

March 17, 2000

Mr. Daniel G. Malone
Acting Director, Licensing
Palisades Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

SUBJECT: PALISADES PLANT - EVALUATION OF INSERVICE TESTING PROGRAM
VALVE RELIEF REQUEST VRR 33 (TAC NO. MA8051)

Dear Mr. Malone:

By letter dated August 26, 1999, you proposed valve relief request No. 33 (VRR 33) for the third 120-month interval inservice testing program for the Palisades Plant. In VRR 33, you propose to use Appendix II, "Check Valve Condition Monitoring Program," of the American Society of Mechanical Engineers (ASME) Operations and Maintenance (OM) Code-1995 Edition (with the 1996 Addenda (OMa-1996)) as an alternative to the ASME/American National Standards Institute OM-1987, Part 10 (with the 1988 Addenda (OMa-1988)) test requirements. You requested NRC staff approval in accordance with 10 CFR 50.55a(a)(3)(i) on the basis that the proposed alternative would provide an acceptable level of quality and safety.

Since your letter was issued, the Commission has published the Final Rule amending the relevant sections of the Code of Federal Regulations, 10 CFR 50.55a (see 64 FR 51370 dated September 22, 1999). The NRC staff finds that certain aspects of VRR 33 are inconsistent with the Final Rule and, therefore, unacceptable. Specifically, you have not (1) demonstrated that the modification to ASME OMa-1996 Addenda Appendix II contained in the Final Rule have been satisfied, or (2) proposed to implement all portions of the 1995 Edition with the 1996 Addenda of the OM Code that apply to check valves for the remaining check valves not included in the Appendix II program, or (3) satisfied 10 CFR 50.55a(b)(3)(iv)(C) by proposing to implement the requirements of Inservice Testing Section C 4.5.1 through 4.5.4 in the event that the Appendix II condition monitoring program should be discontinued. For these reasons, the NRC staff is unable to approve VRR 33 as currently proposed. The enclosure is our safety evaluation regarding VRR 33.

The NRC staff's findings regarding these inconsistencies were discussed with Mr. R. Vincent of your organization during a telephone call on February 9, 1999. Mr. Vincent stated that Consumers Energy Company would re-examine in the future whether it wishes to participate in a check valve condition monitoring program in view of the Final Rule and, depending upon the results, consider submitting a revised request. The NRC staff continues to believe that performance-based (i.e., condition monitoring) testing of check valves provides an improved approach for degradation detection prior to failure, and we encourage licensees to adopt check valve condition monitoring programs consistent with the Final Rule.

D. Malone

- 2 -

This completes our efforts under TAC MA8051. If you have questions regarding this matter, contact Darl Hood at (301) 415-3049 (e-mail: dsh@nrc.gov).

Sincerely,

/RA/

Claudia M. Craig, Section Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Safety Evaluation

cc w/encl: See next page

D. Malone

- 2 -

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February 2000

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO INSERVICE TESTING PROGRAM RELIEF REQUEST VRR 33

CONSUMERS ENERGY COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) applicable edition and addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), or (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, a licensee must demonstrate that (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section XI, 50.55a(f)(4)(iv) provides that IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed, and subject to Commission approval.

Pursuant to 10 CFR 50.55a, the Commission may grant relief from, or authorize proposed alternatives to, the ASME Code requirements upon making the necessary findings. By letter dated August 26, 1999, Consumers Energy Company (the licensee) submitted Valve Relief Request VRR 33 which seeks approval, pursuant to 10 CFR 50.55a(a)(3)(i), of a certain alternative regarding IST of check valves. The licensee's requested relief and the NRC staff's findings are presented in this safety evaluation (SE).

The applicable code of record for the Palisade Plant's IST Program is the ASME Code, 1989 Edition, Section XI. The licensee submitted its third 120-interval IST Program for the Palisades Plant on March 5, 1996; the NRC staff's evaluation of the relief requests in that program was issued by letter dated August 30, 1996.

2.0 VALVE RELIEF REQUEST 33

By letter dated August 26, 1999, the licensee submitted VRR 33 for the IST program at the Palisades Plant, proposing the use of a performance-based ("condition monitoring") alternative with respect to check valve testing. Specifically, the licensee proposes to implement Appendix II, "Check Valve Condition Monitoring Program," contained in ASME Operations and

Maintenance (OM) Code-1995 Edition, OMa-1996 Addenda, as an alternative to the ASME Code, 1989 Edition, Section XI, Subsection IWV requirements, which are deferred to the ASME/ANSI OM-1987 Edition, OMa-1988 Addenda. The licensee explains that the performance-based program would change the current prescriptive code requirements for check valves to a controlled method that would predictively monitor check valve conditions.

In its letter, the licensee states that VRR 33 is similar to other relief requests that the NRC staff approved for Wolf Creek on November 26, 1997, and for Palo Verde on July 8, 1999.¹

2.1 Licensee's Basis for Relief

In Relief Request VRR 33, the licensee states:

This relief will implement Appendix II of the ASME OM Code, OMa-1996 Addenda, "Check Valve Condition Monitoring Program." The proposed testing alternatives therefore provide an acceptable level of quality and safety, in accordance with current Code requirements and the final rule revisions to 10 CFR 50.55a directed by [Commissioner's Memorandum Tracking System] COMEXM-99-001, issued on June 24, 1999.

2.2 Licensee's Proposed Alternative

In VRR 33, the licensee indicates that check valves selected for the condition monitoring activities will comply with ASME OMa-1996, Appendix II, "Check Valve Condition Monitoring Program." The licensee also indicated the following modifications will be additionally imposed in implementing the Appendix II requirements:

1. Check valve obturator movement will be tested, examined or verified in both the open and closed direction to ensure unambiguous detection of functionally degraded check valves. OMa-1988 Addenda to ASME/ANSI OM-1987, Part 10, Section 4.3.2.4 will be used to determine valve obturator movement requirements.

While Appendix II is in effect, the open and close capability may be obtained from activities such as:

- a. Nonintrusive tests that analyze both open and close design function capabilities
- b. Disassembly of a valve that determines the ability of the disc to stroke in both the open and close positions; and

¹ The related relief requests for Wolf Creek and Palo Verde were approved by the NRC staff until such time as the NRC staff's generic position on the ASME guidelines for a check valve condition monitoring program was issued through rulemaking. The approvals were subject to the condition that, upon completion of rulemaking, if those licensees intended to continue to implement the relief requests, they were to follow the ASME guidelines for a check valve condition monitoring program with any limitations or conditions specified in the NRC staff endorsement of those guidelines.

- c. A corroboration of other testing methods (e.g. leak rate testing for close, and full flow testing or design accident flow testing for open).

Other test methods used to assess valve condition and acceptable performance must be equally effective to those identified here, and must be documented in the check valve condition monitoring analysis.

2. Sufficient data must exist to determine the intervals for condition monitoring activities. The initial interval for tests and associated examinations are established per Appendix II and the proposed alternative test modifications. Trending and analysis of existing data is used to reduce or to extend the time between activities.

The initial IST interval must be limited to two fuel cycles or three years. Subsequent extended intervals must be limited to one fuel cycle per extension up to 10 years. In no case will the test or examination interval for an individual valve exceed 120 months.

3. If it is decided to discontinue the "condition monitoring program" on a valve or grouping of valves, the testing and examination will revert back to OMa-1988 Addenda to the ASME/ANSI OM-1987, Part 10 Section 4.3.2, "Exercising Tests for Check Valves," Section 5, "Acceptance Criteria and Corrective Action," and Section 6, "Records and Reports."

3.0 NRC STAFF'S EVALUATION

Since 1990, the OM Code has been developing Code requirements to improve check valve IST by correcting exercising requirement deficiencies. The Code exercising requirements, as implemented in the industry, did not always detect the valve's degradation of performance or ability to perform the intended function. Significant degradation of valve parts could have been ongoing and undetected prior to an IST exercising failure. The OM Code developed a process for monitoring the check valve's condition that allow the Owner certain flexibility in determining activities to establish the type of tests, examination, preventive maintenance and associated intervals. The OM Code, after considerable effort and deliberation, decided to (1) correct certain deficiencies in the way exercising of check valves was being implemented, and (2) to codify a process for monitoring the valve's operating condition. This integral two-part improvement to the Code provided inter-related requirements and was issued in the inservice testing Section C (ISTC) portion of the ASME OM Code-1995 Edition, OMa-1996 Addenda. ISTC 4.5.2 "Exercising Requirements" and 4.5.4 "Valve Obturator Movement" were changed to require a bidirectional test to improve upon the detection of degradation and failure. The related ISTC 4.5.5 "Condition Monitoring Program" change allowed for the codified condition monitoring process as an alternative to the exercising and testing requirements of ISTC 4.5.1 through 4.5.4. The implementation of the condition monitoring process was defined in Appendix II, "Check Valve Condition Monitoring Program." These Code changes were arranged so that licensees who prefer not to use the ISTC 4.5.5 alternative Condition Monitoring Program in their IST Program, would be required to use ISTC 4.5.4 as a default set of testing and examination requirements.

The NRC's amendment to 10 CFR 50.55a (the "Final Rule"), published in the *Federal Register* on September 22, 1999, incorporated by reference the 1995 Edition up to and including the 1996 Addenda to the ASME Code for Operation and Maintenance of Nuclear Power Plants (the OM Code) with certain limitations and modifications. The following modifications in 10 CFR 50.55a(b)(3)(iv) apply when implementing Appendix II:

- (A) Valve opening and closing must be demonstrated when flow testing or examination methods (nonintrusive, or disassembly and inspection) are used;
- (B) The initial interval for tests and associated examinations may not exceed two fuel cycles or three years, whichever is longer. Any extension of this interval may not exceed one fuel cycle per extension with the maximum interval, not to exceed 10 years. Trending and evaluation of existing data must be used to reduce or extend the time interval between tests.
- (C) If the Appendix II condition monitoring program is discontinued, then the requirements of ISTC 4.5.1 through 4.5.4 must be implemented.

In Relief Request VRR 33, the licensee proposes as an alternative, to implement the Appendix II portion of the OMa-1996 Addenda, and seeks NRC staff approval pursuant to 10 CFR 50.55a(a)(3)(i). The licensee states that VRR 33 is similar to other relief requests that the NRC staff approved for Wolf Creek and Palo Verde. The Wolf Creek and Palo Verde relief requests were evaluated pursuant to 10 CFR 50.55a(a)(3)(i). These requests were evaluated pursuant to 50.55a(a)(3)(i) based upon those licensees latest NRC-endorsed Edition of the Code, because the OMa-1996 Appendix II Addenda had not yet been endorsed by an NRC rule amendment. However, for Palisades, VRR 33 is being evaluated pursuant to 10 CFR 50.55a(f)(4)(iv), as an implementation of a portion of a subsequent Code Addenda that includes Appendix II, because the 1996 Addenda to the OM Code has since been incorporated by reference in 10 CFR 50.55a. Paragraph 50.55a(f)(4)(iv) of the regulations allows the licensee to implement portions of subsequent Code editions and addenda that are incorporated by reference, subject to the limitations and modifications listed in paragraph 10 CFR 50.55a(b) and subject to Commission approval.

For VRR 33, the NRC staff finds that the Palisades check valves selected for the condition monitoring activities comply with the requirements in ASME OMa-1996 Addenda Appendix II and the NRC's amended regulations in 10 CFR 50.55a(b)(3)(iv)(A) and (B), as described above. However, the NRC staff finds that, should the Palisades Condition Monitoring Program be discontinued, the testing and examination would revert back to the earlier Code edition requirements of ASME/ANSI OM-1987, Part 10, Section 4.3.2, "Exercising Tests for Check Valves," Section 5, "Acceptance Criteria and Corrective Action," and Section 6, "Records and Reports," rather than the requirement of ISTC 4.5.1 through 4.5.4 of the 1996 Addenda. This is not consistent with 10 CFR 50.55a(b)(3)(iv)(C), as stated above.

As previously stated, the purposes for the integral two-part changes included in the ASME OM-1995 Code, 1996 Addenda, were (1) to improve ISTC requirements by correcting deficiencies in valve exercising testing and examination, and (2) to provide a condition monitoring alternative to the exercising provisions that improve valve performance and optimize testing, examination and preventative maintenance activities. These related Code changes

were arranged for the improved exercising provisions to apply if the condition monitoring program were discontinued.

The licensee's proposal to revert to an earlier Code edition if the Palisades Condition Monitoring Program were to be discontinued, applies requirements of a decreased level of quality that are inconsistent with related requirements of the Code and modifications listed in 10 CFR 50.55a(b) of the regulations.

Furthermore, in the statement of consideration (64 FR 51388) of the final rulemaking amendment to 10 CFR 50.55a, the NRC clarified the conditions that a licensee must meet when a licensee's Code of Record is an earlier edition or addenda than the 1996 Addenda to the OM Code, such as the case of Palisades. The NRC stated in the *Federal Register* that it would favorably consider a request by a licensee under §50.55a(f)(4)(iv) to apply Appendix II in advance of the ASME OM Code as its Code of Record if the licensee justifies the following in its submitted request:

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.

The NRC staff finds that in proposing VRR 33, the licensee has not satisfied the two conditions stated above: The licensee has not committed to comply with the modification in 10 CFR 50.55a(b)(3)(iv)(C), and it has not committed to implement all portions of the 1995 Edition with the 1996 Addenda of the OM Code that apply to check valves for the remaining check valves not included in the Appendix II program.

Because the NRC staff finds that the licensee has not demonstrated or committed to compliance with certain required Code or regulatory requirements as described above, the NRC staff does not approve relief request VRR 33 pursuant to 10 CFR 50.55a(f)(4)(iv), nor pursuant to 10 CFR 50.55a(a)(3)(i).

4.0 CONCLUSION

The NRC staff concludes that in VRR 33, the licensee has proposed unacceptable provisions regarding the potential discontinuation of the Palisades Condition Monitoring Program. VRR 33 also does not satisfy the relevant conditions that the Commission specified in the statement of consideration for the associated Final Rule. Therefore, the licensee's requested approval regarding VRR 33 is denied.

Principal Contributor: F. Grubelich

Date: March 17, 2000