

December 16, 2003

Mr. Thomas Coutu
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Nuclear Management Company, LLC
N490 Highway 42
Kewaunee, WI 54216-9511

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT - STRETCH POWER UPRATE
(TAC NO. MB9031)

Dear Mr. Coutu

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for stretch power uprate amendment dated May 22, 2003. The proposed stretch power uprate amendment would revise the Kewaunee Nuclear Power Plant operating license and technical specifications to increase the licensed rated power by 6.0 percent from 1673 megawatts thermal (MWt) to 1772 MWt.

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

Sincerely,

/RA/

John G. Lamb, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSION

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment to Facility Operating License No. DPR-43, issued to Nuclear Management Company, LLC (the licensee), for operation of the Kewaunee Nuclear Power Plant, 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 Kewaunee Nuclear Power Plant operating license and technical specifications (TSs) to increase the licensed rated power by 6.0 percent from 1673 megawatts thermal (MWt) to 1772 MWt.

The proposed action is in accordance with the licensee's application dated May 22, 2003.

The Need for the Proposed Action:

The proposed action permits an increase in the licensed core thermal power from 1673 MWt to 1772 MWt for the Kewaunee Nuclear Power Plant, providing the flexibility to obtain a higher electrical output from the Kewaunee Nuclear Power Plant with minimal modifications.

Environmental Impacts of the Proposed Action:

The licensee has submitted an environmental evaluation supporting the proposed stretch power uprate and provided a summary of its conclusions concerning the radiological and non-radiological environmental impacts of the proposed action.

Radiological Environmental Assessment

The stretch power uprate will increase the activity level of radioactive isotopes in the primary and secondary coolant. Due to leakage or process operations, fractions of these fluids are transported to the liquid and gaseous radwaste systems where they are processed prior to discharge. As the activity levels in the primary and secondary coolant are increased, the activity level of radwaste inputs is proportionately increased. Regulatory guidance relative to methodology to be utilized to establish whether the radwaste effluent releases from a pressurized-water reactor meet the requirements of 10 CFR Part 20 and 10 CFR Part 50, Appendix I, is provided in NUREG-0017, Revision 1. The NUREG-0017 methodology is independent of the length of the fuel cycle.

The maximum expected increase in the reactor coolant source (associated with the chemical group with the largest percentage increase) is approximately 17.6 percent for noble gas activity. This increase is primarily a combination of the impact of core power uprate and reduction in reactor coolant system (RCS) mass. Considering the accuracy and error bounds of the operational data utilized in NUREG-0017, this percentage change is well within the uncertainty of the existing NUREG-0017-based expected reactor coolant isotopic inventory used for radwaste effluent analyses and corrected for a facility with this power rating.

As discussed above, there is approximately a 17.6 percent increase assumed for the liquid releases as input activities are based on the largest long-term RCS activity increase for any chemical grouping and on waste volumes which are essentially independent of power level

within the applicability range of NUREG-0017. Tritium releases in liquid effluents are assumed to increase approximately 11.4 percent (corresponding to the effective increase in core power) since the facility is changing its power rating, without changing its operational procedures . However, for all liquid releases, the power uprate analysis conservatively used the worst case scaling factor for all isotopes between the pre-uprate case and the uprate case.

For all noble gases (limiting chemical group), there will be a maximum 17.6 percent increase in effluent releases due to the core power uprate. Gaseous releases of Kr-85 in actuality will increase by approximately 11.4 percent. Isotopes with shorter half lives will have increases slightly greater than the percentage increase in power level. The decrease in RCS mass (approximately 5 percent) contributes to the increased concentration of this chemical group in the RCS (the primary removal term for the non-Kr-85 noble gases is decay in the RCS) such that the impact of power uprate is conservatively approximated at 17.6 percent. The impact of the power uprate in iodine releases is approximated by the power level increase. The other components of the gaseous release (that is, particulates via the building ventilation systems and water activation gases) are not impacted by the power uprate using the methodology outlined in NUREG-0017. Tritium releases in the gaseous effluents increase in proportion to the increased tritium production, which is directly related to core power and is pathway allocated in the analysis in the same ratio as pre-power uprate releases. For particulates, the methodology of NUREG-0017 specifies the release rate per year per unit per building ventilation system. This is not dependent on power level. Thus, there is no change calculated for the power uprate. However, a 17.6 percent increase will be conservatively addressed.

The maximum increase in doses for gaseous and liquid effluents is estimated to be 17.6 percent. The estimated doses are a very small fraction of that allowable under Appendix I.

Only minor, if any, changes in waste generation volume are expected. However, it is expected that the activity levels for most of the solid waste would increase proportionately to the increase in long half life coolant activity. Thus, while the total longlived activity contained in the waste is expected to be bounded by the percentage of the power uprate, the increase in the overall volume of waste generation resulting from the power uprate is expected to be minor.

The licensee stated that the power uprate has no significant impact on the expected annual radwaste effluent releases or doses (that is, all doses remain a small percentage of allowable Appendix I doses). The licensee concluded that following the power uprate, the liquid and gaseous radwaste effluent treatment system will remain capable of maintaining normal operation offsite doses within the requirements of 10 CFR Part 50, Appendix I.

Dose Consideration

The stretch power uprate will impact the radiation source terms in the core and the expected radiation source terms in the coolant. The actual increase in radiation levels due to the power uprate will not significantly affect radiation zoning or shielding requirements in the various areas of the plant because it is expected that the increase due to the power uprate will be offset by (1) the conservative analytical techniques typically used to establish shielding requirements, (2) the conservatism in the pre-power uprate design-basis RCS source terms used to establish the radiation zones, and (3) the plant TSs that limit the RCS concentrations to levels well below the design-basis source terms. Individual worker exposures will be maintained within acceptable limits by the site as-low-as-is-reasonably-achievable program that controls access to radiation areas. The licensee stated that the stretch power uprate has no significant effect on normal plant operation radiation zones and shielding requirements.

Following the power uprate, the licensee stated that the post-LOCA vital area operator dose estimates will remain within the regulatory limits of NUREG-0578, Item 2.1.6.b and NUREG-0737 II.B.2 and II.B.3.

Non-Radiological Environmental Assessment

The licensee assessment included determining whether the power uprate will cause the plant to exceed the National Pollutant Discharge Elimination System (NPDES) permits' effluent discharge limitations and other conditions associated with operation of the plant. This review is based upon information contained in the State of Wisconsin, Department of Natural Resources (WDNR), WPDES Permit No. WI-0001571-06-0 and the Final Environmental Statement for the Kewaunee Nuclear Power Plant. The WPDES permit was effective beginning on August 1, 2002, and expires June 30, 2005. The licensee stated that there are no requirements in the NPDES Permit impacted by the power uprate. Circulating water outlet temperature rise increases by approximately 1.5 °F due to the power uprate. The total temperature rise across the condenser would be 16.7 °F. No change in the circulating water flow is required due to the power uprate. The 1.5 °F increase in the circulating water outlet temperature rise is acceptable because it is within the licensee's WPDES Permit No. WI-0001571-06-0.

Summary

The NRC has completed its evaluation of the proposed action and concludes that there are no significant environmental impacts associated with the proposed action.

The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types of effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential nonradiological impacts, the proposed action does not have a potential to affect any historic sites. It has a small effect on nonradiological plant effluents and has no other environmental impact. Therefore, there are no significant nonradiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

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 resource than those previously considered in the Final Environmental Statement for the Kewaunee Nuclear Power Plant, dated December 1972.

Agencies and Persons Consulted:

On November 4, 2003, the staff consulted with the Wisconsin State official, Jeff Kitzebul of the Public Service Commission - Electric Division, 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 May 22, 2003. 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 Web site, <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 by e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 16th day of December 2003.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation