

May 22, 1991

Docket No. 50-298

Mr. Guy R. Horn
Nuclear Power Group Manager
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68602-0499

Dear Mr. Horn:

DISTRIBUTION

Docket File
NRC/Local PDR
PD4-1 Reading
PO'Connor(2)
MVirgilio
TQuay
PNoonan
ACRS(10)(MSP315)
LConstable,RIV

OGC(MS15B18)
DHagan(MS3206)
GHill(4)
WJones(MS7103)
JCalvo(MS11F22)
PD4-1Plant File
GPA/PA(MS2G5)
ARM/LFMB(MS4503)

SUBJECT: COOPER NUCLEAR STATION - EXTENSION IN LICENSE EXPIRATION DATE
OPERATING LICENSE NO. DPR-46 (TAC NO. 74843)

Enclosed is a copy of the Environmental Assessment associated with your application for amendment dated August 31, 1989. This assessment relates to your request to amend the expiration date for the operating license for the Cooper Nuclear Station.

Also enclosed is a copy of the Notice of Issuance of Environmental Assessment and Finding of No Significant Impact which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by

Paul W. O'Connor, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosures:
See next page

OFC	: PD4-1/LA	: PD4-1/PE	: PD4-1/PM	: PDNP	: DREP/PDP/13	: OGC	: PD4-1/D
NAME	: PNoonan	: WReckley	: PO'Connor	: SWeiss	: LCunningham	: TQuay	
DATE	: 4/17/91	: 4/17/91	: 4/17/91	: 5/12/91	: 4/24/91	: 5/16/91	: 5/17/91

OFFICIAL RECORD COPY
Document Name: COOPER EA/74843

9106060183 910522
PDR ADOCK 05000298
P PDR

NRC FILE CLONER COPY



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

May 22, 1991

Docket No. 50-298

Mr. Guy R. Horn
Nuclear Power Group Manager
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68602-0499

Dear Mr. Horn:

SUBJECT: COOPER NUCLEAR STATION - EXTENSION IN LICENSE EXPIRATION DATE
OPERATING LICENSE NO. DPR-46 (TAC NO. 74843)

Enclosed is a copy of the Environmental Assessment associated with your application for amendment dated August 31, 1989. This assessment relates to your request to amend the expiration date for the operating license for the Cooper Nuclear Station.

Also enclosed is a copy of the Notice of Issuance of Environmental Assessment and Finding of No Significant Impact which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script that reads "Paul W. O'Connor".

Paul W. O'Connor, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc w/enclosures:
See next page

Mr. Guy R. Horn
Nuclear Power Group Manager

Cooper Nuclear Station

cc:

Mr. G. D. Watson, General Counsel
Nebraska Public Power District
P. O. Box 499
Columbus, Nebraska 68602-0499

Cooper Nuclear Station
ATTN: Mr. John M. Meacham
Division Manager of Nuclear Operations
P. O. Box 98
Brownville, Nebraska 68321

Dennis Grams, Director
Nebraska Department of Environmental
Control
P. O. Box 98922
Lincoln, Nebraska 68509-8922

Mr. Larry Bohlken, Chairman
Nemaha County Board of Commissioners
Nemaha County Courthouse
1824 N Street
Auburn, Nebraska 68305

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 218
Brownville, Nebraska 68321

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Mr. Harold Borchert, Director
Division of Radiological Health
Nebraska Department of Health
301 Centennial Mall, South
P. O. Box 95007
Lincoln, Nebraska 68509-5007



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

ENVIRONMENTAL ASSESSMENT
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO THE CHANGE IN THE EXPIRATION DATE OF
FACILITY OPERATING LICENSE NO. DPR-46
NEBRASKA PUBLIC POWER DISTRICT
COOPER NUCLEAR STATION
DOCKET NO. 50-298

9106060192 910522
PDR ADDCK 05000298
P PDR

TABLE OF CONTENTS

- 1.0 INTRODUCTION
- 2.0 IDENTIFICATION OF THE PROPOSED ACTION
- 3.0 THE NEED FOR THE PROPOSED ACTION
- 4.0 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION
 - 4.1 RADIOLOGICAL AND ENVIRONMENTAL IMPACTS
 - 4.1.1 General Public
 - 4.1.2 Uranium Fuel Cycle
 - 4.1.3 Occupational Exposures
 - 4.1.4 Transportation of Fuel and Waste
 - 4.2 NON-RADIOLOGICAL IMPACTS
- 5.0 ALTERNATIVES TO THE PROPOSED ACTION
- 6.0 ALTERNATIVE USE OF RESOURCES
- 7.0 AGENCIES AND PERSONS CONTACTED
- 8.0 FINDING OF NO SIGNIFICANT IMPACT

1.0 INTRODUCTION

The U.S Nuclear Regulatory Commission (the Commission) is considering the issuance of a proposed amendment which would extend the expiration date of the facility operating license for the Cooper Nuclear Station. The expiration date for License No. DPR-46 for Cooper Nuclear Station would be extended from June 4, 2008 to January 18, 2014. Cooper Nuclear Station is operated by the Nebraska Public Power District (the licensee) and is located in Nemaha County, Nebraska.

2.0 IDENTIFICATION OF THE PROPOSED ACTION

The currently licensed term for Cooper Nuclear Station is 40 years commencing with the issuance of the construction permit (CPR-42) on June 4, 1968. Accounting for the time that was required for construction of the unit, this represents an effective operating license term of approximately 34 years and 5 months. The licensee's application dated August 31, 1989, requests extension of the expiration date of the operating license to January 18, 2014. With this proposed expiration date, the 40-year operating term for the license would start with the issuance of the operating license rather than the construction permit. The Notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the Federal Register on November 15, 1989 (54 FR 47607).

3.0 THE NEED FOR THE PROPOSED ACTION

The granting of the proposed license amendment would allow the licensee to operate Cooper Nuclear Station for approximately 5 years and 7 months beyond the currently approved license expiration date. Without issuance of the proposed license amendment, Cooper Nuclear Station would not be authorized to operate beyond the end of the currently approved license term.

4.0 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

In February 1973, the United States Atomic Energy Commission issued the Final Environmental Statement (FES) related to the operation of Cooper Nuclear Station. This document provided an evaluation of the environmental impact associated with operation of Cooper Nuclear Station. The NRC staff has reviewed the FES and additional information provided by the licensee, to determine the environmental impact of operation of Cooper Nuclear Station for approximately five and one-half additional years, beyond the current license expiration date.

4.1 RADIOLOGICAL AND ENVIRONMENTAL IMPACTS

The staff has considered potential radiological impacts to the general public residing in the vicinity of Cooper Nuclear Station; these impacts include potential accidents and normal radiological releases. In addition, the staff has considered the impacts from radiation exposure to workers at Cooper Nuclear Station. Finally, the impacts from the uranium fuel cycle and the transportation of fuel and waste have been considered. These impacts are summarized in Sections 4.1.1 through 4.1.4 below.

4.1.1 General Public

Radiological impacts on the environment due to the operation of Cooper Nuclear Station remain low, as expected. The radioactive waste treatment and effluent release systems and the Technical Specifications which limit the allowable release of effluents have been determined to provide adequate protection to the general public. As discussed in the December 24, 1984, Safety Evaluation of the Cooper Radiological Effluent Technical Specifications (RETS), the systems and associated limits were found to be in compliance with the requirements of 10 CFR Part 20 and 10 CFR Part 50. The licensee is required to maintain doses to the public as low as is reasonably achievable and provide an annual report of radioactive material released from the unit and estimates of offsite doses due to gaseous and liquid effluents. The staff concludes that the environmental impacts due to the routine radioactive emissions and effluents from Cooper Nuclear Station have been and are expected to remain well within the regulatory guidelines.

The staff has assessed the public risks from reactor accidents per year for operation at other reactors of comparable design and power level. In all cases, the estimated risks of early fatalities per year of reactor operation have been small compared to the risks of many non-reactor type of accidents to which the public is typically exposed and the natural incidence of fatal cancers. The annual risks associated with reactor accidents did not increase with longer periods of operation of the reactor. If similar risks were estimated for Cooper Nuclear Station, the staff would expect a similar conclusion. Further, as noted in the FES, the integrated exposure to the population within a 50-mile radius of the Cooper Nuclear Station site from a variety of postulated accidents would be orders of magnitude smaller than that from naturally occurring background radiation. When considered with the probability of occurrence, the annual potential radiation exposure of the population from all the postulated accidents is an even smaller fraction of the exposure from natural background radiation and, in fact, is well within naturally occurring variations in the natural background. The staff concludes that the proposed additional years of operation would not increase the annual public risk from reactor accidents.

The Cooper FES, dated February 1973, estimated the population distribution within 50 miles of the site as 177,000 and projected a population of 182,000 in 1980. The demographic stability of the region noted in the FES continues to be a valid assessment. The 1980 population within a 50 mile radius of the Cooper Nuclear Station had decreased to 159,887 with only moderate population gains occurring in several specific areas. The area remains predominantly rural and agricultural and is expected to remain so through the proposed life of the plant. Any moderate increases in local populations which might occur would not change the conclusions of the FES and thus the license extension of five and one-half years is not expected to result in any significant radiological impact on the local population.

4.1.2 Uranium Fuel Cycle

In addition to the impacts associated with the operation of the reactor, there are impacts associated with the uranium fuel cycle. The uranium fuel cycle consists of those facilities (e.g., uranium mills, fuel fabrication plants, etc) that are necessary to support the operation of the reactor. The Cooper FES evaluation concerning uranium fuel assumed annual refuelings, each with a discharge of approximately 137 fuel assemblies. NPPD has revised the fuel management scheme to 18 month operating cycles.

The spent fuel storage facility at Cooper has been expanded from an original 740 locations to the present 2366 locations. Based on current projections, the ability to discharge one full core into the spent fuel pool will end approximately in the year 2004. In the event that there is a delay in fuel removal from the pool to the Department of Energy for disposal, the licensee will evaluate options such as the utilization of licensed dry storage casks.

The additional years of operation associated with the change in the license expiration date will almost proportionally increase the total fissile uranium required. However, the 18 month fuel cycles will actually result in fewer total fuel assemblies being discharged to the spent fuel pool even with the extended plant life. The annual environmental effects of the fuel cycle, including storage, remain essentially unchanged from those associated with the FES assumptions. The longer fuel cycle may actually lessen the total impact from fuel storage and disposal activities.

4.1.3 Occupational Exposures

The staff has evaluated the occupational exposure history at Cooper and compared it with the industry average at other BWR units. Cooper has consistently maintained occupational exposures significantly below that experienced at other BWR units. The only years in which the Cooper values exceeded the BWR average were 1983 and 1985. These years were associated with the repair and replacement of reactor recirculation piping and components due to Intergranular Stress Corrosion Cracking (IGSCC) concerns. The licensee has implemented numerous ALARA-related programs and does not expect to increase the annual collective occupational exposures to radiation workers during the additional years of plant operation.

The staff concludes the NPPD's dose assessment is acceptable and that the radiation protection programs at Cooper are adequate to ensure that occupational radiation exposures will be maintained as low as is reasonably achievable (ALARA) and in continued compliance with the requirements of 10 CFR Part 20. Therefore, the staff concludes that the environmental impact related to annual occupational exposures is not significantly affected by the additional years of operation.

4.1.4 Transportation of Fuel and Waste

The staff has reviewed the environmental impacts attributable to the transportation of fuel and waste to and from the Cooper site. The current fuel management scheme may result in higher fuel enrichments and fuel irradiation

levels than assumed in the FES but are well within the bounding assumptions of 5 weight-percent U-235 and 60 GWD/MT used in the "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation" (53 FR 30355). As discussed in the NRC assessment, the combination of normal and accident risks associated with higher irradiation levels are lower than the risks associated with the assumptions of Table S-4 of 10 CFR 51.52.

Operation of Cooper beyond the current license expiration date will necessitate the shipment of additional low-level radioactive waste. The number of required shipments has been held well below the 68 truckloads of low-level waste per year assumed in the FES. The annual rate of production is not expected to significantly change as a function of the age of the plant and should remain below the level assumed in the FES. Future waste shipments are expected to be routed to a waste disposal site located in Nebraska as agreed to by members of the Central Interstate Compact (CIC). Both the amount of low-level waste and the distances which the waste will be transported are expected to remain significantly below the FES estimates.

Therefore, the staff concludes that the environmental impact related to the transportation of fuel and waste remains low and is not significantly increased by the change in the expiration date of the operating license.

4.2 NON-RADIOLOGICAL IMPACTS

The non-radiological environmental impacts associated with the operation of the Cooper Nuclear Station are fully discussed in the FES. The non-radiological impacts evaluated were centered on land use, water use, biological impact (terrestrial and aquatic); a discussion of probable adverse effects, short-term use versus long-term productivity, and the irreversible and irretrievable commitment of resources. The staff has re-evaluated the findings of the FES and the additional information provided by the licensee associated with the non-radiological impacts. Continued operation during the proposed additional five and one-half years would not introduce any significant impacts over those discussed in the FES. The impacts are expected to be relatively minor in comparison to the construction of replacement power production capability. Therefore, the staff concludes that the non-radiological impacts associated with the proposed change in the operating license expiration date is acceptable.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

The principal alternative to issuance of the proposed license extension would be to deny the application. In this case, Cooper would shut down upon expiration of the present operating license.

Discussions regarding the need for the Cooper Nuclear Station and its associated costs and benefits compared to alternative technologies are provided in FES Chapters X and XI. The cost of Cooper provided electricity in 1988 was 3.3 cents per kilowatt-hour which is considerably less than the cost of replacement power. The five and one-half year delay in the need for capital expenditure for

replacement capacity which is provided by the change in the license expiration date is expected to save hundreds of millions of dollars in debt service costs alone. Therefore, it is advantageous from a cost-benefit viewpoint to continue operation of Cooper for the additional five and one-half years as compared to purchasing alternative electrical power generating capacity.

6.0 ALTERNATIVE USE OF RESOURCES

This action does not involve the use of resources not previously considered in connection with the FES on Cooper Nuclear Station.

7.0 AGENCIES AND PERSONS CONSULTED

The NRC staff reviewed the licensee's request and consulted with representatives of the state of Nebraska regarding the proposed no significant hazards consideration determination made with respect to the requested license extension.

8.0 FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed action. The staff has reviewed the proposed license amendment relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that the proposed action will not have significant radiological or non-radiological impacts and will not change any conclusions reached by the Commission in the FES. Therefore, pursuant to 10 CFR 51.31, an environmental impact statement need not be prepared for this action. Based upon this environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

Principal Contributor: W. Reckley

Date: May 22, 1991

UNITED STATES NUCLEAR REGULATORY COMMISSIONNEBRASKA PUBLIC POWER DISTRICTCOOPER NUCLEAR STATIONDOCKET NO. 50-298NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENTAND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering the issuance of proposed amendments to Facility Operating License No. DPR-46, issued to Nebraska Public Power District (NPPD), for operation of the Cooper Nuclear Station, located in Nemaha County, Nebraska.

Identification of Proposed Action:

The amendment would consist of changing the license to extend the expiration date. Specifically, the expiration date for Operating License (OL) No. DPR-46 would be changed from June 4, 2008 to January 18, 2014.

Summary of Environmental Assessment:

The Commission's staff has reviewed the potential environmental impact of the proposed change in the expiration date of the OL for Cooper Nuclear Station. This evaluation considered the previous environmental studies, including the Final Environmental Statement (FES) dated February 1973, and more recent NRC policy.

Radiological Impacts:

The demographic stability of the region near the Cooper Nuclear Station noted in the FES continues to be a valid assessment. The area remains predominantly rural and agricultural and is expected to remain so through the life of the plant. The estimated population doses from the operation of the unit will be maintained as low as reasonably achievable by the radioactive waste and effluent release systems and the controls which govern their operation. As stated in the no significant hazards consideration determination published on November 15, 1989 (54 FR 47607), the change in the expiration date is consistent with the originally engineered design life of the plant, i.e. 40 years of operation. The original design and such considerations as surveillances, inspections, testing and maintenance programs ensure that the probability or consequences of accidents are not increased and that adequate safety margins are maintained. Accordingly, radiological impacts to the general public, considering both routine operations and potential accidents, are not significantly affected by the extension of the Cooper license to January 18, 2014.

Regarding the uranium fuel cycle and transportation of fuel and waste, the major assumptions of the FES continue to bound the operation of the unit. Although the additional years of operation will proportionally increase the total fissile uranium required, implementation of 18 month fuel cycles will actually result in the discharge of fewer total fuel assemblies. The fuel parameters such as enrichment and burnup are bounded by the assumptions used in the "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation" (53 FR 30355). The annual production of low-level waste has been significantly below the FES assumptions and

is not expected to significantly increase during the additional years of operation.

Cooper has consistently maintained occupational exposures significantly below that experienced at other BWR units. The licensee has implemented numerous ALARA-related programs and no significant increase in the annual collective occupational exposures to workers during the additional years of plant operation is anticipated.

Non-Radiological Impacts:

The Commission has concluded that the proposed extension will not introduce any significant impacts over those discussed in the FES.

FINDING OF NO SIGNIFICANT IMPACT

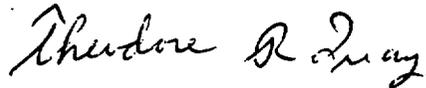
The Commission has determined not to prepare an environmental impact statement for the proposed action. The staff has reviewed the proposed license amendments relative to the requirements set forth in 10 CFR Part 51. Based on this assessment, the staff concludes that there are no significant radiological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

For further details with respect to this action, see (1) the application for amendment dated August 31, 1989, (2) the Final Environmental Statement related to operation of Cooper issued February 1973, and (3) the Environmental Assessment dated May 22, 1991. These documents are available for public

inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C. 20555 and at the Auburn Public Library, 118 15th Street, Auburn, Nebraska 68305.

Dated at Rockville, Maryland, this 22nd day of May 1991.

FOR THE NUCLEAR REGULATORY COMMISSION



Theodore R. Quay, Director
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation