Dominion Nuclear Connecticut, Inc.
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July 16, 2015

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.	15-288
NLOS/WDC	R0
Docket Nos.	50-336/423
License Nos.	DPR-65
	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNITS 2 AND 3
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523, REVISION 2, GENERIC LETTER 2008-01, MANAGING GAS ACCUMULATION (TAC NO. MF5715 & MF5716)

By letter dated January 15, 2015, and supplemented by letter dated April 15, 2015, Dominion Nuclear Connecticut, Inc. (DNC) submitted a license amendment request (LAR) for Millstone Power Station Unit 2 (MPS2) and Millstone Power Station Unit 3 (MPS3). The proposed amendment would modify technical specification requirements to address Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," as described in Technical Specifications Task Force (TSTF)-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." TSTF-523, Revision 2 is approved for use by the Nuclear Regulatory Commission (NRC) and was announced in the Federal Register on January 15, 2014 (79 FR 2700). In an email dated June 1, 2015, the NRC transmitted a request for additional information (RAI) related to the LAR. DNC agreed to respond to the RAI by July 17, 2015.

The attachment to this letter provides DNC's response to the NRC's RAI Questions 2, 3, 4, 5, and 6. The responses to RAI Questions 1, 7, 8, and 9 will be submitted by July 31, 2015.

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

Sincerely,

Mark D. Sartain
Vice President – Nuclear Engineering

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County aforesaid, today by Mr. Mark D. Sartain, who is Vice President – Nuclear Engineering, of Dominion Nuclear Connecticut. 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 16th day of July, 2015.

My Commission Expires: January 31, 2016

Wanda D. Craft
Notary Public

WANDA D. CRAFT
Notary Public
Commonwealth of Virginia
Reg. # 7520495
My Commission Expires January 31, 2016

A134
NRR

Attachment:

Response to Request for Additional Information Regarding License Amendment Request to Adopt TSTF-523 – Questions 2, 3, 4, 5, and 6

Commitments contained in this letter: None

cc: U.S. Nuclear Regulatory Commission
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ATTACHMENT

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO ADOPT TSTF- 523 - QUESTIONS 2, 3, 4, 5, AND 6

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNITS 2 AND 3

By letter dated January 15, 2015, and supplemented by letter dated April 15, 2015, Dominion Nuclear Connecticut, Inc. (DNC) submitted a license amendment request (LAR) for Millstone Power Station Unit 2 (MPS2) and Millstone Power Station Unit 3 (MPS3). The proposed amendment would modify Technical Specification (TS) requirements to address Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," as described in Technical Specifications Task Force (TSTF)-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." TSTF-523, Revision 2 is approved for use by the Nuclear Regulatory Commission (NRC) and was announced in the Federal Register on January 15, 2014 (79 FR 2700). In an email dated June 1, 2015, the NRC transmitted a request for additional information (RAI) related to the LAR. This attachment provides DNC's response to the NRC's RAI Questions 2, 3, 4, 5, and 6.

RAI 2

The Millstone Power Station Unit 3 (MPS3) Containment Quench Spray System (QSS) is stated to be excluded from surveillance requirements (SRs), in part, because there are no identified gas intrusion mechanisms. Please explain how potential operator error during initial filling is not a gas intrusion mechanism for this system.

DNC Response

The QSS suction and discharge piping is filled by gravity from the head of water supplied by the Refueling Water Storage Tank (RWST). Suction piping is properly sloped such that it is either self-venting back to the RWST or self-venting to the QSS pump where it can be vented locally. Once filled, each train is dynamically vented by running its QSS pump on recirculation at rated flow back to the RWST. Quarterly operability surveillances are also performed for each pump train by operating the pump at rated flow (approximately 4000 gpm) with flow from the RWST outlet through the pumps to the discharge recirculation line back to the RWST. The flow rate through this piping is sufficient to ensure that the suction lines and the discharge lines up to the recirculation line are full of water and adequately swept of any accumulated gases (14" schedule 40 suction line, Froude number = 1.60, 12" schedule 40 discharge line, Froude No. = 2.00). Thus, any potential air in the system piping, regardless of the cause, would be dynamically removed following any system maintenance and on a quarterly basis thereafter.

RAI 3

The MPS3 operating centrifugal charging pump (CCP), associated pump piping, the recirculation spray system (RSS) pump, the RSS heat exchanger, and associated RSS piping are excluded from SRs. This appears to be inconsistent with TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." Please provide an

explanation for this apparent inconsistency. Include a discussion of dormant piping that may accumulate gas associated with operating CCP flow such as a tee with no flow in the vertical connection, but with flow entering and leaving through the horizontal connections. Also, address the potential for gas generation associated with flow through bypass orifices.

DNC Response

An explanation for exclusion of the RSS from SRs was provided in the April 15, 2015 supplement to the LAR.

MPS3's current TS 4.5.2.b.1 does not require verification that the operating charging pump is full of water. No revision to the exception of surveillance related to the operating charging pump was proposed in the LAR. The charging system at MPS3 has one pump per train plus a swing pump. With one charging pump normally in operation, the suction lines of the other two charging pumps are stagnant. Due to the close proximity of the inter-connecting pump suction lines, the vibration from a running charging pump was discovered to cause too much chatter to verify the full-of-water status via the Ultrasonic-Test (UT) method. Therefore, the associated suction piping for the two non-operating charging pumps is manually vented every 31 days. Venting of the operating charging pump's associated suction piping is not required by the TS since a system in operation is considered self-venting and cannot develop voids and pockets of entrained gases.

The concern that gas may accumulate in dormant CCP suction piping during normal plant operation has been addressed. The configuration of the CCP suction header does in fact contain stagnant piping in both horizontal and vertical orientations. Each train of charging can be aligned to a Boric Acid Storage Tank (BAST) via a 3-inch vertical take-off from its associated suction header. These stagnant lines are known to be gas collectors due to their vertical orientation. Thus, a separate UT gas monitoring surveillance, controlled by Technical Requirements Manual (TRM), is performed on the gravity boration piping to ensure the BAST system remains available. The common suction header from the RWST also contains a 4-inch vertical take-off that aligns the charging pumps to a hydro test pump that was used during original plant start-up testing. Although this piping is susceptible to gas accumulation, the test pump and associated piping is retired in place and therefore is not monitored for gas accumulation. There is a 6-inch horizontal line that connects each train of charging to the swing pump. With one charging pump normally in operation, the two non-operating charging pump suction lines become stagnant. As stated above, the associated suction piping for the two non-operating charging pumps is manually vented every 31 days to address the potential to accumulate gas while dormant.

The concern that gas may be generated in CCP piping due to flow through bypass orifices has also been addressed. Each CCP contains a multi-stage pressure break-down orifice in the pump's minimum recirculation flow line. The original restriction

orifices allowed gas (hydrogen or nitrogen) from the Volume Control Tank (VCT) to come out of solution and collect in the BAST gravity boration lines due to wear of the last stage of the restriction orifice. A design modification (circa 2001) replaced each restriction orifice with a new design to eliminate the concern. Post-modification testing included a range of VCT pressures to verify that gas was no longer being generated and collected in the BAST gravity boration lines. At that time, a surveillance procedure was developed to monitor gas accumulation in the BAST gravity boration lines.

RAI 4

Please describe the monitoring of system parameters that could identify a change that could introduce gas into piping between surveillance intervals.

DNC Response

The Safety Injection Tanks (SIT) at MPS2 are monitored daily by the Operations staff for changes in tank level. The SITs have a minimum nitrogen gas cover pressure of 200 psig which is known to cause off-gassing in lower pressure zones of interconnected piping due to back leakage across multiple check or isolation valves. Upon a decrease in SIT level with an unknown cause, procedure steps direct operators to UT inspect vulnerable low pressure high point piping for off-gassing (e.g., the High Pressure Safety Injection/Low Pressure Safety Injection loop injection lines at the containment penetrations, and the Containment Spray (CS) discharge headers). These steps aid the operators during troubleshooting activities to identify the leakage flow path and provide early indication of gas accumulation in Emergency Core Cooling System (ECCS) and CS piping. Identification of gas accumulation or off-gassing would be entered in the corrective action program to determine if an increase in UT inspection frequency at vulnerable locations is necessary.

The accumulator tanks at MPS3 are also monitored daily for changes in tank level. These tanks have a nitrogen gas cover pressure of approximately 650 psig and have also been known to cause off-gassing in the safety injection lines due to back leakage. Upon a decrease in level, the accumulator fill procedure includes actions to vent various safety injection high points where gas accumulation due to back leakage could occur.

RAI 5

What are representative surveillance frequencies that exist under the MPS3 Surveillance Frequency Control Program that differ from the TSTF-523 example of 31 days and what is the basis for those changes?

DNC Response

There are no differences. The MPS3 ECCS/CS/Shutdown Cooling (SDC) gas monitoring surveillance frequencies are currently based on 31 days.

RAI 6

The licensee states in its application, "Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY." Explain how this is consistent with the design basis requirement that the subject systems be water-solid.

DNC Response

This statement in the LAR was taken directly from TSTF-523, Rev. 2. However, no locations at MPS2 and MPS3 are currently credited under this statement.