

February 5, 2002

Mr. M. S. Tuckman
Executive Vice President
Nuclear Generation
Duke Energy Corporation
526 South Church St
Charlotte, NC 28201

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2 RE: SAFETY EVALUATION
OF RELIEF REQUEST NO. MC-GRV-04, REVISION 1, REQUEST FOR
INSERVICE TESTING PROGRAM RELIEF FOR CHECK VALVE TESTING
(TAC NOS. MB3253 AND MB3254)

Dear Mr. Tuckman:

By letters dated October 19 and November 30, 2001, you submitted Relief Request MC-GRV-04, which requested U.S. Nuclear Regulatory Commission (NRC) approval, pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.55a(f)(4)(iv), for the use of Appendix II, "Check Valve Condition Monitoring Program," of the ASME *Code for the Operation and Maintenance of Nuclear Power Plants*, 1995 Edition, 1996 Addenda (OMa-1996 Code), in advance of incorporating the OMa-1996 Code as the code of record for the McGuire Nuclear Station, Units 1 and 2 (McGuire) check valve inservice testing (IST) program.

The NRC staff has reviewed Relief Request MC-GRV-04, for approval to implement the OMa-1996 Code Appendix II condition monitoring program at the McGuire Nuclear Station, Units 1 and 2. Based on our review, the staff concludes that your request to use the OMa-1996 Code and related regulatory requirements with regard to implementation of Appendix II is approved pursuant to 10 CFR 50.55a(f)(4)(iv). In addition, the staff concludes that your proposed phased-in implementation of OMa-1996 Code Appendix II requirements at McGuire will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55.a(a)(3)(i). The staff's evaluation and conclusions are contained in the enclosed Safety Evaluation.

Sincerely,

/RA/

Richard J. Laufer, Acting Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: As stated

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF RELIEF REQUESTS FROM ASME SECTION XI REQUIREMENTS
RELATED TO THE INSERVICE TESTING PROGRAM
DUKE ENERGY CORPORATION'S
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

The *Code of Federal Regulations*, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility. Section 10 CFR 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. Paragraph (f)(4)(iv) of 10 CFR 50.55a, provides requirements for the use of IST provisions set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b), subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions and addenda are met.

By letters dated October 19 and November 30, 2001, the Duke Energy Corporation (the licensee) requested that NRC approve the use of Appendix II, "Check Valve Condition Monitoring Program," of the ASME *Code for the Operation and Maintenance of Nuclear Power Plants*, 1995 Edition, through the 1996 Addenda (OMa-1996 Code), pursuant to 10 CFR 50.55a(f)(4)(iv) for its McGuire Nuclear Station (McGuire).

The current code of record for the McGuire IST program is the ASME *Code*, Section XI, 1989 Edition, which references the requirements of American Society of Mechanical Engineers/American National Standards Institute (ASME/ANSI) OMa-1988, Part 10. The licensee's proposed alternative is requested for use in its second 10-year interval IST program for purposes of preparing its check valve IST program for transition into the third 10-year interval IST program on March 1, 2004.

The NRC staff's findings with respect to the licensee's request to implement a portion of the OMa-1996 Code in advance of incorporating the OMa-1996 Code as its code of record, pursuant to 10 CFR 50.55a(f)(4)(iv) for McGuire, are contained in this Safety Evaluation.

2.0 LICENSEE RELIEF REQUEST

The licensee requested NRC approval of relief request MC-GRV-04, Revision 1, to implement the Appendix II, "Check Valve Condition Monitoring Program," consistent with the OMa-1996 Code, in advance of incorporating the OMa-1996 Code requirements as the code of record for the McGuire check valve IST program, pursuant to 10 CFR Part 55a(f)(4)(iv). Implementation of the Appendix II portions of OMa-1996 Code is requested as relief from the licensee's code of record requirements in the ASME/ANSI OMa-1988, Part 10, Section 4.3.2, "Exercising Tests for Check Valves."

2.1 Licensee's Basis for Relief

The licensee's reason for the relief request is to establish a condition monitoring program for certain IST check valves in preparation for McGuire's transition to their next 120-month IST program required code update. The OMa-1996 Code introduces two inter-related code changes that (1) requires bi-directional IST of the check valve disc movement, and (2) provides the Appendix II Condition Monitoring Program as an alternative to IST exercise testing for certain check valves. The purpose of the condition monitoring program is both to improve check valve performance and to optimize testing, examination and preventive maintenance activities for a select group of valves. Bi-directional testing improves the IST capability of detecting valve degradation prior to valve failure.

There are 74 check valves in McGuire, Unit 1 and 68 check valves in Unit 2 that are not currently tested in both the open and closed directions. The plan for implementing the Appendix II Condition Monitoring Program includes a time period for testing and acquiring information needed to adequately evaluate the performance of candidate program valves, such as check valves not currently bi-directionally tested. This activity will allow sufficient time to establish the process and procedures, and evaluate valve groupings that are necessary for the transition to incorporate the ASME OMa-1996 Code as McGuire's code of record. The initial Appendix II implementation and evaluation activities performed will include those valves not currently tested in a bi-directional manner.

The licensee proposes to implement the Appendix II and related check valve IST testing requirements of the OMa-1996 Code over a 2-year time period that would extend to December 31, 2003. This is in advance of the March 1, 2004, date when the third 10-year interval IST program for McGuire, Units 1 and 2, would become effective.

2.2 Proposed Alternative

As an alternative to the requirements of ASME/ANSI OMa-1988, Part 10, Section 4.3.2, the licensee proposes to implement Appendix II in accordance with all related check valve requirements of the ASME OM Code-1995 Edition through 1996 Addenda, pursuant to 10 CFR 50.55a(f)(4)(iv).

The licensee proposes to complete a 2-year transition period prior to incorporating the ASME OMa-1996 Code as its code of record. The testing and examination of the check valves will be managed by the condition monitoring approach by adopting the requirements of the "Condition Monitoring Program" in the OMa-1996 Code subject to the three modifications identified in 10 CFR 50.55a(b)(3)(iv). During the transition to the ASME OMa-1996 Code, if the Appendix II program is discontinued for a valve or group of valves, the requirements of all applicable check valve portions of ASME OM Code-1995 through 1996 Addenda will be implemented. The licensee proposes to implement the condition monitoring program and the related check valve IST testing requirement portions of the OMa-1996 Code, during their current IST program 10-year interval over a 2-year time period that would extend to December 31, 2003.

3.0 EVALUATION

The licensee proposes to use a portion of the OMa-1996 Code at McGuire, Units 1 and 2, for the purpose of preparing its check valve IST program for transition to the third 10-year IST interval on March 1, 2004. Specifically, the licensee proposes to implement the Appendix II, Condition Monitoring Program portion of OMa-1996 Code pursuant to 10 CFR 50.55a(f)(4)(iv).

The licensee indicates that the testing and examination of the check valves will be managed by the condition monitoring approach by adopting the requirements of the "Condition Monitoring Program" in the OMa-1996 Code subject to the three modifications identified in 10 CFR 50.55a(b)(3)(iv). The licensee also indicates that the initial Appendix II implementation and evaluations activities performed will include those valves not currently bi-directional tested and, if the condition monitoring program is discontinued for a valve or group of valves during the transition to the OMa-1996 Code, the requirements of all applicable check valve portions of OMa-1996 Code will be implemented.

The NRC amended its regulations in 10 CFR 50.55a (64 FR 51370) to incorporate by reference the OM Code-1995 Edition through the 1996 Addenda in paragraph 10 CFR 50.55a(b)(3), with certain modifications required when implementing Appendix II as stated in 10 CFR 50.55a(b)(3)(iv). In its Statement of Considerations for the final rule, the NRC stated it would "favorably consider a request by a licensee under paragraph 50.55a(f)(4)(iv) to apply Appendix II in advance of incorporating the 1995 Edition with 1996 Addenda of the ASME OM Code as its code of record if the licensee's request justifies: (1) The modifications to Appendix II contained in the rule have been satisfied, and (2) All portions of the 1995 Edition with the 1996 Addenda of the OM Code that apply to check valves are implemented for the remaining check valves not included in the Appendix II program."

Two significant changes were introduced in OMa-1996 Code: (1) a requirement for a bi-directional test of the check valve disc movement, and (2) a voluntary provision to use the Condition Monitoring Program as an alternative to IST exercise testing for certain check valves. This integral two-part improvement to the Code provides interrelated requirements. Bi-directional testing improves the IST capability of detecting valve degradation prior to valve failure. The condition monitoring program allows the licensee certain IST flexibility in establishing the types of test, examination, and preventive maintenance activities and their associated intervals, when justified based on the valve's performance and operating condition. These Code changes were developed so licensees, who elect not to implement condition

monitoring in their IST program, would be required to bi-directionally test check valves as a default set of testing and examination requirements.

The NRC staff considers the Condition Monitoring Program approach of OMa-1996 Code Appendix II for check valve IST with the modifications in paragraph 50.55a(b)(3)(iv), to be an improvement over present Code requirements, and encourages licensees to implement the condition monitoring alternative. The use of the alternative IST program provides the licensee with knowledge of the valve's operating condition, informed and verified expectations of the valve's performance over extended intervals, and a process to reduce the burden of unnecessary IST.

The licensee stated that it would implement its Condition Monitoring program on an extended schedule (approximately 2 years). As previously noted above, the Statement of Considerations for the September 22, 1999, rulemaking (64 FR 51370) stated that the licensee should justify that all portions of the 1995 Edition with the 1996 Addenda of the OM Code that apply to check valves are implemented for the remaining check valves not included in the Appendix II program. For those check valves not currently bi-directionally tested, the extended period proposed by the licensee would allow the licensee to establish the process, procedures, and valve groupings to implement Appendix II requirements. Thus, there will be a period when certain check valves not currently tested in a bi-directional manner might not meet all testing requirements in the 1995 Edition with the 1996 Addenda. For these check valves, the licensee will meet testing requirements of its code of record (i.e., 1989 ASME Code, Section XI) until the Appendix II program is fully implemented. At that time, all ASME Code Class 1, 2, and 3 check valves in the IST program will be included in the Appendix II program or will use the 1996 Addenda for those check valves not included in the Appendix II program. On the basis that during the phased-in implementation period those check valves that are not bi-directionally tested will meet IST requirements of the current code of record, the staff finds that the alternative provides an acceptable level of quality and safety.

Therefore, the staff finds that the licensee's request to use the check valve portion of the OMa-1996 Code and to apply Appendix II in advance of incorporating the 1995 Edition with 1996 Addenda of the ASME OM Code as its code of record at the McGuire Nuclear Station, Units 1 and 2, as described in its letters dated October 19, 2001, and November 30, 2001, is approved pursuant to 10 CFR 50.55a(f)(4)(iv). The staff further finds that the licensee's proposed implementation sequence to phase in its condition monitoring program over a time period in order to obtain performance data is authorized pursuant to 10 CFR 50.55a(a)(3)(i), on the basis the proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

Based on the above evaluation, the staff concludes that the licensee's request to use the OMa-1996 Code and related regulatory requirements with regard to implementation of Appendix II is approved pursuant to 10 CFR 50.55a(f)(4)(iv). In addition, the staff concludes that the licensee's proposed phased-in implementation of OMa-1996 Code Appendix II requirements at the McGuire Nuclear Station, Units 1 and 2, will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55.a(a)(3)(i).

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Date: February 5, 2002

McGuire Nuclear Station

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