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The Northeast Utilities System

DEC 1 1997

Docket No. 50-336
B16669

Re: 10CFR50.90

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

Millstone Nuclear Power Station, Unit No. 2
Proposed Revision to Technical Specifications
Engineered Safety Feature Actuation System
Loss of Power, 4.16 kV Emergency Undervoltage - Level 1

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend its Operating License, DPR-65, by incorporating the attached proposed changes into the Millstone Unit No. 2 Technical Specifications. The proposed changes will add a time delay, including allowance, to a portion of the Engineered Safety Feature Actuation System Undervoltage Trip Technical Specification. These changes will align the Technical Specifications to the existing plant design, as described in the Final Safety Analysis Report system description and the existing surveillance procedure. No plant modifications are associated with this addition to the Technical Specifications. These proposed additions have been evaluated and determined to be safe.

Attachment 1 provides a discussion of the proposed changes and the Safety Assessment. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the marked-up version of the appropriate page of the current Technical Specifications. Attachment 4 provides the retyped page of the Technical Specifications.

Environmental Considerations

NNECO has reviewed the proposed License Amendment Request against the criteria of 10CFR51.22 for environmental considerations. The proposed changes modify the Engineered Safety Features Actuation System Undervoltage Trip Technical Specification. These changes do not increase the type and amounts of effluents that may be released off site. In addition, this License Amendment Request will not significantly increase individual or cumulative occupational radiation exposures.

Therefore, NNECO has determined the proposed changes will not have a significant effect on the quality of the human environment.

Conclusion

The proposed changes which add the Level One Undervoltage time delay to Technical Specification Table 3.3-4 were evaluated utilizing the criteria of 10CFR50.59 and were determined not to involve an unreviewed safety question. Additionally, we have concluded that the proposed changes are safe.

The proposed changes do not involve a significant impact on public health and safety (see the Safety Assessment provided in Attachment 1) and do not involve a Significant Hazards Consideration pursuant to the provisions of 10CFR50.92 (see the Significant Hazards Considerations provided in Attachment 2).

Plant Operations Review Committee and Nuclear Safety Assessment Board

The Plant Operations Review Committee and Nuclear Safety Assessment Board have reviewed and concurred with the determinations.

Schedule

We request issuance at your earliest convenience, with the amendment to be implemented within 30 days of issuance. This amendment is not required for the restart of Millstone Unit No. 2.

State Notification

In accordance with 10CFR50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

If you should have any questions on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

M L Bowling

Martin L. Bowling, Jr.
Millstone Unit No. 2 - Recovery Officer

Sworn to and subscribed before me

this 1 day of December, 1997

Donna Lynne Williams

Notary Pubic

My Commission expires Nov 30, 2001

Attachments (4)

cc: H. J. Miller, Region I Administrator
D. G. McDonald, Jr., NRC Senior Project Manager, Millstone Unit No. 2
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2
W. D. Travers, Ph.D, Director, Special Projects Office
W. D. Lanning, Deputy Director of Inspections - Special Projects Office
P. F. McKee, Deputy Director of Licensing - Special Projects Office

Director
Bureau of Air Management
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Department of Environmental Protection
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Attachment 1

Millstone Nuclear Power Station, Unit No. 2
Proposed Revision to Technical Specifications
Engineered Safety Feature Actuation System
Discussion of Proposed Changes

December 1997

**Proposed Revision to Technical Specifications**
**Engineered Safety Feature Actuation System**
**Discussion of Proposed Changes**

Introduction

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend its Operating License, DPR-65, by incorporating the attached proposed changes into the Millstone Unit No. 2 Technical Specifications. The proposed changes will add a time delay, including allowance, to a portion of the Engineered Safety Feature Actuation System (ESFAS) Undervoltage (UV) Trip Technical Specification. These changes will align the Technical Specifications to the existing plant design, as described in the Final Safety Analysis Report (FSAR) system description and the existing surveillance procedure. No plant modifications are associated with this addition to the Technical Specifications. These proposed changes have been evaluated and determined to be safe.

Background

Protective instrumentation systems function to shut down the reactor and activate safety systems if continuously monitored key plant process parameters exceed predetermined limits. Specific protection instrumentation systems include the Reactor Protection System (RPS) and the ESFAS. The RPS functions to shut down or trip the reactor if any two of four safety channels, monitoring a plant parameter, generate coincident trip signals. The ESFAS functions to actuate the Engineered Safety Features Systems which provide protection for the public and plant personnel against the incidental release of radioactive products from the Reactor Coolant System, particularly as a result of a postulated Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB). These features localize, control, mitigate and terminate such accidents to hold radiation exposure levels below the applicable limits of 10 CFR Part 100.

Following a LOCA MSLB, or other significant accident, these systems function to cool the reactor core to limit fuel damage, to limit the magnitude and the duration of pressure transients within the containment, to provide post incident cooling for extended periods, and to limit the release of fission products and the buildup of combustible gases. The engineered safety features consist of: Safety Injection; Containment Spray; Containment Air Recirculation and Cooling; Enclosure Building Filtration; Hydrogen Control; and Auxiliary Feedwater Automatic Initiation System.

The ESFAS functions are implemented by means of redundant sensors, instrument loops, logic and actuation devices, which sense a number of plant parameters and actuate the equipment mentioned above, as appropriate, when the associated parameter exceeds the respective trip setpoint. The instrument channels monitor a

number of redundant and independent process variables and initiate a sensor channel trip when the variable or condition deviates beyond a set limit. Emergency 4160 volt electrical bus voltage is one of the important variables sensed.

Design Basis and Licensing Basis

Bus voltage on the 4160 volt emergency buses (24C and 24D) is monitored to assure that the engineered safety features safety related motors, discussed above, are adequately powered to maintain their operability. Sustained operation at low voltage could result in safety related motor damage from overcurrent. Under the present plant design configuration, voltage is monitored by two "Levels" of voltage sensing using ESFAS UV bistable modules.

The higher level of UV detection occurs if 4160 volt emergency bus voltage is maintained at, or below, approximately 3700 volts for eight seconds (± 2.0 seconds). This level of UV sensing, 88% of 4160 volts, is referred to as **Level Two.** This detection equipment senses a degraded voltage condition and provides a trip signal to the supply breaker from the Reserve Station Service Transformer (RSST). However, since short duration voltage reductions do not compromise safety related equipment, the eight second time delay allows for short duration voltage dips (e.g., when starting large motors), without unnecessarily isolating the RSST. If voltage recovers prior to the eight seconds, the sensing circuit resets and the timer is reset. This Level Two UV trip provides a trip signal only when offsite power is supplied to the 4160 volt emergency buses from the RSST.

The lower level of UV detection is provided to sense a complete loss of normal power (LNP) to the 4160 volt emergency buses. This second step of UV sensing, 70% of 4160 volts, is referred to as **Level One.** If emergency bus voltage decreases sufficiently low to actuate the Level One UV relay (2912 volts for 2 seconds ± 0.1 second), a series of actions will occur. The emergency bus will be load shed, the emergency bus will be isolated, the emergency diesel generator (EDG) will receive a start signal and the EDG load sequencer will receive a permissive to begin EDG sequence loading. The 2 second (± 0.1 second) time delay was chosen to allow electrical protection schemes to operate (e.g., clearing possible electrical bus faults) before the Level One UV relays actuate.

The present two level UV design, discussed above, evolved from the original Millstone Unit No. 2 design in response to two electrical bus UV events on July 5, 1976 and July 21, 1976. The second event resulted in a temporary loss of power to the emergency buses. Shortly thereafter, NNECO improved the electrical design and proposed a license amendment to modify the Millstone Unit No. 2 Technical Specifications to preclude recurrence of similar events. The changes resulted, in part, in the addition of a second level of UV sensing (the Level Two sensing previously discussed), combined with an eight second time delay. The Level Two UV sensing, with the eight second time

delay and allowance, was added to the Technical Specifications by License Amendment 17, dated August 30, 1976.[1]

The Level One UV trip sensing time delay circuit previously had a 0.5 second time delay, which had not been specified in Technical Specification Table 3.3-4. During the 1992 Steam Generator Replacement Outage, the time delay for the Level One UV trip was increased from 0.5 seconds to 2.0 seconds, per Plant Design Change 2-155-92. This was done to improve the electrical distribution system grid stability. Similar UV sensing time delay settings for the other two Millstone Units had been set at approximately two seconds. The FSAR was revised accordingly.

The current UV design configuration and the respective surveillance procedure are correct. However, the Technical Specification does not specify the two second Level One UV time delay. Therefore, NNECO has determined that the Millstone Unit No. 2 Technical Specifications should be modified. Accordingly, this License Amendment Request is being submitted to add the Level One UV time delay to Technical Specification Table 3.3-4.

Standard Technical Specifications for Combustion Engineering Plants (NUREG-1432), Limiting Condition for Operation (LCO) 3.3.6, "DG - LOVS," with its associated Surveillance Requirement (SR) 3.3.6.3 is similar to this issue. This SR is divided into two levels, Degraded Voltage (with an associated time delay) and Loss of Voltage (with an associated time delay). NNECO believes that the proposed changes for Millstone Unit No. 2, as previously discussed, are consistent with NUREG-1432.

Description of Proposed Changes

This License Amendment Request is being submitted to add the Level One UV time delay to Technical Specification Table 3.3-4. The changes proposed by NNECO to modify the Millstone Unit No. 2 Technical Specifications are described below.

1. Technical Specification Table 3.3-4, page 3/4 3-20, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INS. ENTATION TRIP VALUES, FUNCTIONAL UNIT 8. LOSS OF POWER, a. 4.16 kv Emergency Bus Undervoltage (Undervoltage relays) - level one, TRIP SETPOINT will be changed to add the words "with a 2.0 $\pm$ 0.1 second time delay."

2. Technical Specification Table 3.3-4, page 3/4 3-20, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES, FUNCTIONAL UNIT 8. LOSS OF POWER, a. 4.16 kv Emergency Bus

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[1] G. Lear letter to Northeast Nuclear Energy Company, issuing Amendment No. 17 to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2, dated August 30, 1976.

Undervoltage (Undervoltage relays) - level one. ALLOWABLE VALUES will be changed to add the words "with a 2.0 ± 0.1 second time delay."

As previously stated, these additional words align Technical Specification Table 3.3-4 to the current FSAR description and the specific surveillance procedure.

The corresponding Technical Specification Surveillance Requirements 4.3.2.1.1 and 4.3.2.1.3, and the Bases are appropriate as written.

Safety Assessment

The proposed changes will add a time delay, including allowance, to a portion of the ESFAS UV Trip Technical Specification. These changes will align the Technical Specifications to the existing plant design, as described in the FSAR system description and the existing surveillance procedure. No new plant modifications are associated with this addition to the Technical Specifications. The proposed changes have been evaluated and determined to be safe.

The present two level UV design evolved from the original Millstone Unit No. 2 design in response to two electrical bus UV events on July 5, 1976 and July 21, 1976. The second event resulted in a temporary loss of power to the emergency buses. Shortly thereafter, NNECO improved the electrical design and proposed a license amendment to modify the Millstone Unit No. 2 Technical Specifications to preclude recurrence of similar events. The changes resulted, in part, in the addition of a second level of UV sensing (the Level Two sensing previously discussed), combined with an eight second time delay. The Level Two UV sensing, with the eight second time delay and allowance, was added to the Technical Specifications by License Amendment 17, dated August 30, 1976.[2]

The Level One UV trip sensing time delay circuit previously had a 0.5 second time delay, which had not been specified in Technical Specification Table 3.3-4. During the 1992 Steam Generator Replacement Outage, the time delay for the Level One UV trip was increased from 0.5 seconds to 2.0 seconds, per Plant Design Change 2-155-92. This was done to improve the electrical distribution system grid stability. Similar UV sensing time delay settings for the other two Millstone Units had been set at approximately two seconds. The FSAR was revised accordingly.

The current UV design configuration and the respective surveillance procedure are correct. However, the Technical Specification does not specify the two second Level One UV time delay. Therefore, NNECO has determined that the Millstone Unit No. 2 Technical Specifications should be modified.

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[2] G. Lear letter to Northeast Nuclear Energy Company, issuing Amendment No. 17 to Facility Operating License No. DPR-65 for Millstone Nuclear Power Station, Unit No. 2, dated August 30, 1976.

The proposed addition to Technical Specification Table 3.3-4, to incorporate the Level One UV trip time delay, including allowance (2.0 ± 0.1 second), is safe and does not constitute an unreviewed safety question. Analysis of the additional time delay concluded that the ESFAS response times for those events considered to occur coincident with an LNP, are not challenged by the increased delay from 0.5 seconds to 2.0 ± 0.1 second. (Note that the current Technical Specification does not specify any time delay. However, the design includes the 2.0 + 0.1 second delay.) This conclusion is based upon a comparison between the EDG start time and the maximum time required to complete those LNP trip functions necessary to support EDG availability for worst case accident conditions (LOCA which results in a Safety Injection Actuation Signal (SIAS) coincident with LNP). The calculated EDG start time considered the ESFAS response time (0.5 seconds) in addition to the maximum EDG start time of 15 seconds after receipt of an SIAS, as specified in Technical Specification Surveillance Requirement 4.8.1.1.2.a.2. Since the calculated LNP trip time delay of 15.14 seconds is less than the calculated SIAS initiated EDG start time of 15.5 seconds, the proposed change does not increase the likelihood of an EDG malfunction during an accident condition. Consequently, the proposed changes do not adversely affect the ability of either the ESFAS or the EDGs to perform their intended safety function. The proposed additions to Technical Specification Table 3.3-4 do not modify the LCO or the specific surveillance procedure acceptance criterion, nor do they change the frequency of the surveillance. The proposed changes do not involve any physical changes to the plant and do not alter the way any structure, system, or component functions. The proposed changes do not have any adverse impact on the design basis accidents previously analyzed. Therefore, the proposed changes do not pose a condition adverse to safety.

The proposed changes were evaluated utilizing the criteria of 10CFR50.59, and were determined not to involve an unreviewed safety question. Additionally, the evaluation concluded that the proposed changes are safe.

Standard Technical Specifications for Combustion Engineering Plants (NUREG-1432), LCO 3.3.6, "DG - LOVS," with its associated SR 3.3.6.3 is similar to this issue. This SR is divided into two levels, Degraded Voltage (with an associated time delay) and Loss of Voltage (with an associated time delay). NNECO believes that the proposed changes for Millstone Unit No. 2, as previously discussed, are consistent with NUREG-1432.

Docket No. 50-336
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Attachment 2

Millstone Nuclear Power Station, Unit No. 2
Proposed Revision to Technical Specifications
Engineered Safety Features Actuation System
Significant Hazards Consideration

December 1997

**Proposed Revision to Technical Specifications**
**Engineered Safety Features Actuation System**
**Significant Hazards Consideration**

Significant Hazards Consideration

Pursuant to 10CFR50.92, Northeast Nuclear Energy Company (NNECO) has reviewed the proposed changes. NNECO concludes that these proposed additions to Technical Specification Table 3.3-4 do not involve a significant hazards consideration (SHC) and do not involve a significant impact on public health and safety.

The basis for this conclusion is that the three criteria of 10CFR50.92(c) are not compromised. That is, the proposed changes do not:

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

   The proposed changes will add a time delay, including allowance, to a portion of the Engineered Safety Feature Actuation System (ESFAS) Undervoltage (UV) Trip Technical Specification Table 3.3-4. These changes will align the Technical Specifications to the existing plant design, as described in the Final Safety Analysis Report (FSAR) system description and the existing surveillance procedure. No new plant modifications are associated with this addition to the Technical Specifications.

   The addition of the Level One UV trip time delay setpoint does not impact any system or component whose failure results in initiation of the accidents described in the FSAR. Therefore, the changes do not affect the probability of occurrence of the previously evaluated accidents. The Level One UV trip time delay potentially affects the Emergency Diesel Generator (EDG) response time to accident conditions that occur coincident with a loss of normal power (LNP). However, previous analysis of the increase in the time delay (0.5 seconds to 2.0 $\pm$ 0.1 second) concluded that the ESFAS response times for those events considered to occur coincident with an LNP, are not challenged by the time delay. This conclusion is based upon a comparison between the EDG start time and the maximum time required to complete those LNP trip functions necessary to support EDG availability for worst case accident conditions (Loss of Coolant Accident which results in a Safety Injection Actuation Signal (SIAS) coincident with LNP). The calculated EDG start time considered the ESFAS response time (0.5 seconds) in addition to the maximum EDG start time of 15 seconds after receipt of an SIAS, as specified in Technical Specification Surveillance Requirement 4.8.1.1.2.a.2. Since the calculated LNP trip time delay of 15.14 seconds is less than the calculated SIAS initiated EDG start time of 15.5 seconds, the proposed changes do not increase the likelihood of an EDG

malfunction during an accident condition. Consequently, the proposed additions do not adversely affect the ability of either the ESFAS or the EDGs to perform their intended safety function. The proposed additions to Table 3.3-4 do not modify the Limiting Condition for Operation or the specific surveillance procedure acceptance criterion, nor do they change the frequency of the surveillance. The proposed changes do not involve any physical changes to the plant and do not alter the way any structure, system, or component functions. The proposed changes do not have any adverse impact on the design basis accidents previously analyzed. The proposed changes do not result in an increase in radiation exposure to either members of the public or site personnel because accident mitigation systems will be available consistent with the assumptions used in the accident analysis. Therefore, the proposed additions to Technical Specification Table 3.3-4 do not affect the consequences of the previously evaluated accidents.

Based on the above, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The function, availability and failure modes of equipment important to safety are unaffected by the addition of the 2.0 $\pm$ 0.1 second Level One UV trip time delay to Technical Specification Table 3.3-4. The additions do not introduce any new, credible accidents, or any new failure modes.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed additions to Technical Specification Table 3.3-4 do not have any adverse impact on the accident analyses. Actuation of the required safety systems is not delayed because the proposed additions do not delay the time at which the EDGs are required, by the plant Technical Specifications, to be available to power the required loads.

Therefore, based on the above, there is no significant reduction in the margin of safety.

The Commission has provided guidance concerning the application of standards in 10CFR50.92 by providing certain examples (51FR7751, March 6, 1986) of amendments that are considered not likely to involve an SHC. The changes proposed herein are not enveloped by a specific example. Currently, the 4.16 kV Bus Level One UV has no associated time delay stated in Technical Specification Table 3.3-4.

However the current FSAR and the existing surveillance procedure do include the time delay. Therefore this change will add the time delay and allowance to Technical Specification Table 3.3-4, where none had previously existed.