eliminates a potential unstable test on the reactor plant.

(2) Previous zero power ejected rod physics test on Millstone 3 have shown all parameters to be within the limits assumed in the safety analysis.

(3) Millstone 3 similarity to other plants which have performed this test satisfactorily.

It has been determined that this change does not constitute an unreviewed safety question because it does not:

a) Increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated.

b) Increase the possibility of an accident or malfunction of a different type that any previously evaluated.

c) Decrease the margin of safety as defined in the basis for any Technical Specification.

TABLE 14.2-2 (Cont)

30. STARTUP TEST - CORE PERFORMANCE

Prerequisites for Testing

640.28 The plant is at steady state conditions at approximately 30, 50, 75, 90, and 100 percent power.

Test Objective and Summary

This test verifies that the core performance margins are within design predictions. The moveable detector system and incore thermocouples will
be used to obtain data for normal ~~and abnormal rod~~ configurations
16 ~~including a single high worth rod withdrawal at greater than 15 percent~~
640.21 ~~power.~~ This data will be evaluated to establish core performance
parameters.

Acceptance Criteria

640.25 Core performance parameters are in accordance with design values throughout the permissible range of power-to-flow conditions. The nuclear peaking factors, $F_Q(Z)$ and $F^N_{\Delta H}$ shall not exceed Technical Specification limits.

ATTACHMENT

Dear Sir:

Based on the similarities between Millstone and previous four loop, 3411 MW thermal Westinghouse core designs, Westinghouse recommends the deletion of the tests noted in Table 1 based on the extensive design code and accident analysis validation at plants with the design similarities listed in Table 2.

TABLE 1

MILLSTONE NUCLEAR POWER STATION UNIT 3 (NEU)

RECOMMENDED TEST DELETIONS AND LICENSING DOCUMENT REFERENCES

NEU TEST PROCEDURE NO.	APPLICABLE STEPS	REG. GUIDE 1.68 APPENDIX A	FSAR
3-INT-7000 Low Power Physics Testing (HZP Ejected Rod Test)	7.23.1-7.23.15	para. 4e	Table 14.2.2 No. 20 p. 22 of 44
3-INT-8000 Appendix 8021 Ejected Rod Test (30% of Full Power)	All	para. 5e	Table 14.2-2 No. 30 p. 32 of 44
3-INT-8000 Appendix 8027 Dropped Rod Test (50% of Full Power)	All	para. 5f & 5i	None

TABLE 2

NEU SIGNIFICANT DESIGN SIMILARITIES TO

OPERATING PLANTS

NEU DESIGN CHARACTERISTIC	WESTINGHOUSE 4 LOOP STANDARD PLANT	OPERATING PLANTS WITH DESIGN FEATURE AND SUCCESSFUL TEST COMPLETION
Light Bank D @ M-4, D-4, D-12, M-12, & H-8	same as NEU	> 6 to date
CC@ H-2, B-8, H-14, P-8, K-6, F-6, F-10, K-10	same as NEU	> 6 to date
CB@ P-6, K-2, F-2, B-6, B-10, F-14, K-14, P-10	same as NEU	> 6 to date
Loading Patterns (i.e., region 1, 2, 3 placement)	same as NEU	4 to date
Burnable Poison Design (i.e., B_2O_3 12.5 w/o)	same as NEU	6 to date
RCCA material/design (i.e., 95% natural HF)	same as NEU	3 to date
Standard Fuel Design	same as NEU	> 6 to date
Moveable Detector Thimble Pattern	same as NEU	> 6 to date
Core Exit Thermocouple Pattern	same as NEU	2 to date

In addition to the similarities listed in Table 2 NEU has control rod HZP and HFP insertion limits and overlap within 4 steps of all 4 loop plants with Hafnium control rods (3 operating).

Based on these similarities, it is reasonable to delete the tests noted in Table 1. Westinghouse plant experience with previous tests performed at prototype four loop plants has been quite favorable. In the following paragraphs individual tests and Reg. Guide 1.68 requirements are addressed in the order of Table 1.

The Reg. Guide 1.68 requirement for a low power pseudo-rod-ejection test is noted in Appendix A, paragraph 4c "to verify calculational models and accident analysis assumptions". In fact the same analyses and codes have been used for numerous 4 loop plants. [illegible] power distribution. Also the conservative nature of this accident analysis precludes an actual plant measurement approaching similar conditions.

A parallel argument to that above holds for the 30% ejected rod test except that the analysis conservatisms contain even more margin and the plant measurement condition is even further away from the analysis condition.

In both of the ejected rod test cases, NEU predictions for actual values (which are considerably more accurate than the FSAR limits) are similar to other plants with Hafnium control rods in the same bank patterns. Successfully completed tests at these plants adequately verified the calculational models and accident analysis assumptions.

The Reg. Guide 1.68 Appendix A requirement for the 50% dropped rod is to demonstrate the capability and/or sensitivity of incore and excore neutron flux instrumentation to detect a control rod misalignment equal to or less than the tech spec limit (paragraph 5i). Also core thermal and nuclear parameters are to be verified in accordance with predictions for a single high worth rod fully inserted and during and following return of the rod to its bank position (paragraph 5f).

The first requirement (paragraph 5i) is excepted in FSAR Chapter 14.2.7.7 number 10 on page 14.2-18. Data from a prototype plant with identical incore moveable detector (M/D) system and thermocouple patterns indicates successful completion of this test. All four loop plants have the same M/D pattern and have successfully fulfilled Tech Spec and Reg. Guide 1.68 requirements to detect control rod misalignments. The prototype test had an identical loading pattern, control rod pattern, control rod material, and similar insertion limits. Predicted values for this test were also similar although a symmetric rod was used for the prototype test. Thus it is reasonable to cite the prototype test as fulfillment of the second requirement (paragraph 5f). This prototype plant test has been referenced by other similar stations as fulfillment of Reg. Guide requirements.

An additional reason for dropping the 30% ejected rod test and the 50% dropped rod test is the difficulty in executing these tests at similar plants as reported recently by INPO. Undesirable radial xenon and power distributions are possible as well as some occurrences of technical specification violations on power distribution. Even at the plants where problems occurred, FSAR assumptions for applicable accident analyses were not challenged.

Summarizing, in light of NEU's similarities to other recent four loop plants, Westinghouse's position is that the tests listed in Table 1 have been adequately demonstrated at prototype plants. The cost in time and the probability of subsequent undesirable power distributions resulting from these tests lead to the conclusion that they should be dropped from the Millstone Nuclear Power Station Unit 3 test program. Successful completion of the remaining tests in the test program will provide sufficient verification of; 1) Technical Specification compliance, 2) transient analysis assumptions and, 3) proper loading and operation of the core and associated components.