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October 31, 2014

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

Serial No. 14-524
NSSL/MLC R0
Docket No. 50-336
License No. DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION UNIT 2

**LICENSE AMENDMENT REQUEST TO REVISE THE FINAL SAFETY ANALYSIS
REPORT - EXAMINATION REQUIREMENTS FOR ANSI B31.1.0 PIPING WELDS**

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby requests an amendment to Facility Operating License No. DPR-65 for Millstone Power Station Unit 2 (MPS2). This amendment request proposes to revise the MPS2 Final Safety Analysis Report (FSAR) to allow the use of the encoded ultrasonic examination technique in lieu of the FSAR committed additional radiography examination for certain piping welds fabricated to ANSI B31.1.0.

Attachment 1 provides the description, technical analysis, regulatory analysis and environmental analysis for the proposed amendment. A mark-up of the proposed changes to the MPS2 FSAR are provided in Attachment 2.

The proposed amendment does not involve a significant hazards consideration pursuant to the provisions of 10 CFR 50.92. The Facility Safety Review Committee has reviewed and concurred with the determination herein.

Issuance of this amendment is requested by October 30, 2015 with the amendment to be implemented within 30 days of NRC approval.

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

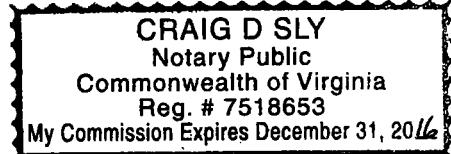
Should you have any questions in regard to this submittal, please contact Wanda Craft at (804) 273-4687.

Sincerely,

M. 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 Mark D. Sartain, who is Vice President – Nuclear Engineering 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 31st day of October, 2014.

My Commission Expires: 12/31/16

A053
MRR

Commitments: None.

Attachments:

1. Evaluation of Proposed Change
2. Mark-up of Proposed FSAR Changes

cc: U.S. Nuclear Regulatory Commission
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ATTACHMENT 1

EVALUATION OF PROPOSED CHANGE

**DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2**

Evaluation of Proposed Change

1.0 Summary

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby requests an amendment to Facility Operating License No. DPR-65 for Millstone Power Station Unit 2 (MPS2). This amendment request proposes to revise the MPS2 Final Safety Analysis Report (FSAR) to allow the use of the encoded ultrasonic (UT) examination technique in lieu of the FSAR committed additional radiography (RT) examination for certain piping welds fabricated to ANSI B31.1.0.

2.0 Proposed Amendment

DNC proposes to amend the MPS2 FSAR to allow the use of the encoded UT examination technique in lieu of the FSAR committed additional radiography (RT) examination for certain piping welds fabricated to ANSI B31.1.0. Specifically, DNC proposes to revise Figure 9.0.3, General Piping and Instrumentation Diagram Legend Notes, to delete the references to "radiography" and replace them with "volumetric examination." The figure number and title have also been added to this page. A mark-up of the proposed FSAR change is provided in Attachment 2.

3.0 Technical Evaluation

DNC is proposing this change to allow the use of the encoded UT examination technique in lieu of the FSAR committed additional RT examination for certain piping welds fabricated to ANSI B31.1.0. Similar techniques are being used throughout the nuclear industry for examination of dissimilar metal welds, overlaid welds, and ANSI B31.1.0 piping replacement welds. This proposed change includes requirements that provide an acceptable level of quality and safety.

Table 1.2-1 of the MPS2 FSAR summarizes the codes and standards for components of water-cooled nuclear power units. Certain piping systems or portions of piping systems designed and fabricated to ANSI B31.1.0 have been designated to have additional testing and examination requirements performed over and above those required by the code. RT has been specified as the additional volumetric examination method for the selected piping systems. At the time of the commitment to perform the additional volumetric examination (Reference 6.1), RT was the appropriate non-destructive examination (NDE) method for volumetric examination to satisfy the code requirements. However, with the advances in technology, the UT examination method has become an acceptable alternative to performing RT for volumetric examinations. The later editions of the ANSI B31.1.0 Code (now referred to as the ASME B31.1 Code), 2004 Edition and later, has included UT examination as an alternative to RT to satisfy the volumetric examination requirement.

The proposed change to the MPS2 FSAR commitment is to allow the use of the UT examination technique to perform the volumetric examination, where appropriate, as incorporated into the later editions of the ASME B31.1 Code. It is recognized that not all weld joint configurations allow effective use of the UT examination method to obtain the necessary coverage of the examination volume. For those joint configurations where effective coverage cannot be obtained with UT examination techniques, RT is still applicable to satisfy the volumetric examination commitment.

The later ASME B31.1 editions require the use of encoded technology when using UT for the weld examinations. The encoded UT examination technology is capable of recording the UT data to facilitate the analysis by a third party and provides repeatability for subsequent examinations. In addition, the encoded UT examination technology provides a permanent record of the data along with imaging capabilities. The electronic data files for the UT examinations can be stored as part of the archival-quality record. In addition to the electronic data, hard copy prints of the data can also be included as part of the record that allows viewing without the use of hardware or software. Examination personnel, procedures, and equipment used to collect and analyze UT data are required to demonstrate their ability to perform an acceptable examination prior to performing the examinations.

The reasons for this change are grouped into two areas; personnel safety and outage support. The use of UT examination techniques will eliminate the personnel safety risk of radiological exposure associated with RT examinations currently required by the FSAR. Specifically, the planned exposure associated with transporting, positioning, and exposing a source for the RT examination, is eliminated. Reducing the potential of accidental exposure is an equally important consideration. Accidental exposures can occur as a result of human error, equipment malfunction or inadequate boundary control. In addition to reducing personnel safety risk, there is an overall reduction in dose for the examinations. This is realized by the use of an encoded scanner, remote analysis processes, and the limited number of personnel needed to perform the examinations. The crew size using encoded UT for the volumetric examination would require two to three people; whereas, RT crews range from five to fifteen people.

With regard to outage support, the use of UT will reduce the time associated with a given weld examination and subsequent documentation of examination results. The encoded UT examinations can be performed as soon as the weld joint surface is prepared. In addition, other outage activities in the area are not impacted during the examination. There is also a reduction in overall outage risk by eliminating the need to stop and start critical maintenance and operations activities affected by the RT exclusion area. Additional savings are realized by eliminating the need for large amounts of support from radiation protection personnel, boundary guards, and other support personnel.

The overall basis for this change is that encoded UT is equivalent to or superior for detecting and sizing critical (planar) flaws as compared to the required RT examination. This proposed use of UT as a volumetric examination method includes requirements that provide an acceptable level of quality and safety. Similar techniques are being used throughout the nuclear industry for examination of dissimilar metal welds, overlaid welds, as well as other applications; including ASME B31.1 piping replacements. The use of the UT as an alternative volumetric NDE method for weld acceptance is widely documented in References 6.2 through 6.16.

4.0 Regulatory Analysis

No Significant Hazards Consideration

The NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92(c). A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with a 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. DNC has evaluated whether or not a significant hazards consideration (SHC) is involved with the proposed change. A discussion of these standards as they relate to this change request is provided below.

Criterion 1

Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

Previously evaluated accident consequences are not impacted by the proposed amendment because credited mitigating equipment continues to perform its design function. The proposed amendment does not significantly impact the probability of an accident previously evaluated because those Systems, Structures and Components (SSCs) that can initiate an accident are not significantly impacted.

Based on the above, DNC concludes that the proposed amendment to the MPS2 FSAR to allow the use of UT in lieu of RT examination for certain piping welds fabricated to ANSI B31.1.0, does not involve a significant increase in the probability or consequences of an accident or transient previously evaluated in the safety analysis report.

Criterion 2

Does the proposed amendment create the possibility for a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed amendment does not create a new or different kind of accident from any accident previously evaluated because previously credited SSCs are not significantly impacted. The proposed amendment does not involve a physical alteration of the plant and no new or different types of equipment will be installed. There is no impact upon the existing failure modes and effects analysis; and conformance to the single failure criterion is maintained.

Based on the above, DNC concludes that the proposed amendment to the MPS2 FSAR to allow the use of UT in lieu of RT examination for certain piping welds fabricated to ANSI B31.1.0, does not create the possibility of a new or different kind of accident or transient from any previously evaluated.

Criterion 3

Does the proposed amendment involve a significant reduction in the margin of safety?

Response: No

The proposed amendment to the MPS2 FSAR will not cause an accident to occur and will not result in any change in the operation of the associated accident mitigation equipment. The proposed amendment does not involve a significant reduction in margin of safety because plant response to any transient or analyzed accident event is unchanged.

Based on the above, DNC concludes the proposed amendment to the MPS2 FSAR to allow the use of UT in lieu of RT examination for certain piping welds fabricated to ANSI B31.1.0, does not involve a significant reduction in the margin of safety.

Conclusion

DNC concludes that the proposed amendment to the MPS2 FSAR to allow the use of UT in lieu of RT examination for certain piping welds fabricated to ANSI B31.1.0, does not involve a significant hazards consideration.

5.0 Environmental Considerations

DNC has evaluated the proposed amendment for environmental considerations. The review has resulted in the determination that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, and would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 References

- 6.1 Millstone Power Station Unit 2, Amendment No. 17 to License Application in Docket No. 50-336, July 2, 1973.
- 6.2 Millstone Power Station Unit 2 Alternative Request RR-04-16, dated August 1, 2013, (ADAMS Accession No. ML13220A019). NRC approval dated April 4, 2014 (ADAMS Accession No. ML14091A973).
- 6.3 ASME Section III Code Case N-659-2, dated June 9, 2008, Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination Section III, Divisions 1 and 3.
- 6.4 Pacific Northwest National Laboratory Report PNNL-19086, Replacement of Radiography with Ultrasonics for the Nondestructive Inspection of Welds - Evaluation of Technical Gaps - An Interim Report, dated April 2010.
- 6.5 ASME B31.1, Case 168, dated June 1997, Use of Ultrasonic Examination in Lieu of Radiography for B31. 1 Application.
- 6.6 ASME Section III Code Case N-818, dated December 6, 2011, Use of Analytical Evaluation approach for Acceptance of Full Penetration Butt Welds in Lieu of Weld Repair.
- 6.7 ASME Code Case 2235-9, dated October 11, 2005, Use of Ultrasonic Examination in Lieu of Radiography Section I, Section VIII, Divisions 1 and 2, and Section XII.
- 6.8 Journal of Pressure Vessel Technology, Technical Basis for ASME Section VIII Code Case 2235 on Ultrasonic Examination of Welds in Lieu of Radiography, Rana, Hedden, Cowfer and Boyce, Volume 123, dated August 2001.

- 6.9 ASME Code Case 2326, dated January 20, 2000, Ultrasonic Examination in Lieu of Radiographic Examination for Welder Qualification Test Coupons Section IX.
- 6.10 ASME Code Case 2541, dated January 19, 2006, Use of Manual Phased Array Ultrasonic Examination Section V.
- 6.11 ASME Code Case 2558, dated December 30, 2006, Use of Manual Phased Array E-Scan Ultrasonic Examination Per Article 4 Section V.
- 6.12 ASME Code Case 2599, dated January 29, 2008, Use of Linear Phased Array E-Scan Ultrasonic Examination Per Article 4 Section V.
- 6.13 ASME Code Case 2600, dated January 29, 2008, Use of Linear Phased Array S-Scan Ultrasonic Examination Per Article 4 Section V.
- 6.14 ASME Section XI Code Case N-713, dated November 10, 2008, Ultrasonic Examination in Lieu of Radiography.
- 6.15 EPRI presentation, dated May 2010, Ultrasonic Capability study for reduction of weld repair during the construction-UT Technical Presentation.
- 6.16 ASME B31.1, 2004 Edition and later.

ATTACHMENT 2

MARK-UP OF PROPOSED FSAR CHANGES

**DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2**

MPS-2 FSAR

Figure 9.0.3, General Piping
and Instrumentation Diagram
Legend Notes (continued)

Third Letter	Design Code	Shop Fabrication	Field Fabrication & Installation
A	Nuclear Power Piping, Class I	ANSI B31.7-69	ASME Section III, 1971
B	Nuclear Power Piping, Class II	ANSI B31.7-69	ASME Section III, 1971
C	Nuclear Power Piping, Class III	ANSI B31.7-69	ASME Section III, 1971
D	Code for Pressure Piping, ANSI B 31.1.0		

- 1.3 Certain piping systems or portions of piping systems designed and fabricated to ANSI B 31.1.0 shall have additional testing and examination requirements over and above those required by that code. These additional requirements will be identified by a fourth code letter. The code letters and corresponding requirements are described as follows:

Fourth Letter — Additional Specific Requirements

- A. ANSI B 31.1.0 Requirements Plus: volumetric examination
1. 100 percent ~~Radiography~~ of Butt Welds
 2. Seismic Analysis
 3. Base Material Traceability (as per Paragraph 1-723.1.3, ANSI B 31.7)
- B. ANSI B 31.1.0 Requirements Plus: volumetric examination
1. Random ~~Radiography~~ of Butt Welds ⁽¹⁾
 2. Base Material Identification (as per Paragraph 3-723, ANSI B 31.7)
 3. Seismic Analysis
- C. ANSI B 31.1.0 Requirements Plus:
1. Base Material Identification (as per ASTM requirements)
 2. Seismic Analysis

be examined volumetrically

(1) On Butt Welds over four inch nominal pipe size, a minimum of 10 percent of the Butt Welds in a specified class shall ~~be examined by radiography~~. Those welds radiographed must include welds by each welder or welding operator performing welding in the specified class.

examined