Dominion Nuclear Connecticut, Inc.
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May 28, 2014

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

Serial No. 14-271
NSSL/MLC R0
Docket No. 50-423
License No. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST FOR CHANGES TO TECHNICAL SPECIFICATION 3/4.7.5, "ULTIMATE HEAT SINK"

By letter dated May 3, 2013, Dominion Nuclear Connecticut, Inc. (DNC) submitted a license amendment request (LAR) for Millstone Power Station Unit 3 (MPS3). The proposed amendment would modify Technical Specification (TS) 3/4.7.5, "Ultimate Heat Sink," to increase the current ultimate heat sink (UHS) water temperature limit from 75°F to 80°F and change the TS Action to state, "With the ultimate heat sink water temperature greater than 80°F, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours."

In a letter dated June 26, 2013, the Nuclear Regulatory Commission (NRC) provided DNC an opportunity to supplement the LAR identified above. Supplemental information was provided to the NRC in a letter dated July 2, 2013. In an e-mail dated September 5, 2013, the NRC transmitted a request for additional information (RAI) related to the LAR. DNC responded to the RAI in a letter dated October 2, 2013. In a letter dated December 19, 2013, the NRC transmitted a second RAI. DNC responded to the RAI in a letter dated January 15, 2014. In a letter dated April 23, 2014, DNC provided supplemental information to Section 5.3.2.3 of Attachment 1 of the LAR submittal of May 3, 2013. In an e-mail dated May 19, 2014, the NRC transmitted a third RAI. Attachment 1 to this letter contains DNC's response to the third RAI.

If you have any questions or require additional information, please contact Wanda Craft at (804) 273-4687.

Sincerely,

Dan Stoddard

Daniel G. Stoddard
Senior Vice President – Nuclear Operations

VICKI L. HULL
Notary Public
Commonwealth of Virginia
140542
My Commission Expires May 31, 2014

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Daniel G. Stoddard, who is Senior Vice President - Nuclear Operations of Dominion Nuclear Connecticut, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 28TH day of MAY, 2014.

My Commission Expires: 5-31-14

Vicki L. Hull
Notary Public

A001
NRR

Commitments made in this letter: None

Attachment:

1. Response to Request for Additional Information Regarding License Amendment Request for Changes to Technical Specifications 3/4.7.5, "Ultimate Heat Sink"

cc: U.S. Nuclear Regulatory Commission
Region I
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Director, Radiation Division
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Attachment 1

Response to Request for Additional Information Regarding License Amendment Request for Changes to Technical Specifications 3/4.7.5, "Ultimate Heat Sink"

Dominion Nuclear Connecticut, Inc.
Millstone Power Station Unit 3

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RAI-1

The license amendment request (LAR) of May 3, 2013 requests a change to Surveillance Requirement (SR) 4.7.5, which does not now include the most current revision of SR 4.7.5.

The licensee is requested to provide the proposed change to SR 4.7.5 using the current revision.

DNC Response

MPS3 Amendment 258, approved February 25, 2014, impacted Technical Specification page 3/4 7-13. The most current revision of page 3/4 7-13 is provided in Enclosure 1 of this attachment and is marked-up to indicate the proposed changes discussed in the license amendment request of May 3, 2013.

RAI-2

In the LAR for LCO 3.7.5 and SR 4.7.5, the licensee changed the parameter to be monitored from "average water temperature" to "water temperature."

The licensee is requested to explain the technical reasons and justify changing the parameter to be monitored as explained above.

DNC Response

At the time the LAR was submitted, the service water system had no remote temperature monitoring instrumentation available. However, the non-safety related circulating water system has remote temperature monitoring instrumentation in each circulating water inlet water box (six total). Since the circulating water pumps take water from the UHS near the suction of the service water pumps, the temperature recorded at the circulating water inlet water box was considered representative of service water inlet temperature. However, these instruments did not have a documented uncertainty. To obtain a higher confidence in the indication of UHS temperature, the in-service water box temperatures were averaged to determine UHS temperature. This was described in the existing bases of the Technical Specification as included in the original LAR submittal of May 3, 2013. However, as a result of the Millstone Unit 2 shutdown due to high UHS temperature in August 2012, the use of these instruments was reconsidered. Detailed measurements showed that the use of the circulating water inlet waterbox temperatures could be non-conservative by approximately 1°F. Therefore, as described in the May 3, 2013 LAR, remote indicating precision temperature monitoring instrumentation was installed at MPS3 at each train's service water inlet to the reactor plant closed cooling water (RPCCW) heat exchangers and the in-service instruments must be within the UHS temperature limit. This instrumentation provides more representative and precise indication of UHS temperature and is used to monitor compliance with the UHS Technical Specification in SR 4.7.5.

RAI-3

In the licensee's letter, dated January 15, 2014, as a response to request for additional information (RAI) 4, regarding the ESF air conditioning unit (3HVQ ACUS1A, 1B, 2A, and 2B) condensers, the licensee explained the seemingly low service water flow rate of 25 gpm and 33.2 gpm by allowing the service water (SW) ΔT across the heat exchangers to increase to transfer the heat for condensing the R-22 Freon. With a SW inlet temperature of 80°F, the vendor data sheet has a ΔT of 15.7°F, while the licensee's calculated ΔT's are 29.5°F and 24.4°F. The licensee justified the seemingly low SW flow rate by allowing higher SW ΔTs. The licensee did not address the effect of the corresponding higher SW temperatures across the condensers on the condensing effects of the R-22, but called the results "reasonable."

Provide definitive statements, as appropriate, regarding the operability of the ESF air conditioning units to perform their safety functions and remove design heat loads under accident conditions with an 80°F SW inlet temperature and the high SW ΔTs and low flow rates described in your RAI response. Describe any adverse effect on the R-22 condensing function with the higher SW ΔT and the ability of the ESF units to perform their safety functions.

DNC Response

The acceptability of 80°F service water to the ESF air conditioning unit condensers (HVQ chillers) was evaluated in calculation 97-002, Rev 3, Addendum B. The HVQ chillers are

Freon to water heat exchangers. When the service water side average temperature increases, the Freon side average temperature also increases to obtain the required heat removal rate. The following excerpts from this calculation address the concerns of the question:

- The refrigerant for the 3HVQ*ACUS1A, 3HVQ*ACUS2A, 3HVQ*ACUS1B, and 3HVQ*ACUS2B condensers is R-22 and the compressor Normal Operating Range Limit is 255 psig (269.7 psia).

- The condenser pressure vs. temperature relationship is defined by the saturated properties of R-22 for condensers 3HVQ*ACUS1A, 3HVQ*ACUS2A, 3HVQ*ACUS1B, and 3HVQ*ACUS2B.

- The highest calculated refrigerant temperature (based on 24.97 gpm of 80°F service water) for 3HVQ*ACUS1A and 3HVQ*ACUS1B is 116.98 °F. The refrigerant is R-22, at a saturated pressure of 264.3 psia, which is less than the 269.7 psia allowable pressure. Therefore, the condensing pressure of 3HVQ*ACUS1A and 3HVQ*ACUS1B is acceptable.

- The highest calculated refrigerant temperature (based on 33.15 gpm of 80°F service water) for 3HVQ*ACUS2A and 3HVQ*ACUS2B is 112.29 °F. The refrigerant is R-22, at a saturated pressure of 248.6 psia, which is less than the 269.7 psia allowable pressure. Therefore, the condensing pressure of 3HVQ*ACUS2A and 3HVQ*ACUS2B is acceptable.

Therefore, it is concluded that these chillers are fully capable of removing the required heat load at 80°F service water temperature assuming the worst case calculated flow rates.

Enclosure 1

Marked-Up Technical Specifications Page

Dominion Nuclear Connecticut, Inc.
Millstone Power Station Unit 3

~~February 25, 2014~~

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.5 The ultimate heat sink (UHS) shall be OPERABLE with ~~an average~~ water temperature of less than or equal to ~~75~~80°F.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the UHS water temperature greater than 80°F, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~If the UHS temperature is above 75°F, monitor the UHS temperature once per hour for 12 hours. If the UHS temperature does not drop below 75°F during this period, place the plant in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. During this period, if the UHS temperature increases above 77°F, place the plant in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

SURVEILLANCE REQUIREMENTS

4.7.5 The UHS shall be determined OPERABLE:

a. At the frequency specified in the Surveillance Frequency Control Program by verifying the ~~average~~ water temperature to be within limits.

b. At least once per 6 hours by verifying the ~~average~~ water temperature to be within limits when the ~~average~~ water temperature exceeds ~~70~~75°F.