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

February 24, 2010

Mr. Jack M. Davis
Senior Vice President and Chief Nuclear Officer
Detroit Edison Company
Fermi 2 – 210 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION – DEGRADED VOLTAGE FUNCTION – TECHNICAL SPECIFICATIONS (TS) TABLE 3.3.8.1-1 - FERMI 2 (TAC NO. ME1477)

Dear Mr. Davis:

By letter dated June 10, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091680379), Detroit Edison (the licensee) submitted a license amendment request for Fermi 2 nuclear plant to revise the Degraded Voltage Function in the TS Table 3.3.8.1-1. Specifically, the proposed amendment adds new time delay logic associated with the degraded voltage function concurrent with a loss-of-coolant accident.

By letter dated September 16, 2009 (ADAMS Accession No. ML093070294), the licensee provided supplemental information in response to the Nuclear Regulatory Commission (NRC) staff's request sent via e-mail on July 27, 2009 (ADAMS Accession No. ML092090231). The NRC staff reviewed the supplemental information provided by the licensee and determined that additional information (follow-up) was required for the evaluation of the proposed change. The new request for additional information (RAI) was initially sent to the licensee on December 14, 2009 via e-mail (ADAMS Accession No. ML093490004). This new RAI was discussed with the licensee representatives on January 7, 2010. During the discussion there were some additional concerns raised by the NRC staff. As a result, the NRC staff revised RAIs and these were transmitted to the licensee on January 14, 2010 via e-mail (ADAMS Accession No. ML100150036). During a follow-up teleconference on January 21, 2010, the licensee agreed to provide their response to the enclosed final RAIs. Please provide your response to the RAI within 45 days of the receipt of this letter. If you have any questions regarding this matter, I may be reached at 301-415-8371.

Sincerely,

Chawla

Mahesh Chawla, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure: As Stated

cc: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION
FOR
DEGRADED VOLATGE FUNCTION – TECHNICAL SPECIFICATION (TS) TABLE 3.3.8.1-1
DETROIT EDISON COMPANY
FERMI 2

Detroit Edison (the licensee) in its letter dated September 16, 2009, in response to RAI #1, stated that the minimum offsite voltage on the Division I, 120 kV system for which large motors can start and all safety related equipment can operate continuously with Load Tap Changer operation on Transformer SS64 is 93.3 percent. The minimum offsite voltage on the Division II, 345 kV system for which large motors can start and safety related equipment can operate continuously is 98.4 percent.

(a) Explain the grid contingencies that were considered to ensure the switchyard voltages remain above the voltages identified, i.e., 93.3 percent at 120 kV and 98.4 percent at 345 kV at switchyard buses.

(b) Provide supporting data or analysis to show that the degraded voltage relay settings are adequate when the switchyard voltages are just above the minimum voltages identified above, to protect all Class 1E equipment.

(c) The degraded voltage relay (DVR) for Division I is set at approximately 96.9 percent and has a time delay of approximately 8.4 seconds for the loss-of-coolant accident (LOCA) case and 46.2 seconds for non LOCA case. The loss of voltage relay (LVR) for Division I is set at approximately 74.4 percent. The DVR and LVR protect safety related equipment. For the non LOCA event, there can be potential for the safety related equipment to be subjected to approximately 75 percent bus voltage for up to 46 seconds (multiple grid issues, DVR timing out and LVR not actuated). Explain under this condition, how will the safety related equipment remain adequately protected.

Follow-up RAI #2: The licensee in its letter dated September 16, 2009, in response to RAI #1, stated that the existing ABB 27D relays will be replaced with ABB 27N relays and additional time delay relays to achieve the LOCA degraded voltage time delay logic.

Confirm that new ABB 27N relays will provide TS Table 3.3.8.1-1 Function 2a and Function 2b of the previous 27D relays, and that Function 2c will be provided by new time-delay relays. Also, provide catalog information for these relays, including logic drawings showing function of these new relays.

Follow-up RAI #3: The licensee in its letter dated September 16, 2009, in response to RAI #1, in the discussion under the heading "Time Delay for Degraded Voltage (Without LOCA)", has considered start of two Residual Heat Removal (RHR) pumps, with two Core Spray pumps starting five seconds later, in each Division.

Clarify the purpose of starting two RHR pumps, and two Core Spray pumps in each division in a non-LOCA scenario.

Follow-up RAI #4: The licensee in its letter dated September 16, 2009, in response to RAI #1, stated that the time delay for a degraded voltage with LOCA is established in pending changes

to calculation DC-0919, Volume I for the new degraded voltage time delay. The time delay is selected based on the following:

a) The maximum time delay which provides load shed and Emergency Diesel Generator (EDG) breaker closure (with RHR pump motor start) at or less than 10 seconds, consistent with the accident analysis.

b) The minimum time delay that allows sequential starting of LOCA loads without separating from the offsite power supply.

Provide summary/excerpts from the dynamic analysis, which provides the worst case voltage transient profile at the safety-related buses (those provided with degraded voltage relays) following LOCA. Preferably superimpose the characteristics of degraded voltage relays on the bus voltage transient profile to confirm that degraded voltage relays can ride through the voltage dips experienced during starting of large LOCA loads.

Follow-up RAI #5: The licensee in its letter dated September 16, 2009, in response to RAI #3b, stated that in case of degraded voltage relay tripping with 7.6 seconds to 8.4 seconds of LOCA signal, the loads will be resequenced and the RHR pump motor can re-start a minimum of one second after tripping while the motor is running.

Confirm that one second is adequate for RHR pump motor to decrease its residual voltage to less than 25 percent of its rated voltage (typically considered safe for restarting purpose). Also, explain the function of degraded voltage and loss of voltage relaying after the safety-related loads are shifted from offsite source to EDG.

Follow-up RAI #6: Function 2.c, Time Delay with LOCA, has been added to TS Table 3.3.8.1-1 with allowable values between 7.6 seconds and 8.4 seconds. Furthermore, the licensee stated in the September 16, 2009, letter that existing ABB 27D relays have been replaced by ABB 27N relays.

Provide calculations including the uncertainties used in the selection of the nominal trip setpoint, allowable value, as-found tolerance, and as-left tolerance for all the functions in TS Table 3.3.8.1-1 affected by the replacement of the existing ABB 27D relays by ABB 27N relays and the addition of the new relay for Function 2.c.

Follow-up RAI #7: Describe the measures to be taken to ensure that the associated instrument channel is capable of performing its specified safety functions in accordance with applicable design requirements and associated analyses. Include in your discussion information on the controls you employ to ensure that the as-left trip setting after completion of periodic surveillance is consistent with your setpoint methodology. Also, discuss the plant corrective action processes (including plant procedures) for restoring channels to operable status when channels are determined to be "inoperable" or "operable but degraded." If the controls are located in a document other than the TS, e.g., plant test procedure, describe how it is ensured that the controls will be implemented.

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Sincerely,

/RA/
Mahesh Chawla, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
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