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Docket No. 50-423
B15196

Re: 10CFR50.90

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

Millstone Nuclear Power Station, Unit No. 3
Proposed Revision to Technical Specifications
Ultimate Heat Sink

Introduction

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend its Operating License, NPF-49, by incorporating the changes identified in Attachments 1 and 2 into the Millstone Unit No. 3 Technical Specifications. The proposed revision to the Action Statement of Limiting Condition for Operation (LCO) 3.7.5 would permit Millstone Unit No. 3 to remain in Modes 1 through 4 with the average water temperature of the ultimate heat sink (UHS) greater than 75°F (but lower than 77°F) for 12 hours. An additional action has been added which would require the plant to be placed in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours upon identifying that the UHS temperature is greater than 77°F.

Background

The UHS is the source of cooling water provided to dissipate reactor decay heat and essential system heat loads. The maximum average water temperature of the UHS ensures adequate heat load removal capacity after a normal reactor shutdown or shutdown following a design basis accident (DBA), including a loss of coolant accident (LOCA). The UHS at Millstone Unit No. 3 is the Long Island Sound. The service water system pumps, which take suction from the Long Island Sound, provide cooling water during all operating conditions, at a maximum average sea water (i.e., Long Island Sound) temperature of 75°F. Section 9.2.1 of the Millstone Unit No. 3 Final Safety Analysis Report (FSAR) describes the service water system in detail. At Millstone Unit No. 3, the UHS average water temperature is monitored at least once per 24 hours. As the UHS average water temperature increases above 70°F, NNECO monitors the temperature on a more

frequent basis (i.e., once per six hours per Surveillance Requirement 4.7.5.b).

Millstone Unit No. 3 LCO 3.7.5 requires that the UHS average water temperature be less than or equal to 75°F at the Millstone Unit No. 3 intake structure. With the average water temperature of the UHS above 75°F, the plant must be placed in at least HOT STANDBY within six hours and in COLD SHUTDOWN within the next 30 hours.

The average water temperature of the UHS varies up and down two or three degrees during a typical summer day. An UHS average water temperature of 75°F is, historically, an extremely rare phenomenon. Typically, the UHS peak average water temperature has occurred during the month of August.

The month of July 1994 has been the hottest month in Connecticut's recorded history, since the National Weather Service began keeping temperature records for the state in 1905. This hot weather has identified the potential for the average water temperature of the UHS to exceed 75°F during either the month of August or September of future years. To resolve this issue, NNECO is proposing a change to the Action Statement for LCO 3.7.5 of the Millstone Unit No. 3 Technical Specifications.

Description of the Proposed Changes

NNECO is proposing several revisions to Millstone Unit No. 3 Technical Specification 3/4.7.5 and Bases Section 3/4.7.5. These sections of the Millstone Unit No. 3 Technical Specifications involve the UHS.

The proposed revisions to LCO 3.7.5 and to Surveillance Requirement 4.7.5 remove the references to the Unit 3 intake structure. Additionally, the acronym (i.e., UHS) has been incorporated.

The proposed revision to the Action Statement of LCO 3.7.5 of the Millstone Unit No. 3 Technical Specifications would permit Millstone Unit No. 3 to remain in Modes 1 through 4 with the average water temperature of the UHS greater than 75°F (but less than or equal to 77°F) for 12 hours. An additional action has been added which would require the plant to be placed in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours upon identifying that the UHS temperature is greater than 77°F.

Bases Section 3/4.7.5 has been rewritten using the guidance of NUREG-1431 to include additional information regarding the bases

for the limiting condition for operation, the action statements, and the surveillance requirements. The pages for Bases Sections 3/4.7.6 through 3/4.7.14 are renumbered. In addition, Index pages have been revised to reflect the renumbered pages of Bases Section 3/4.7. These changes are administrative in nature and has no impact on plant safety.

Safety Assessment

The current Technical Specification 3.7.5 requires that the UHS be operable with an average water temperature of less than or equal to 75°F at the Millstone Unit No. 3 intake structure. The action statement requires that when the above requirement is not met, the plant must be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

The UHS for Millstone Unit No. 3 is the Long Island Sound. Sensible heat is removed from both safety and nonsafety-related cooling systems during normal operation, shutdowns, and accident conditions via the service water and circulating water systems. The service water system consists of two independent flow paths, each supplying cooling water to the safety-related components. Each service water flow path is provided with two pumps (one operating, one standby). The service water system removes heat from the emergency diesel generator engine coolers, reactor plant component cooling water (RPCCW) heat exchangers (RPCCW removes heat from the residual heat removal pumps and heat exchangers, and spent fuel pool coolers), turbine plant component cooling water (TPCCW), the charging pumps, the safety injection pumps, the containment recirculation pumps, containment recirculation coolers, and other loads. Service water to TPCCW is isolated on either a loss of offsite power signal or a containment depressurization actuation (CDA) signal. The service water system is designed to provide adequate cooling to the remaining components, along with a single active component failure and a loss of offsite power with a maximum intake temperature of 75°F.

The proposed technical specification change to the action statement requires the operator to monitor the UHS temperature once per hour for 12 hours if the UHS temperature exceeds 75°F. If the UHS temperature does not drop below 75°F during this 12-hour period, the operator is required to place the plant in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. In addition, should the UHS temperature increase above 77°F during the 12-hour monitoring period, the operator is directed to place the plant in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Due to the unusually high temperatures experienced in July 1994 (the highest average monthly temperature on record), the Long

Island Sound temperature approached the 75°F limit. It is expected that, in the future, the Long Island Sound temperature may approach or exceed the 75°F limit for a short duration. However, based on plant data, the UHS temperature experiences variations of approximately 2°F or 3°F over a 12-hour period. Allowing a 12-hour period for monitoring the UHS temperature if it increases above 75°F, will allow for continued plant operation without the potential for cyclic power changes as the UHS temperature cycles above and below 75°F. Should the UHS temperature remain above 75°F for extended periods, the plant will be placed in HOT STANDBY within 18 hours based on a 12-hour monitoring period and a 6 hour time to place the plant in HOT STANDBY.

The existing 6 hour action statement requirement to achieve HOT STANDBY should the UHS temperature increase above 75°F, as well as all technical specification action statement required times, are either implicitly or explicitly based on the low risk associated with short-term operation outside the limits specified in the technical specifications and assumed in the safety analyses. NNECO has concluded that the risk significance of increasing the allowable time to be in HOT STANDBY from 6 to 18 hours should the UHS temperature increase above 75°F is very low.

NNECO has performed an analysis to quantify the risk significance of various FSAR Chapter 15 initiating events and earthquakes during periods of elevated service water temperature. This analysis assumes that the UHS will be elevated above 75°F for a total of 100 hours in any one year. This timeframe is considered conservative as the UHS temperature has not exceeded 75°F in the operating history of Millstone Unit No. 3. The assumption of a seismic event occurring during the period of time with elevated service water temperatures has a calculated probability of 5×10^{-6} on this basis and is not considered risk significant. As such, seismic loads have not been included in the evaluation of the piping stress associated with the elevated service water temperature. In addition, the assumption of a seismic event occurring coincident with a Chapter 15 initiating event during a time period with elevated service water inlet temperatures is not considered credible.

The risk significance of a Condition IV FSAR Chapter 15 accident occurring during a period of elevated UHS temperatures is considered to be negligibly small when compared to the risk significance of FSAR Chapter 15 events that are more likely to occur. The probability of a large break loss of coolant accident, or steam line break accident occurring during the time

when the UHS is elevated is less than 1 x 10^{-5} (assuming no coincident failures). Assuming a loss of offsite power or a coincident failure in addition to these accidents would reduce this probability by orders of magnitude, making them not risk significant.

For Condition II and III FSAR Chapter 15 events, an evaluation has been performed to demonstrate that safe shutdown can be achieved and maintained. With respect to the service water system component flow margins, the limiting Condition II and III events are events which increase either the number of service water flow paths or the heat load on the inservice components. With respect to some safety-related components (e.g., charging pump coolers), events which cause a safety injection signal without a concurrent loss of offsite power are limiting because the nonessential TPCCW heat exchangers do not isolate and other service water flow paths open automatically (e.g., emergency diesel generators). The steam generator tube rupture accident has been evaluated as the limiting event for this condition. With respect to other safety-related components (e.g., emergency diesel generators), the loss of offsite power event is limiting because of the high component heat loads/service water flow requirements. Both cases have been evaluated with the additional consideration of a single failure and these cases conservatively envelope all limiting Condition II and III events.

An evaluation of the service water loads associated with the steam generator tube rupture event with a failure of one train of service water was performed with an UHS temperature of 77°F. This event results in the safety injection actuation signal without a CDA or a loss of offsite power. As such, service water flow to TPCCW is not automatically isolated. The safety injection pumps start as well as the diesel generators, which increase the service water system loads. The results of this evaluation indicated that the service water loads could be accommodated during this event, and that recovery from this event would not be hindered.

An evaluation of the service water loads associated with the loss of offsite power and the failure of a diesel generator to start was performed to determine whether there is adequate margin to accommodate a service water inlet temperature of 77°F. During the cooldown, once the residual heat removal (RHR) system is initiated with RCS temperatures approximately 350°F, RPCCW heat loads increase significantly. For a period of time simultaneous decay heat removal is required via the steam generators and the RHR system to maintain RPCCW temperatures at acceptable levels. A service water temperature increase to 77°F would slightly

increase the amount of condensate required for auxiliary feedwater. However, auxiliary feedwater inventory is available from other sources in addition to the demineralized water storage tank (e.g., the condensate storage tank, the condensate surge tank, fire water, and domestic water). This additional usable auxiliary feedwater inventory would more than compensate for any reduction in the RHR/RPCCW/service water system capabilities due to an elevated UHS temperature. As such, plant cooldown can be accomplished and maintained with an UHS temperature of up to 77°F.

In summary, the addition of a 12-hour time period to monitor the UHS temperature by the Technical Specification 3.7.5 Action Statement is justified. An evaluation of the service water system components have been evaluated for all credible scenarios with service water intake temperature of up to 77°F. This evaluation determined that the safe shutdown capability of the plant is maintained with the elevated service water temperature.

Significant Hazards Consideration Determination

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

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

   The proposed addition of a 12-hour period to monitor the UHS temperature to the Technical Specification LCO Action Statement does not involve an increase in the probability of an accident previously evaluated. The probability of an accident previously evaluated is not increased by a short-term increase in the UHS temperature. The probability of FSAR Chapter 15 Condition IV accidents occurring in conjunction with the short duration increase in service water inlet temperature above 75°F is low enough such that they are not risk significant. Further, an evaluation has been performed that safe shutdown will be achieved and maintained for a loss of offsite power event and a steam generator tube rupture event with the additional consideration of a single failure with service water inlet temperatures as high as 77°F. There has been no significant increase in the consequences of these events previously evaluated.

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

   The proposed technical specification change does not create the possibility of a new or different kind of accident previously evaluated. The addition of a 12-hour time period to monitor the UHS temperature increases the amount of time that is allowed for the plant to be in HOT STANDBY from 6 to 18 hours should the UHS temperature increase above 75°F. This extension of the time allowed for the plant to be in HOT STANDBY does not change the plant configuration. As such, the change does not create the possibility of a new or different kind of accident previously evaluated.

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

   The proposed technical specification change does not involve a significant reduction in the margin of safety. The addition of a 12-hour time period to monitor the UHS temperature increases the time required for the plant to be in HOT STANDBY from 6 to 18 hours should the UHS temperature exceed 75°F. An evaluation has been performed to demonstrate that the risk significance associated with the increased action time is very low. In addition, safe shutdown capability has been demonstrated for service water inlet temperatures as high as 77°F.

The Commission has provided guidance concerning the application of the standards of 10CFR50.92 by providing certain examples (51FR7751, March 6, 1986) of amendments that are not considered likely to involve an SHC. While the proposed changes to the Action Statement of LCO 3.7.5 and to the Surveillance Requirement 4.7.5 are not enveloped by any of the examples, NNECO has determined that they do not involve a significant hazards consideration. In summary, an increase in the time required for the plant to be in HOT STANDBY from 6 to 18 hours is justified. An evaluation of the service water system components has been evaluated for all credible scenarios with UHS average water temperatures of up to 77°F. This evaluation determined that the safe shutdown capability of the plant is maintained with the elevated UHS average water temperature. As such, the proposed change to the Action Statement of LCO 3.7.5 is justified.

Environmental Considerations

NNECO has reviewed the proposed license amendment against the criteria of 10CFR51.22 for environmental considerations. The proposed change does not increase the types and amounts of effluents that may be released offsite, nor significantly

increase individual or cumulative occupational radiation exposures. Based on the foregoing, NNECO concludes that the proposed change meets the criteria delineated in 10CFR51.22(c)(9) for categorical exclusion from the requirements for an environmental impact statement.

Nuclear Safety Assessment Board Review

The Nuclear Safety Assessment Board has reviewed and concurred with the above determinations.

State Notification

In accordance with 10CFR.91(b), we are providing the State of Connecticut with a copy of this proposed amendment to ensure their awareness of this request.

Schedule Required for NRC Approval

As stated previously, due to high temperatures during the summer, the potential exists for the average water temperature of the UHS to exceed 75°F. This potential is limited to the months of August and September. Unfortunately, it is impossible to predict the exact date that the average water temperature of the UHS will be greater than 75°F, since this condition is linked to short-term climatological conditions. Based on this, NNECO would appreciate NRC review and approval of this request by the end of July 1995.

If the NRC Staff should have any questions or comments regarding this submittal, please contact Mr. R. G. Joshi at (203) 440-2080. We will promptly provide any additional information the NRC Staff may need to respond to this request, and we appreciate your efforts in support of this request.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

J. F. Opeka
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cc: See Page 9

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Subscribed and sworn to before me

this 28th day of April, 1995

Sherry L. Sherman

Date Commission Expires: Aug 31, 1998