

DUKE POWER COMPANY

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VICE PRESIDENT
NUCLEAR PRODUCTION

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December 16, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: B.J. Youngblood, Director
PWR Project Directorate #4

Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
Proposed License Amendment - 40 Year Life

Dear Mr. Denton:

Attached are proposed license amendments to Facility Operating Licenses NPF-9 and NPF-17 for McGuire Nuclear Station Units 1 and 2, respectively.

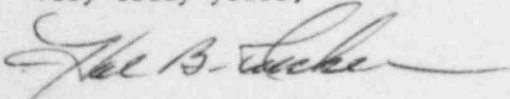
McGuire Nuclear Station is currently licensed for plant operation for 40 years commencing with issuance of the construction permits. The Unit 1 license (NPF-9) and the Unit 2 license (NPF-17) both currently expire on February 28, 2013. It is requested in this license amendment application that these license expiration dates be changed to June 12, 2021 for McGuire Unit 1 and to March 3, 2023 for McGuire Unit 2.

Attachment 1 contains the proposed changes to the Facility Operating Licenses for McGuire Nuclear Station (NPF-9 and -17). Attachment 2 provides a Technical Justification and Environmental Assessment in support of the proposed changes. Attachment 3 provides an Analysis of Significant Hazards Consideration for the proposed changes as required by 10 CFR 50.91. The proposed changes have been determined to have no adverse safety or environmental impact.

This request involves one application for amendment to the McGuire Facility Operating Licenses. Accordingly, pursuant to 10 CFR 170.21, a check for \$150.00 is enclosed.

Please feel free to contact us if you require any additional information.

Very truly yours,



Hal B. Tucker

RLG/hrp

Attachments

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PDR ADOCK 05000369
P PDR

ADD.

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3/37
Rec'd w/ check #150.00

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cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
NRC Resident Inspector
McGuire Nuclear Station

Mr. Dayne Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
P.O. Box 12200
Raleigh, North Carolina

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HAL B. TUCKER, being duly sworn, states that he is Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this revision to the McGuire Nuclear Station License Nos. NPF-9 and NPF-17 and that all statements and matters set forth therein are true and correct to the best of his knowledge.

Hal B. Tucker

Hal B. Tucker, Vice President

Subscribed and sworn to before me this day of

Linda L. Kessler

Notary Public

My Commission Expires:

May 1, 1989



Attachment 1

Duke Power Company
Proposed License Amendments

Revise Facility Operating License NPF-9, McGuire Unit 1 License Condition 2.L to read:

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

Revise Facility Operating License NPF-17, McGuire Unit 2 License Condition 2.K to read:

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

Attachment 2

Technical Justification and Environmental Assessment

INTRODUCTION

McGuire Nuclear Station is currently licensed for plant operation for 40 years commencing with issuance of the construction permits. The Unit 1 license (NPF-9) and the Unit 2 license (NPF-17) both currently expire on February 28, 2013. It is requested in this license amendment application that these license expiration dates be changed to June 12, 2021 for McGuire Unit 1 and to March 3, 2023 for McGuire Unit 2.

Duke has evaluated the potential impacts associated with extending the McGuire operating licenses as proposed. This evaluation includes an assessment prepared by Westinghouse on the NSSS scope. Also included is an evaluation by Duke of the potential impacts that extended service life may have on safety-related systems and equipment outside of NSSS scope of supply and of the favorable conclusions reached in the Final Environmental Statement (FES) issued by the NRC. The results of these efforts are provided in the following paragraphs.

ASSESSMENT OF NSSS SCOPE

In support of a forty year term operating license, it should be noted that the equipment supplied with the Westinghouse NSSS is designed to accommodate the system pressures and temperatures attained under all expected modes of plant operation, including all anticipated transients, and to maintain stress within applicable stress limits. To ensure the high degree of integrity of RCS equipment over the design life of the plant, fatigue evaluations are performed based on conservative estimates of the magnitude and frequency of temperature and pressure transients resulting from various operating conditions in the plant. The design criteria which specify the number of design transients to be considered are based on forty years of operation. The criteria presented in the ASME B&PV Code are used for fatigue analysis. In addition to the loads imposed on the system under normal operating conditions, abnormal loading conditions, such as seismic loading and pipe rupture, are also considered. The transients selected represent operating conditions that should be prudently anticipated during plant operation and are sufficiently severe or frequent to be of possible significance to component cyclic behavior.

The fact that close control was maintained over material selection and fabrication techniques for the reactor coolant pressure boundary ensures a low probability of gross rupture or significant leakage over the design life of the plant. Assurance of adequate fracture toughness of the reactor pressure vessel is established using methods to estimate the reference nil-ductility transition (NDT) temperature. The NSSS complies with the fracture toughness requirements of the ASME Code. The RCS water chemistry is selected to minimize corrosion. A periodic analysis of the coolant chemical composition is performed to verify that the reactor coolant quality meets the specifications for coolant chemistry, activity level, and boron concentration.

All equipment and components supplied with the NSSS have provisions for inspection, testing, and surveillance of critical areas to assess the structural and leaktight integrity. The design of the reactor vessel provides for accessibility during service life to the entire internal surface of the vessel and certain external zones of the vessel, including the nozzle to reactor coolant piping welds and the top and bottom heads. The NSSS arrangement provides sufficient space for inspection of the external surfaces of the reactor coolant system.

MECHANICAL SYSTEMS AND EQUIPMENT

Duke has carefully evaluated the safety implications of extending the McGuire operating licenses for safety-related mechanical systems and equipment. This evaluation included a review of extended service life impacts on equipment integrated dose qualifications. Based on this evaluation, Duke concludes that safety-related mechanical systems, equipment, and components considered the effects of a 40-year operating lifetime or will not be affected by a 40-year operational lifetime. Although this does not mean that some mechanical safety-related components will not wear out during the plant lifetime, existing surveillance and maintenance programs are sufficient to maintain safety-related components and also to determine when replacement of such components is necessary.

ELECTRICAL EQUIPMENT

Duke has evaluated the safety implications of extending the McGuire operating licenses for safety-related electrical systems and equipment. This evaluation included a review of extended service life impacts on equipment integrated dose qualifications and environmental qualifications in response to Nureg 0588 and 10 CFR 50.49. For safety-related electrical equipment within the scope of 10 CFR 50.49, aging reviews have been conducted so as to establish a qualified life for the equipment. Where necessary, qualification related maintenance/surveillance/refurbishment/replacement requirements are integrated into station procedures to ensure that qualification is maintained over the life of the plant. Based on this evaluation, Duke concludes that balance of plant electrical systems design, electrical equipment selection and application, and environmental qualification of electrical equipment either considered the effects of a 40-year operational lifetime or will not be affected by a 40-year operational lifetime.

McGUIRE FES IMPACTS

In order to assess the impact of extending the operating license duration for the plant, Duke has examined the Environmental Report/Operating License Stage, dated June 7, 1974, and the Final Environmental Statement, dated April 1976, to determine whether the environmental impacts would be greater with the extended operating license. Updated population estimates for the area surrounding McGuire were compared to population estimates referenced in the FES. In addition, McGuire environmental monitoring programs were reviewed to verify compliance with operating license commitments referenced in the FES.

The FES estimates for the population within a 50-mile radius of McGuire were based on the 1970 census and were projected to the year 2015. Duke's recalculation of the population estimates based on the 1980 census to the years 2020 and 2030 resulted in the following updated projections:

<u>Population Projections Within 50-Mile Radius of McGuire Nuclear Station</u>		
<u>Year</u>	<u>Population Total</u>	<u>Population Annual Average Growth (%/Yr.)</u> ³
2015 (1970 census) ¹	2.651 Million	1.46
2020 (1970 census) ²	2.818 Million	1.44
2020 (1980 census)	2.188 Million	0.925
2030 (1980 census)	2.279 Million	0.839

¹As reported in McGuire FES.

²From McGuire FSAR Figures 2.1.3-2 and 2.1.3-8

³Calculated based on 1970 population of 1.38 million within the 0-50 mile radius of McGuire as referenced in the McGuire FES.

The McGuire FES cost-benefit analyses used estimated population doses calculated on the basis of 1970 population statistics to evaluate McGuire radiological impacts. The FES population growth assumptions are somewhat higher than estimated based on updated census information. Therefore, population growth rates experienced in the vicinity of McGuire Nuclear Station would tend to improve the already favorable cost-benefit conclusions established in the FES.

As stated in the FES, Duke was required to conduct an extensive aquatic monitoring program as detailed in the Environmental Report along with certain modifications. During this same time period, Duke applied to the EPA for a National Pollutant Discharge Elimination System (NPDES) permit. The state of North Carolina obtained NPDES permitting authority and Permit No. NC0024392 was issued for McGuire on March 28, 1978. Non-radiological discharges from McGuire would be regulated through the NPDES permitting system including the thermal monitoring as proposed in the McGuire FES. The state of North Carolina required, as part of the March 28, 1978 permit, that Duke conduct an extensive 316(a) Demonstration to show that the thermal discharge would be such that the water quality and indigenous biota of Lake Norman would be protected. Duke completed that study in June, 1985, submitted in August, 1985, and was approved by North Carolina by letter dated October 18, 1985. (Copy provided to NRC by Duke letter dated November 27, 1985).

Regardless of how the permit will be revised, the NPDES permit will assure that all non-radiological discharges from McGuire will comply with applicable water quality standards and that the permit may be modified from time to time to assure that the discharges to state waters will not cause adverse environmental impacts for the life of the plant.

CONCLUSION

The review of plant systems design, equipment selection and applications, and environmental qualification indicate that a 40-year plant operational lifetime creates no significant safety hazard. Additionally, our evaluation of population growth trends and the McGuire FES indicates that an extended McGuire operating life will not significantly impact FES conclusions.

In summary, Duke believes that a forty year operating term is reasonable and entirely consistent with the design, construction, analysis, and expected operational procedures of the McGuire Power Plant, Units 1 and 2.

ANALYSIS OF SIGNIFICANT HAZARDS CONSIDERATION

As required by 10 CFR 50.91 this analysis sets forth determination that the proposed changes to the Technical Specifications do not involve any Significant Hazards Consideration as defined by 10 CFR 50.92.

The proposed changes to the Facility Operating License are supported by the technical justification provided in Attachment 2. The proposed extension of the operating lifetime has no significant impact on the McGuire Final Safety Analysis Report as evaluated in the Staff's Safety Evaluation Report. This is consistent with past Staff experience on applications of this type (e.g. Baltimore Gas & Electric, Calvert Cliffs).

McGuire is designed for a 40 year operational life with a .8 power factor. Programs to assess plant aging (ISI, IST, and IQ of safety related equipment) together with routine maintenance are sufficient to maintain or determine replacement for safety related components. In addition, the in-vessel irradiation program is sufficient to assure that reactor vessel irradiation will not be limiting with regard to the 40 year plant life. In summary, existing programs assure that the extension of the OLs does not involve any significant review areas.

CRITERION 1

Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed license amendment in no way affects the probability or consequences of an accident. The probability or consequence of an accident is determined by the design and operation of plant systems. Existing programs are unaffected by this change and it is these programs that tend to affect the probability and consequences of an accident. These programs remain in effect throughout the duration of the operating license, whatever duration it is. Thus, this proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

CRITERION 2

Create the possibility of a new or different kind of accident from any accident previously evaluated.

The possibility of a new or different kind of accident is not created by this proposed change. Existing programs that assess the impact of plant aging together with routine maintenance are sufficient to maintain or determine replacement for safety related components. Thus, any degradation that might create a different kind of accident, would be detected and corrected by existing programs and routine maintenance. The duration of the operating license by itself does not create the possibility of a new or different kind of accident.

CRITERION 3

Involve a significant reduction in a margin of safety.

This proposed change does not involve a significant reduction in a margin of safety. Existing programs, routine maintenance, and existing Technical Specifications provide assurance that an adequate margin of safety is maintained. These activities will remain in effect through the duration of the operating license. Thus, the extension of the duration of the operating license does not result in a reduction in any margin of safety.