

March 14, 2000

Mr. Douglas R. Gipson
Senior Vice President
Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - RELIEF REQUEST FOR THE EXERCISE FREQUENCY FOR EXCESS
FLOW CHECK VALVES IN THE SECOND 10-YEAR INTERVAL OF THE PUMP
AND VALVE INSERVICE TESTING PROGRAM (TAC NO. MA7374)

Dear Mr. Gipson:

In its letter of December 17, 1999, the Detroit Edison Company (the licensee) submitted Relief Request VRR-011 for the second 10-year interval inservice testing program for pumps and valves for Fermi 2. The NRC staff has reviewed the proposed alternative testing interval contained in the relief request against the requirements of the 1989 edition of the American Society of Mechanical Engineers' Boiler and Pressure Vessel Code pursuant to Section 50.55a of Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR 50.55a). The associated technical specification amendment request is being reviewed separately under TAC No. MA7373.

The proposed alternative to the Code requirements described in VRR-011 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) based on the alternative providing an acceptable level of quality and safety. The alternative is authorized for the second 10-year interval.

A copy of the staff's safety evaluation is enclosed.

Sincerely,

/RA/

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

Docket No. 50-341

Enclosure: Safety Evaluation

cc w/encl: See next page

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Fermi 2

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November 1999

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR RELIEF FROM ASME CODE, SECTION XI, REQUIREMENTS
FOR EXCESS FLOW CHECK VALVES FOR THE
SECOND 10-YEAR INTERVAL INSERVICE TESTING PROGRAM
DETROIT EDISON COMPANY
FERMI 2
DOCKET NO. 50-341

1.0 INTRODUCTION

Section 50.55a of Part 50 to Title 10 of 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 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements that are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

By letter dated December 17, 1999, Detroit Edison, the licensee for Fermi 2, submitted Relief Request VRR-011 related to the inservice testing (IST) program requirements for the excess flow check valves (EFCVs) for the second 10-year interval. The NRC's findings with respect to authorizing the alternative proposed in the relief request are given below.

2.0 EVALUATION

The licensee requests relief from the exercise frequency requirements of the Code (OM-10, paragraph 4.3.2.1) for the EFCVs. The licensee proposes that proper operation of the valves be demonstrated during technical specification (TS) operability testing.

2.1 Background

EFCVs are provided in each instrument process line at Fermi 2 that is part of the reactor coolant pressure boundary. The EFCVs are designed so that they will not close accidentally during normal operation, will close if a rupture of the instrument line occurs downstream of the valve, and can be reopened when appropriate after closure from a local panel. Each EFCV has its position indicated in the control room.

As detailed in Section 6.2.4.2.5 of the Fermi 2 Updated Final Safety Analysis Report (UFSAR), Detroit Edison has incorporated into the design of each source line containing an EFCV the equivalent of a 0.25-inch restricting orifice. This was done by either the installation of a 0.25-inch orifice, the tap size of the source line being 0.25 inches, or, in the case of the feedwater pressure-sensing lines, taking credit for an inboard containment isolation valve. Additionally, the design of each EFCV contains an internal 0.25-inch main body orifice. If an EFCV fails to close, the restriction in the associated source line limits leakage to a level where the integrity and functional performance of secondary containment and associated safety systems are maintained. The coolant loss is well within the capabilities of the reactor coolant makeup system, and the potential offsite exposure is substantially below the guidelines of 10 CFR Part 100.

Additionally, the UFSAR indicates that the design and installation of the EFCVs at Fermi 2 follow the guidance of Regulatory Guide 1.11.

2.2 Licensee's Basis for Requesting Relief

The licensee states:

Excess flow check valves are reliable devices, the major components are a poppet and spring. The spring holds the poppet open only under static conditions, such that the valve will close upon sufficient differential pressure across the poppet. Functional testing of the valve is accomplished by venting the instrument side of the valve. The resultant increase in flow imposes a differential pressure across the poppet which compresses the spring and closes off flow through the valve.

Excess flow check valves have been extremely reliable throughout the industry. Of the 837 tests performed in the first ten years of operation, no excess flow check valve isolation failures have been recorded (BWROG Report B21-00658-01). The Fermi 2 Technical Specifications detail what frequency is required to maintain a high degree of reliability and availability, and provide an acceptable level of quality and safety. Therefore, Detroit Edison requests relief pursuant to 10CFR50.55a(a)(3)(i) to test excess flow check valves at the frequency specified in Fermi 2 Technical Specifications Surveillance Requirements (SR) 3.6.1.3.9. As discussed in the Technical Specifications Bases for this SR, this test provides assurance that each valve restricts flow on a simulated instrument line break.

2.3 Alternative Testing

The licensee proposes:

Excess flow check valves will be tested at the frequency specified in Technical Specifications Surveillance Requirement 3.6.1.3.9.

2.4 Evaluation

OM-10, paragraph 4.3.2.1, requires that check valves be exercised every 3 months to verify that they fulfill their safety function. The licensee proposes to demonstrate the proper operation of each valve during the TS-required operability testing.

In its December 17, 1999, letter, Detroit Edison requested a change to the frequency of the TS-required operability testing from testing all EFCVs every 18 months to testing a representative sample of the EFCVs every 18 months such that all EFCVs are tested at least once every 10 years. In order to fully implement this TS change, the licensee also requested relief from the associated Code requirement for exercising these valves.

In evaluating the TS change, the NRC staff concluded that the impact of the increase in EFCV surveillance test intervals to 10 years would result in an increase in the release frequency of about $7.66E-5$ /year from the current release frequency estimate (for an 18-month surveillance test interval) of about $1.36E-5$ /year. The NRC staff considered this estimate to be sufficiently low, especially since the consequence of such an accident is unlikely to lead to core damage. The staff also concluded that the consequences of the steam release from the depicted events is bounded by an existing UFSAR analysis. Based on the acceptability of the methods applied to estimate the release frequency, a relatively low release frequency estimate in conjunction with the unlikely impact on core damage, and negligible consequence of a release in the reactor building, the NRC staff concluded that the increase in risk associated with the licensee's request for relaxation of EFCV surveillance testing is low.

The intent of both the TS surveillance requirement and the Code requirement for exercising the EFCVs is to ensure that there is reasonable assurance that the EFCVs will perform their design function if they are called upon. In its evaluation of the TS change, the NRC staff has concluded that testing at the revised frequency will continue to provide this assurance. Therefore, the licensee's proposed alternative in the relief request will continue to provide an acceptable level of quality and safety and the relief is authorized.

3.0 CONCLUSION

The licensee's proposed alternative to the exercise frequency requirements of OM-10, paragraph 4.3.2.1, for the EFCVs is authorized pursuant to 10 CFR 50.55a(a)(3)(i) based on the alternative providing an acceptable level of quality and safety. The alternative is authorized for the second 10-year IST interval.

Principal Contributor: A. Kugler

Date: March 14, 2000