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Dominion®

APR 15 2015

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

Serial No.: 15-164
NL&OS/TFO: R3
Docket Nos.: 50-336
50-423
License Nos.: DPR-65
NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNITS 2 AND 3
SUPPLEMENT TO LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523, REVISION 2, GENERIC LETTER 2008-01, MANAGING GAS ACCUMULATION

By letter dated January 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-532, Revision 2 was approved for use by the Nuclear Regulatory Commission (NRC) as published in the Federal Register on January 15, 2014 (79 FR 2700).

During a telephone conference on March 26, 2015, the NRC provided DNC an opportunity to supplement the LAR submitted under DNC Letter 15-012 (ADAMs Accession No. ML15021A128). This was based on the NRC staff's acceptance review which identified that the basis provided for exceptions from TSTF-523 did not provide sufficient detail to support the exception.

Attachment 1 provides supplemental information related to the MPS2 requested testing frequency of 92 days versus the testing frequency of 31 days specified in TSTF-523. This supplement expands upon a previous discussion provided in DNC Letter 09-970 (ADAMS Accession No. ML100190064). Attachment 1 also provides supplemental information related to the requested exemption of the MPS3 Quench Spray System and the Recirculation Spray System from this (gas accumulation) testing. The supplement likewise expands upon a previous discussion provided in DNC Letter 08-0013C (ADAMS Accession No. ML082890266).

In accordance with 10 CFR 50.91, a copy of this letter, with attachment, is being provided to the State of Connecticut.

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NRR

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

Sincerely,

John R. Daugherty
Site Vice President - Millstone

STATE OF CONNECTICUT)
)
COUNTY OF NEW LONDON)

The foregoing document was acknowledged before me, in and for the County aforesaid, today by Mr. John R. Daugherty, who is Site Vice President – Millstone, 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 15 day of April, 2015.

My Commission Expires: March 31, 2016.

Notary Public

WM. E. BROWN
NOTARY PUBLIC
MY COMMISSION EXPIRES MAR 31, 2016

Attachment:

Supplement to License Amendment Request to Adopt TSTF-523

Commitments contained in this letter: None

\cc: U.S. Nuclear Regulatory Commission
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ATTACHMENT 1

SUPPLEMENT TO LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523

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

SUPPLEMENT TO LICENSE AMENDMENT REQUEST TO ADOPT TSTF-523

By letter dated January 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 (GL) 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-532, Revision 2 was approved for use by the Nuclear Regulatory Commission (NRC) as published in the Federal Register on January 15, 2014 (79 FR 2700).

During acceptance review of the proposed LAR, the NRC requested additional information to support exceptions from TSTF-523 for MPS2 related to testing frequency and for MPS3 for exempting certain plant systems from testing. This attachment provides the supplemental information to support the NRC's review of the LAR.

Additional Information for MPS2 Exception to TSTF-523 Testing Frequency:

In a letter dated January 15, 2015, DNC took exception to the recommended 31-day gas void monitoring surveillance frequency for Emergency Core Cooling System (ECCS), Shutdown Cooling (SDC), and Containment Spray (CS) piping by proposing a 92-day (or quarterly) surveillance frequency for MPS2.

In DNC letter dated October 14, 2008 (Serial No. 08-0013C), as part of the nine-month response to GL 2008-01, DNC noted that MPS2 did not conduct periodic UT or venting of in-scope systems, but identified that the potential for small voids, believed to be within acceptance criteria, could form, and credited an action plan to develop a quarterly monitoring and trending program to periodically monitor piping locations susceptible to gas intrusion using ultrasonic testing (UT), venting, or other means every 92 days.

In DNC letter dated January 14, 2010 (Serial No. 09-790), DNC discussed use of a quarterly frequency for void monitoring at MPS2 for in-scope piping. DNC noted that the quarterly monitoring frequency was based on operating experience at MPS2 with the requirement that the monitoring frequency would be increased if trending of the issue identified a need. In the March 2, 2011 NRC closeout to GL 2008-01 (ADAMS Accession No. ML110540393), the NRC concluded that the detection, monitoring, and trending of voids in the discharge piping of MPS2 was acceptable.

At MPS2, the High Pressure Safety Injection (HPSI), Low Pressure Safety Injection (LPSI) and CS pumps are located a significant distance below the Refueling Water Storage Tank (RWST) and discharge into containment or the Reactor Coolant System (RCS) which is at an elevation above the pumps. This configuration tends to impede gas void build-up near the pumps.

MPS2 has been performing gas monitoring on the ECCS, CS, and SDC piping on a quarterly basis for five years. Monitoring results are tabulated in a Microsoft EXCEL file for trending purposes. Should trending identify a problem point, the monitoring frequency of that point would be increased. The monitoring presently includes eight points in the pump(s) suction piping and nineteen points in the pump(s) discharge piping. The gas void accumulation issues identified over the last five years have been primarily limited to the CS and LPSI pump discharge high point piping. With the exception of a one-time operating experience in which Safety Injection Tank (SIT) leakage occurred through three isolation valves, gas accumulation issues at MPS2 have been limited to improper fill and vent restoration activities during refueling outages or on-line maintenance. Review of the past five years of gas monitoring data demonstrates that MPS2 operating experience justifies a 92-day monitoring frequency.

Gas void experience identified in the last five years since the 92-day monitoring has been in place are described below:

- HPSI Pump On-Line Maintenance

  Monitoring results indicate one instance of gas voiding in the suction piping during and after restoration (same day) from HPSI pump on-line maintenance. This condition was entered into the corrective action program on December 18, 2012. Prior to the void being vented, additional UT was performed to characterize the actual size of the void by UT measurement of the actual void length. The measurement confirmed the actual void volume was within the acceptance criteria. On-line pump maintenance procedures were revised to include post vent UTs and an engineering evaluation for any point not found full. No other pump suction-side gas voids have been detected to date.

- 'B' LPSI pump cavitation

  On April 6, 2014, during a planned refueling outage shutdown, the 'B' LPSI pump began to cavitate when the pump was started in preparation for SDC. As required by procedure, preparation for SDC requires a LPSI pump to be run at approximately 400 gpm through a 2" warm-up line to verify system integrity. The 'A' and 'B' LPSI pumps share a common discharge line.

  Initial conditions included a known gas void in the 'A' LPSI pump discharge piping. The void was the result of on-line pump maintenance that occurred two months prior. This gas void had been determined to be well within its established acceptance criteria for pump discharge-side void volumes and could not be vented or swept out until the next refueling outage. .

  The procedure also required isolation from the RWST. This step effectively removes the surge tank in a closed piping system. Operating a closed system without surge protection for short periods of time is acceptable if the closed system is water solid. However, the system was not water solid due to the existing void. As a result, this caused the 'B' LPSI pump to cavitate as the pump

began to move volume from the pump suction to fill volume in the pump discharge. The procedure was revised to require the RWST isolation valve to be open prior to starting the LPSI pump, remain open until the system stabilized, and then the RWST would be re-isolated. This issue is considered resolved. Having a monitoring frequency of less than 92 days would not have resulted in identifying this issue sooner.

- Small Gas Voids at Containment Penetrations

  Small void volumes have been found in the high point of four individual LPSI loop injection lines upstream of their respective isolation valve near the containment penetrations. These voids have been small enough to pass the monitoring acceptance criteria with significant margin. Once removed, these points generally remain 100% full. Subsequent trending has not identified an on-going gas intrusion mechanism. Based on operating experience to date, identification and removal of this condition was not affected due to the present 92-day testing frequency.

- Gas Void in 'B' CS discharge header

  On May 21, 2013, while operating in mid-cycle, gas monitoring identified a gas void in the 'B' CS header upstream of the containment penetration. The void was large enough to initially declare the 'B' train of CS inoperable. Prior to venting, additional UT measurements were taken to determine the actual void size. A follow-up evaluation determined that the 'B' train header had additional margin such that the system would have performed its safety function. The cause of the void was determined to be SIT leakage through three closed isolation valves in series in small intersecting piping that provided return flow to the RWST. As the higher pressure SIT water volume began to leak into the low pressure 'B' CS discharge header, dissolved nitrogen gas came out of solution. It was noted that the operating procedure required action to inspect for gas accumulation in the ECCS injection header when SIT levels decrease for an unknown reason, but did not include inspection of the CS headers. The procedure was revised to include inspection of the CS headers when the cause of a decrease in SIT level is unknown. Once the gas intrusion mechanism was identified, the monitoring frequency at this point was increased as needed until the event was fully resolved. The gas intrusion mechanism was resolved during the next refueling outage with the replacement of the isolation valves. It is noted that this gas intrusion event may have been discovered earlier with a gas monitoring frequency of less than 92 days. The event may also have been prevented if the SIT level monitoring procedure had appropriately included a provision to inspect the CS headers. In addition, a recent calculation determined additional void margin is available for this location. Thus, with the corrections applied (procedure provision to inspect CS headers and calculation establishing added margin), the present 92-day gas monitoring frequency is considered to remain appropriate.

- Gas Void in 'A' CS discharge header

  On May 16, 2014, during plant start-up (Mode 3) following a refueling outage, gas monitoring identified a gas void in the 'A' CS discharge header upstream of the containment penetration. The void was large enough to declare the 'A' train of CS inoperable. The cause of the void was determined to be inadequate venting of the 'A' CS header following outage maintenance. The 'A' CS header is interconnected with the 'B' CS header. Maintenance had been performed on the 'B' CS header which was properly filled and vented following maintenance. However, the 'A' CS header was not included in the maintenance recovery efforts and, therefore, was not verified filled and vented. This event could have been prevented if the gas monitoring procedure had been performed prior to entering Mode 4 during plant start-up activities. The gas monitoring procedure is now required to be performed as a Mode 4 hold for future plant shutdowns and restarts. This issue is considered resolved. Having a monitoring frequency of less than 92 days would not have resulted in identifying the issue sooner.

Additional Information for MPS3 Exception for Plant Systems Testing:

In a letter dated January 15, 2015, DNC took exception to including the Recirculation Spray System (RSS) and the Quench Spray System (QSS) in the Technical Specifications for monthly gas monitoring for MPS3.

In a DNC letter dated October 14, 2008, (Serial No. 08-0013C) as part of the nine-month response to GL 2008-01, DNC provided a basis for exception from testing for the QSS and RSS systems. The original responses regarding the QSS and RSS systems have been supplemented with additional information and are provided in the paragraphs below.

Quench Spray System (QSS):

The QSS pumps are each supplied by an independent suction line from the RWST. The system piping is maintained full from the RWST to an equivalent level in the piping headers located inside containment. System walkdowns verified that the suction piping is properly sloped to prevent air traps. The quarterly pump operability surveillances ensure adequate water volume is pumped through suction and discharge piping (up to the recirculation connection directly upstream of the containment isolation valves) at a velocity to adequately sweep the system piping. The water level in the discharge header inside containment is maintained by quarterly valve stroke of the containment isolation valves. The discharge piping beyond the containment isolation valves is self-venting to the containment atmosphere through the Quench Spray header nozzles. Consequently, there are no identified gas intrusion mechanisms for this system. This is a low pressure system with no gas overpressure so the possibility of entrained gases coming out of solution when the piping is full of stagnant fluid is unlikely. It is therefore concluded this system is free of potential gas voids.

The design of the QSS (e.g., dedicated suction lines from the bottom of the RWST, the standby design, isolation from potential pressurization from pressure sources with higher pressure than the RWST, independent piping trains, quarterly dynamic venting) obviates the need for a monthly surveillance of the QSS.

Containment Recirculation System (RSS):

The RSS system piping is not maintained water-filled by design, excluding the ECCS pump cross-over piping. The containment sump is normally maintained in a dry (non-filled) state along with the RSS pump suction piping. The four containment recirculation pumps and motors and the containment recirculation coolers and associated piping are located outside the containment structure. The pumps are vertical deep-well pumps mounted in a separate stainless steel well casing. A portion of the pump casing that is below the sump suction line remains filled with water after dewatering. The pumps are self-venting to the discharge piping and vent as the sump and suction piping is filled inside containment through the discharge of the containment recirculation spray system. The pumps are located adjacent to the containment structure at an elevation sufficiently below the containment structure sump to ensure adequate gravity filling of the suction

piping, pump housing, and a portion of the discharge piping. Each RSS pump casing has a 1" diameter vent line installed to aid in the filling and venting of the RSS pump casings.

The discharge piping, which includes the containment recirculation coolers, is also maintained in a dry condition and will self-vent to containment through the containment recirculation spray header nozzles when the RSS pumps are started and discharge-side piping is filled. The system actuates based upon specific actuation signals which ensure there is adequate water available. Following a Large Break Loss of Coolant Accident, the minimum time for the actuation to occur is 33 minutes. Thus, the RSS system piping, with the exception of ECCS pump cross-over piping, does not require monitoring for gas voids.

TS surveillance 4.5.2.b.1, which requires verification that the ECCS piping is full of water, identifies the RSS pump, the RSS heat exchanger, and associated piping exempt from the monthly surveillance. The TS Bases provides the following reasons why the RSS is exempt from this Surveillance:

- The RSS pumps, since this equipment is partially dewatered during plant operation. Each RSS pump is equipped with a pump casing vent line that allows automatic VENTING of the pump casing prior to pump operation following an accident.

- The RSS heat exchangers, since this equipment is laid-up dry during plant operation. Gas is flushed out of the heat exchangers during the initial operation of the RSS pumps following an accident.

- The RSS piping that is not maintained filled with water during plant operation. The configuration of this piping is such that it is self VENTING upon initial operation of the RSS pumps.

The TS Bases specifically include the ECCS pump cross-over piping for testing (i.e., downstream of valves 3RSS*MV8837A/B and 3RSS*MV8838A/B to safety injection and charging pump suction) and likewise includes the water filled portions of the RSS piping upstream of these valves. These water filled portions of the ECCS cross-over piping will continue to be included in the proposed TSTF-523 changes for MPS3.