

March 28, 2008

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

SUBJECT: KEWAUNEE POWER STATION – ISSUANCE OF AMENDMENT
RE: NUCLEAR CORE DESIGN AND SAFETY ANALYSIS METHODS
(TAC NO. MD6824)

Dear Mr. Christian:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 196 to Facility Operating License No. DPR-43 for the Kewaunee Power Station. This amendment revises the Technical Specifications (TSs) in response to your application dated September 24, 2007, as supplemented on January 18, 2008.

The amendment revises the TSs to add a reference to Dominion Topical Report DOM-NAF-5, "Application of Dominion Nuclear Core Design and Safety Analysis Methods to the Kewaunee Power Station," to the list of approved analytical methods. The amendment permits the application of the Dominion nuclear core design and safety analysis methods, including the methodology to perform core thermal-hydraulic analysis to predict critical heat flux and departure from nucleate boiling ratio for the Westinghouse 422 V+ fuel design.

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

Sincerely,

/RA/

Patrick D. Milano, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures:

1. Amendment No. 196 to
License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

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Kewaunee Power Station

cc:

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DOMINION ENERGY KEWAUNEE, INC.

DOCKET NO. 50-305

KEWAUNEE POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 196
License No. DPR-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Dominion Energy Kewaunee, Inc. dated September 24, 2007, as supplemented on January 18, 2008, 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 Facility Operating License No. DPR-43 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 196, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Lois James, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility Operating License
and Technical Specifications

Date of Issuance: March 28, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 196

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Replace the following page of the Facility Operating License No. DPR-43 with the attached revised page. The changed area is identified by a marginal line.

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

3.10-2

3.10-2

3.10-3

3.10-3

6.9-3

6.9-3

6.9-4

6.9-4

6.9-5

6.9-5

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR, Chapter 1: (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, (2) is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and (3) 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 1772 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 196, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Fire Protection

The licensee shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the licensee's Fire Plan, and as referenced in the Updated Safety Analysis Report, and as approved in the Safety Evaluation Reports, dated November 25, 1977, and December 12, 1978 (and supplement dated February 13, 1981) subject to the following provision:

The licensee may make changes to the approved Fire Protection Program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(4) Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "A Nuclear Management Company Kewaunee Nuclear Power Plant Physical Security Plan (Revision 0)" submitted by letter dated October 18, as supplemented by letter dated October 21, 2004.

(5) Fuel Burnup

The maximum rod average burnup for any rod shall be limited to 60 GWD/MTU until completion of an NRC environmental assessment supporting an increased limit.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO AMENDMENT NO. 196 TO FACILITY OPERATING LICENSE NO. DPR-43

DOMINION ENERGY KEWAUNEE, INC.

KEWAUNEE POWER STATION

DOCKET NO. 50-305

1.0 INTRODUCTION

By application dated September 24, 2007, as supplemented by letter dated January 18, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML072680278 and ML080180444, respectively), Dominion Energy Kewaunee, Inc. (the licensee) requested changes to the Technical Specifications (TSs) for the Kewaunee Power Station (KPS). The January 18, 2008, supplement, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on October 23, 2007 (72 FR 60034).

The proposed changes would: (1) revise the list of approved analytical methods in the core operating limits report (COLR) in TS 6.9.a.4.B, (2) use the provisions of TS Task Force (TSTF) change traveler TSTF-363-A to modify TS 6.9.a.4.B for the characterization of approved methodologies and add a new TS 6.9.a.4.E, requiring the complete identification of those methodologies in the COLR, and (3) change the nomenclature for the height dependent hot channel factor in TS Sections 3.10.b and 6.9.a.4.A. The September 24, 2007, application also requested that TS 2.1.b be modified to substitute the value of the departure from nuclear boiling ratio (DNBR) with the DNBR criterion for the departure from nucleate boiling (DNB) correlations and methodologies listed in Section 6.9 of the TSs. However, in its January 18, 2008, letter, the licensee withdrew its proposed changes to TS 2.1.b.

2.0 REGULATORY EVALUATION

Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR Part 50), establishes the U.S. Nuclear Regulatory Commission's (NRC's) fundamental regulatory requirements with respect to the domestic licensing of nuclear production and utilization facilities.

2.1 Background

As stated in the KPS Updated Safety Analysis Report (USAR), the plant was designed to comply with the original owner's (Wisconsin Public Service Corporation's, WPSC's) understanding of the intent of the Atomic Energy Commission (AEC) General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967. In a letter dated October 2, 1967, the Atomic Industrial Forum (AIF) distributed comments on the

July 1967 AEC GDC. This AIF document was adopted as WPSC's understanding of the method for complying with the AEC GDC. In addition, the licensing basis for KPS is based on the AEC safety evaluation dated July 24, 1972. In Section 3.1, "Conformance with AEC General Design Criteria," the staff performed a technical review to assess the plant against the revised General Design Criteria, issued in 1971, and found that a re-analysis of the plant was not required and that the plant design generally conformed to the intent of the criteria.

2.2 Core Design and Safety Analysis

Section 3.1.3, "Safety Limits," of the USAR states that the reactor is capable of meeting the performance objectives throughout core life under both steady state and transient conditions without violating the integrity of the fuel cladding. Thus, the release of unacceptable amounts of fission products to the coolant is prevented. The TS limiting conditions for operation specify the minimum functional capability or performance levels necessary to assure safe operation of the facility. Design parameters, which are established by safety limits in TS Section 2, are established for the nuclear, reactivity control, thermal and hydraulic, and mechanical aspects of the design.

2.3 Proposed TS Changes

2.3.1 Changes to TS 6.9.4.a.4, "Core Operating Limits Report"

- a. To the list of approved list of analytical methods in TS 6.9.4.a.4.B that are used to determine the core operating limits, the licensee has proposed to add:

(16) Topical Report DOM-NAF-5-A, "Application of Dominion Nuclear Core Design and Safety Analysis Methods to the Kewaunee Power Station (KPS).

and delete:

(1) Safety Evaluation by the Office of Nuclear Reactor Regulation on "Qualifications of Reactor Physics Methods For Application To Kewaunee" Report, dated August 21, 1979, report date September 29, 1978.

- b. Consistent with TSTF-363-A, "Revise Topical Report References in ITS 5.6.5, COLR," dated August 4, 2003, the licensee has proposed to delete the method revision numbers and dates from TS 6.9.4.a.4.B.

- c. The licensee has proposed to add a new TS 6.9.4.a.4.E as follows:

E. The COLR will contain the complete identification of the TS approved analytical methods used to prepare the COLR (i.e. report number, title, revision, date, and any supplements).

2.3.2 Change of the Nomenclature for Height Dependent Hot Channel Factor

The licensee proposed to change the current nomenclature for the height dependent hot channel factor ($F_Q^{EQ}(z)$) to a more generic nomenclature ($F_Q^N(z)$) for this core surveillance

parameter as described in TS 3.10.b, "Power Distribution Limits." This proposed change affects TS 3.10.b.3.C, TS 3.10.b.5, TS 3.10.b.6, TS 3.10.b.6.C.i, TS 3.10.b.6.C.ii, TS 3.10.b.7, TS 3.10.b.7.A, TS 3.10.b.7.C, TS 6.9.a.4.A(9) and TS 6.9.a.4.A(10).

2.4 Regulatory Requirements and Guidance

The regulatory requirements and guidance that the NRC staff considered in its review of the applications are as follows:

- A. KPS USAR Section 1.3 provides a list of applicable AEC GDC, as proposed on July 10, 1967. In particular, Criterion 6, "Reactor Core Design," states that the core, with its related controls and protection systems, shall be designed to function throughout its design lifetime without exceeding acceptable fuel damage limits, which have been stipulated and justified. The core and related auxiliary system designs shall provide this integrity under all expected conditions of normal operation with appropriate margins for uncertainties and for specified transient situations which can be anticipated.
- B. Criterion 14, "Core Protection Systems," states that these protection systems, together with associated equipment, shall be designed to prevent or to suppress conditions that could result in exceeding acceptable fuel damage limits.
- C. Section 50.36, "Technical specifications," of 10 CFR Part 50 states, "Each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section." This regulation requires that the TSs include items in five categories: (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. The licensee's proposed changes to TS 3.10.b and TS 6.9.a.4 are within the limiting control settings and the administrative controls categories.
- D. TSTF Change Traveler TSTF-363-A provides for a requirement to be added to the TSs to specify the complete citation in the COLR for each Topical Report, including the report number, title, revision, date, and any supplements.

3.0 TECHNICAL EVALUATION

3.1 TS 6.9.a.4.B Core Operating Limits Report (COLR)

TS 6.9.a.4.B states that only the listed NRC-reviewed and approved methodologies shall be used to determine core limits. The licensee has proposed to add the Topical Report DOM-NAF-5 (Ref. 3) and delete the existing method, "Qualifications of Reactor Physics Methods for Application to Kewaunee," issued September 1978, that was approved on August 21, 1979. The Topical Report DOM-NAF-5 has been reviewed and approved for KPS by the NRC staff in a safety evaluation dated August 30, 2007 (ADAMS No. ML072290373), to the extent specified in the Topical Report and safety evaluation and under the limitations described therein.

Because DOM-NAF-5 has been reviewed and approved by the NRC staff, it is qualified and acceptable to be listed as a COLR reference in TS 6.9.a.4.B.

3.2 Delete Data and Revision Information from the list of Approved Methods, Relocate to COLR

This TS change is based on TSTF-363-A, which allows the modification of TS 6.9.a.4.B to delete method revision numbers and dates from the current requirements in the list of approved methodologies and the addition of new TS 6.9.a.4.E, requiring complete identification of those analytical methods in the COLR. By deleting revision number and date from TS 6.9.a.4.B, subsequent revisions in the method would not need a request for a TS change, provided that the change did not affect the validity of the method. The new TS 6.9.a.4.E would read as follows:

The COLR will contain the complete identification of the TS approved analytical methods used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).

Because the proposed change to TS 6.9.a.4.B is consistent with TSTF-363-A and the complete identification of the methods will be included in the COLR, as required by new TS 6.9.a.4.E, the NRC staff finds the changes acceptable.

3.3 Change the Nomenclature for Height Dependent Hot Channel Factor

The licensee has proposed that TS 3.10.b, "Power Distribution Limits," be revised to change the nomenclature for the height dependent hot channel $F_Q^{EQ}(z)$ to $F_Q^N(z)$ in the TSs to allow either the Westinghouse relaxed axial offset control (RAOC) or the Dominion relaxed power distribution control (RPDC) methods to be used at KPS. The hot channel factor is measured (under equilibrium conditions) using the monthly core maps. For non-equilibrium conditions, the value is supplemented with an axially-dependent multiplication factor ($W(z)$ for RAOC and $N(z)$ for RPDC), which account for bounding values of calculated non-equilibrium states. Both methods for axial offset control have been approved for use at KPS. It should be noted that allowing use of the Westinghouse RAOC approval methods does not include the Westinghouse RAOC validity criteria methodology, which is a Westinghouse method not reviewed or approved by the NRC to deal with deviations from the RAOC method acceptance criteria. In addition, the surveillance limits and the power distribution control methods applicable to a particular cycle will be documented in the COLR.

The NRC staff finds that the proposed change will facilitate the application of approved methodologies without the complication of two different names for similar parameters. Therefore, the staff finds it acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This 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 staff has determined that the amendment involves no significant increase in the amounts, and no

significant change in the types, of any effluent 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding (72 FR 60034). Accordingly, this 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 this amendment.

6.0 CONCLUSION

The staff 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) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Dominion Energy Kewaunee Letter, G.T. Bischof to NRC, "License Amendment Request 228 Incorporation of Dominion Nuclear Analysis and Fuel Topical Report DOM-NAF-5 Into Kewaunee Technical Specifications" September 24, 2007.
2. Dominion Energy Kewaunee Letter, G.T. Bischof to NRC, "Response to Request for Additional Information Regarding Kewaunee License Amendment Request 228," January 18, 2008.
3. Topical Report DOM-NAF-5, "Application of Dominion Nuclear Design and Safety Analysis Methods to the Kewaunee Power Station (KPS)," by Dominion Energy Kewaunee, April 16, 2007.
4. NRC letter, P.D. Milano to D.A. Christian, Dominion Energy Kewaunee, "Kewaunee Power Station – Safety Evaluation for Topical Report DOM-NAF-5, (TAC No. MD2829)" August 30, 2007.
5. Technical Specification Task Force Change Traveler TSTF-363-A, Revision 0, "Revise Topical Report References in ITS 5.6.5, COLR," April 13, 2000 (as incorporated into NUREG-1431, Revision 2, dated April 13 2001).

Principal Contributor: L. Lois, NRR

Date: March 28, 2008