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

September 24, 2012

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. 3 - ISSUANCE OF AMENDMENT RE: THE USE OF OPTIMIZED ZIRLO™ FUEL ROD CLADDING (TAC NO. ME7663)

Dear Mr. Heacock:

The Commission has issued the enclosed Amendment No. 253 to Renewed Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3, in response to your application dated November 17, 2011.

The amendment revises Technical Specification (TS) 5.3.1, "Reactor Core, Fuel Assemblies," to add Optimized ZIRLO™ as an acceptable fuel rod cladding material. In addition, the amendment revises TS 6.9.1.6.b to add the Westinghouse topical report for Optimized ZIRLO™ to the list of analytical methods used to determine the core operating limits.

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,

James Kim

James Kim, Project Manager
Plant Licensing Branch 1-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures:
1. Amendment No. 253 to NPF-49
2. Safety Evaluation

cc w/encls: Distribution via Listserv

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

DOMINION NUCLEAR CONNECTICUT, INC.

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 253
Renewed License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the applicant dated November 17, 2011, 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.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-49 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 253, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the renewed license. DNC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

George A. Wilson, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License
and Technical Specifications

Date of Issuance: September 24, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 253

RENEWED FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

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	Insert
Page 3	Page 3

Replace the following pages of the Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
5-5	5-5
6-20	6-20
6-20a	6-20a

(2) Technical Specifications

The Technical Specifications contained in Appendix A, revised through Amendment No. 253 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated into the license. DNC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) DNC shall not take any action that would cause Dominion Resources, Inc. (DRI) or its parent companies to void, cancel, or diminish DNC's Commitment to have sufficient funds available to fund an extended plant shutdown as represented in the application for approval of the transfer of the licenses for MPS Unit No. 3.

(4) Immediately after the transfer of interests in MPS Unit No. 3 to DNC, the amount in the decommissioning trust fund for MPS Unit No. 3 must, with respect to the interest in MPS Unit No. 3, that DNC would then hold, be at a level no less than the formula amount under 10 CFR 50.75.

(5) The decommissioning trust agreement for MPS Unit No. 3 at the time the transfer of the unit to DNC is effected and thereafter is subject to the following:

(a) The decommissioning trust agreement must be in a form acceptable to the NRC.

(b) With respect to the decommissioning trust fund, investments in the securities or other obligations of Dominion Resources, Inc. or its affiliates or subsidiaries, successors, or assigns are prohibited. Except for investments tied to market indexes or other non-nuclear-sector mutual funds, investments in any entity owning one or more nuclear power plants are prohibited.

(c) The decommissioning trust agreement for MPS Unit No. 3 must provide that no disbursements or payments from the trust, other than for ordinary administrative expenses, shall be made by the trustee until the trustee has first given the Director of the Office of Nuclear Reactor Regulation 30 days prior written notice of payment. The decommissioning trust agreement shall further contain a provision that no disbursements or payments from the trust shall be made if the trustee receives prior written notice of objection from the NRC.

(d) The decommissioning trust agreement must provide that the agreement can not be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The core shall contain 193 fuel assemblies. Each fuel assembly shall consist of 264 zircaloy-4, ZIRLO®, or Optimized ZIRLO™ clad fuel rods with an initial composition of natural uranium dioxide or a maximum nominal enrichment of 5.0 weight percent U-235 as fuel material. Limited substitutions of zircaloy-4, ZIRLO® or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assembly configurations shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by test or cycle-specific reload analyses to comply with all fuel safety design bases. Each fuel rod shall have a nominal active fuel length of 144 inches. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

CONTROL ROD ASSEMBLIES

5.3.2 The core shall contain 61 full-length control rod assemblies. The full-length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 95.3% hafnium and 4.5% natural zirconium or 80% silver, 15% indium, and 5% cadmium. All control rods shall be clad with stainless steel.

5.4 DELETED

5.5 DELETED

CORE OPERATING LIMITS REPORT (Cont.)

6.9.1.6.b The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," (W Proprietary). (Methodology for Specifications 2.1.1.1--Departure from Nucleate Boiling Ratio, 2.1.1.2--Peak Fuel Centerline Temperature, 3.1.1.3--Moderator Temperature Coefficient, 3.1.3.5--Shutdown Bank Insertion Limit, 3.1.3.6--Control Bank Insertion Limits, 3.2.1--AXIAL FLUX DIFFERENCE, 3.2.2--Heat Flux Hot Channel Factor, 3.2.3--Nuclear Enthalpy Rise Hot Channel Factor, 3.1.1.1.1, 3.1.1.1.2, 3.1.1.2 -- SHUTDOWN MARGIN, 3.9.1.1-- Boron Concentration.)

2. T. M. Anderson to K. Kniel (Chief of Core Performance Branch, NRC), January 31, 1980--Attachment: Operation and Safety-Analysis Aspects of an Improved Load Follow Package.

3. NUREG-800, Standard Review Plan, U.S. Nuclear Regulatory Commission, Section 4.3, Nuclear Design, July 1981 Branch Technical Position CPB 4.3-1, Westinghouse Constant Axial Offset Control (CAOC), Revision 2, July 1981.

4. WCAP-10216-P-A-R1A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL FQ SURVEILLANCE TECHNICAL SPECIFICATION," (W Proprietary). (Methodology for Specifications 3.2.1--AXIAL FLUX DIFFERENCE [Relaxed Axial Offset Control] and 3.2.2--Heat Flux Hot Channel Factor [W(z) surveillance requirements for F_Q Methodology].)

5. WCAP-12945-P-A, "CODE QUALIFICATION DOCUMENT FOR BEST ESTIMATE LOCA ANALYSIS," (W Proprietary). (Methodology for Specification 3.2.2--Heat Flux Hot Channel Factor.)

6. WCAP-16009-P-A, "REALISTIC LARGE-BREAK LOCA EVALUATION METHODOLOGY USING THE AUTOMATED STATISTICAL TREATMENT OF UNCERTAINTY METHOD (ASTRUM)," (W Proprietary). (Methodology for Specification 3.2.2--Heat Flux Hot Channel Factor.)

7. WCAP-11946, "Safety Evaluation Supporting a More Negative EOL Moderator Temperature Coefficient Technical Specification for the Millstone Nuclear Power Station Unit 3," (W Proprietary).

8. WCAP-10054-P-A, "WESTINGHOUSE SMALL BREAK ECCS EVALUATION MODEL USING THE NOTRUMP CODE," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

9. WCAP-10079-P-A, "NOTRUMP - A NODAL TRANSIENT SMALL BREAK AND GENERAL NETWORK CODE," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

10. WCAP-12610, "VANTAGE+ Fuel Assembly Report," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

CORE OPERATING LIMITS REPORT (Cont.)

11. Letter from V. L. Rooney (USNRC) to J. F. Opeka, "Safety Evaluation for Topical Report, NUSCO-152, Addendum 4, 'Physics Methodology for PWR Reload Design,' TAC No. M91815," July 18, 1995.

12. Letter from E. J. Mroczka to the USNRC, "Proposed Changes to Technical Specifications, Cycle 4 Reload Submittal - Boron Dilution Analysis," B13678, December 4, 1990.

13. Letter from D. H. Jaffe (USNRC) to E. J. Mroczka, "Issuance of Amendment (TAC No. 77924)," March 11, 1991.

14. Letter from M. H. Brothers to the USNRC, "Proposed Revision to Technical Specification, SHUTDOWN MARGIN Requirements and Shutdown Margin Monitor OPERABILITY for MODES 3, 4, and 5 (PTSCR 3-16-97), B16447, May 9, 1997.

15. Letter from J. W. Anderson (USNRC) to M. L. Bowling (NNECO), "Issuance of Amendment - Millstone Nuclear Power Station, Unit No. 3 (TAC No. M98699)," October 21, 1998.

16. WCAP-8301, "LOCTA-IV Program: Loss-of-Coolant Transient Analysis."

17. WCAP-10054-P-A, Addendum 2, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model."

18. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature DT Trip Functions," (Westinghouse Proprietary Class 2). (Methodology for Specifications 2.1.1 and 2.2.1.)

19. WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," (W Proprietary). (Methodology for Specification 3.2.2 1 - Heat Flux Hot Channel Factor.)

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 253

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated November 17, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11329A003), Dominion Nuclear Connecticut, Inc. (DNC, the licensee), submitted a license amendment request (LAR) for Technical Specification (TS) revisions and exemption for Millstone Power Station Unit 3 (MPS3) (Reference 1). The requested changes would revise TS 5.3.1, "Reactor Core, Fuel Assemblies," to add Optimized ZIRLO™ as an acceptable fuel rod cladding material. In addition, the requested changes would revise TS 6.9.1.6.b "Core Operating Limits Report (COLR)," to add Westinghouse topical report on Optimized ZIRLO™ to the list of analytical methods used to determine the core operating limits

The Optimized ZIRLO™ cladding, manufactured by Westinghouse Electric Company, is a new version of the ZIRLO™ material and was approved in a topical report Addendum 1-A to WCAP-12610-P-A and CENPD-404-P-A, entitled "Optimized ZIRLO™," (ADAMS Accession No. ML062080576) (portions of this topical report are non-publicly available because they contain proprietary information) (the report with the proprietary information removed is available in ADAMS, Accession No. ML062080569), for Westinghouse and Combustion Engineering (CE) fuel designs. The fuel rod burnup limits were approved to a peak rod average of 62,000 MWD/MTU for Westinghouse fuel and 60,000 MWD/MTU for CE fuel. However, the Nuclear Regulatory Commission (NRC) staff requires that licensees using the Optimized ZIRLO™ comply with the conditions and limitations listed in the safety evaluation (SE) dated June 10, 2005 (ADAMS Accession No. ML051670408).

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.90, "Application for amendment of license or construction permit," allow a licensee to amend or change the original license application. The requirements of 10 CFR 50.92, "Issuance of amendment," specify that the NRC staff will be guided by the considerations which govern the issuance of initial licenses to the extent applicable and appropriate in determining whether an amendment will be issued to the applicant. The licensee requests a license amendment to add Optimized ZIRLO™ as an acceptable fuel rod cladding material in the TS.

By letter dated June 10, 2005, the NRC staff issued a safety evaluation (SE) approving Addendum 1 to Westinghouse Topical Report (TR) WCAP-12610-P-A and CENPD-404-P-A, "Optimized ZIRLO™," wherein the NRC staff approved the use of Optimized ZIRLO™ as an acceptable fuel cladding material for Westinghouse and Combustion Engineering (CE) fuel designs (References 2 and 3). The fuel rod burnup limits were approved to a peak rod average of 62 gigawatt-days per metric ton of uranium (GWD/MTU) for Westinghouse fuel and 60 GWD/MTU for Combustion Engineering fuel. The NRC staff approved the use of Optimized ZIRLO™ as a fuel cladding material based on:

1) similarities to standard ZIRLO™,
2) demonstrated material performance, and
3) a commitment to provide irradiated data and validate fuel performance models ahead of burnups achieved in batch application.

The NRC staff's SE for Optimized ZIRLO™ includes 10 conditions and limitations for its use.

By letter dated August 23, 2012 (ADAMS Accession No. ML12214A583), the NRC staff approved an exemption from specific requirements of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems [ECCS] for light-water nuclear power reactors," and Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," for MPS3 to allow the use of Optimized ZIRLO™ for fuel rod cladding.

3.0 TECHNICAL EVALUATION

3.1 Conditions and Limitations

The June 10, 2005, SE (Reference 2) states:

> Based upon demonstrated material performance in addendum 1 and in response to RAIs [Requests for Additional Information]... and the irradiated database, the NRC staff has approved Optimized ZIRLO™ for full batch implementation.

The SE concludes:

> The NRC staff reviewed the effects of Optimized ZIRLO™ using the appropriate fuel design requirements of [Standard Review Plan] SRP 4.2 and 10 CFR Part 50, Appendix A, General Design Criteria and found that the TR provided reasonable assurance that under both normal and accident conditions, Westinghouse and CE fuel assembly designs implementing Optimized ZIRLO™ fuel cladding would be able to safely operate and comply with NRC regulations.

The SE also states that licensees referencing Addendum 1 to the TR to implement Optimized ZIRLO™ must ensure compliance with ten issues as specified in the SE. The licensee has documented its compliance with these ten conditions and limitations in its LAR (Reference 1) and has committed to ensuring compliance with them for future fuel reloads. The NRC staff has reviewed DNC's response to each of the 10 SE conditions and limitations as discussed below.

3.1.1 Condition 1: Until rulemaking to 10 CFR Part 50 addressing Optimized ZIRLO™ has been completed, implementation of Optimized ZIRLO™ fuel clad requires an exemption from 10 CFR 50.46 and 10 CFR Part 50 Appendix K

Attachment 3 of the licensee's November 17, 2011, submittal is the application for exemption. As stated above, the exemption request is addressed by separate correspondence.

3.1.2 Condition 2: The fuel rod burnup limit for this approval remains at currently established limits: 62 GWD/MTU for Westinghouse fuel designs and 60 GWd/MTU for CE fuel designs.

The licensee stated that the maximum fuel rod burnup limit for Westinghouse fuel designs including Optimized ZIRLO™ will continue to be 62 GWD/MTU. The NRC staff considers this burnup limit acceptable.

3.1.3 Condition 3: The maximum fuel rod waterside corrosion, as predicted by the best-estimate model, will be [proprietary limits included in topical report and proprietary version of safety evaluation] of hydrides for all locations of the fuel rod.

The licensee stated that the maximum fuel rod waterside corrosion for fuel using Optimized ZIRLO™ cladding will be confirmed to be less than the design limit. The licensee performs evaluations that confirm the appropriate corrosion limits are satisfied as part of the normal reload design process. The NRC staff considers this condition met by the licensee's statement.

3.1.4 Condition 4: All the conditions listed in previous NRC SE approvals for methodologies used for standard ZIRLO™ and Zircaloy-4 fuel analysis will continue to be met, except that the use of Optimized ZIRLO™ cladding in addition to standard ZIRLO™ and Zircaloy-4 cladding is now approved.

The licensee stated that it will continue to meet all conditions associated with approved methods for the fuel analysis of Optimized ZIRLO™ clad fuel rods as part of the core reload design process. Based on the licensee's statement, the NRC staff considers that this condition is met by the licensee.

3.1.5 Condition 5: All methodologies will be used only within the range for which ZIRLO™ and Optimized ZIRLO™ data were acceptable and for which the verifications discussed in Addendum 1 and responses to RAIs [Requests for Additional Information] were performed.

The licensee stated that the application of ZIRLO® and Optimized ZIRLO™ in approved methodologies will be consistent with the approach accepted in the approved topical report WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A "Optimized ZIRLO™," as part of the core reload design process. These methodologies will only be used within the range for which ZIRLO® and Optimized ZIRLO™ data were found acceptable. Based on the licensee's statement, the NRC staff considers that this condition is met by the licensee.

3.1.6 Condition 6: The licensee is required to ensure that Westinghouse has fulfilled the following commitment: Westinghouse shall provide the NRC staff with a letter(s) containing the following information (based on the schedule described in response to RAI #3):

a. Optimized ZIRLO™ LTA [Lead Test Assembly] data from Byron, Calvert Cliffs, Catawba, and Millstone.

i. Visual
ii. Oxidation of fuel rods
iii. Profilometry
iv. Fuel rod length
v. Fuel assembly length

b. Using the standard and Optimized ZIRLO™ database including the most recent LTA data, confirm applicability with currently approved fuel performance models (e.g., measured vs. predicted).

The licensee indicated that Westinghouse has provided the NRC staff a number of LTA data and models (References 4, 5, 6, 7, and 8). The data provided, but were not limited to, the information described in Condition 6a. The licensee stated that Westinghouse has committed to continue to provide additional data from the Optimized ZIRLO™ LTA programs to the NRC after new data for higher burnup/fluence become available. The licensee stated it will confirm that as higher burnups/fluencies are achieved for Optimized ZIRLO™ clad fuel rods, the requirements of this condition will be met as it applies to MPS3.

Based on the LTA references cited by the licensee, and the licensee's commitment described above, the NRC staff considers that this condition is met by the licensee.

3.1.7 Condition 7: The licensee is required to ensure that Westinghouse has fulfilled the following commitment: Westinghouse shall provide the NRC staff with a letter containing the following information (based on the schedule described in response to RAI #11):

a. Vogtle growth and creep data summary reports,

b. Using the standard ZIRLO™ and Optimized ZIRLO™ database including the most recent Vogtle data, confirm applicability with currently approved fuel performance models (e.g., level of conservatism in W [Westinghouse] rod pressure analysis, measured vs. predicted, predicted minus measured vs. tensile and compressive stress).

As stated before, Westinghouse has provided the NRC staff a number of LTA data and models including the Vogtle results (References 4, 5, 6, 7, and 8). The data provided, but were not limited to, the information described in Condition 7a.

The licensee indicated that the data from three cycles of operation had been evaluated and that the updated creep model had been used to predict the growth and creep in fuel rod performance. Westinghouse provided the results, which are favorable, to the NRC staff (Reference 8). The

licensee stated that it will confirm that as higher burnups/fluencies are achieved for Optimized ZIRLO™ clad fuel rods, the requirements of this condition will be met as it applies to MPS3.

Based on the review of Westinghouse's LTA references cited above and the licensee's statement, the NRC staff considers that this condition is met by the licensee.

3.1.8 Condition 8: The licensee shall account for the relative differences in unirradiated strength (YS [Yield Strength] and UTS [Ultimate Tensile Strength]) between Optimized ZIRLO™ and standard ZIRLO™ in cladding and structural analyses until irradiated data for Optimized ZIRLO™ have been collected and provided to the NRC staff.

a. For the Westinghouse fuel design analyses:

i. The measured, unirradiated Optimized ZIRLO™ strengths shall be used for BOL analyses.

ii. Between BOL up to a radiation fluence of 3.0×10^{21} n/cm^2 (E >1MeV), pseudo-irradiated Optimized ZIRLO™ strength set equal to linear interpolation between the following two strength level points: At zero fluence, strength of Optimized ZIRLO™ equal to measured strength of Optimized ZIRLO™ and at a fluence of 3.0×10^{21} n/cm^2 (E > 1MeV), irradiated strength of standard ZIRLO™ at the fluence of 3.0×10^{21} n/cm^2 (E > 1MeV) minus 3 ksi.

iii. During subsequent irradiation from 3.0×10^{21} n/cm^2 up to 12×10^{21} n/cm^2, the differences in strength (the difference at a fluence of 3×10^{21} n/cm^2 due to tin content) shall be decreased linearly such that the pseudo-irradiated Optimized ZIRLO™ strengths will saturate at the same properties as standard ZIRLO™ at 12×10^{21} n/cm^2.

b. For the CE fuel design analyses, the measured, unirradiated Optimized ZIRLO™ strengths shall be used for all fluence levels (consistent with previously approved methods).

The licensee stated that analysis of Optimized ZIRLO™ clad fuel rods will use the YS and UTS as modified per Conditions 8.a.i, 8.a.ii, and 8.a.iii until such time that irradiation data for Optimized ZIRLO™ strengths are collected and provided to the NRC. The licensee will confirm that as higher burnups/fluencies are achieved for Optimized ZIRLO™ clad fuel rods that the requirements of this condition will be met as it applies to MPS3.

MPS3 uses a Westinghouse fuel design, therefore Condition 8.b does not apply.

Based on the licensee's statements, the NRC staff considers that this condition is met by the licensee.

3.1.9 Condition 9: As discussed in response to RAI #21, for plants introducing Optimized ZIRLO™ that are licensed with LOCBART or STRIKIN-II and have a limiting [peak cladding temperature] PCT that occurs during blowdown or early reflood, the limiting LOCBART or STRIKIN-II calculation will be rerun using the specified Optimized ZIRLO™

material properties. Although not a condition of approval, the NRC staff strongly recommends that, for future evaluations, Westinghouse updates all computer models with Optimized ZIRLO™ specific material properties.

The licensee stated that the MPS3 is not licensed with LOCBART or STRIKIN-II loss-of-coolant accident methodology. Therefore, this condition does not apply to MPS3. The NRC staff has determined that his statement is correct.

3.1.10 Condition 10: Due to the absence of high temperature oxidation data for Optimized ZIRLO™, the Westinghouse coolability limit on PCT during the locked rotor event shall be [proprietary limits included in topical report and proprietary version of safety evaluation].

The licensee stated that the locked rotor event will be assessed against this coolability limit for the Optimized ZIRLO™ fuel design as part of the core reload design process. Based on the licensee's statement, the NRC staff considers that this condition is met by the licensee.

3.2 TS Revisions

3.2.1 Section 5.3.1, "Reactor Core, Fuel Assemblies"

The licensee proposed to add Optimized ZIRLO™ as an acceptable fuel rod cladding material and correct the spelling of ZIRLO®. The new sentences are stated as follows:

"...Each fuel assembly shall consist of 264 zircaloy-4, ZIRLO®, or Optimized ZIRLO™ clad fuel rods..."

"...Limited substitutions of zircaloy-4, ZIRLO® or stainless steel filler rods..."

Based on the fact that Optimized ZIRLO™ fuel was previously approved and that the licensee had specifically addressed the 10 conditions and limitations delineated in the approved topical report (see Section 3.1 above), the NRC staff concludes that these revisions are acceptable.

3.2.2 Section 6.9.1.6.b, "Core Operating Limits Report (COLR)"

The licensee proposed to add the approved Westinghouse topical report, WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," to the list of references for the COLR. Reference 8 of the list would also be revised to correct a typographical error in the title by deleting the number "17." This error was introduced in Amendment 218, dated March 9, 2004.

Based on the reports being previously approved and the correction of a typographical error, the NRC staff concludes that these revisions are acceptable.

3.3 Summary of Technical Evaluation

The NRC staff has reviewed the licensee's proposed amendment of the TS. Based on the evaluation set forth above and compliance with the limitations and conditions set forth in the NRC SE for WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," the

NRC staff concludes that the Optimized ZIRLO™ fuel rod cladding is acceptable for use at MPS3 to a peak rod average burnup limit of 62,000 MWD/MTU, and the associated TS revisions are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified 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 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 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 (76 FR 73730). 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.

7.0 REFERENCES

1. Letter from Dominion Nuclear Connecticut, Inc. to NRC, "Proposed License Amendment and Exemption Request for Use of Optimized ZIRLO™ Fuel Rod Cladding," November 17, 2011, ADAMS Accession No. ML11329A003.

2. Letter from H. N. Berkow, NRC, to J. A. Gresham, Westinghouse Electric Company, "Final Safety Evaluation for Addendum 1 to Topical Report WCAP-12610-P-A and CENPD-404-P-A, 'Optimized ZIRLO™,'" June 10, 2005, ADAMS Accession No. ML051670395.

3. WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," (Proprietary), July 10, 2006, ADAMS Accession No. ML062080576.

4. Letter from Westinghouse to NRC, "SER Compliance with WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A 'Optimized ZIRLO™'" (Proprietary) LTR-NRC-07-1, January 4, 2007, ADAMS Accession No. ML070100389.

5. Letter from Westinghouse to NRC, "SER Compliance with WCAP-12610-P-A & CENPD-404-P-A Addendum 1-A 'Optimized ZIRLO™'" (Proprietary) LTR-NRC-07-58, November 30, 2007, ADAMS Accession No. ML073130562.

6. Letter from Westinghouse to NRC, "SER Compliance with WCAP-12610-P-A & CENPD-404-P-A Addendum 1-A 'Optimized ZIRLO™'" (Non-Proprietary), LTR-NRC-07-58, Rev. 1, February 29, 2008, ADAMS Accession No. ML080390452.

7. Letter from Westinghouse to U.S. Nuclear Regulatory Commission, "SER Compliance of WCAP-12610-P-A & CENPD-404-P-A Addendum 1-A 'Optimized ZIRLO™'" (Proprietary/Non-Proprietary), LTR-NRC-08-60, December 30, 2008, ADAMS Accession No. ML090080380.

8. Letter and documents from Westinghouse to U.S. Nuclear Regulatory Commission, "SER Compliance of WCAP-12610-P-A & CENPD-404-P-A Addendum 1-A 'Optimized ZIRLO™'" (Proprietary/Non-Proprietary), LTR-NRC-10-43, July 26, 2010, ADAMS Accession No. ML102140223.

Principal Contributor: J. Andrew Proffitt

Date: September 24, 2012

September 24, 2012

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. 3 - ISSUANCE OF AMENDMENT RE: THE USE OF OPTIMIZED ZIRLO™ FUEL ROD CLADDING (TAC NO. ME7663)

Dear Mr. Heacock:

The Commission has issued the enclosed Amendment No. 253 to Renewed Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3, in response to your application dated November 17, 2011.

The amendment revises Technical Specification (TS) 5.3.1, "Reactor Core, Fuel Assemblies," to add Optimized ZIRLO™ as an acceptable fuel rod cladding material. In addition, the amendment revises TS 6.9.1.6.b to add the Westinghouse topical report for Optimized ZIRLO™ to the list of analytical methods used to determine the core operating limits.

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,

/ra/

James Kim, Project Manager
Plant Licensing Branch 1-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures:
1. Amendment No. 253 to NPF-49
2. Safety Evaluation

cc w/encls: Distribution via Listserv

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Accession No.: ML12236A396 *See memo dated July 27, 2012

Office	LPL1-1/PM	LPL1-1/LA	STSB/BC	SNPB/BC	OGC (NLO w/ comments)	LPL1-1/BC
Name	JKim	KGoldstein	RElliott	AMendiola*	JLindell	GWilson
Date	8/27/12	8/27/12	9/12/12	7/27/12	9/20/12	9/24/12

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