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December 29, 1982

Docket Nos: 50-369
and 50-370

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
P.O. Box 33189
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Relief Request - ASME Code Section XI Requirements
(McGuire Nuclear Station, Units 1 and 2)

In letters dated September 14 and October 19, 1982, you requested relief from the hydrostatic testing after modifications to ASME Code Class 2 piping for Units 1 and 2 steam generators and ASME Code Class 1 piping for the Unit 1 safety injection system. In lieu of the required hydrostatic tests, you proposed nondestructive examinations consisting of radiography, ultrasonic testing, and surface examination of the welds.

We have determined that relief from the preservice hydrostatic tests required by Section XI is justifiable. The alternative program, as proposed by you and incorporating our staff evaluation, of nondestructive examinations and hydrostatic testing at prescribed 10-year intervals will provide an acceptable level of structural integrity. Relief is granted pursuant to paragraph 10 CFR 50.55a(a)(2)(i) for Unit 2 and paragraph 10 CFR 50.55a(g)(6)(i) for Unit 1 based on our finding that (1) certain specific requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition through Summer 1978 Addenda are impractical and (2) such relief is authorized by law. Our Safety Evaluation Report is enclosed. Also enclosed for your information is the related Federal Register Notice.

Sincerely,

Thomas M. Novak

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

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- Enclosures:
1. Safety Evaluation
2. Federal Register Notice

cc: See next page

*NOTE: SEE PREVIOUS WHITE FOR CONCURRENCE

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| SURNAME | *RBirkel/hmc | *MHum | *BDLiaw | *JCutchin | *MDuncan | *EAdensam | TNovak |
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We have determined that relief from the preservice hydrostatic tests required by Section XI is justifiable. The alternative program, as proposed by you and incorporating our staff evaluation, of nondestructive examinations and hydrostatic testing at prescribed 10-year intervals will provide an acceptable level of structural integrity. Relief is to be granted pursuant to paragraph 10 CFR 50.55a(a)(2)(i) for Unit 2 and paragraph 10 CFR 50.55a(g)(6)(i) for Unit 1 based on our finding that certain specific requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition through Summer 1978 Addenda, are impractical. Our Safety Evaluation Report is enclosed. Also enclosed for your information is the related Federal Register Notice.

Sincerely,

Thomas M. Novak, Assistant Director
 for Licensing
 Division of Licensing

Enclosures:

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2. Federal Register Notice

cc: See next page

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Docket Nos. 50-369
 and 50-370

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Sincerely,

Elinor G. Adensam, Chief
 Licensing Branch #4
 Division of Licensing

Enclosure:
 As stated

cc: See next page

No local objection subject to issuance of appropriate license

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| OFFICE | DL:LB#4 <i>RTS</i> | <i>NWA</i> | DE:MEB | OELD | DL:LB#4 | | |
| SURNAME | RBirkel | MHum | BDLiaw | JCutchin | EAdensam | | |
| DATE | 11/15/82 | 11/15/82 | 11/15/82 | 11/14/82 | 11/ /82 | | |

McGuire

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U.S. Environmental Protection Agency
Region IV Office
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Atlanta, Georgia 30308

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

**SAFETY EVALUATION REPORT
MCGUIRE NUCLEAR STATION UNITS 1 AND 2
DOCKET NUMBERS 50-369 AND 50-370
RELIEF REQUEST - ASME CODE
SECTION XI REQUIREMENTS**

I. INTRODUCTION

This report was prepared with the technical assistance of DOE contractors from the Idaho National Engineering Laboratory.

The McGuire Unit 1 operating license was issued on January 23, 1981. Paragraph 10 CFR 50.55a(g)(4) requires that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2 and Class 3 shall meet the requirements set forth in the applicable Section XI Editions and Addenda of the ASME Boiler and Pressure Vessel Code to the extent practical within the limitations of design, geometry and materials of construction of the components.

The McGuire Unit 2 construction permit was issued on February 28, 1973. Paragraph 10 CFR 50.55a(g)(2) requires that preservice examinations of components and system pressure tests shall comply with the requirements set forth in editions of Section XI of the ASME Code and Addenda in effect six months prior to the date of issuance of the construction permit. The provisions of 10 CFR 50.55a(g)(2) also state that components (including supports) may meet the requirements set forth in subsequent Editions and Addenda of this Code which are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein.

In letters dated September 14, 1982 and October 19, 1982, Duke Power Company (Licensee for Unit 1 and Applicant for Unit 2) requested relief from the hydrostatic testing after modifications to ASME Code Class 2 piping for the Units 1 and 2 steam generators and ASME Code Class 1 piping for the Unit 1 safety injection system. The relief requests contained the supporting technical information. In lieu of the required hydrostatic tests, nondestructive examinations are proposed consisting of radiography, ultrasonic testing and surface examination of the welds.

II. EVALUATION OF RELIEF REQUESTS

The licensee has requested written relief from an examination requirement that he has determined to be impractical in accordance with paragraph 10 CFR 50.55a(a)(2) and paragraph 10 CFR 50.55a(g)(5)(iii). We have evaluated the information in the referenced letters and have determined that the examination requirement, from which relief is requested, is impractical.

The following paragraphs discuss details of the specific relief request.

Unit 1 Safety Injection System Piping Modification and Units 1 and 2 Piping to Steam Generator Feedwater Nozzles Removal and Replacement

Code Requirement: After repairs or replacements by welding on the ASME Class 1 and Class 2 pressure retaining boundary, hydrostatic pressure tests are required in accordance with ASME Section XI, IWA-4400, IWA-5000 and IWB-5000 (for Class 1) or IWC-5000 (for Class 2).

Code Relief Request: Relief is requested from performing the hydrostatic pressure test on eleven welds total for modification of the Unit 1 safety injection (SI) system for two loops and 16 welds total for replacement of piping to eight total Unit 1 and Unit 2 steam generator feedwater nozzles.

Reason for Request:

A. SI System Modification

There are two affected areas of piping in the system. Both areas are between two check valves. There are no isolation valves downstream of these primary and secondary check valves to the reactor coolant (RC) system. Therefore, it is impossible to isolate these portions of systems. However, there are several approaches to partially pressurizing the system.

The first approach would be to pressurize the reactor coolant system to 2235 pounds, and then use the safety injection pumps to pressurize the SI systems against one of the check valves. However, this pump pressure is only 1600 pounds, which is less than the required test pressure.

The second approach would be to remove the internals from the primary check valves, which go to the RC system, and then pressurize the RC system to 1.02 of 2235 pounds at 500° F temperature. However, this method would still not achieve the desired test pressure and temperature per the Code because this would be a dead leg pipe with no flow, and the convective and conductive effect of heat transfer possibly would not reach the 500° F minimum temperature as this portion of the system is not insulated. This would also require draining the system in order to replace the internals into the check valve, which is a very time consuming and costly procedure.

Therefore, due to orientation of the valves within the system, it is not possible to perform the required code hydrostatic test of the system. However, the Applicant concludes that alternative examinations (radiography, penetrant, ultrasonic, and 10-year interval hydro-test) are equal to or better than the code required testing.

B. Steam Generator Feedwater Piping

Performing the Code required hydrostatic test on the steam generator nozzles and feedwater piping would be impractical, extremely difficult, and very costly due to the following reasons:

should determine whether surface preparation, consistent with ALARA and minimum wall thickness requirements, would improve the effectiveness of the ultrasonic examination of weld root area and heat affected zone. In addition, the following provisions should be incorporated for all piping weld examinations.

- a. Any crack-like indication, 20 percent of DAC or greater, discovered during examination of piping welds or adjacent base metal materials should be recorded and investigated by a Level II or Level III examiner to the extent necessary to determine the shape, identity, and location of the reflector.
- b. The Owner should evaluate and take corrective action for the disposition of any indication investigated and found to be other than geometrical or metallurgical in nature.

III. CONCLUSIONS

We have determined that relief from the preservice hydrostatic tests required by Section XI is justifiable. The alternative program, as proposed by Duke Power Company and incorporating our staff evaluation, of nondestructive examinations and hydrostatic testing at prescribed 10-year intervals will provide an acceptable level of structural integrity. Relief may be granted pursuant to paragraph 10 CFR 50.55a(a)(2)(i) for Unit 2 and paragraph 10 CFR 50.55a(g)(6)(i) for Unit 1 based on our finding that certain specific requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition through Summer 1978 Addenda, are impractical. Implementation of the requirements would result in hardships or unusual difficulties without a compensating increase in the level of quality and safety. We have concluded, based on the considerations discussed above, that: (1) because granting the relief does not involve a significant increase in the probability or consequences of accidents previously considered, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant decrease in a safety margin, the relief does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this relief will not be inimical to the common defense and security or to the health and safety of the public.

We have determined that the granting of relief does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that granting relief involves an action which is insignificant from the standpoint of environmental impact, and that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the granting of this relief.

IV. REFERENCES

- A. Licensee letter dated September 14, 1982.
- B. Licensee letter dated October 19, 1982.

Principal Contributors: Martin Hum, Materials Engineering Branch, DE
Ralph Birkel, Licensing Branch No. 4, DL

Dated: December 29, 1982

1. Isolation and preparation of this system would result in considerable additional radiation exposure to personnel. (Not applicable for Unit 2 since initial fuel loading has not begun.)
2. Additional time would be required to disable the safety relief valves.
3. Additional time would be required to pin or block main steam constant support hangers.
4. Potential damage could result from the static load on main steam system by the water solid condition.
5. Potential damage to steam generator tube bundle could occur.
6. Inability to maintain pressure due to potential leakage through main steam isolation valves, feedwater isolation valves, and other valves in the system.
7. Potential damage to instrumentation could occur or considerable delay due to isolation/removal of instrumentation.

In addition to these considerations, Duke Power Company concludes that the alternative examinations (radiography, magnetic particle, ultrasonic, and 10-year interval hydro-test) are equal to or better than the Code required test.

Staff Evaluation: The subject relief requests are acceptable for both Units Nos. 1 and 2 based on the following considerations.

1. Requiring the ASME Code hydrostatic tests to be performed at this time would result in a substantial additional manpower expenditure, additional occupational radiation exposure (Unit No. 1 only) and would delay plant startup. Therefore, hydrostatic testing at this time would result in hardships or unusual difficulties without a commensurate increase in the level of quality and safety.
2. Performance of the radiographic, surface, and ultrasonic examinations would ensure adequate preservice structural integrity. Duke Power Company has committed to performing the required 10-year interval hydrostatic tests.
3. Duke Power Company has expressed reservations about the effectiveness of the proposed UT examination of the replacement piping during the steam generator modification. The utility is concerned about the interpretation of geometrical reflectors, complex geometry, and rough surface in and adjacent to the area of examination.

The staff recognizes the issue of limitations to ultrasonic inspection after major inservice repairs and modification. Nevertheless, the staff has concluded that the ultrasonic test should be performed on a "best effort" basis consistent with the new design and geometry. However, the utility should evaluate the external weld surface condition of the replacement welds before the ultrasonic test. The utility

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-369 AND 50-370

DUKE POWER COMPANY

NOTICE OF GRANTING OF RELIEF FROM CERTAIN REQUIREMENTS
OF ASME CODE SECTION XI INSERVICE (TESTING) REQUIREMENTS

The U.S. Nuclear Regulatory Commission (the Commission) has granted relief from certain requirements of the ASME Code, Section XI, "Rules and Inservice Inspection of Nuclear Power Plant Components" to the Duke Power Company (the licensee). The relief relates to the preservice hydrostatic tests for the McGuire Nuclear Station, Units 1 and 2 (the facilities) located in Mecklenburg County, North Carolina. The ASME Code requirements are incorporated by reference into the Commission's rules and regulations in 10 CFR Part 50. The relief is effective as of its date of issuance.

The relief relates to certain preservice examination requirements, pursuant to the Commission's regulations in 10 CFR 50.55a(g)(6)(i) for Unit 1 and 10 CFR 50.55a(a)(2)(i) for Unit 2. In lieu of hydrostatic tests, the licensee will perform nondestructive examinations consisting of radiography, ultrasonic testing, and surface examination of the welds.

The requests for relief comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the related Safety Evaluation Report.

The Commission has determined that the granting of relief will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this action.

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For further details with respect to this action, see (1) the licensee's letters dated September 14 and October 19, 1982, (2) the Commission's letter to the licensee dated December 29, 1982, and, (3) the Commission's related Safety Evaluation Report. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. 20555 and at the Atkins Library, University of North Carolina - Charlotte, UNCC Station, North Carolina 28223. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 29th day of December 1982.

FOR THE NUCLEAR REGULATORY COMMISSION



Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

*No legal objection
To issue of R. motion*

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| SURNAME | MDuncan/bmc | RBirkel | Elinor G. Adensam | EAdensam | | | |
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