William T. O'Connor, Jr.
Vice President, Nuclear Generation

Fermi 2
6400 North Dixie Hwy., Newport, Michigan 48166
Tel: 734-586-5201 Fax: 734-586-4172

DTE Energy

10CFR50.90

August 8, 2002
NRC-02-0062

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Proposed License Amendment for Participation in the BWRVIP ISP Plan for RPV Material Surveillance

Pursuant to 10 CFR 50.90, Detroit Edison hereby submits this license amendment to request the incorporation of the Boiling Water Reactor (BWR) Integrated Surveillance Program (ISP) in the Fermi 2 plant licensing basis. The ISP was developed by the BWR Vessel and Internals Project (BWRVIP) to address the NRC requirements for Reactor Pressure Vessel (RPV) material surveillance in Appendix H to 10 CFR 50. The NRC has recently approved the ISP use for all BWRs as a replacement to the individual plant RPV material surveillance programs.

In accordance with the ISP plan, the Fermi 2 RPV surveillance capsules are not required to be removed or tested. Therefore, once NRC approval of this license amendment is granted, Detroit Edison will defer any future withdrawal and testing of the Fermi 2 surveillance capsules.

Enclosure 1 provides a description and an evaluation of the proposed change. Enclosure 2 provides an analysis of the issue of significant hazards consideration using the standards of 10 CFR 50.92.

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor does it significantly change the types or

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significantly increase the amounts of effluents that may be released offsite. The proposed change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22 (c) (9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

This license amendment request will result in a revision of the current RPV material surveillance program description in the Updated Final Safety Analysis Report (UFSAR) to reference the ISP. Consistent with the NRC position in Regulatory Issue Summary 2002-05, this change is being submitted as a license amendment to facilitate NRC review and approval.

The following commitment is being made in this license amendment:

> Detroit Edison will utilize NRC-approved methodologies consistent with the guidance in RG 1.190 for the calculation of RPV neutron fluence the next time such calculations are required.

The current approved extension of the date for reporting the test results of the first Fermi 2 surveillance capsule is October 29, 2002. Therefore, Detroit Edison requests NRC approval of this license amendment by October 15, 2002, with an implementation period of within 60 days following NRC approval.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,

William J. O'Connor Jr.

Enclosures

cc: T. J. Kim
M. A. Ring
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, WILLIAM T. O'CONNOR, JR., do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

CYNTHIA L. SMITH
Notary Public, Monroe County, MI
My Commission Expires Oct. 5, 2005

William T. O'Connor Jr.

WILLIAM T. O'CONNOR, JR.
Vice President - Nuclear Generation

On this 8 day of August, 2002 before me personally appeared William T. O'Connor, Jr., being first duly sworn and says that he executed the foregoing as his free act and deed.

Cynthia L Smith

Notary Public

NRC-02-0062
ENCLOSURE 1

FERMI 2 NRC DOCKET NO. 50-341
OPERATING LICENSE NO. NPF-43

REQUEST FOR PARTICIPATION IN THE BWRVIP ISP PLAN FOR RPV MATERIAL SURVEILLANCE

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

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DESCRIPTION:

Appendix H to 10 CFR Part 50, "Reactor Vessel Material Surveillance Program Requirements," requires the implementation of a reactor pressure vessel (RPV) material surveillance program to monitor changes in the fracture toughness properties of ferritic material in the RPV beltline region which result from exposure of these materials to neutron irradiation and the thermal environment.

Fermi 2 Updated Final Safety Analysis Report (UFSAR), Section 5.2.4.4, "Surveillance Programs for the Reactor Pressure Vessel," describes the Fermi 2 compliance with the requirements in Appendix H to 10 CFR 50. Three stainless steel capsules that contain plate and weld test specimens have been placed near core midplane adjacent to the RPV wall where the neutron flux and temperature will simulate that of the RPV wall. The first surveillance capsule was removed from the Fermi 2 RPV on April 29, 2000.

Paragraph IV of Appendix H to 10 CFR 50 requires the submittal of a summary report with capsule test results to the NRC, within one year of the date of capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation. In Reference 1, Detroit Edison requested the deferral of reporting the test results of the first surveillance capsule to the NRC. Per Reference 2, the NRC granted Detroit Edison an extension of the date for reporting the test results of the first capsule from April 29, 2001, until October 29, 2002. Reference 2 states that this extension was granted in support of the Integrated Surveillance Program (ISP) for Boiling-Water Reactor (BWR) plants, which was developed by the BWR Vessel and Internals Project (BWRVIP). Based on the conclusions drawn by the BWRVIP, none of the surveillance capsules from the Fermi 2 RPV are required for the ISP.

In Reference 3, the NRC approved the BWRVIP ISP and explained how BWR licensees can meet the conditions for participating in the program. The NRC concluded that the ISP is an acceptable alternative to all existing BWR plant-specific RPV surveillance programs, provided the specified conditions were met. Reference 3 states that "since implementation of the ISP may directly affect the licensing basis of every BWR in the United States, licensees who wish to participate in the program shall submit a license amendment to incorporate the ISP into the licensing basis of their BWR facility."

In response to the NRC staff's safety evaluation (SE) approving the BWR ISP (Reference 4), the BWRVIP issued a letter to the NRC (Reference 5) stating that "BWRVIP utilities recognize and concur with the NRC staff position requiring use of a RPV neutron fluence calculational methodology that will meet current NRC staff guidance in Regulatory Guide (RG) 1.190;

however, current plants' methodologies of record may not be consistent with RG 1.190. Therefore, the BWRVIP utilities agree that each utility's next submittal of a RPV neutron fluence calculation should utilize an NRC staff approved methodology which is consistent with RG 1.190."

The NRC responded to the BWRVIP with a letter (Reference 6) and concluded that the intended course of action with regard to addressing the issues related to neutron fluence calculation appeared to be adequate to support the ISP.

This proposed License Amendment requests the NRC approval of a revision to the Fermi 2 licensing basis in complying with the requirements in Appendix H of 10 CFR 50. Upon NRC approval of this license amendment request, Detroit Edison will revise the UFSAR to reference the BWRVIP ISP as approved by the NRC. Consistent with the NRC position in Reference 3, this change is being submitted as a license amendment to facilitate NRC review and approval. Additionally, since testing of the Fermi 2 capsules is not required for the ISP, with the approval of this proposed license amendment, Detroit Edison will not pursue testing of the first Fermi 2 RPV capsule. Furthermore, withdrawal of other capsules is not necessary.

Participation in the ISP results in improving compliance with the regulatory requirements in Appendix H to 10 CFR 50, better matching of the representative capsules to the limiting Fermi 2 RPV beltline plate and weld materials, and a reduction in cost, exposure and outage time associated with capsule removal, shipping and testing.

EVALUATION OF THE PROPOSED CHANGE:

The current Fermi 2 surveillance program for monitoring changes in RPV material properties due to neutron irradiation and thermal environment consists of surveillance capsules installed inside the RPV that include specimens from RPV plate and weld materials. The specimens are scheduled to be removed at periodic intervals, tested and analyzed to monitor the effects of radiation embrittlement and thermal environment on the RPV integrity.

Since the same or similar heats of materials are sometimes used in the surveillance programs of more than one BWR plant in the United States, and since Appendix H of 10 CFR 50 includes provisions for using integrated surveillance programs to monitor RPV material integrity, the BWRVIP concluded that it would be beneficial to combine all the separate BWR surveillance programs into a single integrated program. Reference 7 describes the development of the BWR ISP plan and the capsules to be tested throughout the life of the BWR fleet. The report also describes the ISP compliance with the requirements of 10 CFR 50, Appendix H.

In addition to the existing BWR surveillance specimens available from the individual BWR programs, the ISP utilizes test specimens from the Supplemental Surveillance Program (SSP). The SSP was introduced in the late 1980s to obtain additional BWR surveillance data on well-characterized BWR vessel materials. It was realized that many plants do not have a surveillance material that represents the limiting plate or weld material of their RPV. Additionally, some plants had limited or no unirradiated surveillance specimen data. The SSP was designed to supplement the available vessel embrittlement database and to examine BWR specific irradiation trends.

To follow up on the material presented in Reference 7, the BWRVIP issued an ISP implementation plan (Reference 8) with specific information on capsule withdrawal and testing dates, ISP project administration, neutron fluence determination and data utilization and sharing between BWRs. The NRC, in reviewing References 7 and 8, requested additional information. The BWRVIP response to NRC request for additional information (RAI) was submitted per References 9 and 10. Some of the information initially included in References 7 and 8 was amended by the BWRVIP response to the RAIs.

In accordance with the ISP, none of the Fermi 2 surveillance capsules will need to be tested. The limiting Fermi 2 RPV plate material is best represented by surveillance material heat number C4114-2 from the Hatch, Unit 1 RPV capsules. Three surveillance capsules were included in the Hatch 1 RPV. The first and second capsules have been removed and tested and the third one is planned to be removed in the year 2017.

The limiting Fermi 2 RPV weld material is best represented by surveillance material heat number CE-2(WM) from capsules E and G of the supplementary surveillance program (SSP). SSP capsules E and G were inserted in the Oyster Creek RPV and have both been removed and tested.

As stated in References 3 and 4, the NRC has reviewed and approved the BWRVIP ISP for use by BWR plants. As committed by the BWRVIP on behalf of the participating utilities in Reference 5, and concurred with by the NRC staff in Reference 6, Detroit Edison will utilize NRC-approved methodologies consistent with the guidance in RG 1.190 for the calculation of RPV neutron fluence the next time such calculations are required.

In summary, the proposed license amendment request is acceptable because the ISP results in improved compliance with the regulatory requirements and better matching of the representative capsules to the limiting Fermi 2 RPV materials. Additionally, the ISP has been reviewed and approved by the NRC for use by all BWRs.

REFERENCES:

1. Detroit Edison Letter to NRC, "Request for Deferral of Reporting the First Reactor Pressure Vessel Surveillance Capsule Test Results," NRC-00-0067, dated September 29, 2000 (ADAMS Accession No. ML003759104)

2. NRC Letter to Detroit Edison, "Fermi 2 – Deferral of reporting the First Reactor Pressure Vessel Surveillance Capsule Test Results (TAC No. MB0219)," dated January 16, 2001 (ADAMS Accession No. ML010160060)

3. NRC Regulatory Issue Summary 2002-05, "NRC Approval of Boiling Water Reactor Pressure Vessel Integrated Surveillance Program," dated April 8, 2002 (ADAMS Accession No. ML020660522)

4. NRC Letter to Carl Terry (BWRVIP Chairman), "Safety Evaluation Regarding EPRI Proprietary Reports 'BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)' and 'BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan,'" dated February 1, 2002 (ADAMS Accession No. ML020380691)

5. Letter from Carl Terry (BWRVIP Chairman) to NRC, "Project No. 704 – BWRVIP Response to NRC Safety Evaluation of the BWR Integrated Surveillance Program," dated April 29, 2002 (ADAMS Accession No. ML021210394)

6. NRC Letter to Carl Terry (BWRVIP Chairman), "BWRVIP Response to NRC Safety Evaluation Regarding the BWR Integrated Surveillance Program," dated May 28, 2002 (ADAMS Accession No. ML021490292)

7. Electric Power Research Institute, TR-114228, "BWR Vessel and Internals Project – BWR Integrated Surveillance Program Plan (BWRVIP-78)," dated December 1999 (ADAMS Accession No. ML993620079)

8. Electric Power Research Institute, "BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," dated December 2000 (ADAMS Accession No. ML003780862)

9. Letter from Carl Terry (BWRVIP Chairman) to NRC, "Project No. 704 – BWRVIP Response to NRC Request for Additional Information Regarding BWRVIP-78," dated December 15, 2000 (ADAMS Accession No. ML003778471)

10. Letter from Carl Terry (BWRVIP Chairman) to NRC, "Project No. 704 – BWRVIP Response to Second NRC Request for Additional Information on the BWR Integrated Surveillance Program," dated May 30, 2001 (ADAMS Accession No. ML011560296)

NRC-02-0062
ENCLOSURE 2

FERMI 2 NRC DOCKET NO. 50-341
OPERATING LICENSE NO. NPF-43

REQUEST FOR PARTICIPATION IN THE BWRVIP ISP PLAN FOR RPV MATERIAL SURVEILLANCE

10CFR50.92 SIGNIFICANT HAZARDS CONSIDERATION

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In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed license amendment involves no significant hazards consideration. The proposed participation in the Boiling Water Reactor (BWR) Reactor Pressure Vessel (RPV) material Integrated Surveillance Program (ISP) developed by the BWR Vessel and Internals Project (BWRVIP) does not involve a significant hazards consideration for the following reasons:

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed License Amendment involves a change in the program of RPV material surveillance for monitoring the effects of neutron embrittlement and thermal environment as required by Appendix H of 10 CFR 50. Instead of the Fermi 2 plant-specific program, the BWRVIP ISP is proposed for use in complying with the requirements of Appendix H. Paragraph III.C of Appendix H provides the requirements for an ISP. The BWRVIP ISP has been reviewed and approved by the NRC staff as an acceptable program for use by all BWRs. There are many advantages for participating in the ISP over utilizing a plant-specific program. The advantages include improved compliance with the NRC requirements, better matching of the plant limiting material to the representative capsule material, additional data points for irradiated and unirradiated specimens, and better quality and consistency of the data and methodology. Additionally, future calculations of neutron fluence will be completed in accordance with the approved NRC methodologies in Regulatory Guide (RG) 1.190.

   The data obtained from testing the RPV surveillance capsules is used to define the pressure-temperature limits for the RPV and to ensure that fracture toughness requirements for ferritic materials of pressure retaining components of the reactor coolant boundary are met. Using the ISP for RPV material surveillance program enhances the RPV integrity evaluations and results in using data from better-matching specimens. The ISP also results in better compliance with the NRC requirements and consistency among the BWR plants.

   The proposed change results in better compliance with the regulatory requirements for RPV material surveillance; therefore, it does not increase the likelihood of a malfunction of plant structures, systems and components.

   Based on the above, the proposed change does not significantly increase the probability or consequences of any accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The purpose of the RPV material surveillance program is to monitor neutron embrittlement and thermal environment effects in order to predict the behavioral characteristics of ferritic material of pressure retaining components of the reactor coolant pressure boundary and to ensure RPV fracture toughness and integrity requirements are not violated. The BWRVIP ISP was approved for use by all BWRs as an alternate to plant-specific programs. The change does not affect the design function or operation of any plant structure, system or component. The ISP is an approved alternate monitoring program that meets the regulatory requirements in Appendix H to 10 CFR 50. As an alternate monitoring program, the ISP cannot create a new failure mode involving the possibility of a new or different kind of accident. Therefore, the proposed change does not create the potential for a new or different kind of accident from any accident previously evaluated.

3. The change does not involve a significant reduction in the margin of safety.

   The RPV material surveillance program requirements in Appendix H to 10 CFR 50 are designed to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the reactor coolant pressure boundary may be subjected over its service lifetime. The material surveillance data for the Fermi 2 RPV obtained through the ISP is equal or better to that from plant-specific programs. Paragraph III.C of Appendix H to 10 CFR 50 delineates the regulatory requirements for an ISP. The BWRVIP ISP meets these requirements and has been approved by the NRC. Therefore, the proposed changes will not result in a significant reduction in the margin of safety.

Based on the above, Detroit Edison has determined that the proposed amendment does not involve a significant hazards consideration.