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Detroit Edison



October 12, 1999
NRC-99-0087

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

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) NRC Inspection Report 50-341/99009,
dated July 12, 1999
 - 3) NRC Inspection Report 50-341/99010 (EA 99-185),
dated August 10, 1999

Subject: Reply to a Notice of Violation (99010-01)

Enclosed is Detroit Edison's reply to the Notice of Violation contained in Reference 3. The Notice of Violation relates to activities at Fermi 2 during the week of May 3, 1999. During that week, a Division 1 Emergency Diesel Generator (EDG) was removed from service while portions of the Standby Liquid Control System (SLCS), which are powered from the Division 2 electrical busses, were declared inoperable. The NRC considered this to be a violation of the Fermi 2 Technical Specifications (TS). With an EDG in one division inoperable, TS 3.8.1.1.c requires verification that all "required systems" powered from the opposite division are operable. Detroit Edison does not consider the SLCS to be a "required system" within the context of this TS.

During the inspection, Detroit Edison provided the basis supporting this position. In citing the violation, the NRC stated its interpretation in Reference 3 that "Technical Specification 3.8.1.1, Action c addresses all systems/components covered by the Technical Specifications without regard to whether or not they were credited in the

mitigation of a Design Basis Accident.” Detroit Edison disagrees with this NRC interpretation and the conclusion that a TS violation occurred, and is, therefore, contesting the violation for the reasons explained in detail in the enclosed response. The enclosed response includes additional information, developed since the inspection, supporting the Detroit Edison position.

Notwithstanding Detroit Edison’s decision to contest the violation, Detroit Edison’s focus was and continues to be the safe operation of the Fermi 2 facility. As acknowledged in Reference 2, prior to entering the plant configuration being questioned by this violation, Detroit Edison appropriately evaluated the safety aspects of the plant configuration and concluded that the overall plant risk continued to be low.

Detroit Edison is concerned that this is a new NRC interpretation of the TS, which is unworkable for both the current and Improved TS. For example, the TS permit operation to continue indefinitely with an inoperable containment isolation valve powered from one division, provided that the affected penetration is isolated, as required by the TS actions. Under this new interpretation, a plant shutdown would be required when the opposite division EDG is removed from service for its monthly TS required surveillance test. Similar situations can be postulated for Reactor Coolant System Leakage Detection Instrumentation, Post Accident Monitoring Instrumentation, Remote Shutdown Instrumentation, Meteorological and Seismic Monitoring Instrumentation (if they have not been relocated from TS), and Control Rod Drive pumps (which are not explicitly subject to the TS). A previous relevant NRC interpretation, which is discussed in the enclosed response, indicates that the applicability of the electrical power source TS is focused on automatically actuated Emergency Core Cooling System (ECCS) equipment.

The requirements for cross division verification when an EDG is removed from service is common to other plants with current and Improved TS. This new NRC interpretation requiring that “all” systems covered by TS be considered without regard for credit in the mitigation of a design basis accident, has generic implications. In this regard, Detroit Edison, through our Improved TS contractor, has reviewed the implications of this interpretation with the Owners’ Groups and will seek a generic resolution through the Owners’ Groups, should this interpretation prevail. Detroit Edison notes that the imposition of this new interpretation may constitute a backfit under 10 CFR 50.109. The potential backfitting implications of this position are discussed in the enclosed response.

During the course of the inspection, Detroit Edison requested information from the inspectors to completely understand the basis for the NRC position. At the June 18, 1999 NRC exit meeting for Reference 2 (Inspection Report 50-341/99009), Detroit Edison was informed that a Task Interface Agreement (TIA) had been initiated for

NRC Office of Nuclear Reactor Regulation (NRR) review of this situation. A copy of the TIA was requested at that time. Detroit Edison was informed that the TIA was not a public document and would not be provided. On July 8, 1999, Detroit Edison was informed verbally that NRR review had been completed. A copy of the TIA was requested at that time. Detroit Edison was informed that it was pre-decisional information and would not be provided. Detroit Edison again requested a copy of the TIA prior to and at the July 23, 1999 exit meeting for Reference 3 (Inspection Report 50-341/99010), and was informed that it may be attached to the inspection report. Detroit Edison was subsequently informed that it would not be attached to the report.

Inspection Report 99010 was issued on August 10, 1999 and received by Detroit Edison on August 12, 1999. On August 13, 1999, since, the TIA was no longer pre-decisional in that it was the basis for the violation cited in Reference 3 (Inspection Report 50-341/99010), Detroit Edison instructed its contractor to obtain a copy of the TIA through a Freedom of Information Act (FOIA) request. The FOIA request was subsequently expanded on August 19, 1999 to request additional information pertinent to the understanding of the NRC position.

To date, Detroit Edison has yet to receive the TIA or any of the other requested information. On September 9, 1999, in a conversation between Mr. W. T. O'Connor (Detroit Edison) and Mr. A. Vogel (NRC) a thirty day extension of the original violation response due date, to October 12, 1999, was granted to permit additional time to receive the requested information. Although the requested information has not been received, Detroit Edison has elected to not seek a further extension of the due date, but reserves the opportunity to revise the response or alter our position should the information requested under the FOIA provide any new insights.

Although Detroit Edison is contesting this violation, Detroit Edison is in basic agreement with the NRC assessment of the decision making process and communications related to this issue, which is documented in Reference 2 (Inspection Report 50-341/99009). Detroit Edison agrees that enhancements can be made to better support the operators in these situations. While Detroit Edison disagrees with the NRC interpretation of "required systems," with increased sensitivity to this issue, Detroit Edison has since avoided situations which could challenge this position, pending a final resolution of this issue.

There are no commitments being made in this letter.

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

Sincerely,



Enclosure

cc: A. J. Kugler
A. Vogel
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission M. V. Yudasz, Jr.
Region III
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Statement of the Violation:

Technical Specification 3.8.1.1.b requires, in part, that while the plant is in Operational Conditions 1, 2, and 3, two separate and independent onsite alternating current electrical power sources, each consisting of two emergency diesel generators [diesel] shall be operable. Action Statement 3.8.1.1.c requires, in part, that with one or both diesel generators inoperable, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining onsite alternating current electrical power division as a source of emergency power are also operable; otherwise, be in at least Hot Shutdown within the next 12 hours.

Contrary to the above, within 2 hours of removing Division 1 Diesel Generator 11 from service at 3:00 a.m., on May 4, 1999 (with the plant in Operational Condition 1), the licensee failed to verify that components depending on the Division 2 Diesel as a source of emergency power were operable. Additionally, the licensee failed to place the plant in Hot Shutdown within the next 12 hours. Specifically, the Division 2 Standby Liquid Control System B (a system that depends on Division 2 Diesel as its source of emergency power) was inoperable at the time the Division Diesel was removed from service. The concurrent inoperability of Division 2 Standby Liquid Control System B and Division 1 Diesel lasted for approximately 32 hours until May 5, 1999, at 10:32 a.m., when Division 2 Standby Liquid Control System B was returned to service.

The Reason for the Violation, or If Contested, the Basis for Disputing the Violation or Severity Level:

Detroit Edison is contesting that a violation of TS occurred. Detroit Edison disagrees with the NRC interpretation that "Technical Specification 3.8.1.1, Action c addresses all systems/components covered by the Technical Specifications without regard to whether or not they were credited in the mitigation of a Design Basis Accident." Detroit Edison's basis for disputing the violation is presented below.

A. The Term "Required Systems" as used in the Technical Specifications:

Because the Technical Specifications do not specifically define the term "required systems" as they do other important terms, it is necessary to review the Technical Specification Bases to determine the meaning the term "required systems" as it relates to the Technical Specifications. Detroit Edison notes that use of the Technical Specifications Bases to support interpretation of Technical Specifications requirements is consistent with NRC Information Notice 97-80, "Licensee Technical Specifications Interpretations," dated November 21, 1997.

Technical Specification 3.8.1.1 Action c states:

With one or both diesel generators in one of the above required onsite A.C. electrical power divisions inoperable, in addition to ACTION b, above, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining onsite A.C.

electrical power division as a source of emergency power are also OPERABLE; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

The Bases for Technical Specification 3.8.1 state:

The Operability of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility.

1) The Standby Liquid Control System (SLCS) is not a Safety Related System

The most basic argument is that because the SLCS is not a safety related system, the Bases exempt it from the requirements of Technical Specification 3.8.1.1 Action c, and the argument made in the inspection report that the term "required systems" implies all systems discussed in the Technical Specifications is incorrect. The non safety related status of the Fermi 2 SLCS was reviewed and approved by the NRC in NUREG-0798, Supplement No. 5, "Safety Evaluation Report Related to the Operation of Fermi-2," dated March 1985. Additionally, in Generic Letter 85-06, "Quality Assurance Guidance for ATWS Equipment that is not Safety Related," the NRC stated that "the staff continues to view the observed industry practices as acceptable for non safety related ATWS equipment." It further states that "the use of (10CFR50) Appendix B as a reference does not indicate that the guidance in this letter imposes any Appendix B requirements on non safety related ATWS equipment, and, therefore, NRC would not judge compliance with this generic letter by using Appendix B or its associated regulatory guides." It finally states that "The lesser safety significance of the equipment encompassed by 10CFR50.62, as compared to safety related equipment, necessarily results in less stringent QA guidance."

2) Critical Systems and Loss of Safety Function

Beyond this basic argument is the fact that the SLCS is a non divisional, manually initiated system that do not have the same degree of immediate dependence on an EDG as a source of emergency power, as do the safety related Emergency Core Cooling Systems (ECCSs). The Bases for TS 3.8.1 state that:

When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable.

A "required" system according to this Basis statement is a "critical" system where a loss of offsite power under the conditions prohibited by TS 3.8.1.1, Action c would result in a complete loss of a safety function. Although the term "critical" also is not defined in Technical Specifications, the critical systems where a loss of offsite power under the conditions prohibited by TS 3.8.1.1, Action c would result in a complete loss of a safety function would logically be those divisionalized systems in which one train is rendered completely unavailable when a single component is taken out of service and the other train will not activate automatically in the time required by the safety analysis on a loss of offsite power. Thus, loss of safety function for a critical system implies a divisionalized system where trains are not cross connected, where an automatic initiation is required, and where a time constraint exists (i.e., if a safety function is not required immediately, then the emergency power supporting the safety function also is not required immediately).

The SLCS is manually initiated from the main Control Room, as directed by the Emergency Operating Procedures (EOPs), if the operator believes the reactor cannot be shutdown or maintained shutdown with the control rods. Such a situation constitutes a beyond design basis Anticipated Transient Without Scram (ATWS) event. No plant specific ATWS analysis is presented in the Updated Final Safety Analysis Report (UFSAR). 10 CFR 50.62, the ATWS rule, prescribes overall functional requirements for SLCS based on generic analysis of ATWS events.

The generic ATWS evaluation assumes the beyond design basis failure of the Reactor Protection System (RPS) to initiate a reactor trip in conjunction with the anticipated operational occurrences described in the UFSAR. The primary success path for ATWS is the automatic Recirculation Pump Trip (RPT) and Alternate Rod Insertion (ARI). The generic evaluation indicates that RPT results in an immediate substantial reduction in power. ARI provides a diverse method from RPS for initiating control rod insertion. SLCS would only be necessary if ARI was unsuccessful. The generic evaluation conservatively assumes ARI failure and relies on the backup SLCS. The most limiting ATWS transients involves a loss-of-offsite power (LOOP). The LOOP results in closure of MSIVs and loss of the condenser as a heat sink. In this scenario, all of the heat generated by the reactor is deposited in the suppression pool, resulting in suppression pool heat up and containment pressurization. The generic ATWS evaluations do not take credit for actions directed by the EOPs which considerably lengthen the time available for initiation of boron injection from the SLCS. These actions include early establishment of suppression pool cooling and lowering reactor water level, which significantly reduces reactor power and the heatup of the suppression pool.

The SLCS is configured such that either pump, powered from any power source that can be made available (including the Combustion Turbine Generator, CTG 11-1, credited in a Station Blackout event), can deliver boric acid solution to the reactor pressure vessel. Thus, the SLCS function can be met with a single pump, provided power can be made available to that pump. Assuming a complete loss of offsite power, Division 2 EDG 12 was still available to supply the Division 1 emergency bus 72 EA through the Division 1 ESF bus tie while EDG 11 was

inoperable. Thus, SLCS Pump A could have been made available in sufficient time for it to perform its intended function using this option. Additionally, CTG 11-1 was available as a backup emergency power source to bus 72 EA and may have been able to be made available in sufficient time for the SLCS to perform its intended function. Finally, SLCS Pump B, which was unavailable only because its supply breaker was open under administrative control, could have been made available in sufficient time for it to perform its intended function by simply closing its supply breaker. This information was utilized by the Nuclear Shift Supervisor (NSS) in determining that the boron injection safety function would not be lost during the period EDG 11 was unavailable, assuming a complete loss of offsite power. Closing the breaker and restoring SLCS Pump B took less than seventeen minutes as demonstrated on May 5, 1999 when the inspector raised the concern.

1) 10CFR50.36(c)(2)(ii) Criteria as they Relate to the Primary Success Path in the Mitigation of Design Basis Accidents and Transients

10CFR50.36, "Technical Specifications," establishes the requirements for the Technical Specifications by establishing specific criteria which define the required scope and content of the TS. The criteria provide some insight as to what constitutes a "critical system."

10CFR50.36(c)(2)(ii) requires that TS Limiting Conditions for Operation (LCO) be established for items meeting any of the following criteria:

Criterion 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to a fission product barrier.

Criterion 4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

These criteria were developed by the NRC and the industry during the mid-1980's as part of the Technical Specifications Improvement Project (TSIP). Criteria 1,2 and 3 first appeared in the February 6, 1987 publishing of the "Proposed Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" in the Federal Register (52FR3788). The proposed policy statement recognized that the SLCS would not satisfy any of the three criteria for inclusion in Technical Specifications. Of particular note is Criterion 3. The SLCS is not part of the primary success path for any design basis accident or transient, nor is the SLCS on the primary success path for beyond design basis ATWS events. In an ATWS event, the SLCS would only

be initiated if the primary path, RPT and ARI, were unsuccessful. However, the proposed policy statement identified SLCS, Reactor Core Isolation Cooling, Residual Heat Removal, and the Recirculation Pump Trip as systems which operating experience and probabilistic risk assessment have generally shown to be important to the public health and safety, a basis similar to the current Criterion 4. The final Policy Statement was published on July 22, 1993 (58FR39132). The final Policy Statement included the current Criterion 4.

The background discussion relating to the evolution of Criterion 4 indicates that it is intended to include systems that "operating experience and probabilistic risk assessment have generally shown to be important to public health and safety." It is noteworthy that the Fermi 2 plant specific PSA and the evaluation performed in accordance with the Configuration Risk Management Program (CRMP) mandated by TS 3.8.1.1, showed that overall plant risk remained low with the removal from service of the entire SLCS in conjunction with an inoperable EDG. The PSA models SLCS as a single system, that is, not a divisionalized system.

The Improved Technical Specifications (ITS) and associated Bases further amplify the significance of Criterion 3 versus Criterion 4 in defining critical or required systems in the context of Technical Specification 3.8.1.1. ITS LCO 3.8.1, Action A.2 is analogous to Technical Specification 3.8.1.1, Action c in the current Technical Specifications. The ITS Bases for LCO 3.8.1 reiterate the fact that the Technical Specification requirements are related to mitigation of design basis accidents and transients. It follows that the required features that must be verified under ITS LCO 3.8.1, Action A.2 (and current Technical Specification 3.8.1.1, Action c) comprise the Criterion 3 systems included in Technical Specification. SLCS does not rise to the level of systems required by Criterion 3.

B. Apparent New Staff Position:

The NRC staff position stated in the inspection report, "the staff determined that TS 3.8.1.1.c addressed all systems/components covered by the TS without regard to whether or not they were credited in the mitigation of a DBA," appears to be in conflict with previous staff guidance in this area. Specifically, Task Interface Agreement 95-002, dated July 7, 1995, discusses emergency power sources for the Chemical and Volume Control System (CVCS) charging pumps at a PWR, which have a similar function to that of the SLCS pumps at a BWR, for use in emergency boration. This TIA concerns the fact that only two of the three CVCS charging pumps can be powered from emergency power sources, but that the licensee uses a combination of any two of the three charging pumps to meet TS requirements. The NRC staff, in evaluating this issue concluded that the CVCS charging pumps are neither used for accident mitigation nor given any credit in the accident analysis. They further stated that because the CVCS charging pumps do not perform any ECCS function, they are not required to be powered from normal as well as emergency power sources; and therefore, normal power is sufficient for these pumps to meet their operability requirements. Therefore, although this TIA involves a PWR, and addresses a slightly different concern, it is applicable in regard to the intent of the term "required systems" as used in the Technical Specifications. It is clear from this TIA that systems and

components credited in the mitigation of a DBA, specifically those performing an ECCS function, are the focus of the term "required systems" as used in the electrical power TS (Section 3.8), and not "all systems/components covered by the TS."

C. Standby Power and the Non-Divisional Nature of SLCS:

10 CFR 50, Appendix A, General Design Criteria (GDC), Criterion 17, "Electric Power Systems," delineates the requirements for on site and off site electrical power systems. GDC 17 requires both an on site and an off site power distribution system to permit functioning of structures, systems, and components important to safety, assuming either the on site or off site system is unavailable. GDC 17 further defines the two required safety functions supported by the electric power system: 1) protection of specified acceptable fuel design limits and the reactor coolant pressure boundary during anticipated operational occurrences; and, 2) assurance of core cooling and containment integrity during postulated accidents. Both of these functions relate to design basis accidents and transients. In contrast, for beyond design basis ATWS events, 10 CFR 50.62 requires only that the SLCS be designed to perform its function in a reliable manner. Regulatory Guide 1.93, "Availability of Electric Power Sources," provides guidance on Technical Specifications allowed out of service times for electric power systems required by GDC 17. RG 1.93 frames its discussion in terms of mitigation of design basis accidents and transients.

As discussed in above, the SLCS is not credited in the mitigation of any design basis accident or transient and was not designed as a safety related system. However, to ensure that the SLCS performs its function in a reliable manner, the SLCS pumps, valves, and controls are powered from the standby A.C. power supply. While the power supplies are oriented toward redundant SLCS components, the SLCS is not treated as a divisionalized system. The SLCS has common features and is not required to be completely divisionalized as are the safety related ECCS systems. Therefore, the SLCS operating, surveillance, and maintenance procedures are not divisionalized, nor are SLCS outages scheduled during divisional work weeks. The SLCS is not modeled as a divisionalized system in the Fermi 2 Probabilistic Safety Analysis (PSA); and the Fermi Bypassed and Inoperable Status Indication, installed in conformance with Regulatory Guide 1.47, has only one status indicator for SLCS, whereas divisionalized safety systems have one for each division.

D. Backfit Considerations:

In NUREG-1409, "Backfitting Guidelines," Section 3.3, "Plant-Specific Backfits," it states that if "the inspector indicates that a specific action must be taken, such action is a backfit unless it is consistent with an applicable regulatory staff position. Detroit Edison believes the position stated in the inspection report that "TS 3.8.1.1.c addressed all systems/components covered by the TS without regard to whether or not they were credited in the mitigation of a DBA," is a new NRC Staff position and that requiring the licensee to place the plant in Hot Shutdown because of this position, constitutes a backfit as described in 10CFR50.109. Detroit Edison further believes

that this new NRC Staff position would affect all licensees to some extent, and therefore, that it should have been reviewed by the Committee to Review Generic Requirements (CRGR) prior to its being used on an individual licensee's docket. Detroit Edison intends to pursue the generic aspects of this NRC Staff position with the various Owner's Groups because we believe that it is unworkable in both current and Improved Technical Specifications.

E. Clarification of Statements Made in the Inspection Report:

- 1) The Notice of Violation states that "the licensee failed to verify that components depending on the Division 2 Diesel as a source of emergency power were operable." This is a misleading statement. In fact, the operators performed the Technical Specification (TS) 3.8.1.1, Action c verifications within 2 hours after taking EDG 11 out of service. They simply did not consider the Standby Liquid Control System (SLCS) to be a "required system" as used in the Technical Specifications. Rather than stating that "the licensee failed to verify that components depending on the Division 2 Diesel as a source of emergency power were operable," the report should more accurately have stated that the NRC disagrees with the licensee regarding the inclusion of SLCS as a required system, subsystem, train, component or device that depends on the remaining onsite alternating current electrical power division as a source of emergency power.
- 2) The Notice of Violation states that "The concurrent inoperability of Division 2 Standby Liquid Control System B and Division 1 Diesel lasted for approximately 32 hours until May 5, 1999, at 10:32 a.m., when Division 2 Standby Liquid Control System B was returned to service." In fact, the period of time, where there was any question regarding the ability the SLCS B to perform its intended function was actually 16 hours, the period during which the supply breaker was open. The breaker for the SLC B pump was opened at 1830 hours on May 4, 1999 and restored to the closed position at 1032 hours on May 5, 1999. Although administratively considered inoperable, because of the inoperable continuity circuit, prior to opening the SLC B pump breaker, SLC B pump was never actually inoperable for performing its intended function, and was not without immediately available emergency power until 1830 hours on May 4, 1999. Reference 2 acknowledges that Detroit Edison subsequently documented that SLCS B was operable with the inoperable continuity circuit.
- 3) The cover letter to the inspection report states that the "operators did not understand license requirements and placed the plant in a configuration where Emergency Diesel Generator 11 was removed from service and the opposite division Standby Liquid Control System B was inoperable." Detroit Edison believes that the operators understood the license requirements and utilized their knowledge of system design and operating status to ensure that the SLCS, although not safety related and thus not required to be verified by Technical Specification 3.8.1.1, Action c, would continue to be able to perform its intended function in the configuration in which it was placed. They took the added step of ensuring that this

configuration was risk insignificant through the use of the CRMP evaluation performed prior to the removal of EDG 11 from service.

F. Conclusion:

Based upon the arguments presented above, Detroit Edison maintains that the SLCS is not a "required system" as used in the Technical Specifications, and that verification of the SLCS in accordance with Technical Specification 3.8.1.1, Action c is not necessary to comply with the Technical Specifications when an EDG or offsite power circuit is inoperable.

Corrective Steps that Have Been Taken and the Results Achieved:

No violation occurred necessitating corrective actions.

Corrective Steps that Will Be Taken to Avoid Further Violations:

No violation occurred necessitating corrective actions.

Date when full compliance will be achieved:

Fermi 2 remained in full compliance throughout this event.