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Dominion®

November 6, 2013

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

Serial No.	13-582
NSSL/MAE	R0
Docket No.	50-423
License No.	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
LICENSE AMENDMENT REQUEST, PROPOSED TECHNICAL SPECIFICATION CHANGES OF THE REFUELING WATER STORAGE TANK ALLOWABLE TEMPERATURES

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) requests amendment to Operating License NPF-49 for Millstone Power Station Unit 3 (MPS3). The proposed changes will revise Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System," to provide additional operational margin for control of the Refueling Water Storage Tank (RWST) temperature.

The proposed changes have been reviewed and approved by the Facility Safety Review Committee.

Information provided in the attachments to this letter is summarized below:

- Attachment 1 provides Description, Technical Evaluation, Regulatory Evaluation and Environmental Consideration for the proposed Technical Specifications changes. As discussed in this attachment, the proposed amendment does not involve a significant hazards consideration pursuant to the provisions of 10 CFR 50.92.

- Attachment 2 provides marked-up pages of the proposed changes to the technical specifications.

- Attachment 3 provides marked-up pages of the proposed changes to the Technical Specifications Bases for information only. These changes will be implemented in accordance with the Technical Specification Bases Control Program.

DNC requests approval of the proposed amendment by November 6, 2014. Once approved, the amendment will be implemented within 120 days.

In accordance with 10 CFR 50.91(b), a copy of this license amendment request is being provided to the State of Connecticut.

A001
NRR

If you have any questions regarding this submittal, please contact Wanda Craft at (804) 273-4687.

Sincerely,

Mark D. Sartain
Vice President – Nuclear Engineering and Development

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 Mark D. Sartain, who is Vice President – Nuclear Engineering and Development 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 6TH day of November, 2013.

My Commission Expires: May 31, 2014.

Vicki L. Hull
Notary Public

Commitments made in this letter: None

Attachments:

1. Evaluation of the Proposed Changes
2. Marked-up Technical Specifications Pages
3. Marked-up Technical Specifications Bases for Information Only

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Attachment 1

Evaluation of the Proposed Changes

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

1.0 SUMMARY DESCRIPTION

The proposed changes would revise Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System," to provide additional operational margin for control of the Refueling Water Storage Tank (RWST) temperature.

2.0 DETAILED DESCRIPTION

A. DETAILED DESCRIPTION OF THE PROPOSED CHANGES

TS 3/4.5.4, "Refueling Water Storage Tank"

- TS requirement 3.5.4.c for the minimum RWST solution temperature would be increased from 40°F to 42°F
- TS requirement 3.5.4.d for the maximum RWST solution temperature would be increased from 50°F to 73°F

The TS requirements would be changed to read as follows:

"c. A minimum solution temperature of 42°F.

d. A maximum solution temperature of 73°F."

The ACTION statement would also be changed to include the wording "the next." The ACTION would read as follows:

"With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System"

In TS requirement 4.6.2.1.a.2, the minimum and maximum RWST water temperature limits would be increased from the current values of 40°F and 50°F, respectively to the new values of 42°F to 73°F, respectively.

The TS requirement would be changed to read as follows:

"2). Verifying the temperature of the borated water in the refueling water storage tank is between 42°F and 73°F."

The proposed change is evaluated in Technical Evaluation, Section 3.0 of this attachment.

TS Bases 3/4.5.4 Refueling Water Storage Tank:

TS Bases 3/4.5.4 has been modified to include a discussion on the minimum and maximum RWST solution temperature limits specified within the TSs. A paragraph was added to identify an operational margin of 2°F (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) between the TS limits and the actual values used in accident analysis/piping stress analysis. The actual minimum and maximum RWST solution temperature limits used in the design analysis is 40°F and 75°F, respectively. The proposed changes to the TS Bases are provided for information only and will be implemented in accordance with the TS Bases Control Program.

B. A DISCUSSION OF CONDITIONS THAT THE PROPOSED AMENDMENT INTENDS TO RESOLVE

The current TS requirements limit RWST temperature between a minimum of 40°F and a maximum of 50°F. The RWST is the source of water used for the Emergency Core Cooling System (ECCS) and the Quench Spray System (QSS). Each train of the ECCS system consists of a charging pump, a High Pressure Safety Injection (HPSI) pump and a Residual Heat Removal (RHR) pump. These systems are credited for mitigation of design basis accidents as detailed in Table 1 of enclosure 1.

The RWST is also used during a refueling outage as the source of water for filling the refueling cavity to allow refueling of the core. Following completion of refueling, the water from the refueling cavity is returned to the RWST. While the RWST water is being used in the refueling cavity, the temperature of the water can increase to as high as 100°F. With the RWST containing a minimum of 1,166,000 gallons, it can take a significant time for the water to cool from 100°F to the current TS limit of 50°F. This can extend the duration of the refueling outage.

In addition, in the summer, cooling is necessary to maintain the RWST temperature below 50°F. A failure of the RWST cooling system during the summer can result in an unplanned shutdown due to exceeding the RWST maximum temperature limit.

Thus, a TS change is being proposed to raise the minimum and maximum temperature limits to 42°F and 73°F respectively. These values include a 2°F operational margin (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) from the values used within the accident analysis/piping stress analysis. The proposed change provides the opportunity to minimize the risk of an unplanned shutdown in the event of a failure of the RWST cooling system and reduce the refueling outage length. Implementation of this proposed change is scheduled for the fall 2014 refueling outage (3R16).

3.0 TECHNICAL EVALUATION

3.1 System Description

A. The Refueling Water Storage Tank

The RWST is a 59' X 59' stainless steel right circular cylinder that holds approximately 1,200,000 gallons of borated water.

The RWST supplies borated water for refueling operations. In addition, the RWST provides borated water to the charging pumps, the safety injection pumps, the RHR pumps, and the containment QSS pumps when a safety injection is warranted. The RWST water is aligned directly to the ECCS pumps except the charging pumps. The suction of the charging pumps is normally aligned to the volume control tank (VCT) of the chemical and volume control system (CVCS) but will automatically switch alignment from the VCT to the RWST on a safety injection signal (SIS).

The RWST water is used for core injection and for quench spray, to reduce containment pressure and temperature and for refueling cavity fill water. The Millstone Power Station Unit 3 (MPS3) TSs require that a minimum volume of borated water be available. This minimum volume (1,166,000 gallons) provides borated water to insure:

1. Adequate injection water to meet ECCS design objectives.
2. The reactor will remain subcritical with all control rods, except the most reactive rod cluster control assembly, inserted into the core.
3. A sufficient volume of water in the containment engineered safety feature (ESF) sump and recirculation pump suction to permit the initiation of recirculation.

A capacitance level probe provides three alarms to the operator:

1. High - High overflow at 1,195,000 gal.
2. High - stop makeup at 1,189,000 gal.
3. Low - start makeup at 1,171,000 gal.

Makeup operations to the RWST are manually performed by an operator.

Four differential pressure transmitters are used for level indication at the main control board and auxiliary shutdown panel.

Separate level switches provide two safety functions:

- Low - Low – RHR pump trip at 520,000 gallons in conjunction with a SI signal.

- Empty - QSS pump trip at <59,718 gallons
  At the setpoint of 520,000 gallons, the remaining inventory in the RWST is dedicated to the QSS pumps while the other ECCS pumps are shifted to the recirculation mode using the water in the containment sump.

Current TSs provide temperature limits for the RWST of 40°F minimum and 50°F maximum. In order to meet these temperature requirements, the RWST is equipped with recirculation pumps and coolers.

B. RWST Temperature Control System

A relatively low RWST water temperature is desired to allow each spray water droplet to absorb more internal energy from the containment's atmosphere. The lower temperature causes an increased quenching effect on containment atmosphere following a LOCA. The RWST temperature control system maintains temperature within a band (46-48°F) in a normally automatic operation. Current TS RWST temperature limits are 40°F - 50°F. Two RWST recirculation pumps are located in the ESF building on the ground floor adjacent to the RWST.

The RWST recirculation pumps will receive an automatic trip signal when the auctioneered highest temperature of the RWST or pump suction drops to 46°F. Water from the RWST is provided to the suction of the two refueling water recirculation QSS pumps through two air operated valves (AOVs). The two AOVs are located on the west side of the RWST. The RWST water is pumped through one of two RWST coolers cooled by the Chilled Water System and is returned to the RWST by a connection to the RWST recirculation flow line. Recirculation through the coolers maintains the desired temperature band. Because the RWST is located outside the ESF building and exposed to the environment, exposed connections to the RWST are heat traced to prevent freezing.

The RWST cooling is initiated automatically by starting Recirculation Pump 3QSS*P1A/B when RWST temperature reaches approximately 48°F. Recirculation pump operation continues until approximately 46°F whereby the pump is automatically secured. The RWST is insulated thereby limiting the amount of temperature change to less than 0.5°F per day. During summer periods, it is expected that the RWST recirculation pump will be cycling on and off to maintain temperature. The only time the RWST tank temperature can approach the new RWST TS upper limit of 73°F is if and when the recirculation pumps are not in service for an extended time or the time immediately after coming out of an outage. In the event the recirculation pumps are out of service for an extended time, RWST temperature becomes elevated, and temperature stratification does occur, the warmer (less dense) water within the RWST would tend to rise. Temperature element 3QSS-TE23 is located relatively high in the tank and thus is most likely the first sensor to read the onset of warmer (less dense) RWST water. Operations will be reading and responding to this higher RWST water temperature, initiating appropriate actions to ensure the RWST is maintained below the 73°F TS limit.

During winter operation, plant operators periodically have to take manual action to add heat to the RWST. This involves running both recirculation pumps and opening RWST Cooler Return valve 3CDS-TV26 if RWST temperature is less than refueling water cooler chilled water supply temperature. A review of historical plant data for the two RWST temperature sensors revealed that RWST temperature does not fall below 45°F for both sensors (3QSS-TE23 and 3QSS-TE37) during normal plant operations. The RWST low temperature alarm setpoint which is sensed by 3QSS-TE37 (located physically low on the RWST) is being increased from 41°F to 43°F. Given the lower elevation of the sensor and assuming temperature stratification is occurring, this low temperature alarm is more likely to respond earlier than the other sensors due to colder more dense water sinking to the bottom of the RWST. With the existing procedures in place and the increase in the low temperature alarm setpoint implemented, DNC does not consider temperature stratification will be an issue regarding the maintenance of overall RWST bulk temperature to ensure the safety analysis limit of 40°F is met.

3.2 Current Licensing Bases

The MPS3 design was reviewed in accordance with NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Report for Nuclear Power Plants," SRP 6.2.1.1.A, Rev. 2, July 1981.

As noted in the Final Safety Analysis Report (FSAR) Section 3.1, the design bases of MPS3 are measured against the NRC General Design Criteria for Nuclear Power Plants, 10 CFR 50, Appendix A, as amended through October 27, 1978. The adequacy of the MPS3 design relative to the design criteria is discussed in the FSAR Sections 3.1.1 and 3.1.2.

The FSAR contains descriptions of the RWST as part of the containment heat removal system. Table 6.2-61 of the FSAR contains RWST data. As a part of containment heat removal system, the RWST is designed in accordance with the following criteria:

1. General Design Criterion 38 with respect to containment heat removal.
2. General Design Criterion 39 with respect to inspection of the containment heat removal system.
3. General Design Criterion 40 with respect to testing of the containment heat removal system.
4. Regulatory Guide 1.1 as related to the net positive suction head (NPSH) available to the ECCS and containment heat removal system pumps (as clarified by SRP 6.2.2).
5. Regulatory Guide 1.26 quality group standards. The systems are designed in accordance with ASME III, Class 2 and are designated Safety Class 2.
6. Regulatory Guide 1.29 for seismic classification. The systems are designed to Seismic Category 1.

TS requirements associated with the RWST are provided in TS 3/4.5.4, "Refueling Water Storage Tank" and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System" as indicated in Section 2.0(A) above.

The current analysis of record was reviewed and approved by the NRC in a license amendment request (LAR) dated July 13, 2007 (References 1 and 2) for a stretch power uprate to increase rated power from 3411 megawatts thermal to 3650 megawatts thermal. That change required revisions to FSAR Chapter 15, Accident Analyses, and FSAR Chapter 6 for the containment analyses. The results of these analyses were provided in the Licensing Report Sections 2.6, Containment Review Considerations, and 2.8, Reactor Systems, of the stretch power uprate LAR (Reference 1). In anticipation of a request to increase the RWST maximum allowable temperature, a bounding RWST maximum temperature of 100°F was used for the accident analyses submitted and approved in the power uprate LAR. Details are provided in Licensing Report Section 2.8 and the maximum containment pressure and temperature analyses provided in Section 2.6 of that submittal. While not using 100°F, subsequent analyses have been performed which continue to bound the RWST maximum temperature of 73°F proposed herein.

3.3 Analysis of the Proposed Changes

1. TS 3/4.5.4, "Refueling Water Storage Tank":

    - TS requirement 3.5.4.c for the minimum RWST solution temperature would be increased from 40°F to 42°F and TS requirement 3.5.4.d for the maximum RWST solution temperature would be increased from 50°F to 73°F. The proposed changes in RWST solution temperature can be justified as follows:

To address the impact of raising the maximum RWST temperature on the performance of the ECCS and QSS systems, engineering design and safety analysis calculations were reviewed to identify the RWST temperature assumed in safety analyses.

As described in MPS3 FSAR, Section 6.3.2.2.2, the RWST is used to provide a sufficient supply of borated water to the safety injection (SI), charging (CHS), and RHR pumps during the injection mode of the ECCS operation. The RWST also supplies water to the QSS and provides borated water to fill the refueling cavity for refueling operations.

RWST temperature is a key safety analysis parameter for FSAR accidents that initiate SI and/or the QSS. Enclosure 1, Table 1, identifies the FSAR accidents for which RWST temperature is an assumed analysis parameter, the minimum and maximum RWST temperature assumptions, and the SI and/or QSS function that the RWST fluid supports. Enclosure 1, Table 2, provides the same information for additional safety analysis and design basis calculations that provide input to plant design and programs. From Tables 1 and 2, the engineering design and programs reviews conclude that:

- the **minimum** RWST temperature operating limit is set by several safety analyses that assume 40°F; and
- the **maximum** RWST temperature operating limit is set by a single safety analysis that assumes 75°F (RSS/QSS piping thermal analysis described in FSAR Sections 6.2.2 and 6.3.1).

Results

Using information provided in Enclosure 1, the following table (Table 3 in Enclosure 1, Proposed Technical Specification Limits for RWST Temperature Based on Safety Analysis Limits) summarizes the safety analysis and design limits and the supported TS limits with a 2°F operational margin (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) which is used to develop plant surveillance limits.

	Minimum RWST Temperature	**Maximum RWST Temperature**
Safety analysis and design basis	40°F	75°F
Supported TS limits which include a 2°F margin from safety analysis and design basis limits	42°F	73°F

The evaluations confirm that the Environmental Equipment Qualification (EEQ) program is based on containment response analyses based on at least a 77°F RWST temperature and at least an 80°F Ultimate Heat Sink (UHS). The FSAR Radiological Consequences Analyses have been confirmed to support the proposed change. The NPSH margin will be maintained for the ECCS and QSS pumps that take suction from the RWST following a Safety Injection Actuation Signal or a Containment Depressurization Actuation Signal. The pipe and component stress limits continue to be met for a 75°F RWST temperature.

Thus, it is concluded that the ECCS and QSS will continue to meet design basis requirements.

- The proposed change to add the wording "the next" in the ACTION statement is administrative and editorial in nature. This change will more closely align the current TS ACTION with other MPS3 TS ACTIONs. For example:

  TS 3.6.1.1 ACTION states: "Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

  TS 3.6.1.2 ACTION states: "With the containment leakage rates exceeding the limits, restore the leakage rates to within limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours."

2. TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System"

- TS requirement 4.6.2.1.a.2 for the minimum and maximum RWST solution temperature would be increased from the current values of 40°F and 50°F, respectively to the new values of 42°F to 73°F, respectively. The proposed changes in the minimum and maximum RWST solution temperatures can be justified as discussed in item 1 above.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

Applicable Regulatory Requirements:

In Section 50.36, "Technical specifications," of Title 10 of the *Code of Federal Regulations* (10 CFR), the Commission established its regulatory requirements related to the content of technical specifications. Pursuant to 10 CFR 50.36(c), technical specifications are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls.

10 CFR 50.59(c)(1)(i) requires a licensee to submit a license amendment application pursuant to 10 CFR 50.90 if a change to the TS is required. Furthermore, the requirements of 10 CFR 50.59 necessitate that NRC approve the TS changes before the TS changes are implemented.

Specifically, 10 CFR 50.36(c)(2)(ii) requires that a TS limiting condition for operation (LCO) be established for each item meeting one or more of the following criteria:
- Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
- Criterion 2: A process variable, design feature, or operating restriction that is an initial condition for a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of the fission product barrier.
- Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of the fission product barrier.
- Criterion 4: A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

Acceptance Criteria:

The acceptance criteria for the Refueling Water Storage Tank design are based on:

1. GDC-38, insofar as it requires that the containment heat removal system(s) function to rapidly reduce the containment pressure and temperature following any LOCA and maintain them at acceptably low levels.

2. GDC-39, insofar as it requires that the containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as the torus, sumps, spray nozzles, and piping to assure the integrity and capability of the system.

3. GDC-40, insofar as it requires that the containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole, and, under conditions as close to the design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

4. Regulatory Guide 1.1 as related to the net positive suction head (NPSH) available to the ECCS and containment heat removal system pumps (as clarified by SRP 6.2.2).

5. Regulatory Guide 1.26 quality group standards. The systems are designed in accordance with ASME III, Class 2 and are designated Safety Class 2.

6. Regulatory Guide 1.29 for seismic classification. The systems are designed to Seismic Category 1.

4.2 No Significant Hazards Consideration

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) requests amendment to Operating License NPF-49 for Millstone Power Station Unit 3 (MPS3). The proposed amendment would revise Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System" to increase the maximum allowable refueling storage tank (RWST) temperature limit.

According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

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

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

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

In support of this determination, an evaluation of each of the three criteria set forth in 10 CFR 50.92 is provided below regarding the proposed license amendment.

1. The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Response: No

The proposed change affects the allowable limit for RWST temperature. Since the RWST is a passive component used as a water supply for ECCS and QSS that operate only following an accident, the proposed change cannot cause an accident or affect the probability of any accident.

Evaluations have been performed to address the impact of raising the maximum RWST temperature on the performance of the ECCS and QSS. The evaluations demonstrate that NPSH margin would be maintained for the ECCS and QSS pumps that take suction from the RWST following a Safety Injection Actuation Signal or a Containment Depressurization Actuation Signal. Pipe and component stress limits continue to be met at the higher RWST temperature. Thus, it is concluded that the ECCS and QSS will continue to meet the design basis requirements.

The FSAR Chapter 15 accident analyses and Chapter 6 containment analyses were performed assuming an RWST temperature that bounds the proposed technical specification change. Thus, the proposed change has no significant impact on the consequences of an accident as documented in the current analysis of record.

Changing the ACTION statement to include the wording “the next” is administrative and editorial in nature. This proposed change does not alter the effective technical content of the ACTION statement.

Thus, it is concluded that the proposed changes do not involve a significant increase in the probability or consequences of any analyzed accident.

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

Response: No

The proposed change only increases the allowable range for the RWST temperature. As such, it cannot initiate a transient or accident. Evaluations have been performed that demonstrate that the ECCS and QSS systems will have adequate NPSH and the design bases will be met. Thus, the proposed change cannot create the possibility of a new or different kind of accident.

3. The proposed changes do not involve a significant reduction in a margin of safety?

Response: No

Evaluations have been performed that demonstrate that the ECCS and QSS pumps will maintain NPSH margin when taking suction from the RWST at the higher temperature limit. The mechanical component stress requirements will continue to be met at the higher temperature. Thus, the ECCS and QSS will continue to operate as required to mitigate a design basis accident.

The accident analyses were performed with assumed RWST temperatures that bound this proposed change. The containment analysis and accident analyses demonstrate that the design basis requirements are met.

Thus, the proposed change does not involve a significant reduction in a margin of safety.

Conclusion

Based upon this discussion, it is concluded that the proposed TS change to increase the minimum and maximum allowable RWST temperature does not involve a significant hazards consideration.

5.0 ENVIRONMENTAL CONSIDERATION

DNC has evaluated this proposed license amendment consistent with the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments." DNC has determined that this proposed change meets the criteria for categorical exclusion set forth in paragraph (c)(9) of 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," and has determined that no irreversible consequences exist in accordance with paragraph (b) of 10 CFR 50.92, "Issuance of amendment." This determination is based on the fact that this proposed change is being processed as an amendment to the license issued pursuant to 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation," or which changes an inspection or surveillance requirement and the amendment meets the following specific criteria :

1. The amendment involves no significant hazards consideration.

   As demonstrated in Section 4.2 above, "No Significant Hazards Consideration," the proposed change does not involve any significant hazards consideration.

2. There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

   The proposed changes would revise TS 3/4.5.4, "Refueling Water Storage Tank," and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System." The proposed changes do not result in an increase in power level, and do not increase the production nor alter the flow path or method of disposal of radioactive waste or byproducts; thus, there will be no significant change in the amounts of radiological effluents released offsite.

   Based on the above evaluation, the proposed change will not result in a significant change in the types or significant increase in the amounts of any effluent released offsite.

3. There is no significant increase in individual or cumulative occupational radiation exposure.

   The proposed change would not result in any changes to the configuration of the facility. The proposed changes would revise TS 3/4.5.4, "Refueling Water Storage Tank," and TS 3/4.6.2.1, "Depressurization and Cooling Systems, Containment Quench Spray System" which will not cause a change in the level of controls or methodology used for the processing of radioactive effluents or handling of solid radioactive waste, nor will the proposed amendment result in any change in the normal radiation levels in the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.

6.0 REFERENCES

1. G. T. Bischof to NRC, "Dominion Nuclear Connecticut, Inc., Millstone Power Station Unit 3, License Amendment Request, Stretch Power Uprate," dated July 13, 2007. (ML072000386)

2. J. C. Lamp to D. A. Christian, "Millstone Station, Unit No. 3 – Issuance of Amendment RE: Stretch Power Uprate," Dated August 12, 2008. (ML081610585)

Enclosure 1 to Attachment 1

Additional Information

**DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3**

Enclosure 1 to Attachment 1

The purpose of this enclosure is to identify the Refueling Water Storage Tank (RWST) temperature values assumed in the accident analysis calculations that support Millstone Power Station Unit 3 (MPS3) Final Safety Analysis Report (FSAR) Chapters 6 and 15. In addition, the RWST temperature assumptions are provided for evaluations performed or facilitated by the safety analysis and used as input for plant design and programs.

As described in MPS3 FSAR, Section 6.3.2.2.2, the RWST is used to provide a sufficient supply of borated water to the safety injection (SI), charging (CHS) and residual heat removal (RHR) pumps during the injection mode of the emergency core cooling system (ECCS) operation. The RWST also supplies water to the containment quench spray system (QSS) and provides borated water to fill the refueling cavity for refueling operations.

RWST temperature is a key safety analysis parameter for FSAR accidents that initiate SI and/or QSS. Table 1 identifies the FSAR accidents for which RWST temperature is an assumed analysis parameter, the minimum and maximum RWST temperature assumptions, and the SI and/or QSS function that the RWST fluid supports. Table 2 provides the same information for additional safety analysis and design basis calculations that provide input to plant design and programs. From Tables 1 and 2, the engineering design and programs reviews conclude that:

- the **minimum** RWST temperature operating limit is set by several safety analyses that assume 40°F; and

- the **maximum** RWST temperature operating limit is set by a single safety analysis that assumes 75°F (containment recirculation spray system (RSS) and QSS piping thermal analysis described in FSAR Sections 6.2.2 and 6.3.1).

Table 3 summarizes the safety analysis limits and the supported TS limits which include 2°F operational margin (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) from value limits used in accident analysis/piping stress analysis.

The evaluations confirm that the Environmental Equipment Qualification (EEQ) program is based on containment response analyses for at least 77°F RWST and at least 80°F Ultimate Heat Sink (UHS). The FSAR Radiological Consequences Analyses have been confirmed to support the proposed change.

Mechanical design calculations were reviewed and confirmed that the net positive suction head (NPSH) margin will be maintained for the ECCS and QSS pumps that take suction from the RWST following a Safety Injection Actuation Signal or a Containment Depressurization Actuation Signal. The pipe and component stress limits are met for a maximum RWST temperature of 75°F.

Thus, it is concluded that the ECCS and QSS system will continue to meet design basis requirements.

Table 1: RWST Temperature Assumed in the MPS3 Safety Analyses

FSAR Section	Accident	Criterion	RWST Temperature
6.0	Design Basis Accident (DBA)	Containment pressure reduced to 19 psig in 24 hours; The reduced containment pressure maintained following the DBA.	SI = 100°F / 77°F in LBLOCA Mass and Energy (M&E) Analysis[1] QSS = 77°F in LBLOCA Containment Pressure/Temperature Analysis
6.1.1.2 6.2.2	Large Break Loss of Coolant Accident (LBLOCA)	Sump pH due to RWST water boron concentration.	SI & QSS = 40°F (minimum value)
6.2.1.1.2	DBA	The internal maximum design pressure is 45 psig.	SI = 100°F / 77°F in LBLOCA M&E Analysis[1]
			QSS = 77°F in LBLOCA Containment Pressure/Temperature Analysis
6.2.1.1.2 6.2.1.1.3	Inadvertent QSS	The internal minimum design pressure is 8.00 psia.	QSS = 40°F (minimum value)
6.2.1.1.3 6.2.1.3	LBLOCA Small Break Loss of Coolant Accident (SBLOCA)	Containment Integrity Analysis: • Containment Peak Pressure • Containment Peak Temperature • Containment Depressurization to yield 50% of the design leakage (at Pa) after one hour.	SI = 100°F / 77°F in LBLOCA M&E Analysis[1] QSS = 77°F in LBLOCA Containment Pressure and Temperature Analysis SI & QSS = 100°F for SBLOCA
6.2.1.1.3 6.2.1.4	Steam Line Break (SLB)	Containment Integrity Analysis: • Containment Peak Pressure • Containment Peak Temperature • Containment Liner Temperature	SI = 100°F in M&E Release QSS = 100°F for containment response
6.2.1.5	LBLOCA	Peak Cladding Temperature and Cladding Oxidation.	QSS = 40°F in minimum containment pressure response (see also 15.6.5.2)
6.2.2	LBLOCA SBLOCA	QSS spray nozzle droplet size	QSS = 100°F
6.3.2.5	LBLOCA	Boric Acid Precipitation.	See 15.6.5.2
12.3.1.3.2	Post-Accident Access to Vital Areas	Shine from RWST piping	Boric Acid Solution < 40°F
15.1.4 15.1.5	SLB	Return to Power; Departure from Nucleate Boiling (DNB).	N/A for Hot Full Power Case SI = 40°F in Hot Zero Power Case
15.1.5		M&E Releases for Radiological Consequences.	SI = 100°F
15.2.8	Feedwater Line Break	Overpressurization; Margin to Hot Leg Saturation.	SI = 100°F
15.5.1	Inadvertent SI	Integrity of the reactor coolant system pressure boundary.	SI = 40°F (minimum)
15.6.3	Steam Generator Tube Rupture	Steam Generator Overfill	SI = 40°F (minimum)
		Radiological Consequences.	SI = 100°F
15.6.5.2	LBLOCA	Peak Cladding Temperature and Cladding Oxidation.	QSS = 40°F for minimum containment pressure response (see also 6.2.1.5)
			SI = 40-100°F for core cooling response
		Post-LOCA Subcriticality.	SI = 100°F
		Post- LOCA long term cooling.	SI = 40-100°F
15.6.5.3	SBLOCA	Peak Cladding Temperature and Cladding Oxidation.	SI = 100°F

FSAR Section	Accident	Criterion	RWST Temperature
15.6.5.4	LBLOCA	Radiological Consequences.	QSS = 77°F for containment depressurization to yield 50% of the design leakage (at P_a) after one hour. QSS < 40°F for iodine removal coefficient

[1] The LBLOCA Mass & Energy Release analyses are performed by Westinghouse for the blowdown, refill and reflood phases using 100°F for safety injection. The NRC approved Dominion GOTHIC containment analysis methodology in DOM-NAF-3-P-A is used for the post-reflood M&E analysis, and a value of at least 77°F is used for safety injection.

Table 2
RWST Temperatures Assumed in Safety Analyses and Evaluations Supporting MPS3 Plant Design and Programs

FSAR Section	Accident	Criterion	RWST Temperature
Appendix 3B	SLB in Main Steam Valve Building (MSVB)	MSVB pressure and temperature bounded by EEQ envelope	SI = 100°F
4.3.2.1	BORDER Analysis	Boration requirements with RWST as boration source	100°F for calculation of required RWST volumes
6.2.1.1.3	LBLOCA SBLOCA SLB	Containment pressures and vapor temperatures bounded by the EEQ envelope.	SI = 100°F / 77°F LBLOCA M&E[1] QSS = 77°F in LBLOCA Containment Pressure/Temperature Analysis SI & QSS = 100°F for SBLOCA and SLB
	LBLOCA SBLOCA	Containment sump temperature for system piping and components of ECCS and containment heat removal systems	SI = 100°F / 80°F LBLOCA M&E[1] QSS = 80°F in LBLOCA Containment Sump Temperature Analysis SI = 100°F for SBLOCA
6.2.2 6.3.1	LBLOCA SBLOCA SLB	QSS/RSS Piping Thermal Analysis Following a LOCA and SLB	SI = 100°F / 75°F LBLOCA M&E[1] QSS = 75°F (maximum) for LBLOCA SI & QSS = 100°F for SBLOCA and SLB
8.1.8	Station Blackout	Coping Analysis	120 °F for RCS makeup
N/A	Fire Protection	Minimum RWST inventory for Safe Shutdown (Technical Requirements Manual TR 7.4.1)	Boric Acid Solution = 100°F

[1] The LBLOCA Mass & Energy Release analyses are performed by Westinghouse for the blowdown, refill and reflood phases using 100°F for safety injection. The Dominion GOTHIC containment analysis methodology in DOM-NAF-3-P-A is used for the post-reflood M&E analysis, and a value of 77°F is used for maximum containment pressure and temperature a value of 80°F is used for maximum sump temperature, a maximum of 75°F is used for QSS/RSS piping thermal analysis calculations.

Table 3
Proposed Technical Specification Limits for RWST Temperature Based on Safety Analysis Limits

	Minimum RWST Temperature	Maximum RWST Temperature
Safety Analysis and Design Basis	40°F	75°F
Supported TS Limits which include 2°F margin from safety analysis and design basis limits.	42°F	73°F

Attachment 2

Marked-Up Technical Specifications Pages

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

EMERGENCY CORE COOLING SYSTEMS

3/4.5.4 REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.5.4 The refueling water storage tank (RWST) shall be OPERABLE with:

a. A contained borated water volume between 1,166,000 and 1,207,000 gallons,

b. A boron concentration between 2700 and 2900 ppm of boron,

c. A minimum solution temperature of ~~40~~ 42°F, and

d. A maximum solution temperature of ~~50~~ 73°F.

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

ACTION

With the RWST inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.4 The RWST shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1) Verifying the contained borated water volume in the tank, and

2) Verifying the boron concentration of the water.

b. At least once per 24 hours by verifying the RWST temperature.

~~May 31, 2005~~

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT QUENCH SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent Containment Quench Spray subsystems shall be OPERABLE.

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

ACTION:

With one Containment Quench Spray subsystem inoperable, restore the inoperable system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each Containment Quench Spray subsystem shall be demonstrated OPERABLE:

a. At least once per 31 days, by:

1) Verifying that each valve (manual, power operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position; and

2) Verifying the temperature of the borated water in the refueling water storage tank is between ~~40~~ 42°F and ~~50~~ 73°F.

b. By verifying that each pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5;

c. At least once per 24 months, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on a CDA test signal, and

2) Verifying that each spray pump starts automatically on a CDA test signal.

d. By verifying each spray nozzle is unobstructed following maintenance that could cause nozzle blockage.

Attachment 3

Marked-Up Technical Specifications Bases Pages for Information Only

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

EMERGENCY CORE COOLING SYSTEMS

BASES

ECCS Subsystems: Auxiliary Building RPCCW Ventilation Area Temperature Maintenance:

In MODES 1, 2, 3 and 4, two trains of 4 heaters each, powered from class 1E power supplies, are required to support charging pump OPERABILITY during cold weather conditions. These heaters are required whenever outside temperature is less than or equal to 17°F.

When outside air temperature is below 17°F, if both trains of heaters in the RPCCW Ventilation Area are available to maintain at least 65°F in the Charging Pump and Reactor Component Cooling Water Pump areas of the Auxiliary Building, both charging pumps are OPERABLE for MODES 1, 2 and 3.

When outside air temperature is below 17°F, if one train of heaters in the RPCCW Ventilation Area is available to maintain at least 32°F in the Charging Pump and Reactor Component Cooling Water Pump areas of the Auxiliary Building, the operating charging pump is OPERABLE, for MODE 4.

With less than 4 OPERABLE heaters in either train, the corresponding train of charging is inoperable. This condition will require entry into the applicable ACTION statement for LCOs 3.5.2 and 3.5.3.

LCO 3.5.2 ACTION statement "b", and LCO 3.5.3 ACTION statement "c" address special reporting requirements in response to ECCS actuation with water injection to the RCS. The special report completion is not a requirement for logging out of the ACTION statements that require the reports.

3/4.5.4 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following a large break (LB) LOCA, assuming mixing of the RWST, RCS, ECCS water, and other sources of water that may eventually reside in the sump, with all control rods assumed to be out. These assumptions are consistent with the LOCA analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.0 and 7.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

Insert A

~~The maximum/minimum solution temperatures for the RWST in MODES 1, 2, 3 and 4 are based on analysis assumptions.~~

Insert A

The minimum and maximum solution temperatures for the RWST in MODES 1, 2, 3 and 4 are based on the following:

The 42°F minimum and 73°F maximum solution temperature values identified within the Technical Specifications include an operational margin of 2°F (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) from values used in accident analysis/piping stress analysis. Accident analysis/piping stress analysis used 40°F and 75°F for the minimum and maximum RWST solution temperature.