

January 30, 2003

Mr. William T. O'Connor, Jr.
Vice President - Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: IMPLEMENTATION OF THE
BWRVIP RPV ISP TO ADDRESS THE REQUIREMENTS OF APPENDIX H TO
10 CFR PART 50 (TAC NO. MB5840)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 152 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the Operating License in response to your application dated August 8, 2002, as supplemented October 23, 2002.

The amendment authorizes changes to the Updated Final Safety Analysis Report for Fermi 2 by allowing implementation of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) reactor pressure vessel (RPV) Integrated Surveillance Program (ISP) as the basis for demonstrating the compliance with the requirements of Appendix H, "Reactor Vessel Material Surveillance Program Requirements," to Title 10 of the *Code of Federal Regulations*, Part 50.

A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

John F. Stang, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures: 1. Amendment No. 152 to NPF-43
2. Safety Evaluation

cc w/encls: See next page

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Fermi 2

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March 2002

DETROIT EDISON COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 152
License No. NPF-43

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Detroit Edison Company (the licensee) dated August 8, 2002, as supplemented October 23, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, changes to the Updated Final Safety Analysis Report (UFSAR) to allow implementation of the Boiling Water Reactor Vessel and Internals Project reactor pressure vessel Integrated Surveillance Program as the basis for demonstrating the compliance with the requirements of Appendix H, "Reactor Vessel Material Surveillance Program Requirements," to 10 CFR Part 50, are authorized as described in the Nuclear Regulatory Commission staff's safety evaluation dated January 30, 2003 in accordance with 10 CFR 50.71(e).
3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: January 30, 2003

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 152 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated August 8, 2002, (Reference 1) the Detroit Edison Company (DECo or the licensee) requested an amendment to the Facility Operating License for Fermi 2. The proposed amendment would authorize changes to the Updated Final Safety Analysis Report for Fermi 2 by allowing implementation of the Boiling Water Reactor Vessel and Internals Project (BWRVIP) reactor pressure vessel (RPV) Integrated Surveillance Program (ISP) as the basis for demonstrating the compliance with the requirements of Appendix H, "Reactor Vessel Material Surveillance Program Requirements" to Title 10 of the *Code of Federal Regulation*, Part 50. In response to the Nuclear Regulatory Commission (NRC) staff's questions, the licensee provided additional clarifying information by letter dated October 23, 2002, (Reference 2). This supplemental letter did not change the original no significant hazards consideration determination or expand the amendment beyond the scope of the original notice.

The BWRVIP RPV ISP was submitted for NRC staff review and approval in topical reports BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan," and BWRVIP-86, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," (References 3 and 4). Additional information necessary to establish the technical basis for, and proposed implementation of, the BWRVIP ISP was provided in letters from the BWRVIP to the NRC dated December 22, 2000, and May 30, 2001, (References 5 and 6). The NRC staff approved the proposed BWRVIP ISP in a safety evaluation (SE) which was provided to the BWRVIP by letter dated February 1, 2002, (Reference 7). However, the NRC staff's SE required that plant-specific information be provided by BWR licensees who wish to implement the BWRVIP ISP for their facilities. The licensee's August 8, 2002, and October 23, 2002, submittals addressed the plant-specific information required in the NRC staff's February 1, 2002, BWRVIP ISP SE.

2.0 EVALUATION

2.1 Regulatory Requirements

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement RPV surveillance programs to "monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region...which result from exposure of these materials to

neutron irradiation and the thermal environment.” Two specific alternatives are provided with regard to the design of a facility’s RPV surveillance program which may be used to address the requirements of Appendix H to 10 CFR Part 50.

The first alternative is the implementation of a plant-specific RPV surveillance program consistent with the requirements of American Society for Testing and Materials (ASTM) Standard Practice E 185, “Standard Practice for Conduction Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels.” In the design of a plant-specific RPV surveillance program, a licensee may use the edition of ASTM Standard Practice E 185 which was current on the issue date of the American Society of Mechanical Engineers (ASME) Code to which the reactor vessel was purchased, or later editions through the 1982 Edition.

The second alternative provided in Appendix H to 10 CFR Part 50 is the implementation of an ISP. An ISP is defined in Appendix H to 10 CFR Part 50 as occurring when, “the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features.” Five specific criteria are stated in Appendix H to 10 CFR Part 50 which must be met to support approval of an ISP:

- a. The reactor in which the materials will be irradiated and the reactor for which the materials are being irradiated must have sufficiently similar design and operating features to permit accurate comparisons of the predicted amount of radiation damage.
- b. Each reactor must have an adequate dosimetry program.
- c. There must be adequate arrangement for data sharing between plants.
- d. There must be a contingency plan to assure that the surveillance program for each reactor will not be jeopardized by operation at reduced power level or by an extended outage of another reactor from which data are expected.
- e. There must be substantial advantages to be gained, such as reduced power outages or reduced personnel exposure to radiation, as a direct result of not requiring surveillance capsules in all reactors in the set.

As noted in Section 1.0 of this SE, the NRC staff approved the proposed BWRVIP ISP in an SE which was issued to the BWRVIP by letter dated February 1, 2002, (Reference 7). In Reference 7, all of the criteria cited above for approval of an ISP were addressed either completely or partially. For those criteria which could not be fully addressed in Reference 7, plant-specific information was required. The NRC staff identified in Reference 7 the specific information which would be required from licensees who wished to implement the BWRVIP for their facilities. As stated in Reference 7:

“[L]icensees who wish to participate in the BWR ISP must provide, for NRC staff review and approval, information which defines how they will determine RPV and/or surveillance capsule fluences based on the dosimetry data which will be available for their facilities. This information must be submitted concurrently with each licensee’s submittal to replace their existing plant-specific surveillance program with the BWR ISP as part of their facility’s licensing basis. The information submitted must be sufficient for the staff to determine that:

- (1) RPV and surveillance capsule fluences will be established as based on the use of an NRC-approved fluence methodology that will provide acceptable results based on the available dosimetry data; and
- (2) If one methodology is used to determine the neutron fluence values for a licensee's RPV and one or more different methodologies are used to establish the neutron fluence values for the ISP surveillance capsules which "represent" that RPV in the ISP, the results of these differing methodologies are compatible (i.e., within acceptable levels of uncertainty for each calculation)."

This plant-specific information was required by the NRC staff to ensure that criterion (b.) for an ISP from Appendix H to 10 CFR Part 50 could be met by each facility and to confirm that data which would be shared as part of the BWRVIP ISP could be effectively utilized by each licensee for the monitoring of RPV embrittlement for their facility.

2.2 Technical Evaluation

In its letters dated August 8, 2002, and October 23, 2002, the licensee submitted information for Fermi 2 which addressed the information requested in the NRC staff's February 1, 2002, BWRVIP ISP SE, (Reference 7). The licensee provided a revised Section 4.3.2.8 of the Fermi 2 Updated Final Safety Analysis Report (UFSAR) which stated in part:

"Future updates to vessel fluence calculations will be performed in accordance with an approved methodology consistent with the requirements of NRC Regulatory Guide 1.190."

Although the NRC staff would note that the guidance provided in NRC Regulatory Guide (RG) 1.190 does not constitute a "requirement," the staff has concluded that the inclusion of this statement in the Fermi 2 UFSAR is sufficient to address both items (1) and (2) from Reference 7. Regarding item (1), the licensee's use of a methodology for determining Fermi 2 RPV neutron fluence values which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff will provide acceptable results based upon the available dosimetry data. Regarding item (2), RPV surveillance capsules tested under the BWRVIP ISP will have their fluences determined by the use of a methodology which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff. The NRC staff has concluded that any two (or more) different fluence methodologies will provide "compatible" results provided that each methodology is consistent with the attributes of RG 1.190 and has been approved by the NRC staff. In addition, the licensee provided an additional commitment in its October 23, 2002, letter regarding when it will perform an updated RPV fluence analysis for the Fermi 2 RPV:

"Detroit Edison will update neutron fluence calculations for the Fermi 2 RPV utilizing NRC-approved methodologies consistent with the guidance in RG 1.190 by December 31, 2005."

The NRC staff found this commitment by the licensee to be acceptable since the current RPV fluence calculations for the Fermi 2 RPV are expected to remain conservative with respect to the actual, accumulated RPV neutron fluence through the December 31, 2005, operating date.

Inasmuch as this action was submitted as a license amendment, consistent with the NRC staff's understanding of the decision given in Commission Memorandum and Order CLI-96-13, the licensee provided a revised Section 5.2.4.4 and 5.2.4.4.3 of the Fermi 2 UFSAR which documented the licensee's incorporation of the BWRVIP ISP into the Fermi 2 licensing basis. Relevant excerpts from these Fermi 2 UFSAR sections are provided below:

5.2.4.4 Surveillance Programs for the Reactor Pressure Vessel

Subsequent to the development of the Fermi plant-specific surveillance program, the BWR Vessel and Internals Project (BWRVIP) developed an integrated surveillance program to comply with the requirements of 10 CFR Part 50, Appendix H, Paragraph III.C,

"Requirements for an Integrated Surveillance Program." No capsules from the Fermi 2 vessel are included in the BWR Integrated Surveillance Program (ISP). Capsules from other plants will be removed and specimens will be tested in accordance with the ISP implementation plan. The results from these tests will provide the necessary data to monitor embrittlement of the Fermi 2 vessel. A description of the BWR ISP and its application to Fermi is contained in Section 5.2.4.4.3."

5.2.4.4.3 Description of BWRVIP Integrated Surveillance Program

Subsequent to this concern, the BWRVIP began development of a BWR RPV Integrated Surveillance Program (ISP) to meet the requirements of 10 CFR Part 50 Appendix H Paragraph III.C. This effort resulted in development of reports BWRVIP-78 and BWRVIP-86 (as amended by responses to NRC RAIs), that were submitted to the NRC for review and approval (Reference 15 through 18). The NRC approved these reports by issuing [an] NRC Safety Evaluation as an attachment to NRC letter to Carl Terry dated February 1, 2002 (Reference 19).

The NRC has approved use of the BWRVIP ISP as an acceptable alternative to a plant specific RPV surveillance program; with two conditions. First, that licensees submit a license amendment requesting NRC approval of their participation in the ISP. Second, that BWRs commit to utilizing an acceptable neutron fluence calculation methodology. Section 4.3.2.9 provides information dealing with Fermi 2 neutron fluence calculation methodology."

The NRC staff has concluded that the information provided in the revised Fermi 2 UFSAR is adequate to document the licensee's intent to appropriately implement the BWRVIP ISP as the method for demonstrating the compliance of Fermi 2 with the requirements of Appendix H to 10 CFR Part 50.

Based on the above, the NRC staff has concluded that the information provided by the licensee was sufficient to conclude that the BWRVIP ISP, as approved in Reference 7, can be implemented for Fermi 2 as the basis for demonstrating the facility's continued compliance with the requirements of Appendix H to 10 CFR Part 50. As part of the implementation and documentation of the licensee's intent to utilize the BWRVIP ISP for this purpose, the licensee shall modify the Fermi 2 UFSAR as stated in its October 23, 2002, submittal.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, and changes a surveillance or inspection requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (67 FR 56320). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 REFERENCES

1. W. T. O'Connor, Jr., DECo Energy, to USNRC Document Control Desk, "Proposed License Amendment for Participation in the BWRVIP ISP Plan for RPV Material Surveillance," August 8, 2002.
2. W. T. O'Connor, Jr., DECo Energy, to USNRC Document Control Desk, "Response to NRC Request for Additional Information Regarding the Proposed License Amendment for Participation in the BWRVIP ISP Plan for RPV Material Surveillance," October 23, 2002.
3. C. Terry, BWRVIP, to USNRC Document Control Desk, "Project No. 704 - BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)," December 22, 1999.
4. C. Terry, BWRVIP, to USNRC Document Control Desk, "Project No. 704 - BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," [Electric Power Research Institute] EPRI Technical Report 1000888, December 22, 2000.
5. C. Terry, BWRVIP, to USNRC Document Control Desk, "PROJECT NO. 704 - BWRVIP Response to NRC Request for Additional Information Regarding BWRVIP-78," December 15, 2000.
6. C. Terry, BWRVIP, to USNRC Document Control Desk, "PROJECT NO. 704 - BWRVIP Response to Second NRC Request for Additional Information on the BWR Integrated Surveillance Program," May 30, 2001.
7. W. H. Bateman, USNRC, to C. Terry, BWRVIP, "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," February 1, 2002.

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Date: January 30, 2003