

June 20, 2008

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: FERMIL POWER PLANT, UNIT 2
NRC UNRESOLVED ITEM RESOLUTION INSPECTION REPORT
05000341/2008008

Dear Mr. Davis:

On May 9, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Fermi Power Plant. This report documents the actions taken to review an unresolved item (05000341/2005016-06) concerning the degraded voltage protection scheme at your Fermi Power Plant. The results were discussed on May 9, 2008 with members of your staff.

The inspection examined activities conducted under your license, as they relate to safety and to compliance with the Commission's rules and regulations, and with the conditions of your license. The inspector reviewed selected analyses and records.

Based on the results of this inspection, the NRC identified a concern with respect to the adequacy of the degraded voltage protection scheme. On June 11, 1981, you notified the NRC staff of your position regarding time delay settings for the degraded voltage relays. The correspondence did not discuss the impact of receiving a safety injection signal during degraded voltage conditions. At that time, the NRC did not identify this oversight, and subsequently determined that, the degraded voltage scheme was acceptable. After further review, the staff determined that the current degraded voltage protection scheme is inadequate, in that, the time delay relay settings for the degraded voltage relays for both divisions could impact the emergency core cooling system injection timing requirements. Additionally, for a short period of time under degraded voltage conditions, voltage could be too low for proper operation of safety-related motors but high enough to prevent emergency diesel generator start. The staff assessed this issue as it relates to a backfit and determined that the provisions of 10 CFR 50.109 (a)(4), were applicable, in that, a modification is necessary to bring a facility into compliance with the rules or orders of the Commission.

The NRC has also determined that this is not a violation of NRC requirements due to the change in NRC position promulgated by our earlier acceptance of this inadequate protection scheme. The circumstances surrounding this issue are described in detail in the subject inspection report.

You are requested to respond to this letter with a description of your intended actions to address the noncompliance including a proposed schedule to complete those actions.

You have 30 days from the date of this letter to appeal the staff's determination of the backfit or the applicability of the provisions of 10 CFR 50.104(a)(4).

You should provide a response within 30 days of the date of this inspection report, with your proposed actions or the basis for your appeal, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission – Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Fermi 2 Facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

/RA by Anne Boland Acting For/

Steven West, Director
Division of Reactor Safety

Docket No. 50-341
License No. NPF-43

Enclosure: Inspection Report 05000341/2008008
w/Attachment: Supplemental Information

cc w/encl: J. Plona, Vice President,
Nuclear Generation
K. Hlavaty, Plant Manager
R. Gaston, Manager, Nuclear Licensing
D. Pettinari, Legal Department
Michigan Department of Environmental Quality
Waste and Hazardous Materials Division
M. Yudasz, Jr., Director, Monroe County
Emergency Management Division
Supervisor - Electric Operators
T. Strong, Chief, State Liaison Officer, State of Michigan
Wayne County Emergency Management Division

J. Davis

-2-

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DATE	6/18/08		Per email 6/17/08		06/20/08		06/20/08		06/20/08	

OFFICIAL RECORD COPY

Inspection Report to Mr. Jack M. Davis from Ms. Ann Marie Stone dated June 20, 2008.

SUBJECT: FERMIL POWER PLANT, UNIT 2
NRC UNRESOLVED ITEM RESOLUTION INSPECTION REPORT
05000341/2008008

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-341

License No: NPF-43

Report No: 05000341/2008008

Licensee: Detroit Edison Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: February 25, 2008 through May 7, 2008

Inspectors: R. Daley, Senior Reactor Inspector

Approved by: A.M. Stone, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000341/2008008; 02/25/08 – 05/07/2008; Fermi Power Plant, Unit 2; Routine Followup of Unresolved Items.

This report covers a followup inspection for Unresolved Item (URI) 05000341/2005016-06. The inspection was conducted by a Region III inspector.

A. NRC-Identified and Self-Revealing Findings

No violations of significance were identified.

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 (Closed) Unresolved Item (URI) 05000341/2005016-06: Degraded Voltage Protection Scheme

Background: During the safety system design and performance capability inspection, the inspectors identified an issue related to the adequacy of the design of the second level of undervoltage (commonly known as “degraded” voltage) protection. The inspectors determined that the time delay settings of the degraded voltage relays for both Divisions 1 and 2 of the Class 1E electrical distribution system were inadequate. The licensee’s degraded voltage protection scheme could result in the voltage being too low to adequately power the emergency core cooling (ECCS) equipment but high enough to prevent the emergency diesel generators (EDGs) from connecting to the safety-related buses in a timely manner.

Specifically, Revision 2 of the Standard Review Plan, NUREG-0800, dated July 1981, Branch Technical Positions (BTPs) of Appendix 8-A (PSB), contained BTP PSB-1, “Adequacy of Station Electric Distribution System Voltages,” which presented guidance for an acceptable approach to design for degraded voltage conditions. Position B.1.b of BTP PSB-1 described a method acceptable to the NRC staff for how the licensee’s design should respond to a loss of coolant accident (LOCA) that occurs during a degraded voltage condition. Section B.1 of the draft BTP PSB-1 sent to the licensee stated, in part:

- The first time delay should be of a duration that established the existence of a sustained degraded voltage condition (i.e., something longer than a motor starting transient). Following this delay, an alarm in the control room should alert the operator to the degraded condition. *The subsequent occurrence of a safety injection actuation signal (SIAS) should immediately separate the Class 1E distribution system from the offsite power system [emphasis added].* The second time delay should be of a limited duration such that the permanently connected Class 1E loads will not be damaged. Following this delay, if the operator has failed to restore adequate voltages, the Class 1E distribution system should be automatically separated from the offsite power system. Bases and justification must be provided in support of the actual delay chosen.

The inspectors concluded that the existing degraded voltage relay time delays of 44 ± 2.2 seconds and 21.4 ± 1.07 seconds for Divisions 1 and 2, respectively, would delay water injection flow into the reactor vessel during a loss of coolant accident concurrent with a degraded voltage condition. This issue was unresolved (IR 05000341/2005016-06) pending consultation with the Office of Nuclear Reactor Regulation (NRR).

On August 28, 2007, the inspectors initiated Task Interface Agreement (TIA) 2007-003 (ML072410317), requesting assistance from the NRR staff in evaluating the design and licensing basis, and the licensee’s analysis regarding the degraded voltage protection

scheme at Fermi. On February 25, 2008, NRR issued its Final Response to TIA 2007-03 (ML080420435). The response stated, in part:

- On June 11, 1981, the licensee sent the NRC staff a letter stating the licensee's position regarding BTP PSB-1. In this letter, the licensee did not address the subsequent SIAS clause of BTP PSB-1 Section B.1.b.
- From June 23 to 26, 1981, the NRC staff performed an audit at Fermi 2 to review the licensee's calculations regarding degraded voltage protection. In response to the audit, on June 26, 1981, the licensee provided an amended response to BTP PSB-1, which contained voltage and time delay values. The degraded voltage relay time delay for Division 1 was initially 17 seconds \pm 3 percent tolerance and 18.5 seconds \pm 3 percent tolerance for Division 2.
- In June 1981, Amendment 36 to Fermi 2's Final Safety Analysis Report (FSAR) was issued. The FSAR stated that Fermi 2 had committed to install a second level of undervoltage relaying that addressed the NRC staff's concerns as stated in Amendment 22. The licensee also stated that the time delay setting was chosen to avoid the operation of the relay for motor-starting conditions, and the time delay for the actuation of the degraded grid undervoltage relay was selected to be as short as possible without encountering spurious trips from motor starting.
- In July 1981, the NRC staff issued its final safety evaluation report (SER) for Fermi 2 (NUREG-0798), which summarized Fermi 2's degraded voltage protection scheme. The letters dated June 11 and June 26, 1981, which discussed the degraded voltage protection scheme, were also referenced in the SER. The SER stated that the licensee's protection scheme met BTP PSB-1 Position 1 requirements and that the NRC staff found it acceptable. The NRC also issued Technical Specifications (TS) in March 1985 (NUREG-1089).

The NRR staff concluded that the July 1981 SER and the 1985 TS constituted an agency position that accepted the licensee's degraded voltage protection scheme. However, the NRR staff agreed with the inspectors' conclusions that the Fermi 2's design does impact the accident analysis. Title 10 CFR Part 50, Appendix A, General Design Criterion-17, "Electric Power Systems," states, in part:

- An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of *anticipated operational occurrences* [emphasis added] and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of *postulated accidents* [emphasis added].

Because the safety buses do not disconnect from offsite power following a SIAS, the time delays for both divisions would impact the plant's ECCS injection during a LOCA that occurs during a degraded voltage condition. The NRR staff concluded that Fermi's

degraded voltage protection scheme does not meet NRC regulations, specifically, 10 CFR Part 50, Appendix A, General Design Criterion-17, "Electric power systems." In addition, the current design fails to meet the timing requirements in its accident analysis.

Therefore, the inspectors and the NRR staff concluded that the agency's acceptance of the licensee's degraded voltage scheme as documented in the July 1981 SER and the 1985 TS was not valid because the degraded voltage scheme was inadequate.

Enforcement: The current NRC staff position regarding the inadequacy of the licensee's design of the second level of undervoltage protection is different than a previous position due to the NRC's acceptance of the voltage protection scheme as documented in the July 1981 SER and the 1985 TS. Therefore, the inspectors evaluated the provisions of 10 CFR 50.109. That section defines backfitting as "the modification of or addition to systems, structures, components, or design of a facility, any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position." After consultation with NRR and the Office of General Counsel, the inspectors determined, that no backfit analysis was required under 10 CFR 50.109(a)(2) because the provisions of 10 CFR 50.109 (a)(4), were applicable, in that, a modification is necessary to bring a facility into compliance with, specifically, 10 CFR Part 50, Appendix A, General Design Criterion-17, "Electric Power Systems."

This URI did not result in a violation, because the NRC had accepted the inadequate degraded voltage protection scheme in 1981 and in 1985. Based on this review, this unresolved item is closed.

4OA6 Management Meetings

.1 Exit Meeting Summary

On May 9, 2008, the inspectors presented the inspection results to Mr. Caragher and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Caragher, Director, Nuclear Engineering
S. Hassoun, Supervisor, Licensing
K. Howard, Manager, Plant Support Engineering
R. Johnson, Supervisor, Compliance
G. Najjar, Supervisor, System Engineering
T. Stack, Manager, Security
J. Tibai, Supervisor, Plant Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000341/2005016-06 URI Inadequate Time Delay for Degraded Voltage Relays

Opened and Discussed

None

LIST OF ACRONYMS USED

BTP	Branch technical Position
CFR	Code of Federal Regulations
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
LOCA	Loss of Coolant Accident
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
SIAS	Safety Injection Actuation System
SER	Safety Evaluation Report
TIA	Task Interface Agreement
TS	Technical Specification
URI	Unresolved Item