

June 18, 2008

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

SUBJECT: KEWAUNEE POWER STATION - ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT IMPACT RE: FUEL BURNUP LIMIT  
(TAC NO. MD6085)

Dear Mr. Christian:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment dated July 2, 2007. The proposed amendment would revise the facility operating license by removing condition 2.C(5), "Fuel Burnup," which had limited the peak rod average burnup to 60 gigawatt-days per metric ton uranium until completion of an U.S. Nuclear Regulatory Commission environmental assessment supporting an increased limit.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/Justin Poole for

Jack Cushing, Senior Project Manager  
Plant Licensing Branch 3-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure:  
Environmental Assessment

cc w/encl: See next page

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

SUBJECT: KEWAUNEE POWER STATION - ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT IMPACT RE: FUEL BURNUP LIMIT  
(TAC NO. MD6085)

Dear Mr. Christian:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment dated July 2, 2007. The proposed amendment would revise the facility operating license by removing condition 2.C(5), "Fuel Burnup," which had limited the peak rod average burnup to 60 gigawatt-days per metric ton uranium until completion of an U.S. Nuclear Regulatory Commission environmental assessment supporting an increased limit.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/Justin Poole for

Jack Cushing, Senior Project Manager  
Plant Licensing Branch 3-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure:  
Environmental Assessment

cc w/encl: See next page

DISTRIBUTION:

PUBLIC	RidsNrrPMJCushing	E. Lenning, NRR	RidsOgcRp
LPL3-1 r/f	RidsNrrLABTully	RidsRgn3MailCenter	
RidsNrrDorlLpl3-1	RidsNrrDirRerb	RidsAcrsAcnw&mMailCenter	

ADAMS Accession No.: ML081550246

OFFICE	NRR/LPL3-1/PM	NRR/LPL3-1/LA	NRR.DLR/RERB	OGC/MAS-NLO	NRR/LPL3-1/BC
NAME	JCushing	THarris	JRikhoff (A)	MSpencer	LJames
DATE	6/ 10 /08	6/ 17 /08	6/ 10 /08	6/ 16 /08	6/ 18 /08

OFFICIAL RECORD COPY

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOMINION ENERGY KEWAUNEE, INC.

DOCKET NO. 50-305

KEWAUNEE POWER STATION

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.90, for Facility Operating License No. DPR-43, issued to Dominion Energy Kewaunee, Inc. (the licensee), for operation of the Kewaunee Power Station (KPS), located in Kewaunee County, Wisconsin. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would revise the facility operating license by removing condition 2.C(5), "Fuel Burnup," which had limited the peak rod average burnup to 60 gigawatt-days per metric ton uranium (GWD/MTU) until completion of an NRC environmental assessment supporting an increased limit. The proposed action would allow an increase of the maximum rod average burnup to as high as 62 GWD/MTU. The licensee has procedures in place to ensure that maximum rod burnup will not exceed 62 GWD/MTU.

The proposed action is in accordance with the licensee's application dated July 2, 2007.

The Need for the Proposed Action:

The proposed action to delete the license condition for fuel burnup would allow a higher maximum rod average burnup of 62 GWD/MTU, which would allow for more effective fuel management. If the amendment is not approved, the licensee will not be provided the opportunity to increase maximum rod average burnup to as high as 62 GWD/MTU and allow fuel management flexibility.

Environmental Impacts of the Proposed Action:

In this environmental assessment regarding the impacts of the use of extended burnup fuel beyond 60 GWD/MTU, the Commission is relying on the results of the updated study conducted for NRC by the Pacific Northwest National Laboratory (PNNL), entitled "Environmental Effects of Extending Fuel Burnup Above 60 GWD/MTU" (NUREG/CR-6703, PNNL-13257, January 2001). Environmental impacts of high burnup fuel up to 75 GWD/MTU were evaluated in the study, but some aspects of the review were limited to evaluating the impacts of the extended burnup up to 62 GWD/MTU because of the need for additional data on the effect of extended burnup on gap release fractions. All the aspects of the fuel-cycle were considered during the study, from mining, milling, conversion, enrichment and fabrication through normal reactor operation, transportation, waste management, and storage of spent fuel.

The amendment would allow KPS to extend lead rod average burnup to 62 GWD/MTU. The NRC staff has completed its evaluation of the proposed action and concludes that such changes would not adversely affect plant safety, and would have no adverse affect on the probability of any accident. For the accidents that involve damage or melting of the fuel in the reactor core, fuel rod integrity has been shown to be unaffected by extended burnup under consideration; therefore, the probability of an accident will not be affected. For the accidents in which core remains intact, the increased burnup may slightly change the mix of fission products that could be released in the event of a serious accident, but because the radionuclides

contributing most to the dose are short-lived, increased burnup would not have an effect on the consequences of a serious accident beyond the previously evaluated accident scenarios.

Increases in projected consequences of postulated accidents associated with fuel burnup up to 62 GWD/MTU are not considered significant, and remain well below regulatory limits.

Regulatory limits on radiological effluent releases are independent of burnup. The requirements of 10 CFR 50.36a and Appendix I to 10 CFR Part 50 ensure that any release of gaseous, liquid or solid radiological effluents to unrestricted areas is kept "As Low As is Reasonably Achievable." Therefore, NRC staff concludes that during routine operations, there will be no significant increase in the amount of gaseous radiological effluents released into the environment as a result of the proposed action, nor will there be a significant increase in the amount of liquid radiological effluents or solid radiological effluents released into the environment.

The proposed action will not change normal plant operating conditions. No changes are expected in the fuel handling, operational or storing processes. There will be no significant changes in radiation levels during these evolutions. No significant increase in the allowable individual or cumulative occupational radiation exposure is expected to occur.

The use of extended irradiation will not change the potential environmental impacts of incident-free transportation of spent nuclear fuel or the accident risks associated with spent fuel transportation if the fuel is cooled for 5 years after being discharged from the reactor. The PNNL report for the NRC (NUREG/CR-6703, January 2001), concluded that doses associated with incident-free transportation of spent fuel with burnup to 75 GWD/MTU are bounded by the doses given in 10 CFR 51.52, Table S-4 for all regions of the country, based on the dose rates from the shipping casks being maintained within regulatory limits. Increased fuel burnup will decrease the annual discharge of fuel to the spent fuel pool which will postpone the need to remove spent fuel from the pool.

NUREG/CR-6703 determined that no increase in environmental effects of spent fuel transportation accidents are expected as a result of increasing fuel burnup to 75 GWD/MTU.

The proposed action does not affect non-radiological plant effluents, and no changes to the National Pollution Discharge Elimination System permit are needed. No effects on the aquatic or terrestrial habitat in the vicinity of the plant, or on endangered and/or threatened species and their habitats are expected. The proposed action does not involve any historical or archaeological sites.

The proposed action will not change the method of generating electricity or the method of handling any influents from the environment or non-radiological effluents to the environment. Therefore, no changes or different types of non-radiological environmental impacts are expected as a result of this amendment. Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action. For more detailed information regarding the environmental impacts of extended fuel burnup, please refer to the study conducted by PNNL for the NRC, entitled "Environmental Effects of Extending Fuel Burnup Above 60 GWD/MTU" (NUREG/CR-6073, PNL-13257, January 2001, ADAMS Accession No. ML010310298). The details of the staff's safety evaluation will be provided in the amendment that will be issued as part of the letter to the licensee approving the amendment.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resources than those previously considered in the Final Environmental Statement for Kewaunee Power Station, dated December 1972.

Agencies and Persons Consulted:

In accordance with its stated policy, on June 12, 2008, the staff consulted with the Wisconsin State official, Mr. Jeff Kitsemel, of the Public Service Commission, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated July 2, 2007 (ADAMS Accession No. ML071860075). Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Website, <http://www.nrc.gov/reading-rm/adams.html>.

Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov).

Dated at Rockville, Maryland, this 18<sup>th</sup> day of June 2008.

FOR THE NUCLEAR REGULATORY COMMISSION

***/RA/***

Justin C. Poole, Project Manager  
Plant Licensing Branch 3-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation



Kewaunee Power Station

cc:

Resident Inspectors Office  
U.S. Nuclear Regulatory Commission  
N490 Hwy 42  
Kewaunee, WI 54216-9510

Mr. Chris L. Funderburk  
Director, Nuclear Licensing and  
Operations Support  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

Mr. Thomas L. Breene  
Dominion Energy Kewaunee, Inc.  
Kewaunee Power Station  
N490 Highway 42  
Kewaunee, WI 54216

Ms. Lillian M. Cuoco, Esq.  
Senior Counsel  
Dominion Resources Services, Inc.  
120 Tredegar Street  
Riverside 2  
Richmond, VA 23219

Mr. Stephen E. Scace  
Site Vice President  
Dominion Energy Kewaunee, inc.  
Kewaunee Power Station  
N 490 Highway 42  
Kewaunee, WI 54216

Mr. Thomas J. Webb, Director  
Nuclear Safety & Licensing  
Dominion Energy Kewaunee, Inc.  
Kewaunee Power Station  
N 490 Highway 42  
Kewaunee, WI 54216