UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 7, 2018

Mr. Keith J. Polson
Senior Vice President and
Chief Nuclear Officer
DTE Electric Company
Fermi 2 – 260 TAC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI, UNIT 2 – RELIEF FROM THE REQUIREMENTS OF THE ASME OM CODE (CAC NO. MG0070; EPID L-2017-LLR-0079)

Dear Mr. Polson:

By letter dated August 4, 2017, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17216A015), DTE Electric Company (the licensee or DTE) submitted a request to the Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at Fermi 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, section 50.55a(z)(1), the licensee requested to use proposed alternatives VRR-012, Revision 1 and VRR-013, Revision 1 on the basis that the alternatives provide an acceptable level of quality and safety.

NRC staff finds that the proposed alternatives VRR-012, Revision 1 and VRR-013, Revision 1 provide an acceptable level of quality and safety for valves listed in Tables 1 and 2 of the enclosed safety evaluation. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

Therefore, the NRC staff authorizes the proposed alternative requests for the remainder of the third 10-Year IST interval at Fermi 2 Nuclear Power Plant which started on February 17, 2010.

If you have any questions, please contact the project manager, Sujata Goetz, at 301-415-8004 or via e-mail at Sujata.Goetz@nrc.gov.

Sincerely,

David J. Wrona, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure: Safety Evaluation

cc w/encl: ListServ

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUESTS VRR-012 AND VRR-013 REVISION 1

REGARDING THE INSERVICE TESTING PROGRAM, THIRD 10-YEAR INTERVAL

DTE ENERGY COMPANY

FERMI NUCLEAR POWER PLANT, UNIT 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated August 4, 2017, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17216A015), DTE Electric Company (the licensee or DTE) submitted a request to the Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at Fermi 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.55a(z)(1), the licensee requested to use proposed alternatives VRR-012 and VRR-013, Revision 1, on the basis that the alternatives provide an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

Regulation 10 CFR 50.55a(f), "Inservice Testing Requirements," requires, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda incorporated by reference in the regulations. Exceptions are allowed where alternatives have been authorized by the NRC pursuant to paragraphs 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2).

Regulation 10 CFR 50.55a allows the NRC to authorize alternatives from the ASME OM Code requirements upon making necessary findings. When proposing an alternative relief, the licensee must demonstrate that the proposed alternative provides an acceptable level of quality and safety as required by Section 50.55a(z)(1) or that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety per Section 50.55a(z)(2).

3.0 TECHNICAL EVALUATION

DTE has requested an alternative test plan in lieu of certain IST requirements of the 2004 Edition of the ASME OM Code for the IST programs at Fermi 2 for the remainder of the third interval which started on February 17, 2010.

3.1 The Licensee's Alternative Request VRR-012, Revision 1

ASME OM Code ISTC-3700, "Position Verification Testing," requires valves with remote position indicators be observed locally at least once every 2 years to verify that valve operation is accurately indicated.

Alternative testing is requested for the following valves in Table 1:

Table 1

Valve ID	Function	Cat.	Class
C5100F002A	TIP Channel A Ball Valve	A	2
C5100F002B	TIP Channel B Ball Valve	A	2
C5100F002C	TIP Channel C Ball Valve	A	2
C5100F002D	TIP Channel D Ball Valve	A	2
C5100F002E	TIP Channel E Ball Valve	A	2
E11F412	RHR (residual heart removal) Division II, Primary Containment Monitoring Isolation Valve	A	2
E11F413	RHR Div. II Primary Containment Monitoring Isolation Valve	A	2
E11F414	RHR Div. I Primary Containment Monitoring Isolation Valve	A	2
E11F415	RHR Div. I Primary Containment Monitoring Isolation Valve	A	2
E41F400	Primary Containment Monitoring – Suppression Pool	A	2
E41F401	Primary. Containment Monitoring – Suppression Pool	A	2
E41F402	Primary. Containment Monitoring – Suppression Pool	A	2
E41F403	Primary Containment Monitoring – Suppression Pool	A	2
P34F401A	Post Accident Sampling (PAS) V13-7360	A	1
P34F401B	Post Accident Sampling (PAS) V13-7361	A	1
P34F403A	Post Accident Sampling (PAS) V13-7364	A	2
P34F403B	Post Accident Sampling (PAS) V13-7365	A	2
P34F404A	Post Accident Sampling (PAS) V13-7374	A	2
P34F404B	Post Accident Sampling (PAS) V13-7375	A	2
P34F405A	Post Accident Sampling (PAS) V13-7366	A	2
P34F405B	Post Accident Sampling (PAS) V13-7367	A	2
P34F406A	Post Accident Sampling (PAS) V13-7376	A	2
P34F406B	Post Accident Sampling (PAS) V13-7377	A	2
P34F407	Post Accident Sampling (PAS) V13-7368	A	2
P34F408	Post Accident Sampling (PAS) V13-7369	A	2
P34F409	Post Accident Sampling (PAS) V13-7378	A	2
P34F410	Post Accident Sampling (PAS) V13-7379	A	2
T50F412A	Primary Containment Torus Level Monitoring Division 1	A	2
T50F412B	Primary Containment Torus Level Monitoring Division 2	A	2
T50F450	Primary Containment Radiation Monitoring System Inlet Isolation Valve	A	2
T50F451	Primary Containment Radiation Monitoring System Outlet Isolation Valve	A	2
T50F458	Primary Containment Atmospheric Monitoring (PCAM) Division 2 Penetration X-27F Remote Manual Solenoid Valve	A	2

The license stated in its August 4, 2017, letter that:

> Relief is requested from performing the position indication verification test (PIT) on a two year frequency. Recent historical data was used to identify that PIT alone each refuel outage (each 18 months) incurs a total dose of approximately 700 mRem [millirem]. The NRC's approval of the proposed alternative in VRR-012, Revision 0, resulted in the PIT frequency being aligned with the Fermi 2 performance-based leakage-test program outlined in 10 CFR 50 Appendix J, Option B with a test interval limit of 60 months. VRR-012, Revision 1, proposes that position indication verification will be performed at a frequency commensurate with the 10 CFR 50 Appendix J, Option B performance-based leakage testing program at Fermi 2, which incorporates NEI [Nuclear Energy Institute] 94-01, Revision 3-A (ADAMS Accession No. ML12221A202), and the conditions and limitations specified in NEI 94-01, Revision 2-A.
>
> The Fermi 2 program which implements 10 CFR 50 Appendix J, Option B requires individual containment isolation valves to be good performers before they can be placed on extended seat leakage testing frequency. Assuming all of the PIT valves are classified as good performers, the extended test intervals would provide for a savings of approximately 2100 mRem (700 mRem above the 1400 mRem savings realized through the previously approved test interval limit of 60 months in VRR-012, Revision 0) over a 75-month period.
>
> Proposed Alternative [VRR-012, Revision 1]:
>
> In accordance with ISTC-3700, where local observation is not possible, other indications shall be used to verify valve position. The method used at Fermi 2 is a pressure test using the local leakage rate testing [LLRT] equipment. This method involves pressurizing the containment penetration volume to approximately 56.5 psig [pounds per square inch gauge], and verifying the penetration remains pressurized while the valve is indicating closed on the main control room board. The valve is then opened using the control switch in the main control room. A decrease in pressure is then verified along with valve position indicating open in the main control room. This method satisfies the requirement for position indication verification and ensures that the indicating system accurately reflects the valve position.
>
> The subject valves are all in category A and are all containment isolation valves per the plant safety analysis. All of the subject valves have a safety function to close in order to isolate containment during a Loss of Coolant Accident (LOCA) when required.
>
> Since these valves are containment isolation valves [CIV], they are each individually seat leakage tested in accordance with 10 CFR 50 Appendix J, Option B.
>
> The subject valves are designed such that the position of the valve is not locally observable. The design of these valves is such that the coil position is internal to the valve body and not observable in either the energized or de-energized state.

For the subject valves, Fermi 2 will perform the position indication verification [PIV] in conjunction with the seat leakage test at a frequency in accordance with 10 CFR 50 Appendix J, Option B. This interval may be adjusted to a frequency of testing commensurate with the Option B of 10 CFR 50 Appendix J Type C leakage testing, which is based on valve seat leakage performance.

Each of these valves are seat leakage tested using local leakage rate testing equipment (i.e., Local Leakage Rate Monitors (LRMs)), and the current leakage rate tests have been modified to also perform the position indication verification test at the same time. The individual valve being tested must have its system properly drained, vented, and aligned correctly prior to performing the seat leakage test or the position indication verification, per code requirements. The radiation exposure and the Operations/Test personnel time/labor involved will be significantly reduced by performing the position indication verification test at the same interval (frequency) as the 10 CFR 50 Appendix J, Option B seat leakage test.

In addition, each of these subject valves are exercised on a quarterly or refueling frequency and their stroke times are measured and compared to the ASME OM Code ISTC-5152 "Stroke Test Acceptance Criteria," which states "Test results shall be compared to referenced values established in accordance with ISTC-3300, ISTC-3310, or ISTC-3320." By continuing this valve exercising, the performance of the position indication verification, and the seat leakage test in accordance with 10 CFR 50 Appendix J, Option B, an adequate assessment of valve health may be determined.

These PIT valves are also subject to Preventive Maintenance program coverage, in which preventive maintenance activities are performed periodically to satisfy Environmental Qualifications (EQ) Program criteria. Any maintenance that is performed on these valves which might affect position indication will be followed by applicable Post Maintenance Testing (PMT) including PIT.

In 1996, Fermi 2 received a Safety Evaluation (Technical Specification Amendment No. 108) with approval to implement Option B of the 10 CFR 50 Appendix J Program. This program permits the extension of the Appendix J seat leakage testing to a frequency corresponding to the specific valve performance. Valves whose leakage test results indicate good performance may have their interval of testing increased based on these test results.

On March 9, 2017, Fermi 2 received a Safety Evaluation (Technical Specification Amendment No. 205) with approval to implement NEI 94-01, Revision 3-A (ADAMS accession No. ML12221A202) and the conditions and limitations specified in NEI 94-01, Revision 2-A, to implement the performance-based leakage-testing program in accordance with 10 CFR 50 Appendix J, Option B. This Amendment increased the containment isolation valves leakage test intervals (i.e., Type C tests) from 60 months to 75 months. The Fermi 2 program which implements 10 CFR 50 Appendix J, Option B requires individual containment isolation valves to be good performers before they can be placed on extended seat leakage testing frequency. Based on the data contained in Attachment 3, [of licensee's letter dated August 4, 2017] all the listed valves have passed their last three PIT Local Leakage Rate Tests.

In conclusion, the ability to detect degradation and ensure the operational readiness of the subject valves to perform their intended function is not jeopardized by performing the position indication verification test at the same frequency as specified by 10 CFR 50 Appendix J, Option B. This frequency of testing provides reasonable assurance of the operational readiness of the subject valves and provides an acceptable level of quality and safety.

This proposed alternative is for the remaining duration of the Femi 2 Third Inservice Testing (IST) 10-Year Interval, which started February 17, 2010.

3.2 NRC Staff Evaluation of VRR-012, Revision 1

The licensee has proposed an alternative test in lieu of the requirements found in ASME OM Code ISTC-3700 for the valves listed in Table 1. Specifically, the licensee proposes to perform the PIT in conjunction with the Type C tests (which measure containment isolation valve leakage rates) at a frequency in accordance with the 10 CFR Part 50 Appendix J, Option B (Option B) schedule. Valves would initially be tested at the required interval schedule, which is currently every refueling outage (RFO) or 18 months, as specified by ISTC-3700. Valves that have demonstrated good performance for two consecutive cycles may have their test interval extended to a maximum of 75 months. Good performance is defined as no PIT failures due to seating surface condition of the valves. Any PIT failure would require the component to return to the initial interval of every RFO or 18 months until good performance can again be established.

As stated in the licensee's letter dated August 4, 2017, this is a revision of a previously approved request. In a letter dated, September 28, 2010, NRC approved VRR-012 and VRR-013, Revisions 0, for the current IST program test interval (ADAMS Accession No. ML102360570). The previous request allowed the valves listed in Table 1 to have their valve position verification test performed in conjunction with the Type C valve seat leakage test at a frequency in accordance with the Option B schedule. Valves that demonstrated good performance for two consecutive cycles have their test interval extended to every three RFO not to exceed 60 months.

On March 9, 2017, the licensee received approval to amend their technical specifications (TSs) to implement a performance-based leakage-testing program in accordance with the Option B schedule using the guidance of NEI 94-01, Revision 3A, "Nuclear Energy Institute Industry Guideline For Implementing Performance-Based Option of 10 CFR Part 50, Appendix J." This amendment increased the Type C tests from 60 months to 75 months. 10 CFR 50 Appendix J, Option B requires individual containment isolation valves to be good performers before they can be placed on extended seat leakage testing frequency. Based on the data contained in Attachment 3, of licensee's letter dated August 4, 2017, all the listed valves have passed their last three PIT Local Leakage Rate Tests, therefore they can be placed on extended seat leakage testing.

The purpose of the proposed RR revision was to realign the IST test requirements with the TS requirements. Review of the original RR along with the updated valve test history yields no significant performance issues. Consequently, there are no changes to the analysis performed on the previous safety evaluation completed for RR VRR-012, Revision 0. The proposed alternative provides an acceptable level of quality and safety.

3.3 Licensee's Alternative Request VRR-013, Revision 1

ASME OM Code ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves" requires, in part, that "Category A valves with a leakage requirement not based on 10 CFR 50, Appendix J program, must be tested to verify their seat leakages are within acceptable limits. Valve closure before seat leakage testing must be performed by using the valve operator with no additional closing force applied." ASME OM Code ISTC-3630(a), "Frequency" requires tests to be performed at least once every 2 years.

DTE is requesting alternative testing for the following valves:

Table 2

Valve ID	Function	Cat.	Code Class
E1100F050A	RHR Div. 1 Inboard Isolation Testable Check Valve	A	1
E1100F050B	RHR Div. 2 Inboard Isolation Testable Check Valve	A	1
E1150F008	RHR Div. 1 & 2 Shutdown Cooling Outboard Cont. Isolation Valve	A	1
E1150F009	RHR Div. 1 & 2 Shutdown Cooling Inboard Cont. Isolation Valve	A	1
E1150F015A	RHR Div. 1 Low Pressure Coolant Injection Inboard Isolation Valve	A	1
E1150F015B	RHR Div. 2 Low Pressure Coolant Injection Inboard Isolation Valve	A	1
E1150F608	RHR Shutdown Cooling Inboard Inlet Isolation Bypass Valve	A	1
E2100F006A	Core Spray Div. 1 Inboard Primary Containment Check Valve	A	1
E2100F006B	Core Spray Div. 2 Inboard Primary Containment Check Valve	A	1
E2150F005A	Core Spray Div. 1 Inboard Isolation Valve	A	1
E2150F005B	Core Spray Div. 2 Inboard Isolation Valve	A	1
E4150F006	HPCI (high-pressure coolant injection) Main Pump Outlet to Feedwater Isolation Valve	A	1
E4150F007	HPCI Main Pump Discharge Isolation Valve	A	2
E5150F012	Reactor Core Isolation Cooling Pump Discharge Isolation Valve	A	2
E5150F013	Reactor Core Isolation Cooling Pump Supply To Feedwater Header Isolation Valve	A	1

DTE stated in its August 4, 2017, letter that it is requesting this alternative because:

> ISTC-3630(a) requires that leakage rate testing (water) for pressure isolation valves (PIV) be performed at least once every two years. The radiation exposure and the personnel time involved will be significantly reduced by performing the PIV test at the same interval (frequency) as the 10 CFR 50 Appendix J "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B "Performance-Based Requirements," seat leakage test. Recent historical data was used to identify that PIV testing alone each refuel outage (each 18 months) incurs a total dose of approximately 900 mRem. The reason

for this relief request is to reduce outage dose and to align the PIV test frequency to the Appendix J, Option B test frequency.

The NRC's approval of the proposed alternative in VRR-013, Revision 0, resulted in the PIV test frequency being aligned with the Fermi 2 performance-based leakage-test program outlined in 10 CFR 50 Appendix J, Option B but with a test interval limit of 60 months. VRR-013, Revision 1, proposes that PIV testing will be performed at a frequency commensurate with the 10 CFR 50 Appendix J, Option B performance-based leakage testing program at Fermi 2, which incorporates NEI 94-01, Revision 3-A (ADAMS Accession No. ML12221A202), and the conditions and limitations specified in NEI 94-01, Revision 2-A.

The Fermi 2 program which implements 10 CFR 50 Appendix J, Option B requires individual containment isolation valves to be good performers before they can be placed on extended seat leakage testing frequency. Assuming all of the PIVs are classified as good performers, the extended test intervals would provide for a savings of approximately 2700 mRem (900 mRem above the 1800 mRem savings realized through the previously approved test interval limit of 60 months in VRR-013, Revision 0) over a 75-month period.

Proposed Alternative [VRR-013, Revision 1]:

Pressure Isolation Valves (PIVs) are not included in the scope for performance-based testing as provided for in 10 CFR 50 Appendix J, Option B. The concept behind the Option B alternative for containment isolation valves is that licensees should be allowed to adopt cost effective methods for complying with regulatory requirements. NEI 94-01 describes the risk-informed basis for the extended test intervals under Option B. That justification shows that for valves which have demonstrated good performance by passing their leak rate tests for three consecutive cycles, further failures appear to be governed by the random failure rate of the component. NEI 94-01 also presents the results of a comprehensive risk analysis, including the statement that "the risk impact associated with increasing [leak rate] test intervals is negligible (less than 0.1% of total risk)."

NUREG-0933, "Resolution of Generic Safety Issues," Issue 105, "Interfacing Systems LOCA at LWRs [light-water reactors]," discussed the need for PIV leak rate testing based primarily on three pre-1980 historical failures of applicable valves industry-wide. These failures all involved human errors in either operations or maintenance. None of these failures involved inservice equipment degradation. The performance of PIV leak rate testing provides assurance of acceptable seat leakage with the valve in a closed position. Typical PIV testing does not identify functional problems which may inhibit the valves ability to re-position from open to closed. For check valves, such functional testing is accomplished per ASME OM Code Section ISTC-3522 "Category C check Valves" and Section ISTC-3520 "Exercising Requirements." Power-operated valves are routinely full stroke tested in accordance with ASME OM Code Section ISTC-5100, "Power Operated Valves," to ensure their functional capabilities. At Fermi 2, these functional tests for PIVs are performed only at a Cold Shutdown or refuel outage frequency. Such testing is not performed online in order to prevent any possibility of an inadvertent Interfacing System Loss of

Coolant Accident (ISLOCA) condition. The 18-month functional stroke testing of the PIVs is adequate to identify any abnormal condition that might affect closure capability. Performance of the separate 18-month PIV leak rate testing does not contribute any additional assurance of functional capability as it only verifies the seat tightness of the closed valves.

Thirteen of the fifteen valves listed are classified as CIVs and nine of those valves are leak rate tested with air at intervals determined by 10 CFR 50 Appendix J, Option B (hereto referred to as Option B). The test intervals for the valves with a PIV-only function will be determined in the same manner as is done for CIV testing under Option B. That is, the test interval may be extended up to every four refueling outages (not to exceed 75 months) upon completion of three consecutive periodic PIV tests with results within prescribed acceptance criteria. Any PIV test failure will require a return to the initial (every 30 months) interval until good performance can be re-established.

The primary basis for this relief request is the historically good performance of the PIVs. There have been no PIV failures due to seating surface condition of the valves. Several of the valves covered by this relief request have passed the as found PIV water test but experienced failures of as found CIV air leakage tests due to seat imperfections. There is industry-wide consensus that CIV air-testing is a more challenging and accurate measurement of seat condition, and more likely to identify any seat condition degradation.

NUREG/CR-5928, "Final Report of the NRC-sponsored ISLOCA Research Program", [ADAMS Accession No. ML072430731] evaluated the likelihood and potential severity of ISLOCA events in BWRs [boiling water reactors] and PWR [pressurized water reactors]. The BWR design used as a reference for this analysis was a BWR-4 with a Mark 1 containment. Fermi 2 was listed in Section 4.1 of the document as one of the applicable plants. The applicable BWR systems were individually analyzed and in each case this report concluded that the system was not at risk with respect to ISLOCA risk. Section 4.3 concluded the BWR portion of the analysis by saying "ISLOCA is not a risk concern for the BWR plant examined here."

On March 9, 2017, Fermi 2 received a Safety Evaluation (Technical Specification Amendment No. 205) with approval to implement NEI 94-01, Revision 3-A (ADAMS accession No. ML12221A202) and the conditions and limitations specified in NEI 94-01, Revision 2-A, to implement the performance-based leakage-testing program in accordance with 10 CFR 50 Appendix J, Option B. This Amendment increased the containment isolation valves leakage test interval (i.e., Type C tests) from 60 months to 75 months. Valves whose leakage test results indicate good performance may have their interval of testing increased based on these test results. The Fermi 2 program which implements 10 CFR 50 Appendix J, Option B requires individual containment isolation valves be good performers before they can be placed on extended seat leakage testing frequency. Based on the historical data, the majority of the listed valves have passed their last three PIV Leak Rate Tests.

Summary of bases and rationale for this relief request:

- Performance-based PIV testing would yield a dose reduction of approximately 2700 mRem over a 75-month period.
- Performance of functional stroke testing of PIVs every 18 months per ASME Code.
- Excellent historical performance results from PIV testing for all the applicable valves.
- Very low likelihood of valve mispositioning during power operations (procedures, interlocks).
- Air testing versus water testing - degrading seat conditions are identified much sooner with air testing.
- Relief valves in the low pressure piping - these relief valves may not provide ISLOCA mitigation for inadvertent PIV mispositioning (gross leakage) but their relief capacity can easily accommodate conservative PIV seat leakage rates.
- Alarms that identify high pressure to low pressure leakage - Operators are highly trained to recognize symptoms of a present or incipient ISLOCA and to take appropriate actions.

The intent of this relief request is to allow a performance-based approach to the scheduling of PIV leakage testing. Fermi 2 PIVs have an excellent performance history in terms of seat leakage testing. The risks associated with extending the leakage test interval to a maximum of 75 months are extremely low. This relief will provide significant reductions in radiation dose.

This proposed alternative is for the remaining duration of the Femi 2 Third Inservice Testing (IST) 10-Year Interval, which started February 17, 2010.

3.4 NRC Staff Evaluation for VRR-013, Revision 1

The licensee has proposed an alternative test in lieu of the requirements found in the 2004 Edition of the ASME OM Code Section ISTC-3630(a) for 15 PIVs listed in Table 2. Specifically, the licensee proposes to functionally test and verify the leakage rate of these PIVs using the Option B schedule. Valves would initially be tested at the required interval schedule which is every refueling outage or two years as specified by ASME OM Code Section ISTC-3630(a). In transitioning to the Option B schedule as detailed in NEI 94-01, Revision 3-A, the licensee proposes to perform PIV testing at intervals (frequencies) ranging from every 30 months up to every 75 months. Valves that have demonstrated good performance for three consecutive cycles may have their test interval extended up to 75 months. Any PIV leakage test failure would require the component to return to the initial interval of every 30 months until good performance can again be established.

The PIVs are defined as two valves in series within the reactor coolant pressure boundary which separate the high pressure reactor coolant system from an attached lower pressure system. Failure of a PIV could result in an over-pressurization event which could lead to a system rupture and possible release of fission products to the environment. This type of failure event was analyzed in NUREG/CR-5928, which quantified the risk associated with an ISLOCA event in BWR-4 design such as Fermi 2. The conclusion of the analysis indicated that ISLOCA is not

a risk concern for BWR-4 design.

The current RR dated August 4, 2017, is a revision of a previously requested RR for VRR-012 and VRR-013, revision 0 which NRC approved in a letter dated, September 28, 2010 (ADAMS accession No. ML102360570). The previous request allowed the valves listed in Table 2 to functionally test and verify their leakage rate at a frequency in accordance with an Option B schedule for the current IST program test interval. This allowed valves that demonstrated good performance for two consecutive cycles to have their test interval extended to every three RFOs not to exceed 60 months.

The purpose of the current proposed RR revision is to realign the IST test requirements with the TS requirements.

On March 9, 2017, the licensee received approval to amend their TS to implement a performance-based leakage-testing program in accordance with the Option B schedule using the guidance of NEI 94-01, Revision 3A, "Nuclear Energy Institute Industry Guideline For Implementing Performance-Based Option of 10 CFR Part 50, Appendix J." This amendment increased the Type C tests from 60 months to 75 months.

Option B is a performance based leakage test program. Guidance for implementation of acceptable leakage rate test methods, procedures, and analyses is provided in Regulatory Guide (RG) 1.163, "Performance Based Containment Leak Test Program" (ADAMS Accession No. ML003740058). RG 1.163 endorses NEI Topical Report 94-01, Revision 0, "Industry Guideline for Implementing Performance Based Option of 10 CFR 50, Appendix J" dated July 26, 1995, with the limitation that Type C components test interval cannot extend greater than 60 months. The current version of NEI 94-01 is Revision 3-A which allows Type C containment isolation valves test intervals to be extended to 75 months with a permissible extension for non-routine emergent conditions of 9 months (84 months total). The NRC staff finds the guidance in NEI 94-01, Revision 3-A, is acceptable (ADAMS Accession Nos. ML121030286 and ML12226A546) with the following conditions:

(1) Extended interval for Type C's LLRT may be increased to 75 months if a licensee's post outage report includes the margin between Type B test (pneumatic tests that detect and measure local leakage rates across pressure retaining and leakage-limiting boundaries) and Type C leakage rate summation and its regulatory limit. In addition, a corrective action plan must be developed to restore the margin to an acceptable level. Extensions of up to nine months (total maximum interval of 84 months for Type C tests) are permissible only for non-routine emergent conditions. The 9-month extension provision does not apply to valves that are restricted and/or limited to 30 month intervals such as BWR main steam isolation valves or to valves held to the base interval (30 months) due to unsatisfactory LLRT performance.

(2) When routinely scheduling any LLRT valve interval beyond 60 months and up to 75 months, the primary containment leakage rate testing program trending or monitoring must include an estimate of the amount of understatement in the Types B & C test total and must be included in a licensee's post-outage report. The report must include the reasoning and determination of the acceptability of the extension, demonstrating that the LLRT totals calculated represent the actual leakage potential of the penetrations.

Review of the original RR along with the updated valve test history yields no significant performance issues. Consequently, there are no changes to the analysis performed on the

previous safety evaluation dated September 28, 2010, for RR VRR-013. The proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives VRR-012, Revision 1 and VRR-013, Revision 1 provide an acceptable level of quality and safety for valves listed in Tables 1 and 2. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

Therefore, the NRC staff authorizes the proposed alternative requests for the remainder of the third 10-year IST interval at Fermi 2 Nuclear Power Plant which started on February 17, 2010.

Principle Contributor: Michael Farnan, NRR/EMIB

Date of issuance: March 7, 2018

SUBJECT: FERMI, UNIT 2 – RELIEF FROM THE REQUIREMENTS OF THE ASME OM CODE (CAC NO. MG0070; EPID L-2017-LLR-0079) DATED MARCH 7, 2018

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