June 20, 2004

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

SUBJECT: FERMI 2 - REQUEST FOR ADDITIONAL INFORMATION RELATED TO PROPOSED LICENSE AMENDMENT FOR THE IMPLEMENTATION OF THE ALTERNATIVE RADIOLOGICAL SOURCE TERM METHODOLOGY (TAC NO. MB7794)

Dear Mr. O'Connor:

By application to the U.S. Nuclear Regulatory Commission (NRC) dated February 13, 2003, as supplemented July 8 and December 12, 2003, and June 4, 2004, the Detroit Edison Company requested changes the Fermi 2 Technical Specifications based on a reevaluation of the design-basis loss-of-coolant accident using the alternative source term methodology. The NRC staff is reviewing your request and finds that additional information is needed as shown in the enclosed request for additional information (RAI).

I discussed the enclosed RAI with Mr. Rodney Johnson of your organization on June 18, 2004, and he agreed to a target date of July 31, 2004, for responding to the RAI. Please contact me at (301) 415-3243 if you have questions.

Sincerely,

/RA/

David P. Beaulieu, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure: Request for Additional Information

cc w/encl: See next page

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Fermi 2

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REQUEST FOR ADDITIONAL INFORMATION

RELATED TO PROPOSED LICENSE AMENDMENT FOR

THE IMPLEMENTATION OF THE ALTERNATIVE

RADIOLOGICAL SOURCE TERM METHODOLOGY

DETROIT EDISON COMPANY

DOCKET NO. 50-341

FERMI 2

The Nuclear Regulatory Commission staff is reviewing the Detroit Edison Company's (DECo's) application dated February 13, 2003, as supplemented July 8 and December 12, 2003, and June 4, 2004, that requested changes to the Fermi 2 Technical Specifications based on a reevaluation of the design-basis loss-of-coolant accident (DBLOCA) using the alternative source term (AST) methodology. The NRC staff has determined that the following additional information is needed in order to complete the review:

The NRC staff discussed questions 1 and 2 with DECo during a telephone call on February 17, 2004.

1. With regard to DECo's modeling of the deposition of fission products in main steam line piping, the staff's position is that credit for deposition cannot be taken for one of the main steam lines between the reactor pressure vessel (RPV) and the inboard main steam isolation valve (MSIV). DECo's analysis credited deposition in all four steam lines. NRC regulations and regulatory guidance require an evaluation of a spectrum of potential break sizes and locations within the reactor coolant pressure boundary with regard to emergency core coolant system (ECCS) performance. Analyses of DBLOCA radiological consequences stylistically assume that the ECCS fails, resulting in the substantial release of fission products, regardless of break size or location. Although the rupture of recirculation system piping was used as the limiting case in the licensing of Fermi, DECo's proposal to credit fission product deposition in the main steam lines raises the possibility that a rupture of one of the main steam lines upstream of the inboard MSIV could be more limiting since crediting deposition in the ruptured line would be inappropriate. The in-containment main steam line assumed to fail should be selected so as to minimize the assumed deposition credit. Note that the assignment of the limiting single failure of an MSIV to close may change as a result of the assumed main steam line failure. Please update the analyses and submittal or provide further justification for why DECo's proposed approach is adequately conservative.

2. DECo's modeling of the MSIV leakage pathway appears to treat the drywell and primary containment as a single, well-mixed volume from the start of the event. This assumption may not be supportable during the early stages of the event. The initial blowdown of the reactor coolant system would have occurred prior to the onset of the in-vessel release phase. Thus, the driving force for mixing between the two volumes will be less. Since the

Enclosure

LOCA break communicates with the drywell volume, only the use of the drywell and wetwell free volume has the effect of reducing the concentration of the fission products available for release via MSIV leakage, a nonconservative situation. Because of this uncertainty, the NRC staff deterministically assumes that complete mixing does not occur until 2 hours, when core reflood is projected. Please update the analyses and submittal or provide further justification for why DECo's proposed approach is adequately conservative.

3. In its June 4, 2004, supplemental letter, DECo provided a response to an NRC staff request for additional information related to the use of the standby liquid control (SLC) system in maintaining suppression pool pH. The staff agrees, on the basis of the information provided, that there appears to be sufficient ECCS flow and a flow path exists to affect mixing of the RPV and suppression pool contents. However, DECo's response does not establish that the SLC injection would be entrained in the ECCS flow that is spilling through the break. The NRC staff notes that a significant portion of the ECCS flow may not flow directly past the SLC injection point and that stratification of the injected SLC solution in the lower head is a possibility. For example:

   a. In the event that both low-pressure coolant injection (LPCI) divisions are operating, is it likely that a significant fraction of the LPCI flow would simply bypass the jet pumps and spill into the annulus and, therefore not be available to transport the injected SLC solution to the break point?

   b. In the event that one division of LPCI is operating (as a result of single failure or isolation), would the flow through the active jet pumps be sufficient to force ECCS flow into the lower head region (where it could mix with the injected SLC solution) and out the nonactive jet pumps in the reverse direction? If so, are procedural controls needed to isolate one LPCI division after the SLC injection is completed to promote mixing and sweeping of injected SLC solution from the RPV?

   c. Core spay flow could create reverse flow through the core by which the injected SLC solution could be swept from the RPV via reverse flow through the nonactive jet pumps. However, steaming in the core region could affect this flow.

   Please provide an explanation of why DECo believes that the amount of SLC solution necessary to maintain a suppression pool pH greater than 7.0 would be transported from the RPV by the ECCS flow. If reconsideration of your earlier response affects your prior analysis of the suppression pool pH value and timing, please update those analyses and describe the changes in the inputs, assumptions, methods, and results.