Docket Nos.: 50-369
and 50-370

December 23, 1986

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Issuance of Amendment No.67 to Facility Operating License NPF-9 and Amendment No.48 to Facility Operating License NPF-17 - McGuire Nuclear Station, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No.67 to Facility Operating License NPF-9 and Amendment No.48 to Facility Operating License NPF-17 for the McGuire Nuclear Station, Units 1 and 2. These amendments consist of changes to the licenses in response to your letter dated December 16, 1985, and supplemental letter of November 24, 1986.

The amendments change the expiration date for the Unit 1 Facility Operating License, NPF-9, from February 28, 2013, to June 12, 2021, and change the expiration date for the Unit 2 Facility Operating License, NPF-17, from February 28, 2013, to March 3, 2023.

A copy of the related safety evaluation supporting Amendment No.67 to Facility Operating License NPF-9 and Amendment No.48 to Facility Operating License NPF-17 is enclosed.

Notice of issuance of amendments will be included in the Commission's next bi-weekly Federal Register notice.

Sincerely,

151

Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Enclosures:
1. Amendment No.67 to NPF-9
2. Amendment No.48 to NPF-17
3. Safety Evaluation

cc w/enclosures: See next page

Distribution:
See attached page

PWR#4/DPWR-A	PWR#4/DPWR-A	PWR#4/DPWR-A
MDuncan/rad	DHood	BJYoungblood
12/4 /86	12/4 /86	12/9 /86

Mr. H. B. Tucker
Duke Power Company

McGuire Nuclear Station

cc:
Mr. A.V. Carr, Esq.
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

County Manager of Mecklenburg County
720 East Fourth Street
Charlotte, North Carolina 28202

Mr. Robert Gill
Duke Power Company
Nuclear Production Department
P. O. Box 33189
Charlotte, North Carolina 28242

J. Michael McGarry, III, Esq.
Bishop, Liberman, Cook, Purcell
and Reynolds
1200 Seventeenth Street, N.W.
Washington, D. C. 20036

Senior Resident Inspector
c/o U.S. Nuclear Regulatory Commission
Route 4, Box 529
Hunterville, North Carolina 28078

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission,
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30323

L. L. Williams
Area Manager, Mid-South Area
ESSD Projects
Westinghouse Electric Corporation
MNC West Tower - Bay 239
P. O. Box 355
Pittsburgh, Pennsylvania 15230

Dr. John M. Barry
Department of Environmental Health
Mecklenburg County
1200 Blythe Boulevard
Charlotte, North Carolina 28203

Chairman, North Carolina Utilities
Commission
Dobbs Building
430 North Salisbury Street
Raleigh, North Carolina 27602

Mr. Dayne H. Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
701 Barbour Drive
Raleigh, North Carolina 27603-2008

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

DUKE POWER COMPANY

DOCKET NO. 50-369

McGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 67
License No. NPF-9

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the McGuire Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-9 filed by the Duke Power Company (the licensee) dated December 16, 1985, and supplemented November 24, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, 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 set forth in 10 CFR Chapter I;

   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, Facility Operating License No. NPF-9 is changed as follows:

   Change paragraph 2.L to read:

   L. This license is effective as of the date of issuance and shall expire at midnight on June 12, 2021.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/S/

Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Date of Issuance: December 23, 1986

PWR#4/DPWR-A
MDuncan/rad
12/ 4 /86

EB/PWR-A
RBallard
12/ 9 /86

Concur @ comments noted.

DSH
PWR#4/DPWR-A
DHood
12/ 4 /86

OGC-Bethesda
JOHNSON
12/ 15 /86

PSB/DPWR-A
JMilhoan
12/ 4 /86

RSB/DPWR-A
CBerlinger
12/ 9 /86

PWR#4/DPWR-A
BJYoungblood
12/ /86

D-PWRA
TMNovak
12/ 17 /86

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

DUKE POWER COMPANY

DOCKET NO. 50-370

McGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 48
License No. NPF-17

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the McGuire Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-17 filed by the Duke Power Company (the licensee) dated December 16, 1985, and supplemented November 24, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, 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 set forth in 10 CFR Chapter I;

   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, Facility Operating License No. NPF-17 is changed as follows:

   Change paragraph 2.K to read:

   K. This license is effective as of the date of issuance and shall expire at midnight on March 3, 2023.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Darl Hood, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Date of Issuance: December 23, 1986

PWR#4/DPWR-A MDuncan/rad 12/4 /86	PWR#4/DPWR-A DHood 12/4 /86	PSB/DPWR-A JMilhoan 12/8 /86	RSB/DPWR-A CBerlinger 12/9 /86
EB/PWR-A RBallard 12/9 /86	OGC-Bethesda JOHNSON 12/15 /86	PWR#4/DPWR-A BJYoungblood 12/9 /86	D-PWRA TMNovak 12/17 /86

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NPF-9

AND AMENDMENT NO. 48 TO FACILITY OPERATING LICENSE NPF-17

DUKE POWER COMPANY

DOCKET NOS. 50-369 AND 50-370

McGUIRE NUCLEAR STATION, UNITS 1 AND 2

INTRODUCTION

By application dated December 16, 1985, Duke Power Company (the licensee) requested amendments to the facility operating licenses for McGuire Nuclear Station, Units 1 and 2. The proposed amendments would change the expiration date for the Unit 1 Facility Operating License, NFP-9, from February 28, 2013, to June 12, 2021, and change the expiration date for the Unit 2 Facility Operating License, NFP-17, from February 28, 2013, to March 3, 2023. Supplemental information in support of the application was provided by the licensee's letter of November 24, 1985.

Section 103.c of the Atomic Energy Act of 1954 provides that a license is to be issued for a specified period not exceeding 40 years. 10 CFR 50.51 specifies that each license will be issued for a fixed period of time not to exceed 40 years from date of issuance. 10 CFR 50.56 and 10 CFR 50.57 allow the issuance of an operating license pursuant to 10 CFR 50.51 after the construction of the facility has been substantially completed, in conformity with the construction permit and other provisions specified in 10 CFR 50.57 are met. The currently licensed term for the McGuire Units 1 and 2 is 40 years commencing with the issuance of the construction permit (February 28, 1973). Accounting for the time that was required for plant construction, this represents an effective operating license term of 31-3/4 years for Unit 1 and 30 years for Unit 2. Consistent with Section 103.c of the Atomic Energy Act and Sections 50.51, 50.56 and 50.57 of the Commission's regulations, the licensee, by its application of December 16, 1985, seeks extensions of the operating license terms for McGuire Units 1 and 2 such that the fixed period of the licenses would be 40 years from the date of the operating license issuance. Operating licenses authorizing low power were issued on June 12, 1981 for Unit 1 and on March 3, 1983 for Unit 2.

EVALUATION

The Commission has reviewed the licensee's application for amendments and previous licensing documents, including the McGuire Final Safety Analysis Report (FSAR), the McGuire Safety Evaluation Report (SER) with its supplements, and more recent Commission policy and documents, to determine the effects of the requested extension upon safety. The Commission's evaluation considered the potential effects to systems and equipment, including effects due to aging of

electrical equipment important to safety and changes in the fracture toughness properties of reactor vessel beltline materials due to neutron irradiation. The evaluation also included the effects of updated population estimates upon the previous determination of exclusion area, low population zone (LPZ) and population center distance, in accordance with 10 CFR 100. Other areas of the Commission's previous safety review of the McGuire Nuclear Station are not affected by the requested extension; the McGuire Nuclear Station was originally designed and constructed, and has been evaluated by the Commission, on the basis of a 40 year service life.

a. Updated Population Estimates

The LPZ for the McGuire Station extends to a radius of 5.5 miles. The 1970 population within 5 miles of the McGuire Station was noted in Section 2.1 of the SER to be 3465 people. Based on this 1970 data, the licensee had projected in FSAR Table 2.1.3-1 that the total population within 5 miles of the Station for the year 2020 would be 7,399 people, corresponding to an annual average population growth of 1.53 percent per year. Using the 1980 census and projections by the United States Department of Commerce (References 1 and 2), the licensee projected 10,739 people and an annual average growth of 2.29 percent per year for this same area for the year 2020; corresponding updated projections for the year 2030 were 11,103 people and 1.96 percent per year. Thus, the updated total population within 5 miles of the McGuire Station at the end of the extended operating term is about 40 percent greater than the previous estimate, and the updated annual growth rate is about 50% greater. The licensee's updated projections of total population and annual average growth for radii in excess of 5 miles were lower than the previous 1970-based projections.

The exclusion area surrounding the reactors (in which Duke Power Company, through ownership of the property and through agreements with and cooperation of the Mecklenburg County Police and North Carolina Highway Patrol and Lake Norman Marine Commission, exercises appropriate control, including exclusion or removal of personnel and property) remains unchanged from that described in SER Section 2.1. The nearest population center distance, defined as the distance from the reactor to the nearest boundary of a densely populated center having more than 25,000 residents, continues to be greater than one and one-third the distance from the reactor to the outer boundary of the LPZ. The nearest population center continues to be Charlotte, NC and is projected to remain so throughout the proposed extended license period for McGuire. Therefore, the nearest population center remains the same as that described in McGuire SER Section 2.1. Additionally, the licensee's updated population projections for the year 2020 for all the sectors which include Charlotte (i.e., S, SSE, SE at 10 to 20 miles from the McGuire site) and all the sectors just on the McGuire side of Charlotte (i.e., S, SSE SE at 5 to 10 miles from the McGuire site) are lower than those projected based on 1970 census data and presented in McGuire FSAR Figures 2.1.3-8 and 2.1.3-14.

The increase in population within 5 miles of the station is primarily due to residential lakeshore development, upgrading of secondary roads, and the completion of Interstate 77. The land usage in the local area remains rural. Although there has been higher projected growth than previous projections in the SER and FSAR, the upgrading of secondary roads and the completion of Interstate 77 attendant with the population growth in the area assures that

there continues to be a reasonable assurance that appropriate measures can be taken on behalf of the population within the LPZ in the event of an accident.

The population density around McGuire remains about half the average for US nuclear power plants.

Accordingly, the Commission's conclusions on SER Section 2.1 that the exclusion area, LPZ and population center distance meet the guidelines of 10 CFR 100, are not changed by the proposed extension, and the McGuire site continues to be acceptable.

b. Effects Upon Systems and Equipment

The licensee's request for extension of the operating licenses is based on the fact that a 40-year service life was considered during the design and construction of the plant. This does not mean that some components will not wear out during the plant lifetime. Rather, design features were incorporated which provide for inspectability of structures, systems and equipment. Surveillance and maintenance practices which were implemented in accordance with the ASME code and the facility Technical Specifications provide assurance that any unexpected degradation in plant equipment will be identified and corrected. The design of the reactor vessel and its internals considered the effects of 40 years of operation, and a comprehensive vessel material surveillance program is maintained in accordance with 10 CFR Part 50, Appendix H. We have completed our analyses related to the pressurized thermal shock (PTS) rule, 10 CFR 50.61, for both units. By our letter dated October 21, 1986, the licensee was given results showing that the controlling weld and shell forging materials for both reactor vessels meet the screening criterion of 10 CFR 50.61 at the end of the 40-year operating life. In addition to these calculations, surveillance capsules placed inside the reactor vessels provide a means of monitoring the cumulative effects of power operation.

Aging analyses have been performed for all safety-related electrical equipment in accordance with 10 CFR 50.49, "Environmental qualification of electrical equipment important to safety for nuclear power plants," identifying qualified lifetimes for this equipment. These lifetimes will be incorporated into plant equipment maintenance and replacement practices to ensure that all safety-related electrical equipment remains qualified and available to perform its safety function regardless of the overall age of the plant.

c. Findings

Based upon the above, we find that extension of the operating licenses for McGuire Units 1 and 2 to allow a 40-year service life is consistent with the safety analyses for the McGuire Station and that the Commission's previous safety findings are not changed. All issues associated with plant systems and equipment, including aging and changes in fracture toughness properties of materials, have been addressed and are acceptable for 40 years of operation. The site continues to meet the guidelines of 10 CFR 100. Accordingly, we find the proposed change to the expiration dates of the McGuire Units 1 and 2 Facility Operating Licenses to be acceptable.

REFERENCES

1. U. S. Department of Commerce, Bureau of Economic Analysis, Projection, Economic Activity in North Carolina, Series E Projection, April 1986.

2. U. S. Department of Commerce, Bureau of Economic Analysis, Projection, Economic Activity in South Carolina, Series E Projection, April 1986.

ENVIRONMENTAL CONSIDERATION

A Notice of Issuance of Environmental Assessment and Finding of No Significant Impact relating to the proposed extension of facility operating license termination dates for the McGuire Nuclear Station, Units 1 and 2, was published in the Federal Register on December 19, 1986 (51 FR 45570).

CONCLUSION

We have concluded, based on the considerations discussed above, that (1) there is a reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (51 FR 20370) on June 4, 1986, and consulted with the state of North Carolina. No public comments were received, and the state of North Carolina did not have any comments.

Principal Contributors: D. Hood, PAD-4
L. Lois, PARS
P. Randall, MEBR

Dated: December 23, 1986

DATED: December 23, 1986

AMENDMENT NO. 67TO FACILITY OPERATING LICENSE NPF-9 - McGuire Nuclear Station, Unit 1
AMENDMENT NO. 48TO FACILITY OPERATING LICENSE NPF-17 - McGuire Nuclear Station, Unit 2

DISTRIBUTION:
Docket File 50-369/370
NRC PDR
Local PDR
PRC System
NSIC
PWR#4 R/F
B. J. Youngblood R/F
M. Duncan
D. Hood
H. Thompson
OGC/Bethesda
J. Partlow
B. Grimes
E. Jordan
L. Harmon
W. Jones
T. Barnhart (8)
ACRS (10)
OPA
LFMB
N. Thompson
E. Butcher
L. Lois, PARS
C. Sellers, PAEB