SEP 16 1986

Docket Nos. 50-282
and 50-306

Mr. D. M. Musolf, Manager
Nuclear Support Services
Northern States Power Company
414 Nicollet Mall
Midland Square, 4th Floor
Minneapolis, Minnesota 55401

Dear Mr. Musolf:

Enclosed is a copy of the Environmental Assessment relating to your February 21, 1986 application for license amendments. The proposed amendments would change the expiration date for the Unit 1 Facility Operating License, DPR-42 from June 25, 2008, to August 9, 2013, and change the expiration date for the Unit 2 Facility Operating License, DPR-60 from June 25, 2008, to October 29, 2014.

A copy of a Notice of Issuance of Environmental Assessment and Finding of No Significant Impact, which will be published in the Federal Register, is also enclosed.

Sincerely,

/s/

Dominic C. DiIanni, Project Manager
Project Directorate #1
Division of PWR Licensing-A

Enclosures:
As Stated

cc's w/enclosures
See Next Page

*See Previous Concurrence

Office:	LA/PAD#1	PM/PAD#1	PSB	RSB	PAEB
Surname:	*PShuttleworth	*DDiIanni/tg	DMilhoan	CBerlinger	RBallard
Date:	07/08/86	07/10/86	08/4/86	08/18/86	08/18/86
Office:	OGC	PD/PAD#1			
Surname:		GLear			
Date:	08/ /86	08/16/86			

Concur in non-rad portions.

8609230044 860916
PDR ADOCK 05000282
P PDR

Mr. D. M. Musolf
Northern States Power Company

Prairie Island Nuclear Generating Plant

cc:
Gerald Charnoff, Esq.
Shaw, Pittman, Potts and Trowbridge
1800 M Street, NW
Washington, DC 20036

Executive Director
Minnesota Pollution Control Agency
1935 W. County Road, B2
Roseville, Minnesota 55113

Mr. E. L. Watzl, Plant Manager
Prairie Island Nuclear Generating Plant
Northern States Power Company
Route 2
Welch, Minnesota 55089

Jocelyn F. Olson, Esq.
Special Assistant Attorney General
Minnesota Pollution Control Agency
1935 W. County Road, B2
Roseville, Minnesota 55113

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
Route #2, Box 500A
Welch, Minnesota 55089

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
Office of Executive Director for Operations
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. William Miller, Auditor
Goodhue County Courthouse
Red Wing, Minnesota 55066

DISTRIBUTION:

Docket Files
NRC PDR
Local PDR
GLear
PShuttleworth
DDiIanni
OGC
EJordan
BGrimes
JPartlow
JMilhoan
CBerlinger
RBallard
ACRS (10)
OPA
PAD#1 r/f
PAD#1 s/f

ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE CHANGE IN EXPIRATION DATES OF

FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 AND 50-306

Date: SEP 16 1986

TABLE OF CONTENTS

1.0 INTRODUCTION

The currently licensed term for Prairie Island Nuclear Generating Plant (PINGP) Unit Nos. 1 and 2 is 40 years commencing with issuance of the construction permits (June 25, 1968). Accounting for the time that was required for plant construction, this represents an effective operating license term of 34 years and 11 months for Unit 1 and 33 years and eight months for Unit 2. The licensee's application dated February 21, 1986, requests a 40-year operating license term for PINGP Unit Nos. 1 and 2.

2.0 THE NEED FOR THE PROPOSED ACTION

The granting of the proposed license amendments would allow the licensee to operate PINGP Unit Nos. 1 and 2 for approximately an additional 5 and 6 years, respectively, beyond the currently approved dates.

3.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

In May 1973, the Atomic Energy Commission issued the "Final Environmental Statement Related to Operation of PINGP Unit Nos. 1 and 2" (FES). This document provides an evaluation of the environmental impact associated with operation of PINGP Unit Nos. 1 and 2. The NRC staff reviewed this document to determine if any significant environmental impacts, other than those previously considered, would be associated with the proposed license extensions.

3.1 Radiological Impacts

The NRC staff has considered the radiological impacts as a result of a hypothetical, design basis, accident at PINGP, including the impact of revised population estimates.

In 1972 and 1973 (Safety Evaluation Report, Prairie Island Nuclear Generating Plant Units 1 and 2, September 28, 1972; and Final Environmental Statement, Prairie Island Nuclear Generating Plant Units 1 and 2, May 1973), the staff evaluated the regional demography and found the land area within a 25 mile radius to be predominantly rural, as indicated by the population statistics. The population density for a 25 mile radius has not changed significantly, based on 1980 census data, and the area remains and is projected to remain predominantly rural. Also, based upon a comparison of population projections in the FES and the population trends and census data since the plants began operating, the forecasts of population density have been consistent and generally conservative, and would appear to remain so throughout the period of extended operations to the year 2015.

The outer boundary of the low population zone (LPZ) is at a nominal radius of two miles from the plant (1.5 miles in current emergency planning). The 1970 census for the LPZ population was 374, and 484 was estimated for 1990. Based on the 1980 census data, in which the LPZ population was 471, and on the trended population increase for 1970 to 1980, the projected LPZ population for 2015 is 708. The nearest population center with more than 25,000 people is the Minneapolis - St. Paul metropolitan area, located beginning 30 miles northwest of the plant and extending northward. The Census Bureau data for 1980 indicates a population of 2,113,533 for this metropolitan area, with a licensee projected 2015 population of about 2.7 million.

The staff has concluded that, based upon these population estimates, the current Exclusion Area Boundary, Low Population Zone and nearest population center distances would likely be unchanged from those used for licensing the units. Therefore, the conclusion reached in the staff's Safety Evaluation in 1972 that Prairie Island meets the requirements of 10 CFR Part 100 remains unchanged.

In addition, the staff concludes that the higher projected population for 2015 would not change the overall conclusions of the Final Environmental Statement concerning radiological consequences following accidents.

Finally, the staff has assessed the public risks from reactor accidents per year of operation at other reactors of comparable design and power level (and larger). In all cases, the estimated reactor accident risks of early and latent cancer fatality per year of operation have been small compared to the background accident and cancer fatality risks to which the public is exposed and did not increase with longer periods of operation. If similar risks were estimated for Prairie Island, Units 1 and 2, we would expect a similar comparison. Therefore, we conclude that the proposed additional years of operation would not increase the annual public risk from reactor accidents.

The NRC staff has also evaluated the radiological environmental effects associated with normal operation of the facility. This evaluation was conducted to assure that the licensee's "as low as is reasonably achievable" (ALARA) measures and dose projections are applicable for the additional years of plant service and are in accordance with 10 CFR Part 20 and the guidance of Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be as Low as is Reasonably Achievable" (Revision 3).

3.1.1 Environmental Impacts - General Public

The NRC staff calculated dose commitments to the human population residing around nuclear power reactors to assess the radiological impact on this population from radioactive material released from these reactors. The annual dose commitment is the calculated dose that would be received over a 50-year period following the intake of radioactivity for one year under the conditions that would exist 15 years after the plant began operations.

The 15 year period is chosen as representing the midpoint of 30 year plant operations cycle and was incorporated into the dose models by allowing for buildup of long lived radionuclides in the soil. Estimated doses are affected significantly only for radionuclides that have half-lives greater than a few years and are ingested by humans. For a plant licensed for 40 years, increasing the buildup from 15 to 20 years would increase the dose from long-lived radionuclides via the ingestion pathways by 10% at most. The effect on dose from shorter-lived radionuclides would be much less. Additionally, population dose estimates in the FES were based on population projections which have proved to be over 20% higher than actual population in the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 area.

Appendix E of the Final Environmental Statement (FES) indicates that the estimated doses via the ingestion pathways are well below the regulatory design objectives. For example, the projected ingestion dose to the thyroid from Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 operations is 5 mrem/yr compared to an Appendix I design objective of 15 mrem/yr. Maximum doses projected

for 1986 (critical receptor) indicate a thyroid dose of 0.554 mrem through a ground - inhalation - vegetable pathway for a child located 0.6 miles south-southeast of the plant. The high dose through milk receptor for 1986 was projected as a 0.2 mrem thyroid dose through the ground - milk - inhalation pathway for an infant located 2.2 miles south-southeast of the plant. Offsite dose calculations based on actual effluent releases show offsite doses far below regulatory requirements (e.g., offsite doses calculated for the period January 1, 1985 through December 31, 1985 are small fractions of allowed doses). Additionally, the total-body population doses from effluent releases have been well below projected values (NUREG/CR-2850, Volume 4, June 1986). The 1986 offsite dose calculation values have been typical of each year of operations of the Prairie Island Units, and are expected to remain typical of plant operations through the year 2015. Thus, an increase of even as much as 10% in these pathways would result in a dose that remains well below the Appendix I guidelines and would not be significant.

3.1.2 Environmental Impacts-Uranium Fuel Cycle

The impacts of the uranium fuel cycle as considered for the FES were originally based on 30 years of operation of a model light water reactor (LWR). The fuel requirements for the model LWR were assumed to be one initial core load and 29 annual refuelings (approximately 1/3 core per refueling). In considering the annual fuel requirement for 40 years for the model LWR, fuel use is averaged out over a 40-year operating life (1 initial core and 39 refuelings of approximately 1/3 core) and results in a slight reduction compared to the annual fuel requirement averaged for a 30-year operating life. The net result is an approximately 1.5% reduction in the annual fuel requirements for the model LWR, due to averaging out of the initial core load over 40 years, instead of 30 years. This small reduction in fuel requirements would not lead to significant changes in the annual impacts of the uranium fuel cycle. The licensee expects 13 additional refuelings over the extended plant life for both units (approximately 5 years, 1 month for Unit 1, and 6 years, 4 months for Unit 2) at the current typical refueling frequency of 13 months.

The staff judges that there would not be any changes to the FES that would be necessary in order to consider 40 years of operation. If anything, the values in the FES become more conservative when a 40-year period of operation is considered, particularly since the licensee will probably extend the intervals between refuelings.

3.1.3 Environmental Impacts-Occupational Exposures

The staff has evaluated the licensee's dose assessment for the years 2008 to 2015 (the additional years during which Unit 1 and/or Unit 2 would operate), and compared it with current Prairie Island and overall industry occupational dose experience.

The average dose over the recent five year period covering 1980-1984 has been 258 person-rem per year for both units (129 person-rem unit), which is the second lowest dose per unit per year among operating pressurized water reactors in the United States.

The licensee has projected that an average annual dose of 280 person-rem for both units will be incurred for each additional year of operation. The total occupational dose expected over the period of the operating license extension is 1960 person-rem, and is based on 13 additional refuelings during this period, with no major unanticipated maintenance. The licensee expects that increased doses from increased maintenance and corrosion product build-up will be offset by a continually improving ALARA program, dose-saving plant modifications, reduced requirements for TMI-required modifications, the use of robotics, and a fuel monitoring (sipping) program, but that average annual overall doses could increase by about 10%. Recent plant modifications that contribute to both on-site and off-site dose reduction include the installation of charcoal filters in purge and vent lines and the installation and use of a "super compactor", which significantly reduces waste handling and shipping.

By comparison, the average annual dose per reactor for other U.S. pressurized water reactors during this same period has been 569 person-rem per reactor year, while the average dose for each Prairie Island Unit for this same five years has been only 129 person-rem. The Prairie Island Units have also been among the lowest in numbers of workers receiving measurable doses, and in average dose per worker during this same period, compared to other U.S. reactors.

The licensee is presently making about 10 radwaste shipments per year, within a range of 10 to 20 shipments in any given year. Radioactive waste shipments are expected to remain at about the present level for the life of the plant, and radwaste reduction efforts, such as the installation of a "super compactor", are expected to help reduce radwaste volume as well as doses from processing and shipping radwaste.

Spent fuel will be stored in the reracked spent fuel pool (previously evaluated by the staff for radiological environmental consequences) in lieu of shipment offsite as stated in the FES. Any further expansion of on-site spent fuel storage capacity (such as through rod consolidation) will be further evaluated for radiological environmental effects by the NRC staff.

The staff concludes that the licensee's dose assessment is acceptable, and their radiation protection program is adequate to ensure that occupational radiation exposures will be maintained ALARA and in continued compliance with the requirements of 10 CFR Part 20.

3.2 Non-Radiological Impacts

Re-examination of the staff's FES of May 1973 reveals that the assessments of non-radiological impacts were based on several considerations depending on the type of impact being addressed. For some types of impact, the assessments were based on a fixed life-of-plant; for other types, the assessments were based on plant design features, on relative loss of renewable resources, or on relative loss or degradation of available habitat.

A time scale reaching far into the future was considered in the relationship between short-term uses of the environment and maintenance of the site for the 30 to 40-year life of the plant (FES P.VIII-1). The biota of the region was studied for probable impact by the plant for significant short- or long-term effects including the use of the environment (i.e., air, water, and land). In essence, no significant short- or long-term damage or loss of biota of the

region has occurred or is anticipated. Should an unanticipated significant detrimental effect to any of the biotic communities or the environment occur, the monitoring programs that are in place are designed to detect such anomalies and corrective measures would be taken by the licensee.

Amendment Nos. 54 and 48, issued by letter dated February 26, 1982, deleted the water quality monitoring requirements (Appendix B) from the Technical Specifications since these requirements would be administered by the Minnesota Pollution Control Agency; the permitting agency designated by the U. S. Environmental Protection Agency (EPA). The Minnesota Pollution Control Agency issued the final National Pollutant Discharge Elimination System (NPDES), Permit No. MN 004006, covering the Prairie Island Nuclear Generating Plants. Water quality requirements covered in the NPDES would be extended to cover the requested extensions. All other issues addressed in our safety evaluation associated with these amendments were reviewed and it was determined that the conclusions would not be impacted by the requested extension.

With regard to intake and thermal discharge effects on aquatic organisms, the design of the structures provides for additional environmental protection. These include: (1) the plant's cooling towers are designed to reduce the condenser coolant discharges to receiving waters to temperatures that are compatible with maintaining a healthy population of fish and other aquatic organisms; (2) the temperature change in the discharge canal will be gradual, thus permitting fish and other aquatic organisms to acclimate to temperature changes extending over hours rather than minutes minimizing cold shock impact; and (3) the absence of dikes in the river will provide freedom of movement of fish into and out of the thermal plume. These additional environmental protection conditions will continue to be in place for the proposed license extension and will in no way change the existing effects on aquatic organisms.

A number of plant modifications have been made since the final environmental statement was issued. These modifications tend to improve plant reliability and it has been shown that the environmental impact has been minimal. The plant modifications are described in the updated Safety Analysis Report, which is revised annually. In addition, the 40 year plant operating life is considered part of the design and construction of the modifications. Components associated with the modifications that are expected to wear out during plant life are subjected to a surveillance and maintenance program so that component degradation will be identified and corrected. Extending the operating life as proposed by the licensee will have no detectable environmental impact resulting from the plant modifications.

All potential impacts have been identified, described, and evaluated in previously issued environmental impact statements and/or appraisals by the NRC and reviews by the NPDES permitting authority under the Clean Water Act. All operational non-radiological impacts on biological resources have been assessed by the staff on bases other than a life-of-plant basis; hence, the requested extensions will not alter previous staff findings and conclusions.

4.0 ALTERNATIVES TO THE PROPOSED ACTION

The principal alternative to issuance of the proposed license extensions would be to deny the applications. In this case, Prairie Island Units 1 and 2 would shut down upon expiration of the present operating licenses.

In Chapter XI of the FES, a cost-benefit analysis is presented for Prairie Island. Included in the analysis is a comparison among various options for producing an equivalent electrical power capacity. Even considering significant changes in the economics of the alternatives, operation of Prairie Island Unit 1 for approximately an additional 5 years and Unit 2 for approximately an additional 6 years would only require incremental yearly costs. These costs would be substantially less than the costs associated with the purchase of replacement power or the installation of new electrical generating capacity. Moreover, the overall cost per year of the facility would decrease since the large initial capital outlay would be averaged over a greater number of years. In summary, the cost/benefit advantage of Prairie Island, compared to alternative electrical power generating capacity, improves with the extended plant lifetime.

5.0 ALTERNATIVE USE OF RESOURCES

This action does not involve the use of resources not previously considered in connection with the "Final Environmental Statement Relating to Operation of Prairie Island Nuclear Generating Plant Units 1 and 2" dated May 1973.

6.0 AGENCIES AND PERSONS CONSULTED

The NRC staff reviewed the licensee's request and consulted with the Minnesota Pollution Control Agency. The Minnesota Pollution Agency did not indicate a concern in granting the proposed extension and will extend the water quality requirements in the NPDES to cover the period of the extension.

7.0 BASIS AND CONCLUSION FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed the proposed license amendments relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and that the issuance of the proposed license amendments will have no significant impact on the quality of the human environment. Therefore, pursuant to 10 CFR 51.31, an environmental impact statement need not be prepared for this action.

Dated at Bethesda, Maryland, this 16thday of September 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

Eileen M McKenna for
George E. Lear, Director
PWR Project Directorate #1
Division of PWR Licensing-A

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

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

DOCKET NOS. 50-282 AND 50-306

NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT

AND FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License Nos. DPR 42 and 60, issued to Northern States Power Company (the licensee), for operation of the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 located in Goodhue County Minnesota.

Identification of Proposed Action:

The amendment would consist of changes to the operating license authorizing an extension to expiration date for the Unit 1 Facility Operating License DPR-42 from June 25, 2008 to August 9, 2013 and for Unit 2 Facility Operating License DPR-60, from June 25, 2008 to October 29, 2014.

The amendment to the Technical Specification (TS) is responsive to the licensee's application dated February 21, 1986. The NRC staff has prepared an Environmental Assessment of the Proposed Action, "Environmental Assessment by the Office of Nuclear Reactor Regulation Relating to the Change in Expiration Dates of Facility Operating License Nos. DPR-42 and DPR-60, Northern States Power Company, Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, Docket Nos. 50-282 and 50-306," dated September 16, 1986.

Summary of Environmental Assessment:

The NRC staff has reviewed the potential environmental impact of the proposed change in the expiration dates of the Operating Licenses for Prairie Island Unit Nos. 1 and 2. This evaluation considered the previous environmental studies, including the "Final Environmental Statement Relating to Operation of Prairie Island Nuclear Generating Plant Units 1 and 2" May 1973, and more recent NRC policy.

Radiological Impacts

Although the population in the vicinity of Prairie Island Unit Nos. 1 and 2 has increased slightly, the site requirements of 10 CFR Part 100 are still met with regard to Exclusion Area Boundary, Low Population Zone, and nearest population center distances. In addition, the proposed additional years of reactor operation do not increase the annual public risk from reactor operation.

With regard to normal plant operation, the licensee complies with NRC guidance and requirements for keeping radiation exposures "as low as is reasonably achieveable" (ALARA) for occupational exposures and for radioactivity in effluents. The licensee would continue to comply with these requirements during any additional years of facility operation and also apply advanced technology when available and appropriate.

Non-Radiological Impacts

The NRC review identified no additional degradation of the habitat surrounding Prairie Island with regard to indigenous plant and animal species for the additional years of facility operation. In addition, the National Pollutant Discharge Elimination System permit provides additional environmental protection.

FINDING OF NO SIGNIFICANT IMPACT:

The staff has reviewed the proposed change to the expiration dates of the Prairie Island Units 1 and 2 Facility Operating Licenses relative to the requirements set forth in 10 CFR Part 51. Based upon the environmental assessment, the staff concluded that there are no significant radiological or nonradiological impacts associated with the proposed action and that the proposed license amendments will not have a significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendments.

For further details with respect to this action, see (1) the application for amendents dated February 21, 1986, (2) the Final Environmental Statement Relating to Operation of Prairie Island Nuclear Generating Plant Units 1 and 2, issued May 1973, and (3) the Environmental Assessment dated September 16, 1986. These documents are available for public inspection at the Commission's

Public Document Room, 1717 H Street, N. W. Washington, D.C., 20555 and at the Environmental Conservation Library Minneapolis Public Library 300 Nicollet Mall Minneapolis Minnesota.

Dated at Bethesda, Maryland, this 16th day of September 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

Eileen M. McKenna

Eileen M. McKenna, Acting Director
Project Directorate #1
Division of PWR Licensing-A