Dominion Nuclear Connecticut, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
Web Address: www.dom.com

November 2, 2015

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

Serial No.	15-497
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 SECOND 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) containing nine questions related to the LAR. In a letter dated July 16, 2015, DNC responded to RAI Questions 2, 3, 4, 5, and 6. In a letter dated July 30, 2015, DNC responded to RAI Questions 1, 7, 8, and 9. In an email dated October 2, 2015, the NRC transmitted a second RAI. The attachment to this letter provides DNC's response to the NRC's second RAI.

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 and Commonwealth 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 2ND day of November, 2015.

My Commission Expires: 12/31/16

Notary Public

CRAIG D SLY
Notary Public
Commonwealth of Virginia
Reg. # 7518653
My Commission Expires December 31, 2016

A134
NRR

Attachment:

Response to Second Request for Additional Information Regarding License Amendment Request to Adopt TSTF-523

Commitments contained in this letter: None

cc: U.S. Nuclear Regulatory Commission
Region I
2100 Renaissance Blvd
Suite 100
King of Prussia, PA 19406-2713

Richard V. Guzman
NRC Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 08 C2
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Millstone Power Station

Director, Radiation Division
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

ATTACHMENT

RESPONSE TO SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523

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

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RAI 4-1

RAI 4 requested a description of "the monitoring of system parameters that could identify a change that could introduce gas into piping between surveillance intervals." The July 16, 2015, DNC response addressed accumulators but did not address other potential sources of gas. Please provide the monitoring frequency and the response to a malfunction that could introduce gas into a system that is important to safety for the following systems/equipment during power operation:

a. *Reactor coolant system*

b. *Chemical sampling system*

c. *Any other equipment where a malfunction could introduce gas into a system that is important to safety*

DNC Response 4-1

a. The response and monitoring frequency for off-gassing due to Reactor Coolant System (RCS) leakage is not pre-defined. RCS operational leakage is a parameter controlled by Technical Specification (TS) 3.4.6.2 and includes limits for identified leakage of 10 gpm and unidentified leakage of 1 gpm. TS Surveillance 4.4.6.2.1 requires verification that RCS operational leakage is within these limits by the performance of an RCS water inventory balance at least once per 72 hours. Early leak detection is the goal of the RCS leakage monitoring program. Trending and investigating unidentified RCS leakage is procedurally controlled with actions for specified unidentified RCS leakage rates. Exceeding specified unidentified leakage rates result in a Condition Report (CR), a request

for cognizant system engineering support, and a troubleshooting plan depending upon the actual leakage rate. If internal RCS leakage across system boundaries is suspected, the CR corrective action plan and/or troubleshooting plan may invoke ultrasonic testing (UT) for gas accumulation monitoring in lower pressure piping areas as a method to determine the RCS leak path(s). A gas monitoring frequency would then be developed for problem areas until the condition is corrected.

b. The response and monitoring frequency for off-gassing due to a malfunction associated with chemical sampling is not pre-defined. Establishing and maintaining primary water chemistry is procedurally controlled. The procedure identifies the parameters, minimum sampling frequencies, and appropriate limits and action levels necessary to implement the MPS2 primary water chemistry control program. The procedure includes a list of possible causes and corrective actions to take when a chemical parameter is discovered outside specified limits and exceeds an action level. Abnormal test results are documented in a CR. A technical evaluation of the abnormal chemistry condition, including implications for plant equipment and components, is performed if the parameter is not restored below the action level within seven days. The CR and technical evaluation processes would be instrumental in determining if the abnormal chemistry condition could cause gas voiding elsewhere in the system. If so, the CR corrective action plan may invoke ultrasonic testing (UT) for gas accumulation monitoring as an early gas void detection method. A gas monitoring frequency would be developed for problem areas until the condition is corrected.

c. Equipment malfunctions would be documented in a CR. The CR process requires investigation of an adverse condition and establishes the necessary corrective actions to correct the condition and any consequential conditions. If, during the CR investigation, concerns with either gas voiding and/or gas accumulation became evident, corrective actions would prompt further investigation (e.g., gas monitoring troubleshooting) and resolution.

RAI 9-1

RAI 9 requested specified detail regarding the void surveillance history of Millstone Power Station, Unit 2 (MPS2). Please address the following:

a. *DNC identified a void discovery on August 13, 2013, but there is no entry in the table of void discoveries for this date.*

b. *92-day surveillances were identified on May 21, 2013 and May 16, 2014 where the measured void volumes of 6.557 ft^3 and 5.286 ft^3 exceeded the volume that was predicted to exceed the operable limit of 2.57 ft^3. The first was attributed to accumulator leakage and the second to an improper fill and vent after a refueling outage (RFO). Why were these not identified earlier by daily monitoring of*

accumulator level and immediate follow-up after an outage, respectively? Have DNC procedures been changed to correct these occurrences?

c. *A void volume of 0.122 ft^3 was measured versus a 0.129 ft^3 criterion during a 92-day surveillance on July 28, 2014. This was attributed to outgassing after shutdown cooling termination following an RFO. All other similar occurrences resulted in smaller volumes. Please provide information to substantiate this large outgassing volume.*

RAI 9e requested the MPS2 void surveillance history related to "Monitoring of equipment such as accumulators or reactor coolant system leakage and follow-up from outages with respect to void assessment." Please describe the surveillances that have been conducted when exiting an outage and the surveillances that have been conducted prior to a return to power operation.

DNC Response 9-1

a. The void discovered on August 13, 2013 was initially provided in the July 30, 2015, DNC response on page 15 of 18 as part of a group of repeat occurrences at UT location 26 during the date period from May 22, 2013 through March 31, 2014. The discovery of this void occurred during the scheduled 92-day surveillance which coincided with weekly surveillances that were also required at that same location. Specific details of the August 13, 2013 void have been added. Refer to the Cycle 22 table below.

b. On November 11, 2012, daily monitoring of the Safety Injection Tank (SIT) identified decreasing level in the tank. The response to an unknown drop in SIT tank level is procedurally controlled and includes steps to perform gas accumulation UTs at the containment penetrations for the High Pressure Safety Injection (HPSI)/Low Pressure Safety Injection (LPSI) loop injection lines only. At this time, SIT leakage into the Containment Spray (CS) discharge header via multiple normally closed manual valves was not considered a credible gas intrusion leak path. Surveillance at the CS discharge header on December 4, 2012 indicated no void and the next surveillance of the CS discharge header on February 26, 2013 indicated a void volume of 0.341 ft^3, which was within the acceptance criteria. Operations concluded the leakage from the SIT was going to the refueling water storage tank. This was a missed opportunity to recognize SIT leakage into the CS discharge header as a gas intrusion leakage path. It was not until the next 92-day scheduled surveillance on May 21, 2013 identified a void volume at the CS header that SIT leakage into the CS discharge header across three normally closed valves was identified as a credible gas intrusion leakage path. The procedure for SIT level monitoring was revised to require the performance of UTs for potential gas accumulation at the containment penetrations for the CS discharge headers.

Prior to restart from the spring 2014 refueling outage (2R22), the quarterly gas accumulation surveillance procedure was due, was performed, and gas accumulation in the CS header from improper fill and vent during restart was identified. The quarterly gas accumulation surveillance procedure was not performed as a refueling outage restoration verification activity, but it was recognized that performance of the procedure prior to restart from a refueling outage could have prevented the inoperable CS header situation that occurred during plant heat up from 2R22. As a result of the lessons learned, the quarterly gas accumulation surveillance procedure was added to the outage surveillance checklist. The quarterly gas accumulation surveillance procedure is required to be performed prior to plant heat up from a refueling outage and prior to plant heat up from a forced outage if any portion of the emergency core cooling system is drained for maintenance.

c. During the quarterly gas accumulation surveillances following the 2R22 outage, the void volumes found in the LPSI loop injection high points at containment penetration UT locations 20, 21, 22, and 23 were consistently between 0.000 ft^3 and 0.069 ft^3 with the exception of July 28, 2014 where a larger void of 0.122 ft^3 was discovered. The nominal void volumes are attributed to outgassing as a result of improper fill and vent activities near the end of the refueling outage. A possible contributor to the large void volume was identified to be the LPSI pump. A LPSI pump is run once a quarter on minimum flow recirculation for 5 to 10 minutes. During the quarterly LPSI pump run, there is no flow in the main discharge header, but the header is pressurized and then depressurized. Because the larger void volume on July 28, 2014 was a one-time occurrence, DNC has concluded that a portion of the total void on this date was due to a residual air void that migrated to this high point over time by itself or was aided during the quarterly LPSI pump run.

   The horizontal run of pipe at the loop injection high points is approximately 2 feet in length. The actual void volume acceptance criteria at the high points (1.5 ft^3) exceed the void volume an empty horizontal pipe would indicate. Therefore, DNC has conservatively chosen 50% of the horizontal pipe volume (0.128 ft^3, 0.244 ft^3, 0.129 ft^3, and 0.147 ft^3) as the acceptance criteria for the high points. The larger void volume of July 28, 2014 was still within the conservative acceptance criteria.

e. At MPS2 when exiting an outage, system specific fill and vent procedures for the HPSI, LPSI and CS piping systems are performed to verify systems are full of water. These procedures include UT inspection points at various vulnerable system high points to ensure systems have been properly filled and vented. If gas voids are present, the fill and vent process is repeated or alternate methods (i.e., dynamic venting) of void removal is pursued. The UT validations associated with these fill and vent procedures have historically been relied upon to support plant restarts following refueling outages. The quarterly gas accumulation surveillance procedures were not routinely performed prior to startup after a

refueling outage. Three refueling outages have occurred since gas monitoring was first established at MPS2 in March of 2010. The scheduling date of the quarterly gas accumulation surveillance procedure coincided with the date of plant restart for two of the three refueling outages but was not formally tied to plant restart activity. As noted in the response above, the quarterly gas accumulation surveillance procedure is now included on the outage surveillance checklist and is required to be performed prior to plant heat up.

Cycle 22

Date	Location	Void Vol. (ft^3)	Allowable Vol. (ft^3)	Notes	Surveillance Frequency	Reason for Discovery	Disposition with Respect to Impact on Operability
8/13/13	UT Point 26 – CS discharge	0.161	2.57	Mode 1. Source is SIT back leakage across multiple valves into the B Train CS discharge header - Location is restored to water filled condition each instance	92 days	Routine surveillance	Void volume within operability limits