



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 26, 2015

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Nuclear
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 2 - ISSUANCE OF AMENDMENT
RE: REVISION TO THE FINAL SAFETY ANALYSIS REPORT – EXAMINATION
REQUIREMENTS FOR ANSI B31.1.0 PIPING WELDS (TAC NO. MF5159)

Dear Mr. Heacock:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 322 to Renewed Facility Operating License No. DPR-65 for the Millstone Power Station, Unit No. 2 (MPS2), in response to your application dated October 31, 2014.

The amendment revises the MPS2 Final Safety Analysis Report (FSAR) to allow for the use of the encoded ultrasonic examination technique in lieu of the FSAR committed additional radiography examination for certain piping welds fabricated to American National Standards Institute B31.1.0. Specifically, the notes of Figure 9.0.3, "General Piping and Instrumentation Diagram" are revised to replace the references to "radiography" with "volumetric examination."

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Guzman", is written over a horizontal line.

Richard V. Guzman, Sr. Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosures:

1. Amendment No. 322 to DPR-65
2. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DOMINION NUCLEAR CONNECTICUT, INC.

DOCKET NO. 50-336

MILLSTONE POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 322
Renewed License No. DPR-65

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Dominion Nuclear Connecticut, Inc. (the licensee) dated October 31, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

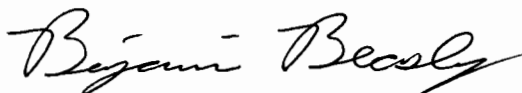
2. Accordingly, the license is amended by changes to the Millstone Power Station, Unit 2 (MPS2), Final Safety Analysis Report (FSAR) and, as indicated in the attachment to this license amendment, Paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 322, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 30 days of issuance. In addition, the licensee shall include the revised information in the MPS2 FSAR in the next periodic update in accordance with 10 CFR 50.71(e), as described in the licensee's application dated October 31, 2014, and the NRC staff's safety evaluation enclosed with this amendment.

FOR THE NUCLEAR REGULATORY COMMISSION



Benjamin Beasley, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License No. DPR-65

Date of Issuance: August 26, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 322

RENEWED FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove
3

Insert
3

Connecticut, in accordance with the procedures and limitations set forth in this renewed operating license;

- (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter 1: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 2700 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 322, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

Renewed License No. DPR-65
Amendment No. 322



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 322

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By application dated October 31, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14310A187), Dominion Nuclear Connecticut, Inc. (the licensee) requested changes to the Final Safety Analysis Report (FSAR) for Millstone Power Station, Unit No. 2 (MPS2). The requested changes would revise the MPS2 FSAR to allow the use of volumetric testing methods such as ultrasonic testing (UT) in lieu of the FSAR specified radiography (RT) examination for certain piping welds fabricated to the requirements of the American National Standards Institute (ANSI) B31.1.0. Specifically, the reference to "radiography" would be replaced with "volumetric examinations" in the legend notes of MPS2 FSAR Figure 9.0.3, "General Piping and Instrumentation Diagram."

2.0 REGULATORY EVALUATION

American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," paragraph IWA-4221, "Construction Code and Owner's Requirements," requires the owner to use the requirements of the construction code when performing repair and replacement activities.

The construction permit for MPS2 was issued on December 12, 1970, and several components were constructed to several standards. The Class I, II, and III piping welds at the facility were constructed using ANSI B31.7, "Nuclear Power Piping," for shop welds and the 1971 Edition of ASME Code Section III, "Rules for Construction of Nuclear Facility Components" for field welds. Piping components considered to be pressure welds, not falling into ASME Code Classes I, II, or III, were constructed to the requirements of ANSI B31.1.0, "Power Piping".

Provisions in ASME Code Section III and ANSI B31.7 require the use of radiography for butt welds using filler. Provisions in ANSI B31.1.0 only require the use of radiography for steam service butt welds above 925 degrees Fahrenheit and thicker than 1-1/8 inch thick and water service butt welds thicker than 1-5/8 inch thick. The legend notes of MPS2 FSAR Figure 9.0.3, that are the subject of the license amendment request, add a requirement to use radiography to some of the non-ASME Class welds constructed using the requirements of ANSI B31.1.0.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z), the licensee can, and has in the past, submit and have authorized by the Director, Office of Nuclear Reactor Regulation, proposed alternatives for repair and replacement activities of ASME Code Class II welds covered under ASME Code Section III. However, alternatives to FSAR requirements are not allowed via 10 CFR 50.55a(z), but, instead, require the submission and approval of license amendment requests. Thus, the licensee has submitted this license amendment request in order to change the current legend notes of MPS2 FSAR Figure 9.0.3 that do not allow for the use of UT in lieu of RT for some pressure piping welds.

3.0 TECHNICAL EVALUATION

3.1 Proposed Changes to the FSAR

The licensee is requesting to amend the MPS2 FSAR to modify the pre-service inspection requirements from requiring the use of radiography to allowing for the use of any volumetric inspection technique for piping with augmented inspection. Specifically, the licensee is proposing to revise the legend notes of Figure 9.0.3, "General Piping and Instrumentation Diagram" to delete the references to "radiography" and replace them with "volumetric examination."

The legend notes in question apply to piping components constructed to the provisions of ANSI B31.1.0, "Power Piping."

The ASME Code Class I, II, and III piping at MPS2 was constructed using the requirements of ANSI B31.7 for shop welds and the 1971 Edition of ASME Code Section III for field welds. The pressure piping was constructed to meet the requirements of ANSI B31.1.0.

This proposed license amendment would allow the use of other volumetric inspection techniques, such as UT, for the non-ASME Code Class welds constructed under ANSI B31.1.0.

3.2 Method of NRC Staff Review

The effect of the proposed changes was evaluated and compared to the continued use of the current FSAR requirements. This comparison was performed using the current codes and standards, recent NRC precedents on the use of UT in lieu of radiographic testing for welds, and the NRC's current technical position regarding substituting radiographic testing with UT. The NRC staff also reviewed the licensee's "No Significant Hazards Consideration" analysis provided in the letter dated October 31, 2014.

3.3 Evaluation of the Proposed Changes

The proposed changes to the construction code requirements would only apply during repair and replacement activities. Provisions in ASME Code, Section XI, paragraph IWA-4221, require the owner to use the requirements of the construction code for repair and replacement activities. The MPS2 FSAR Figure 9.0.3 legend notes that are the subject of the license amendment request add the radiography requirement to some of the non-ASME Code Class welds constructed using the requirements of ANSI B31.1.0.

When the facility was constructed, radiography had several advantages over ultrasonic examinations for new welds. Radiography is capable of finding and identifying several weld fabrication flaws such as slag and porosity and can, under favorable conditions, detect planar fabrication defects such as lack of fusion and cracking. Additionally, radiography produces a permanent record of the examination via the archival-quality film used to record the results. The UT had not, at that time, been demonstrated to be as effective as radiography at finding and characterizing the various welding fabrication flaws. Also, at the time that the facility was constructed, UT did not produce a permanent record of the examination. Therefore, the imposition of radiography on select ANSI B31.1.0 welds by the FSAR helped to assure that the pressure piping received the same level of rigor as the thicker and more safety significant welds.

During the early 2000's, UT technology saw significant advances in capability and recordability. The development of phased-array ultrasonic probes allowed a single ultrasonic search unit to steer and focus sound at several angles and depths, simulating the use of many conventional ultrasonic transducers, and allowing the inspector to collect much more data than had been previously practical. Additionally, the development of inexpensive and reliable electronic data storage made it possible for this data to be recorded in electronic files, allowing the inspector to analyze the data at length. Finally, the development of the ability to record the results of the ultrasonic inspection allowed for archival-quality storage of the information.

The use of UT in lieu of RT for class 2 ferritic piping has been granted via the 10 CFR 50.55a relief request process for Palo Verde Nuclear Generating Station, Units 1, 2, and 3, in April 2013 (ADAMS Accession No. ML13091A177) and for Millstone Power Station, Unit 2, in April 2014 (ADAMS Accession No. ML14091A973). An assessment of the use of UT in lieu of RT by the NRC is described in NUREG/CR-7204, "Applying Ultrasonic Testing In Lieu of Radiography for Volumetric Examination of Carbon Steel Piping," and it concluded that UT has the potential to replace RT for ferritic welds if done to a sufficient level of rigor.

The current successor to ANSI B31.1.0 is ASME B31.1-2014, which generally allows the choice between UT and RT for volumetric inspections of welds. Thus, a new plant installing piping welds to the requirements of ASME B31.1-2014 would be permitted to use UT in lieu of RT. This change to ASME B31.1 is consistent with the improvements in UT technology discussed above.

3.4 NRC Staff Findings

The proposed changes to the MPS2 FSAR are technically sound and reflect the improvements achieved in encoded UT over the decades since the FSAR was originally developed. Based on the above, the NRC staff finds that the proposed changes to the FSAR are acceptable because the changes: (1) are in line with the current ASME B31.1 codes and standards; (2) put the piping constructed to the requirements of ANSI B31.1.0 in alignment with the requirements of the ASME Code Section III; and (3) allow the licensee to propose alternative examination requirements under 10CFR50.55a(z) to use UT in lieu of radiographic testing for examinations of welds in the subject piping during repair and replacement activities.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified on August 3, 2015, of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* (FR) on June 9, 2015 (80 FR 32626). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Cumblidge

Date: August 26, 2015

August 26, 2015

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Nuclear
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Glen Allen, VA 23060-6711

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Sincerely,

/RA/

Richard V. Guzman, Sr. Project Manager
Plant Licensing Branch I-1
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S. Cumblidge, NRR		

ADAMS Accession No.: ML15225A008

* See memo dated July 2, 2015

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DATE	8/18/2015	8/26/2015	8/26/2015

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