UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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LISLE, IL 60532-4352

April 27, 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: FERMI POWER PLANT, UNIT 2 NRC COMPONENT DESIGN BASES INSPECTION (CDBI) INSPECTION REPORT 05000341/2010-006(DRS)

Dear Mr. Davis:

On April 5, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed a component design bases inspection at your Fermi Power Plant, Unit 2. The enclosed report documents the inspection findings, which were discussed on February 26, 2010, with Mr. J. Plona and other members of your staff, and on April 26, 2010 with Mr. J. Plona, Mr. M. Caragher, and other 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 inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, six NRC-identified findings of very low safety significance were identified, six of which involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, 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; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Fermi Power Plant. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Fermi Power Plant. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

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).

Sincerely,

/RA/

V. Patricia Lougheed, Acting Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000341/2010-006
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-341
License No:	NPF-43
Report No:	05000341/2010-006(DRS)
Licensee:	Detroit Edison Company
Facility:	Fermi Power Plant, Unit 2
Location:	Newport, MI
Dates:	January 25 through April 5, 2010
Inspectors:	Z. Falevits, Senior Reactor Inspector, Lead C. Brown, Reactor Inspector, Electrical B. Jose, Senior Reactor Inspector, Electrical M. Jones, Reactor Inspector, Mechanical C. Moore, Reactor Inspector, Operations G. Skinner, Electrical Contractor C. Baron, Mechanical Contractor L. Kozak, Senior Reactor Analyst
Approved by:	V. Patricia Lougheed, Acting Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000341/2010-006; 01/25/2010 – 04/05/2010; Fermi Power Plant, Unit 2; Component Design Bases Inspection (CDBI).

The inspection was a 3-week onsite baseline inspection that focused on the design of components that are risk-significant and have low design margin. The inspection was conducted by regional engineering inspectors and two consultants. Six findings of very low safety significance were identified with six associated Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a finding having very low safety significance with an Non-Cited Violation (NCV) of 10 CFR 50.65(b)(2)(iii), for the licensee's failure to include turbine building heating ventilation and air conditioning (TBHVAC) fans in the scope of their maintenance rule program. Specifically, the licensee failed to effectively control TBHVAC system components condition through the implementation of appropriate preventive maintenance as directed by the requirements of the maintenance rule. The TBHVAC system is used to maintain the turbine building at a negative pressure for radiological considerations and room and area temperature below design limits to prevent a Group 1 Isolation resulting in main steam isolation valves (MSIV) closure and a reactor trip. The licensee entered the issue into their corrective action program for further evaluation.

  This finding was more than minor because it was associated with the Initiating Events cornerstone attribute of equipment performance, and affected the cornerstone objective to limit the likelihood of those event that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. This finding is of very low safety significance (Green), because it does not contribute to the likelihood that mitigation equipment or functions will not be available. The inspectors determined there was no cross-cutting aspect associated with this finding because the system was initially scoped out during the initial baseline evaluation for maintenance rule in June 1995 and was not reflective of current performance. (Section 1R21.3.b.(4))

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding having very low safety significance with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to perform adequate calculations to ensure the availability of offsite power. Specifically, on two occasions the licensee failed to perform adequate calculations to demonstrate the availability of 120kV system offsite power. The first occasion was related to the analysis in calculation DC-0919 for conditions when the System Service (SS) Transformer No. 64 load tap changer (LTC) was in service. The

second occasion was related to TSR-35286, which analyzed conditions for placing the SS Transformer No. 64 LTC in manual. This finding was entered into the licensee's corrective action program to revise the calculations and perform an Engineering Functional Analysis (EFA) to demonstrate operability.

The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of safety-related equipment to respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether the offsite power supply would remain operable during a design basis event pending re-analysis. This finding is of very low safety significance (Green) because the design deficiency was confirmed not to result in loss of operability or functionality. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because the licensee did not provide a complete, accurate, and up-to-date design documentation, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)]) (Section 1R21.3.b.(1))

- Green. The inspectors identified a finding having very low safety significance (Green) with an associated NCV of Technical Specifications 5.4.1.a, "Procedures" for the licensee's failure to translate the design requirements for the availability of the 120kV offsite power into station operating procedures, which are used to control voltages on the offsite power system within acceptable ranges. Specifically, the licensee failed to translate the 2.1 percent switchyard voltage drop criteria assumed in calculation DC-0919 into station operating procedures. This finding was entered into the licensee's corrective action program to revise the calculations and perform an EFA to demonstrate operability.

  The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of safety-related equipment to respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure the availability of the 120kV power source to 4160V safety buses by implementing procedural controls to ensure that the step voltage decrease on the trip on the Fermi generating unit did not exceed the 2.1 percent value analyzed in calculation DC-0919. This finding is of very low safety significance (Green), because the design deficiency was confirmed not to result in loss of operability or functionality. The inspectors concluded that the cause of the finding was related to the cross-cutting aspect of Human Performance, Resources, because the licensee did not provide complete, accurate, and up-to-date design documentation to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)]) (Section 1R21.3.b.(3))

- Green. The inspectors identified a finding having very low safety significance with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to accurately account for the cable resistance for the reactor core isolation cooling (RCIC) and high pressure core injection (HPCI) dc Motor Operated Valves (MOVs) in the DC short circuit calculation. The issue, along with other related electrical calculational errors, was entered into the licensee's corrective action program.

The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of safety-related equipment to respond to initiating events to prevent undesirable consequences. This finding is of very low safety significance (Green) because the design deficiency was confirmed not to result in loss of operability or functionality. The inspectors concluded that the cause of the finding was related to the cross-cutting aspect of Human Performance, Resources, because the licensee did not provide complete, accurate, and up-to-date design documentation to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)]) (Section 1R21.3.b.(6))

- Green. The inspectors identified a finding of very low safety significance (Green) for the licensee's failure to adhere to operating experience program procedural requirements. Specifically, the inspectors identified three instances where the licensee failed to adequately evaluate and take appropriate corrective actions on industry operating experience contrary to the requirements in licensee's operating experience Procedure MLS04, Revision 22. Also, based on the inspectors' finding, the licensee performed an extent of condition and identified approximately 30 more operating experience reviews performed within the last two years as less than adequate. No violation of NRC requirements occurred.

  The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring equipment availability and reliability. Specifically, multiple examples were identified where the licensee failed to ensure that problems identified in industry operating experience were evaluated for applicability to Fermi and corrective actions implemented. This finding is of very low safety significance (Green) because the design deficiency was confirmed not to result in loss of operability or functionality. The inspectors concluded that the cause of the finding was related to the cross-cutting element of Problem Identification and Resolution, Operating Experience, because the licensee failed to systematically collect, evaluate, and communicate to affected internal stakeholders in a timely manner relevant internal and external operating experience to support plat safety. (IMC 0310, Section 06.02.b.(1) [P.2(a)]) (Section 1R21.4.b)

- Green. The inspectors identified a finding of very low safety significance (Green) with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance with two examples, for failing to perform adequate electrical design calculations to support modifications to the degraded voltage protection scheme. The first example involved the failure to analyze motor starting capability based on voltages afforded by the degraded voltage relay scheme. The second example involved the failure to perform conservative calculations to show that spurious grid separation would not occur during accidents due to action of the degraded voltage relays. This finding was entered into the licensee's corrective action program to revise the calculations and perform an EFA to demonstrate operability.

  The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring the availability, reliability, and capability of safety-related equipment to respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to confirm the adequacy of new degraded voltage relay set-points by ensuring motors had adequate voltage to start if safety buses remained connected to offsite power during a LOCA with degraded voltage. In addition, the licensee failed to ensure that spurious

grid separation would not occur during accidents due to action of the degraded voltage relays. This finding is of very low safety significance (Green) because the design deficiency was confirmed not to result in loss of operability or functionality. The inspectors concluded that the cause of the finding was related to the cross-cutting aspect of Human Performance, Resources, because the licensee did not provide complete, accurate, and up-to-date design documentation to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)]) (Section 1R21.5.b)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding of very low safety significance (Green) with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failing to perform proper motor starting studies to demonstrate that motors would successfully start when connected to the offsite power supply. This finding was entered into the licensee's corrective action program to revise the calculations and perform an EFA to demonstrate operability.

  The finding was more than minor because it was associated with the Barrier Integrity cornerstone attribute of design control and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, failing to demonstrate that the approved design was adequate to ensure safety-related motors have sufficient voltage to start created a reasonable doubt as to the operability of the control complex hearing ventilation and air-conditioning system needed to provide a radiological barrier for control room personnel during an accident. The inspectors determined that this finding is of very low safety significance (Green) because the radiological function of the control complex was not affected. The inspectors concluded that the cause of the finding was related to the cross-cutting aspect of Human Performance, Resources, because the licensee did not provide complete, accurate, and up-to-date design documentation to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)]) (Section 1R21.3.b.(2))

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Component Design Bases Inspection (71111.21)

.1 Introduction

The objective of the component design bases inspection is to verify that design bases have been correctly implemented for the selected risk-significant components and that operating procedures and operator actions are consistent with design and licensing bases. As plants age, their design bases may be difficult to determine and an important design feature may be altered or disabled during a modification. The probabilistic risk-assessment (PRA) model assumes the capability of safety systems and components to perform their intended safety function successfully. This inspectable area verifies aspects of the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for which there are no indicators to measure performance.

Specific documents reviewed during the inspection are listed in the Attachment to this report.

.2 Inspection Sample Selection Process

The inspectors selected risk-significant components and operator actions for review using information contained in the licensee's PRA and the Fermi Standardized Plant Analysis Risk (SPAR) Model, Revision 3.5. In general, the selection was based upon the components and operator actions having a risk achievement worth of greater than 1.3 and/or a risk-reduction worth greater than 1.005. The operator actions selected for review included actions taken by operators both inside and outside of the control room during postulated accident scenarios. In addition, the inspectors selected operating experience issues associated with the selected components.

The inspectors performed a margin assessment and detailed review of the selected risk-significant components to verify that the design bases have been correctly implemented and maintained. This design margin assessment considered original design reductions caused by design modification, power uprates, or reductions due to degraded material condition. Equipment reliability issues were also considered in the selection of components for detailed review. These included items such as performance test results, significant corrective action, repeated maintenance activities, Maintenance Rule (a)(1) status, components requiring an operability evaluation, NRC resident inspector input of problem areas/equipment, and system health reports. Consideration was also given to the uniqueness and complexity of the design, operating experience, and the available defense in depth margins. A summary of the reviews performed and the specific inspection findings identified are included in the following sections of this report.

This inspection constituted 26 samples as defined in Inspection Procedure 71111.21-05.

.3 Component Design

a. Inspection Scope

The inspectors reviewed the updated final safety analysis report (UFSAR), Technical Specifications (TS), design basis documents, drawings, calculations and other available design basis information, to determine the performance requirements of the selected components. The inspectors used applicable industry standards, such as the American Society of Mechanical Engineers (ASME) Code, Institute of Electrical and Electronics Engineers (IEEE) Standards and the National Electric Code, to evaluate acceptability of the systems' design. The NRC also evaluated licensee actions, if any, taken in response to NRC issued operating experience, such as Bulletins, Generic Letters (GLs), Regulatory Issue Summaries (RISs), and Information Notices (INs). The review was to verify that the selected components would function as designed when required and support proper operation of the associated systems. The attributes that were needed for a component to perform its required function included process medium, energy sources, control systems, operator actions, and heat removal. The attributes to verify that the component condition and tested capability was consistent with the design bases and was appropriate may include installed configuration, system operation, detailed design, system testing, equipment and environmental qualification, equipment protection, component inputs and outputs, operating experience, and component degradation.

For each of the components selected, the inspectors reviewed the maintenance history, system health reports, operating experience-related information and licensee corrective action program documents. Field walkdowns were conducted for all accessible components to assess material condition and to verify that the as-built condition was consistent with the design. Other attributes reviewed are included as part of the scope for each individual component.

The following 15 components were reviewed:

- Reactor Core Isolation Cooling (RCIC) Pump (E5101C001): The inspectors reviewed RCIC pump and turbine data to ensure compatibility so that the intended safety function of the system can be met. Hydraulic calculations were reviewed to assure that the flow requirements were met and that sufficient net positive suction head (NPSH) was available from both the RCIC tank and the suppression pool. The water supply was further examined to assure that a reliable water supply was available and that transfer from the RCIC tank to the suppression pool could be accomplished without pump damage and within acceptable transfer times. An interview was conducted with systems engineers to discuss testing, reservoir capacity and maintenance history. The requirements from both the UFSAR and TS were reviewed to assure that the design conformed to the licensing commitments.

- Core Spray (CS) Pump (E2101C001C): The inspectors reviewed the system hydraulic calculations including NPSH, system flow, and potential vortexing to ensure the pump was capable of providing sufficient flow under accident conditions. The inspectors reviewed surveillance test procedures and the bases for the acceptance criteria to verify that the tests would ensure the pumps were capable of their required performance. The inspectors also reviewed aligning the pump to an alternate water source and the minimum flow protection for the pump

to verify performance under all conditions. The inspectors performed a walkdown of the pump and associated equipment to verify the material condition and verify that no hazards existed in the area. The inspectors reviewed a sample of past corrective action documents, the system health report, training documents, the TS, and the design basis document. In addition, the inspectors reviewed electrical load flow and voltage drop calculations to determine whether the CS Pump 1C motor would have adequate voltage to start and run during design basis accident conditions. In addition, the inspectors reviewed electrical schematic and logic diagrams to determine whether automatic and manual control functions for the motors were as described in the design bases. The inspectors also reviewed the 130Vdc control voltage drop calculation and verified that the pump breaker control components would have sufficient voltage to close the breaker when the source (associated 130Vdc battery) was at its minimum voltage.

- Core Spray Division 1 Outboard Isolation Motor Operated Valve (MOV) (E2150F004A): The inspectors reviewed the calculations including required thrust, structural weak link analysis, and maximum differential pressure, to ensure the valve was capable of functioning under design conditions. The system engineer was interviewed, primarily to discuss overall health and issues associated with the identified voiding and potential binding concerns. Periodic verification diagnostic and in-service testing (IST) results were reviewed to verify acceptance criteria were met and performance degradation would be identified.

- Emergency Diesel Generator (EDG) 12 (R3001S002): The inspectors reviewed the mechanical aspects of the EDG, including the fuel system, the cooling system, and the building ventilation system. The inspectors reviewed the capacity of the fuel-oil storage system and the design of the fuel-oil transfer system to verify that they meet their design basis requirements. This review included the fuel consumption rate of the EDG and the minimum allowable tank levels to preclude vortexing. The inspectors reviewed the design of the EDG cooling system to verify that adequate cooling water would be provided. The inspectors reviewed the design of the EDG area ventilation system to verify that the system was capable of maintaining an acceptable environment for the operating equipment. In addition, the inspectors reviewed the capability of the EDG to perform its design function in the event of a postulated tornado event. This review included the capability of interior building walls to withstand pressure differentials and the required response of the operators to damaged ventilation equipment. The inspectors also performed a walkdown of the EDG and associated equipment to verify the material condition and to verify that no hazards existed in the area. The inspectors reviewed a sample of past corrective action documents, to determine whether there had been any adverse operating trends; the system health report; training documents; the TS, and the design basis documents. In addition, the inspectors reviewed the EDG output breaker control logic; verified the minimum voltage requirements of the control components and compared the minimum voltage requirement to the minimum available voltage when the associated 130Vdc battery was at its lowest voltage to ensure that the EDG output breaker will close when required.

- Fire Protection Diesel Fire Pump, (P8000C001): The inspectors reviewed the pump start schematic diagrams, the 48Vdc start up battery requirements, and the battery condition and verified that sufficient power and control source was available to start the pump and maintain the engine auxiliary components that require dc control power. In addition, the inspectors reviewed the motor nameplate data to determine compatibility with the pump and power supply requirements. The schematic diagram was reviewed to verify manual and automatic operation of the pump. The inspectors reviewed the vendor manual and the pump curve to verify pumping capability. The interaction between the fuel-oil day tank level indicator and the fuel oil transfer pump was reviewed to verify continual compliance with the system design requirements. Fuel-oil storage tank design was reviewed to ensure usable volume was consistent with design calculations and surveillance results. The inspectors reviewed the maintenance rule scoping documents used for re-classifying the system to (a)(1) status and the associated corrective actions and pending revisions to the "Get Well Plan." Due to pending actions associated with the maintenance rule status change, only a limited review of the licensee's most recent root cause report could be performed. A walkdown was conducted with the systems engineer to assess the material condition of the pump and diesel.

- System Service (SS) Transformer No. 64 (R1200S002): The inspectors reviewed the calculations and operating procedures to determine whether bus voltages maintained by the automatic load-tap changer were adequate to assure the availability of offsite power during low voltage conditions. The inspectors reviewed sources of power for automatic control equipment to determine whether the transformer would operate properly during low voltage conditions. The inspectors reviewed maintenance schedules, procedures, vendor manuals, and completed work records to determine whether the transformer was being properly maintained. The inspectors reviewed corrective action histories to determine whether there had been any adverse operating trends. In addition, the inspectors performed a visual inspection of SS Transformer No. 64 to assess material condition and the presence of hazards.

- Division 1 Essential Safety Feature (ESF) Bus 64C 4.16 kV (R1400S001C): The inspectors reviewed bus loading calculations to determine whether the 4160Vac system had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The inspectors reviewed the design of the 4160Vac bus degraded voltage protection scheme to determine whether it afforded adequate voltage to safety-related devices at all voltage distribution levels. This included review of degraded voltage relay setpoint calculations, motor starting and running voltage calculations, and motor control center (MCC) control-circuit voltage drop calculations. The inspectors reviewed procedures and completed surveillances for calibration of the degraded voltage relays to determine whether acceptance criteria was consistent with design calculations, and to determine whether relays were performing satisfactorily. The inspectors reviewed operating procedures to determine whether the limits and protocols for maintaining offsite voltage were consistent with design calculations. The inspectors reviewed the Fermi response to NRC Generic Letter 2006-02 to determine whether current procedures for maintaining the availability of offsite power were consistent with licensee responses. The inspectors reviewed protective relaying schemes and calculations to determine whether equipment such as motors and cables were adequately protected, and to determine whether protective devices featured proper

selective tripping coordination. The inspectors reviewed system health reports, corrective action documents and maintenance records to determine whether there were any adverse operating trends. The inspectors reviewed approved modification packages to address deficiencies in the degraded voltage protection scheme subject to NRC backfit requirements issued in June 2008. In addition, the inspectors performed a visual inspection of the 4160Vac safety buses to assess material condition and the presence of hazards. In addition, the inspectors reviewed the 130Vdc control voltage drop calculation and verified that sufficient control voltage would be available for the breaker trip and close components for both the incoming lines and the associated EDG breaker.

- ESF Bus 72C 480Vac Switchgear and 72C-2A MCC: The inspectors reviewed the degraded voltage protection scheme to determine whether the voltage setpoints were selected based on the voltage requirements for safety-related loads at the 480Vac level. The inspectors reviewed 480Vac short circuit calculations to determine whether protective devices were applied within their ratings and whether appropriate fault values were used in protective relaying calculations. The inspectors reviewed maintenance procedures, and schedules for the 480Vac load centers and MCC to determine whether equipment was being properly maintained. The inspectors reviewed system health and corrective action documents to determine whether there were any adverse operating trends. In addition, the inspectors performed a visual inspection of the 480Vac safety buses to assess material condition and the presence of hazards.

- Residual Heat Removal Service Water (RHRSW) Division 2 Pump E1151C001B Minimum Flow Air Operated Valve (E11F400B): The inspectors reviewed the system description for the control air system to determine the valves ability to maintain line pressure on the interruptible control air system. The inspectors reviewed valve and actuator design data to verify compatibility. The inspectors reviewed corrective action documents to ensure condition reports were appropriately addressed and resolved or closed. The inspectors reviewed piping and instrumentation diagrams for the control air system, where the valve was located, and performed a system walkdown with licensee staff to verify the valve's position in the system lineup.

- Division 1 RHRSW Pump A (E1151C001A): The inspectors reviewed the 130Vdc control voltage drop calculation and verified that sufficient control voltage would be available for the pump start breaker control components when the associated 130Vdc battery was at its minimum voltage. In addition, the inspectors reviewed the system hydraulic calculations including NPSH, system flow, and submergence to ensure the pump was capable of providing sufficient flow under normal and accident conditions. The inspectors reviewed the design of the pump area ventilation system to verify that the system was capable of maintaining an acceptable environment for the operating equipment. The inspectors reviewed surveillance test procedures and the bases for the acceptance criteria to verify that the tests would ensure the pumps were capable of their required performance. The inspectors also reviewed the minimum flow protection for the pump to verify adequate performance under all conditions. The inspectors reviewed a design change associated with replacing the pump. The inspectors performed a walkdown of the pump and associated equipment to verify the material condition and verify that no hazards existed in the area. The inspectors also reviewed a

sample of past corrective action documents, the system health report, training documents, the TS, and the design basis document.

- Residual Heat Removal (RHR) Division 1 Heat Exchanger Outlet Isolation Valve (E1150F068A): The inspectors reviewed the thrust and differential pressure calculations associated with this motor operated valve to verify its capability to perform its function during normal and accident conditions. The inspectors reviewed the applicable surveillance test procedure and completed surveillances to ensure actual performance was acceptable. Post-accident operating procedures related to the valve's operation were also reviewed. The inspectors reviewed the voltage used in the MOV calculations to verify consistency with the associated electrical distribution calculations. The inspectors performed a walkdown of the pump and associated equipment to verify the material condition and verify that no hazards existed in the area. The inspectors also reviewed a sample of past corrective action documents, the system health report, training documents, the TS, and the design basis document.

- Battery 2PA 130/260Vdc (R3200S003): The inspectors reviewed calculations and analyses relating to battery sizing and capacity, hydrogen generation, and station blackout (SBO) coping. The review was performed to ascertain the adequacy and appropriateness of design assumptions, and to verify that the battery was adequately sized to support the design basis required voltage requirements of the 130/260Vdc safety-related loads under both design basis accident and SBO conditions. The inspectors also reviewed a sample of completed surveillance tests, service tests, performance discharge tests, and modified performance tests. The review of various discharge tests was to verify that the battery capacity was adequate to support the design basis duty cycle requirements and to verify that the battery capacity meets TS requirements.

- Division 1 dc Bus 2PA-2 (R3200S026): The inspectors reviewed 130Vdc short circuit calculations and verified that the interrupting ratings of the fuses were well above the calculated short circuit currents. The 130Vdc voltage drop calculations were reviewed to determine if adequate voltage would be available for the 4.16kV breaker open and close coils and spring charging motors. The inspectors reviewed the 4.16kV motor control logic diagrams and the 130Vdc voltage-drop calculation to ensure adequate voltage would be available for the control circuit components under all design basis conditions. The inspectors also reviewed the dc equipment operability calculation and the dc MOV mechanical thrust calculation to ensure that the RCIC and high pressure coolant injection (HPCI) MOVs would develop sufficient thrust under worst case voltage conditions.

- Division 1 Battery Charger 2A-1 (R3200S020): The inspectors reviewed calculations relating to sizing and current limit setting to ascertain the adequacy and appropriateness of design assumptions, and to verify that the charger was adequately sized to support the design basis duty cycle requirements of the 130Vdc safety-related loads and the associated battery under both normal and design basis accident conditions. In addition, the test procedures were reviewed to determine whether maintenance and testing activities for the battery charger were in accordance with vendor's recommendations. The inspectors also reviewed preventive maintenance activities to verify that the electrolytic capacitors installed in the battery charger were replaced with appropriate frequency.

- Turbine Building HVAC Exhaust Fan (U4100C006): The inspectors reviewed system health reports and corrective actions program documents for the turbine building HVAC (TBHVAC) system. The inspectors reviewed maintenance rule scoping documents and the basis for the systems exclusion. The inspectors reviewed vendor manuals and performance curves to verify the system was capable of meeting its intended function when in operation. The TBHVAC system engineer was interviewed and the overall health of the TBHVAC system, with an emphasis on exhaust fan failures, was discussed. The inspectors performed a walkdown with the system engineer and maintenance personnel of the plenum area and of the failed TBHVAC fans.

b. Findings

(1) Inadequate Calculations for Availability of 120kV System Offsite Power

Introduction: The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to perform adequate calculations to ensure the availability of offsite power. Specifically, on two occasions the licensee failed to perform adequate calculations to demonstrate the availability of 120kV system offsite power. The first occasion was related to the analysis in calculation DC-0919, for conditions when the service system (SS) transformer No. 64 LTC was in service. The second occasion was related to TSR-35286, which analyzed conditions for placing the SS transformer No. 64 LTC in manual operation.

Description: The inspector reviewed calculation DC-0919, "Undervoltage Relay Setpoints." This calculation relied, in part, upon computer databases ETAP and LOFSTAB, which were not maintained as independent calculations such that the assumptions and inputs could not be independently verified. This increased the difficulty in reviewing the many permutations presented in the DC-0919 calculation. The inspector identified numerous errors with this calculation including unverified assumptions and unsupported conclusions. The inspector specifically identified a concern with the analysis of SS transformer No. 64 LTC performance in Section 9.13 of DC 0919, "Undervoltage Relay Setpoints," which resulted in the analysis being non-conservative. Major errors included failure to properly account for the 2.1 percent step voltage decrease on the trip of the unit, and failure to account for the two percent LTC deadband.

The calculation determined the degraded voltage relay time delay necessary to permit the SS transformer No. 64 LTC to compensate for voltage drops on the 4160V safety-related buses at the onset of an accident, with the associated trip of the main generator. Although the calculation described the need to consider a 2.1 percent step voltage decrease on the trip of the unit, it was not clear in the calculation how this was actually accomplished. The calculation included a two-tap margin above the eight taps shown to be needed by voltage results from ETAP runs in Attachment "I." The ETAP runs did not account for the 2.1 percent step voltage decrease, and also considered an initial bus voltage slightly above the center of the LTC deadband, instead of conservatively at the low-end of the band. In addition, because the low-end of the LTC deadband was 99 percent, the LTC might not act to improve voltage any further once the 4kv bus reached this level. The acceptance criteria in calculation DC-0919 required voltage to recover to 99.8 percent; therefore, voltage might not recover, regardless of the time afforded for LTC action, the inspector noted that this error adversely affected the licensee's response to Generic Letter (GL)

2006-002 Item 2c. Had the error been known at the time the licensee responded to the GL, the response to Item 2c should probably have been answered negatively. The licensee addressed this condition in EFA-R14-10-004, Revisions 0 and A, and took credit for degraded voltage relay tolerances from surveillance results that were more favorable than the values used in the calculation. The EFA-R14-10-004, Revision 0, was superseded by EFA-R14-10-004, Revision A after the end of the inspection period so a detailed assessment of this revision was not made.

Additionally, Technical Service Request (TSR)-35286 analyzed conditions for placing the SS transformer No. 64 LTC in manual. This condition could occur while the offsite voltage is within its expected voltage range as defined in the UFSAR. The technical approach in the TSR was to select a manually adjusted target voltage for the Division-1 4160V buses that was approximately 2.64 percent higher than normal (4270V minimum versus 4160V ±1 percent with the LTC in automatic). This was done in order to compensate for the increased post LOCA loading on the buses, thus enabling the degraded voltage relays to reset. The TSR included a steady state ETAP run that showed bus voltage with LOCA loads would recover to 4188V, which was considered to be sufficient to reset the relays, because they reset at approximately 4160V. However, the analysis failed to consider the step voltage decrease that could occur on the trip of the unit, which was assumed to be 2.1 percent in calculation DC-0919. Consequently, the analysis was non-conservative. Preliminary calculations by the inspectors showed that compensation of approximately 2.64 percent above the normal bus voltage range would not be sufficient to offset the approximately 4.3 percent drop that would occur due the combined effects of LOCA bus loading and the 2.1 percent step voltage decrease on the trip of the unit. In response to the inspectors concerns, the licensee initiated a CARD and implemented restrictions on placing the LTC in manual, pending reanalysis.

Analysis: The inspectors determined that the failure to perform adequate analyses for availability of the120kV offsite power supply was contrary to 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” and was a performance deficiency. The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, there was reasonable doubt as to whether the offsite power supply would remain operable during a design basis event pending reanalysis. The finding was also similar to Example 3.j. of IMC 0612, Appendix E,

Based on additional information provided by the licensee after the exit, the inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of findings,” Table 4a for the Mitigating Systems Cornerstone. The inspectors answered “No” to each of the questions in Column 2. Therefore, the finding screened as having very low safety significance (Green).

The inspectors determined the primary cause of this issue was related to Human Performance, Resources, which requires complete, accurate, and up-to-date design documentation, including calculations and procedures, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)])

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of January 25, 2010, the licensee failed to ensure that the design basis for the degraded voltage relay setpoint was correctly translated into procedures. Specifically, on two occasions the licensee failed to perform conservative calculations to show that the Division 1 degraded voltage relays would reset when required to maintain the availability of offsite power. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as CARD 10-21733, this violation is being treated as an Non-Cited Violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000341/2010006–01, Inadequate Calculations for Availability of 120kV System Offsite Power).

(2) Inadequate Motor Starting Voltage Calculations

Introduction: The inspectors identified a finding having very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to perform proper calculations to demonstrate that motors would successfully start when connected to the offsite power supply.

Description: The NRC previously determined that the design of the Fermi degraded voltage protection scheme had failed to consider a simultaneous LOCA with a degraded voltage, in that, the time delay for actuation of the degraded voltage protection exceeded the time delay assumed in the UFSAR accident analysis (see Inspection Report 05000341/2008-008). The NRC required that the licensee rectify this design oversight. The modifications are scheduled for implementation in the fall of 2010, during Refueling Outage 14.

The electrical system design in place prior to the modifications being implemented was based on offsite power system voltages no lower than the administrative limits listed in UFSAR Section 8.2.2.5.1 as follows: 120kV system – 112kV minimum and 345kV system – 339.5kV minimum. Calculation DC-0919 determined the onsite electrical system bus voltages available with these voltages on the offsite power system based on the starting voltage requirements for motors, and compared to available bus voltages. The inspectors determined that these calculations were non-conservative because motor starting voltage requirements were based on 70 percent of motor rated voltage at the terminals, rather than on the voltages stipulated in the motor specifications. These voltages were as follows:

- RHR Motors 80 percent (Specification 3037-A);
- Core Spray Motors 90 percent (Specification 3037-A); and
- 460V Motors (except MOVs) 85 percent (Specification 3067).

The inspectors determined that this error stemmed, in part, from the licensee canceling calculation DC-5264, which analyzed 460Vac motor starting capability during accident load sequencing.

Motor starting voltage less than the specified minimum could result in inadequate load torque, slow starting, overheating, or tripping of overcurrent protective devices. These factors were not evaluated in the calculation. The inspectors noted that DC-0919, Attachment "I," Revision F, which contained the static motor starting results, and DC-0919, Attachment "O" (from ECR 35621-1), which was a dynamic study, showed considerably different results. For example, the minimum voltage at the terminals of RHR Pump "A" during starting in Attachment "O" was 85.48 percent, whereas the voltage shown in Attachment "I" was 82.54 percent. The licensee confirmed that the dynamic analysis in Attachment "O" was non-conservative due to incorrect modeling of the SS Transformer No. 64 transformer automatic LTC. In addition, Attachment "I" was determined to be non-conservative because it did not take the 2.1 percent step voltage decrease at the start of an accident described in calculation DC-0919, Assumption 5.1, and did not take into account the effect of the two percent deadband on the SS Transformer No. 64 LTC. The licensee performed an operability evaluation, EFA-R14-10-004, which the inspectors determined to be incomplete because it did not address the case where 480V motors were started simultaneously with the large ESF motors during accident load sequencing, did not address the step voltage decrease occurring on the trip of the unit, and did not address the transient response time of voltage regulators on the Division 2 480V buses. The licensee revised the operability analysis and was able to demonstrate operability; however a detailed review of the operability analysis was not completed. The inspectors determined that the components with the lowest margin were the control complex HVAC chiller supply and return motors.

Analysis: The inspectors determined that the failure to perform adequate calculations to demonstrate that motors had sufficient voltage to start during accidents was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor because the finding was associated with the Barrier Integrity cornerstone attribute of design control and affected the cornerstone objective of provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee failed to demonstrate that the approved design was adequate to ensure safety-related motors had sufficient voltage to start if safety buses remained connected to offsite power during a LOCA with normal offsite power system voltages.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, and Table 4a for the Barrier Integrity Cornerstone. The inspectors determined that there was only a degradation of the radiological barrier function provided for the control room. As such, the finding was determined to be of very low safety significance (Green).

The inspectors determined the primary cause of this issue was related to Human Performance, Resources, which requires complete, accurate, and up-to-date design documentation, including calculations and procedures, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2.(c)])

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, as of January 25, 2010, the licensee's design control measures failed to verify the adequacy of design of the onsite electrical distribution system. Specifically, the inspectors identified that the licensee failed to properly analyze motor starting voltage requirements while the safety buses were connected to offsite power. Because this violation was of very low safety significance and was entered into the licensee's corrective action program as CARDs 10-20748, and 10-21733, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000341/2010006-02, Inadequate Motor Starting Voltage Calculations)

(3) Inadequate Procedures for Controlling Availability of 120kV System Voltage

Introduction: The inspector identified a finding of very low safety significance with an associated NCV of TS 5.4.1.a, "Procedures" for the licensee's failure to translate design requirements for the availability of offsite power into procedures. Specifically, the licensee failed to translate the 2.1 percent switchyard voltage drop criteria assumed in calculation DC-0919 into station operating Procedures ODE-12, "Operations Department Expectations," Revision 18; MOP05, "Control of Equipment," Revision 30, and 20.300.Grid, "Grid Disturbance," Revision 2.

Description: Calculation DC-0919, Assumption 5.1, identified that a 2.1 percent step voltage decrease could occur on the 120kV offsite power system on the trip of the unit. This assumption was necessary because SS Transformer No. 64, which supplies power to the Division 1 buses from the 120kV switchyard, was equipped with an automatic LTC. During normal operation, the LTC normalizes voltage on the 4160V bus. When a sudden switchyard voltage decrease occurs, such as may occur on the trip of the unit, the voltage decrease is reflected onto the 4160V buses. The degraded voltage relays on the Division 1 4160V safety buses featured a nominal 44 second time delay to afford time for the LTC to compensate for this voltage decrease and raise the bus voltage above the reset setpoint (99.8 percent of bus rated voltage) of the relays. If the voltage decrease exceeded the value assumed in the calculation, the LTC might not have sufficient time to adjust voltage to the required value before the degraded voltage relay scheme times out, and grid separation occurs.

The inspectors noted that station and system operations procedures intended to control voltages on the offsite power system within acceptable ranges only addressed the minimum and maximum discrete voltages for the 120 kV systems, and did not address the magnitude of the sudden voltage decrease that could be tolerated. Specifically, Procedure ODE-12, Section 7, Table 1 provided values from which the licensed limits for operability were derived. Table 1 identified the minimum and maximum discrete values (112kV and 126kV, respectively) for 120kV system voltage and did not address the sudden decrease in voltage that could be tolerated, as discussed in calculation DC-0919. Similarly, Procedure 20.300.GRID provided criteria for assessing operability of the offsite power supplies based on minimum voltages only, instead of including voltage drop criteria for the 120kV system. Procedure MOP5, Section 6.13 discussed conditions where the offsite power supplies would be considered inoperable, but these did not include exceeding the voltage drop criteria analyzed in Calculation DC-0919. In response the inspectors concerns, the licensee issued a CARD and initiated monitoring of voltage drop criteria. The CARD stated that as of March 3, 2010, ITC Transmission added the 2.1 percent voltage drop limits on Buses 101 and 102 for real time contingency analysis.

Analysis: The inspectors determined that the failure to translate design criteria for the operability of 120kV offsite power supply into procedures was contrary to TS 5.4.1a, "Procedures," and was a performance deficiency.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure the availability of the 120kV power source to 4160V safety buses by implementing procedural controls to ensure that the step voltage decrease on the trip on the Fermi generating unit did not exceed the 2.1 percent value analyzed in calculation DC-0919. The finding was also similar to Example 3.j. of IMC 0612, Appendix E. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, and Table 4a for the Mitigating Systems Cornerstone. The inspectors answered "No" to each of the questions in Column 2. Therefore, the finding screened as having very low safety significance (Green).

The inspectors determined the primary cause of this issue was related to Human Performance, Resources, which requires complete, accurate and up-to-date design documentation, including calculations and procedures, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)])

Enforcement: Technical Specification 5.4.1.a, requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.

Regulatory Guide 1.33, Appendix A, Paragraph 6, "Procedures for Combating Emergencies and Other Significant Events," Item c addresses loss of electrical power and degraded power sources.

Licensee Procedures ODE-12, "Operations Department Expectations," Revision 18, MOP05, "Control of Equipment," Revision 30, and 20.300.Grid, "Grid Disturbance," Revision 2, address loss of electrical power and degraded power sources.

Contrary to the above, as of January 25, 2010, the licensee failed to establish a procedure to address degraded power sources. Specifically, the licensee failed to translate switchyard voltage drop criteria determined in calculation DC-0919 into Procedures ODE-12, MOP05, and 20.300.Grid. Because this violation was of very low safety significance, and was entered into the licensee's corrective action program as CARD 10-21791, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000341/2010006-03, Inadequate Procedures for Controlling Availability of 120kV System Voltage)

(4) Failure to include Turbine Building Heating, Ventilation and Air Conditioning Fans in the Scope of the Maintenance Rule Program

Introduction: The inspectors identified a finding of very low safety significance (Green) with and associated NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for the failure to include the TBHVAC fans within the scope of the Maintenance Rule program. Failure of all three fans could cause an increase in steam tunnel temperatures that would lead to a forced shutdown, i.e., manual scram, in anticipation of a Group 1 isolation (MSIV closure) resulting in a reactor trip.

Description: As a part of the inspection sample and discussions with the resident inspectors, the inspectors selected the TBHVAC system for review based on the historical events and evaluations of recent failures of the systems exhaust fans. The inspectors reviewed corrective action program documents, root cause evaluations, maintenance rule procedures and scoping documents, preventive maintenance procedures, system operating procedures, and system design documents.

The TBHVAC system exhaust fans have experienced approximately 10 catastrophic failures since 1990, with an increase in the frequency of failure or periodicity of operation with degraded fans, over the past ten years from 1999-2010. The TBHVAC system recently degraded to a point where no exhaust fans were operable and the licensee was forced to take compensatory action to limit and monitor the temperature in the turbine building steam tunnel for any increase, which might have challenged trigger points established in the operational decision making issue (ODMI) plan, which could have spurred the licensee into a forced shutdown in anticipation of a reactor trip.

The inspectors reviewed Maintenance Rule (MR) Evaluation 95-010, which provides the basis for not including the TBHVAC system in scope of the program. The licensee stated that the TBHVAC system did not meet any of the requirements in 10 CFR 50.65 to be a MR system. The licensee considered that for non-safety-related systems, structures, or components (SSCs) to be considered important, they must add significant value to the mitigation function of an emergency operating procedure by providing the total or a significant fraction of the total functional ability required to mitigate core damage or radioactive release where the significance determination was made based on utility specific technical judgment.

The licensee provided additional justification for excluding the TBHVAC system from the MR program in MR Program position papers 97-006 and 98-023. The inspectors identified that the licensee referenced a modification plan that was never implemented, that would have been credited for alleviating high steam tunnel temperatures. The licensee entered this issue into their corrective actions program for evaluation. The inspectors also identified in the licensee's consideration of the criteria in (b)(2) of 10 CFR 50.65, instead of asking if failure of the SSC would cause a scram or actuation of a safety-related system, the licensee asked, "would failure of the SSC cause a safety-related SSC to fail to perform its function"? The inspectors identified that 10 CFR 50.65(b)(2)(iii), "Requirements for Monitoring Maintenance at Nuclear Power Plants," states that non-safety-related SSCs whose failure could cause a reactor scram or actuation of safety-related systems shall be included in the MR program. The licensee stated in its basis document, and in more recent ODMIs, that if all three fans in the TBHVAC system fail, plant shutdown would commence at 193 degrees

Fahrenheit (°F) and at 195°F the reactor mode switch would be placed in shutdown. At temperatures greater than 200°F, group one isolation could occur, causing a reactor scram.

Analysis: The inspectors determined that the licensee's failure to scope the TBHVAC system into its maintenance rule program is a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Initiating Events cornerstone attribute of Equipment Performance, and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, because the TBHVAC fans were initially not scoped into the Maintenance Rule program, the licensee could not provide reasonable assurance that the preventive maintenance being performed ensured the system remained capable of performing its intended function. The finding was also similar to Example 7.d. of IMC 0612, Appendix E.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, and Table 4a for the Transient Initiators Cornerstone. The inspectors determined that the finding did not contribute to the likelihood that mitigation equipment or functions would not be available. Therefore, the finding screened as having very low safety significance (Green).

The inspectors determined there was no cross-cutting aspect associated with this finding because the system was originally scoped out during the initial baseline evaluation for Maintenance Rule in June 1995; therefore, was not reflective of current performance.

Enforcement: Title 10 CFR 50.65(b)(2)(iii) "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," states that non-safety-related SSCs whose failure could cause a reactor scram or actuation of a safety-related system shall be scoped in the monitoring program as specified in 10 CFR 50.65(a)(1).

Contrary to the above, from June 1995 through January 25, 2010, the licensee failed to adequately scope into the Maintenance Rule program the TBHVAC fans, whose intended function is to control temperature and building pressure below design limits to preclude reaching temperatures that could lead to the initiation of manual or automatic reactor trips. Because this violation was of very low safety significance and was entered into the licensee's corrective actions program as CARDs 10-21757, 10-21761, and 10-21777, this violation is being treated as a NCV with Section VI.A.1 of the Enforcement Policy. (NCV 05000341/201006-04, Failure to include Turbine Building Heating Ventilation and Air Conditioning Fans in the Scope of the Maintenance Rule Program).

(5) Inadequate Calculation for DC Short Circuit Analysis

Introduction: The inspectors identified a finding of very low safety significance with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" for the licensee's failure to correctly translate cable resistances into dc calculations. The inspectors noted that the licensee failed to use conservative assumptions, verify the accuracy of design inputs and parameters, and avoid conceptual errors, which led to a decrease in margin in the short circuit calculation.

Description: During review of calculation, DC-0214, "Short Circuit Calculation for dc System," the inspectors identified several errors which reduced the overall margin of the dc system. Specifically, the inspectors determined that the licensee did not recognize the actual cable wiring configuration and instead incorrectly calculated the cable resistance for HPCI and RCIC MOVs by taking the individual length of a feed cable conductor and multiplying it by four. The inspectors determined that this resulted in overestimating the cable resistance by a factor of 2.285 which resulted in reduction in the short-circuit current available to the breakers. The inspectors determined that the incorrect and non-conservative methodology affected the breaker short-circuit rating not only for the individual MOV breakers, but also the main feed breakers for both divisions. In addition to this error, the inspectors also identified that the short circuit calculation used non-conservatively high values for battery inter-cell connection resistance and omitted the battery terminal connection resistance, which again decreased the available short-circuit current to the breakers. The inspectors identified a third error – using only half of the MOV circuit resistance values -- that was conservative. The inspectors determined that the current configuration was still acceptable; however, future load additions could result in exceeding the short circuit rating of the main feed breakers resulting in the potential for a loss of either dc division.

In addition to the errors in the short circuit calculation, the inspectors identified that the incorrect methodology for calculating cable resistance was also used in calculations DC-4943, "DC Equipment Operability, DC-5351, "DC Voltage Drop, DC-0213, "Battery and Charger Sizing," and mechanical calculation 021-014-AWI for computing dc MOV thrust margins. The inspector determined that the methodology, while still incorrect, resulted in conservative results for these calculations. Similarly, the licensee also failed to include the battery inter-cell and terminal connection resistance in calculation DC-0213. The inspectors identified additional errors in the above calculations, which either had minor effects or did not result in a significant loss of margin. These errors ranged from simple arithmetic issues to failing to select the worst case first minute battery terminal voltage to listing timing sequences and corresponding voltages that did not agree with the UFSAR accident sequences. Based on the extent of the issues, and when combined with the errors discovered in the ac electrical calculation DC-0919, as described above, the inspectors determined that there was a concern with the licensee's design control process in the electrical area. The inspectors noted that all the calculations were revised within the last two years, with calculation DC-4943 having been revised several times without identifying and correcting the incorrect timing sequences.

Analysis: The inspectors determined that the licensee's failure to incorporate conservative cable resistance values into the dc short circuit calculation was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor because the issue was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, if the errors were not corrected, they could lead to one or both dc divisions being lost if additional loads were added to the main feed breakers. The finding was also similar to Example 3.j of IMC 0612, Appendix E.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, Table 4a for the Mitigating Systems Cornerstone. The inspectors answered "No" to each of the questions in Column 2. Therefore, the finding screened as having very low safety-significance (Green).

The inspectors concluded that the primary cause of the finding was related to the cross-cutting element of Human Performance, Resources, which requires complete, accurate and up-to-date design documentation, including calculations and procedures, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)])

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control" requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of suitable testing program.

Contrary to this requirement, as of January 25, 2010, the licensee's design control measures failed to ensure the adequacy of the design for the RCIC and HPCI MOVs. Specifically, the licensee failed to ensure that the cable resistances used in the short circuit analysis were conservative to ensure adequate current to the main feed breakers. Because this violation was of very low safety-significance and because the issues were entered into the licensee's corrective action program, as CARDS 10-20981, 10-20982, 10-20992, 10-21209, 10-21265, 10-21285, 10-21311, 10-21564, 10-21567, and 10-21591, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000341/2010006-05, Inadequate Calculation for DC Short Circuit Analysis)

.4 Operating Experience

a. Inspection Scope

The inspectors reviewed five operating experience issues to ensure that NRC generic concerns had been adequately evaluated and addressed by the licensee. The operating experience issues listed below were reviewed as part of this inspection:

- IN 2009-02, "Biodiesel in Fuel Oil Could Adversely Impact Diesel Engine Performance";
- OE 28932, "Higher than Expected Failure Rate on Initial License Training Exam (Catawba)";
- IN 2009-09, "Improper Flow Controller Settings Renders Injection Systems Inoperable and Surveillance Did Not Identify";
- IN 2008-02, "Findings Identified During Component Design Bases Inspections"; and
- GL 2007-001, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Trip."

b. Findings

(1) Failure to Adequately Evaluate Industry Operating Experience for Applicability to Fermi 2

Introduction: The inspectors identified a finding of very low safety significance for the failure to follow procedures when evaluating industry operating experience for applicability to Fermi 2 Power Plant. Specifically, the inspectors identified three instances where the licensee did not evaluate and take corrective actions on industry operating experience that was applicable to the Fermi 2 site. This did not meet the requirements in licensee's operating experience Procedure MLS04, "Fermi 2 Licensing/Safety Engineering Conduct Manual for Operating Experience Program," Revision 22.

Description: The inspectors identified three examples where the licensee did not follow its internal procedure for review and disposition of industry operating experience.

1. On February 4, 2008, the licensee initiated CARD 08-20775 in response to industry operating experience regarding "digital feed water control system power supply failures causing automatic reactor scram with complications including RCIC trip while injecting into the reactor vessel." On July 28, 2008, this CARD was closed out without addressing RCIC trip while injecting into the reactor vessel due to changes made to the RCIC flow controller tuning parameters. Specifically, no attempt was made to address the applicability of RCIC flow controller tuning parameters to Fermi 2.

2. On February 21, 2008, the licensee initiated CARD 08-21245 after learning about "changes to flow controller tuning parameters contributed to RCIC pump trip at Perry." This CARD was closed out on April 17, 2008, without clearly reviewing and determining its applicability to Fermi 2 despite the fact that a note was added to the CARD that stated "CARD 07-24478 was written to address concerns regarding HPCI/RCIC system tuning based on OE 25305 and OE 15574 and that CARD was closed without action." The licensee issued CARD 09-24985 on June 25, 2009, in response to NRC Information Notice (IN) 2009-09 "Improper Flow Controller Settings Renders Injection Systems Inoperable and Surveillance Did Not Identify" to review for impact to Fermi. This appeared to be the fourth CARD in a series that the licensee initiated on the same issue dealing with the HPCI and RCIC controller tuning parameters. The action plans described in this CARD appeared to be reasonable in resolving the issue. However, as of February 26, 2010, this CARD was still open and the issue unresolved.

3. On April 22, 2008, the licensee initiated CARD 08-22662 in response to NRC IN-2008-02 "Findings identified during component design bases inspections." This CARD was closed out on June 17, 2009, without addressing all the issues identified in the NRC IN. Specifically, the IN had described a finding at Quad Cities related to the Quad Cities safety-related Division 1 and 2 batteries having non-conservative inter-cell and terminal connection resistance values (≤ 150 micro-ohms (μΩ) per connection) prescribed in the Quad Cities TS. Fermi had the same resistance values in its TS and failed to evaluate this finding for applicability to Fermi. During the inspection, the inspectors brought the issue to the attention of the licensee and the licensee indicated that they had initiated CARD 09-27471 on September 25, 2009, in preparation for the CDBI but had not

resolved the issue. The inspectors performed a quick calculation and determined that the Fermi Division 2 safety-related 130/260 VDC battery would become inoperable due to negative voltage margin if every inter-cell and terminal connection resistances was allowed to reach 150 μΩ as allowed by the Fermi Technical Specifications.

Based on the inspectors' findings, the licensee performed a formal evaluation and took appropriate corrective actions. The licensee also performed an extent of condition review and identified approximately 30 additional operating experience reviews performed within the last 2-year period, which did not meet licensee expectations.

Analysis: The inspectors determined that the licensee's failure to follow operating experience Procedure MLS04 in evaluating industry operating experience for applicability to Fermi on several occasions in the recent past was a performance deficiency warranting a significance evaluation. The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring equipment availability and reliability. Specifically, multiple examples were identified where the licensee failed to ensure that problems identified in industry operating experience were evaluated for applicability to Fermi and corrective actions implemented.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, and Table 4a for the Mitigating Systems Cornerstone. The inspectors answered "No" to each of the questions in Column 2. Therefore, the finding screened as having very low safety significance (Green).

The inspectors concluded that the cause of the finding was related to the cross-cutting element of Problem Identification and Resolution, Operating Experience, because the licensee failed to systematically collect, evaluate and communicate to affected internal stakeholders in a timely manner relevant internal and external operating experience to support plat safety (IMC-0310, Section 06.02.b.(1) [P.2(a)])

Enforcement: The inspectors determined that no violation of regulatory requirements had occurred. The licensee entered these issues in their corrective action program as CARDs 10-20898, 10-20912, and 10-21122. (FIN 0500341/2010006-06, Failure to Adequately Evaluate Industry Operating Experience for Applicability to Fermi 2).

.5 Modifications

a. Inspection Scope

The inspectors reviewed 11 permanent plant modifications related to selected risk-significant components to verify that the design bases, licensing bases, and performance capability of the components had not been degraded through modifications. The modifications listed in the "List of Documents Reviewed" of this report, were reviewed as part of this inspection effort.

b. Findings

(1) Inadequate Calculations for Backfit Modifications

Introduction: The inspectors identified a finding very low safety significance with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for failing to perform adequate calculations to support modifications to the Fermi 2 degraded voltage protection scheme. The first example involved the failure to analyze motor starting capability based on voltages afforded by the degraded voltage relay scheme. The second example involved the failure to perform conservative calculations to show that spurious grid separation would not occur during accidents due to action of the degraded voltage relays.

Description: The NRC previously determined that the design of the Fermi degraded voltage protection scheme had failed to consider a simultaneous LOCA with a degraded voltage, in that the time delay for actuation of the degraded voltage protection exceeded the time delay assumed in the UFSAR accident analysis (see Inspection Report 05000341/2008-008). The NRC required that the licensee rectify this design oversight.

Modification EDP-35621, Revision 0 (dated March 02, 2009), changed the time delay of the degraded voltage relay scheme from a maximum of 46.2 seconds to a maximum of 8.4 seconds, to ensure that if a degraded grid condition occurred concurrent with a LOCA, the safety-related buses would be disconnected from the degraded offsite power source and ESF loads would have power available from the diesel generators within the time assumed in the accident analysis. However, EDP-35621 also concluded that grid separation and load shedding might occur for large motor starting with initial bus voltage at the lower end of the range above the secondary voltage relay settings. The "lower end of the range" referred to was the allowable range of switchyard voltage defined in UFSAR Section 8.2.2.5.1. Since a design that would allow separation of the offsite power supply if an accident occurred with switchyard voltage within its expected range was not acceptable, EDP-36014, dated September 22, 2009, was issued to replace the existing ITE 27-D degraded voltage relays with Model ABB 27-N relays. The new relays would feature a smaller deadband, thereby providing a lower voltage for relay reset, and more margin for spurious grid separation avoidance. The revised setpoints of the new relays were evaluated in ECR-35621-1, Revision A, dated September 11, 2009, by performing dynamic motor starting studies using ETAP. The inspectors determined that these motor starting studies were not adequate because they did not address whether motors had adequate voltage to start based on voltage afforded by the new degraded voltage relays. In addition, the studies were non-conservative for purposes of showing that the relays would be able to reset and avoid spurious grid separation if offsite voltage remained within its expected range during accidents.

Motor Starting Voltage

None of the approved modification packages described above evaluated whether safety-related motors would have adequate voltage to start, considering the worst case voltages that could exist on the safety-related buses during an accident. During transient conditions at the onset of an accident, starting the large ESF motors would cause the degraded voltage relays to drop out, initiating the delay timers. If voltage recovered above the relay reset setpoint before the time delay expired, then the safety buses would remain connected to offsite power. Engineering Change Request

(ECR)-35621-1 revised the nominal reset setpoint for the Division 1 degraded voltage relays from 95 percent X 103 percent = 97.85 percent to 95 percent X 101 percent = 95.95 percent. Calculation DC-0919, Appendix C, established a two percent tolerance for the degraded voltage relays that was also adopted in ECR-35621-1. Applying the tolerance in the negative direction, the Division 1 relays could reset as low as 95.95 percent X 98 percent = 94.03 percent. This is lower than the minimum voltage that would occur with the existing design, 97.85 percent X 98 percent = 95.89 percent. Because the degraded voltage modifications have not yet been installed in the field, this issue did not affect current operability.

Spurious Grid Separation

ECR-35621-1 evaluated the time delay and reset setpoints of the new ABB-27N relays scheduled to be installed by EDP-036014 as part of the modifications to comply with NRC backfit orders relating to degraded voltage concerns. The ECR added Attachment "O" to Calculation DC-0919. This attachment was a dynamic ETAP motor starting study intended to demonstrate the adequacy of the revised relay reset setpoint and time delays. Because Attachment "O" was a dynamic model, it showed both the magnitude and duration of the voltage dips and was used in lieu of the separate static and dynamic models used in the previous version of the calculation.

As stated above, ECR-35621-1 revised the nominal reset setpoint for the degraded voltage relays and adopted a two percent tolerance for the degraded voltage relays. Applying the tolerance in the positive direction, a maximum reset voltage was determined as 95.95 percent X 102 percent = 97.87 percent. The Attachment "O" showed that the voltage on Buses 64B and 64C recovered to 97.89 percent within 3.5 seconds following the start of the Core Spray Pumps during an accident, providing voltage margin of 0.02 percent.

The inspectors compared the static motor starting results from calculation DC-0919, Revision F, Attachment "I" to the dynamic study contained in Attachment "O" from ECR-35621-1. The inspectors noted that the Attachment "I" and Attachment "O" showed considerably different results. For example, the minimum voltage at the terminals of RHR Pump "A" during starting in Attachment "O" was 85.48 percent, whereas the voltage shown in Attachment "I" was 82.54 percent. The inspectors determined that the dynamic analysis in Attachment "O" was non-conservative due to incorrect modeling of the SS Transformer No. 64 transformer automatic LTC. Consequently, considering the approximately 3 percent error in the Attachment "O" results versus the calculated reset margin of 0.02 percent, the inspectors determined that the conclusion in ECR-35621-1 that the new design would prevent spurious grid separation were not justified. Because the degraded voltage modifications have not yet been installed in the field, this issue did not affect current operability.

Analysis: The inspectors determined that the failure to perform adequate calculations to support modifications to the Fermi 2 degraded voltage protection scheme was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Design Control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to confirm the adequacy of new degraded voltage relay setpoints by ensuring motors had adequate voltage to start if safety buses remained connected to offsite power during a LOCA with degraded voltage. In addition, the licensee failed to ensure that spurious grid separation would not occur during accidents due to action of the degraded voltage relays. The finding was also similar to Example 3.j. of IMC 0612, Appendix E.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 04, and Table 4a for the Mitigating Systems Cornerstone. The inspectors answered Question 1 positively. Therefore, the finding screened as having very low safety significance (Green).

The inspectors determined the primary cause of this issue was related to Human Performance, Resources, which requires complete, accurate, and up-to-date design documentation, including calculations and procedures, to assure nuclear safety. (IMC 0310, Section 06.01.b.(3) [H.2(c)])

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, as of January 25, 2010, the licensee's design control measures failed to verify the adequacy of design of the safety-related degraded voltage protection scheme scheduled to be installed during RFO14, in October 2010. Specifically, the inspectors identified that the licensee failed to analyze motor starting voltage requirements, and to ensure that spurious grid separation would not occur in calculations to support modifications for the degraded voltage protection scheme. Because this violation was of very low safety significance, and was entered into the licensee's corrective action program as CARDs 10-21733 and 10-21792, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. (NCV 05000341/2010006-07, Inadequate Calculations for Backfit Modifications)

.6 Risk-Significant Operator Actions

a. Inspection Scope

The inspectors performed a margin assessment and detailed review of six risk-significant, time critical operator actions (six samples). These actions were selected from the licensee's PRA rankings of human action importance based on risk achievement worth values. Where possible, margins were determined by the review of the design basis and USAR response times and performance times documented by job performance measures results. For the selected operator actions, the inspectors performed a detailed review and walk through of associated procedures, including observing the performance of some actions in the station's simulator and in the plant for other actions, with an appropriate plant operator to assess operator knowledge level, adequacy of procedures, and availability of special equipment where required.

The following operator actions were reviewed:

- Action to Locally Operate an RHR Motor Operated Valve;
- Action to Locally Tie in an Alternate Battery Charger;
- Action to Locally Cross-Tie Division 1 to Division 2 NIAS Control Air;
- Action to Align 4160V Maintenance Cross-Tie Breakers 64T/65T to Cross-Tie Division 1 to Division 2 Following a Loss Of Offsite Power and the Failure of Diesel Generators on One Division of ESF Power;
- Action to Keep MSIV's Open Following a Reactor Scram; and
- Action to Start the Standby Feedwater Pump to Maintain RPV Water Level.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered Into the Corrective Action Program

a. Inspection Scope

The inspectors reviewed a sample of the selected component problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design issues. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action program. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA6 Meeting(s)

.1 Exit Meeting Summary

On February 26, 2010, the inspectors presented the inspection results to Mr. J. Plona and other members of the licensee staff. On April 26, 2010, the inspectors conducted a re-exit of the inspection results with Mr. J. Plona, Mr. M. Caragher, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Several documents reviewed by the inspectors were considered proprietary information and were either returned to the licensee or handled in accordance with NRC policy on proprietary information.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Plona, Site Vice President
M. Caragher, Nuclear Engineering Director
T. Conner, Plant Manager
K. Howard, Manager, Plant System Engineering
J. Davis, Manager, Nuclear Training
R. Johnson, Manager, Licensing
S. Hassoun, Supervisor, Licensing and Compliance
R. Salmon, Principal Engineer, Licensing
J. Tigai, Engineering Supervisor, NQA
J. Moyers, Manager, NQA
J. Ellis, Work Management, Manager
G. Strobel, Operations Manager
W. Meath, Operations Department
J. Dudlets, Supervisor, PSE, Electrical/I and C
K. Lawson, Principal Engineer, PSE
B. Sanders, PSE Mechanical Engineering
B. Waybright, PSE Electrical/I and C
P. Temple, PSE Mechanical Civil
J. Korte, Manager, Nuclear Strategy

Nuclear Regulatory Commission

M. Morris, Senior Resident Inspector
J. Benjamin, EB2 Acting Branch Chief, RIII
F. Tran, Projects Inspector, RIII

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000341/2010006-01	NCV	Inadequate Calculations for Availability of 120kV System Offsite Power
05000341/2010006-02	NCV	Inadequate Motor Starting Voltage Calculations
05000341/2010006-03	NCV	Inadequate Procedures for Controlling Availability of 120kV System Voltage
05000341/2010006-04	NCV	Failure to include Turbine Building Heating Ventilation and Air Conditioning Fans in the Scope of the Maintenance Rule Program.
05000341/2010006-05	NCV	Adequate Calculation for DC Short Circuit Analysis
05000341/2010006-06	FIN	Failure to Adequately Evaluate Industry Operating Experience for Applicability to Fermi 2
05000341/2010006-07	NCV	Inadequate Calculations for Backfit Modifications

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

CALCULATIONS

Number	Description or Title	Revision
DC-0106 Vol. 1	Control Valve Sizing and Selection RHR, RHRSW, EESW, & DGSW Systems	D
DC-0213	Sizing of 130/260 V Batteries	U
DC-0214	Short Circuit Calculation For DC System	H
DC-0230 Vol. 1	Core Spray System Design Calculations	G
DC-0559 Vol. 1	Volume of Reservoir – RHR Complex	C
DC-0835	System Voltage Study (superseded)	E
DC-0919	Undervoltage Relay Setpoints	F
DC-2712 Vol. 1	Specifications of Motor Operated Valve Stroke Times	X
DC-3141 Vol.1A	Piping Stress Report	04/14/86
DC-4388	Protective Relay Settings for 13.2KV 4.16KV and 480V Auxiliary Equipment	G
DC-4943	DC Equipment Operability	O
DC-5036 Vol. 1	Maximum Differential Pressure for MOVs E1150-F068A & E1150-F068B	0
DC-5041	Maximum Expected Differential Pressure for Valves E2150F004A and E2150F004B	A
DC-5079 Vol. 1	LPCI and CS Pump Acceptance Criteria and LOCA Input Verification	D
DC-5084 Vol. 1	Seismic Review of Hoist Chains in Safety Related Buildings	A
DC-5111	RHR and CS Pump Motor Overcurrent Relay Time Current Curve	A
DC-5264	Operability Evaluation of Electrical Equipment During System Transient due to LPCI & LPCS Initiation Following DBA-LOCA with Degraded Grid (canceled)	A
DC-5351	DC Control Voltage Calculation for Division 1	G
DC-5405 Vol. 1	Third Party Review of Thrust Capacities of Wm. Powell Co. MOVs (Report No. 455597)	G
DC-5424 Vol. 1	Ventilation Air Quantity Required for RHR Complex Rooms	C
DC-5489 Vol. 1	Ventilation Air Quality for Diesel Generator Room 11	A
DC-5719 Vol. 1	Minimum Required Target Thrust (MRTT) for Generic Letter 89-10 Gate, Globe, and Quarter-Turn Valves (torque)	P
DC-5894 Vol. 1	RHR Reservoir Replenishment Requirements	A
DC-5945 Vol. 1	Design Basis System Parameters for AOVs E11F400A, E11F400B, E11F400C and E11F400D	A

DC-5986	AOV Stem Force Requirement and Actuator Capability Calculation for E11F400A, E11400B, E11400C, E11400D	A
DC-6186	Electrical Loading Short Circuit Current and Running Voltages for 4.15kV 480 Volt and 120 Volt System using ETAP Power Station (superseded)	C
DC-6249 Vol. 1	Service Water Systems Calibrated Hydraulic Model	0
DC-6258	Division I and Division II Switchgear Rooms Components Operability Evaluation at 122°F (50°C)	---
DC-6309 Vol. 1	Design Basis of EDG Fuel Oil and Day Tank Level Requirements and Setpoints	0
DC-6348	QL1 MOV Thermal Overload Heater Sizing	O
DC-6397 Vol. 1	Calculation of Safety Related GL 89-10/96-05 and non-GL 89-10/ 96-05 ACMOV Motor Terminal Voltages	0
DE-FR-041	Seismic and Weak Link Analysis of 3" Fisher Air Operated Valves	1
DSN 455597	Reevaluation of Thrust Capacities for Powell Valves	09/21/94
DSN 729190	Survivable Thrust Capacities for Powell Valves	08/24/94
021-014-AWI	DC MOV Thrust Margins	1

CORRECTIVE ACTION PROGRAM DOCUMENTS GENERATED AS A RESULT OF THE INSPECTION

Number	**Description or Title**	**Date**
10-20695	Potential Safety Concern: Loose Cabinet Screws Unable to be Tightened	01/27/10
10-20700	NRC Concern: DFP Tach Generator Wiring	01/27/10
10-20716	4160V Breaker Not Properly Staged After Being Racked Out.	01/27/10
10-20720	NRC CDBI Inspection Identified Corrosion on RHRSW Pump 'A' Pedestal	01/27/10
10-20723	2010 CDBI Item: Evaluate the Effect of P43R403C Reading Below 0 psid	01/27/10
10-20746	4160V Breaker Not Properly Staged After Being Racked Out	01/27/10
10-20747	2010 CDBI Div I/II Switchgear Room Cabinets Have Loose Knob Screws	01/28/10
10-20748	CDBI Identified Canceled DC-5264 May Have To Be Reinstated	01/28/10
10-20764	2010 CDBI issue - Catch Hose Not Tracked In Accordance With RWWI-02	01/28/10
10-20771	DC-4943 Vol I Issued with TSR-Config Instead of TSR-ABN	01/29/10
10-20776	2010 CDBI, Enhancements for 23.309, 260/130V DC ELECTRICAL SYSTEM	01/29/10
10-20784	2010 CDBI - Missing Continuation Arrow on Dwg. M-2135-1	01/29/10
10-20787	2010 CDBI - Water under Diesel Fire Pump Battery Box	01/29/10
10-20793	2010 CDBI - Revise Hoist And Rigging Procedures	01/29/10
10-20819	CDBI Question on Fuel Clad Temp	01/29/10

CORRECTIVE ACTION PROGRAM DOCUMENTS GENERATED AS A RESULT OF THE INSPECTION

Number	Description or Title	Date
10-20823	CDBI 2010 Concern Revise DC-0919 to Include Correct LTC volts per Tap	01/29/10
10-20861	2010 CDBI - Minor Changes Required to Operator Action HERFACHRPLNT	02/01/10
10-20888	2010 CDBI Revise DC-6397 to Include Voltage Bounding Condition Discussion	02/02/10
10-20894	2010 CDBI DC-0919 Requires Revision To Properly Verify Design Inputs	02/02/10
10-20898	2010 CDBI, Operating Experience Review	02/02/10
10-20912	Reevaluate INPO SEN 271, Digital Feedwater Control System Power Supply Failures Cause Automatic Reactor Scram with Complications, for Impact to Fermi	02/02/10
10-20928	Evaluate Improved Trending Method for Key Calculation Reviews/Design Calc Project	02/02/10
10-20981	2010 CDBI - Design Calculation Improvements for DC-4943 "DC Equipment Operability	02/04/10
10-20982	2010 CDBI DC-0213 Improvement	02/04/10
10-20992	2010 CDBI RFI No -G027-4 (CDBI -0127) NRC Inspection Question Regarding Temperature Requirement for DC-4943	02/04/10
10-21038	2010 CDBI Procedure Changes associated with 64 Xfmr Load Tap Changer Manual Ops	02/05/10
10-21101	2010 CDBI ETAP Calculation Process Question	02/08/10
10-21122	2010 CDBI Inspection Item - Missed Opportunity during 2009 CDBI Self-Assessment	02/08/10
10-21209	2010 CDBI - Discrepancy Found in Design Calculation DC-4943 "DC Equipment Operability	02/11/10
10-21212	2010 CDBI - Review Manipulation Timing Analysis of Operator Action HERFRMOVPLNT	02/10/10
10-21256	2010 CDBI Inspection Item - Error Found in RID-78612	02/11/10
10-21265	2010 CDBI DC-4943 Needs Revision	02/11/10
10-21283	2010 CDBI Questions On The Voltage Boundaries in DC-0919 Volume 1 Revision F	02/11/10
10-21285	2010 CDBI - Discrepancy Found During Document Review	02/11/10
10-21287	2010 CDBI - Installation of Washers on 2PA Found Reversed	02/11/10
10-21311	2010 CDBI DC-0214 Validation of Battery Resistance	02/12/10
10-21317	CDBI 2010 - Data Recorded in ICSS is Inconsistent with Loop Instructions	02/12/10
10-21320	2010 CDBI - Design Calc Discrepancy	02/12/10
10-21332	Enhancement to Various IST-Related Surveillance Procedures	02/12/10
10-21564	Improper Output Torque Capability Used for MOV E4150F012 Margin Determination	02/19/10

CORRECTIVE ACTION PROGRAM DOCUMENTS GENERATED AS A RESULT OF THE INSPECTION

Number	Description or Title	Date
10-21567	2010 CDBI Inspection - Design Specification 3071-128-EP Discrepancy	02/19/10
10-21591	2010 CDBI - Found Minor Inconsistencies in DC-0214	02/22/10
10-21733	2010 CDBI DC-0919 LTC and Motor Starting	02/25/10
10-21749	2010 CDBI, Tornado Action Enhancement Associated with RHR Complex HVAC	02/25/10
10-21757	CDBI 2010: Evaluate Previous Maintenance Rule Scoping of U4100 System	02/25/10
10-21761	Re-Evaluate the TBHVAC System Exclusion From the Maintenance Rule scope	02/25/10
10-21777	2010 CDBI - Re-evaluate PM Classification and PM Work for TBHVAC Fans	02/25/10
10-21791	2010 CDBI Voltage Drop Limits Not Used at Fermi to Assess 120 Kv Offsite Power	02/26/10
10-21792	2010 CDBI – EDP 35621 Backfit Mod Issue	02/26/10
10-21920	2010 CDBI NRC Questioned Completeness of EFA-R14-10-004	03/03/10
10-21332	Enhancement to Various IST Related Procedures	02/12/10
10-22135	NRC CDBI Item -- Completeness and Accuracy of Information Provided to the NRC	03/12/10

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

Number	Description or Title	Date
98-13970	Ground Detected on 2PC3-14	05/15/98
99-11707	RHRSW Pump Discharge Pressure Gauges No Longer Used in Surveillances	02/08/99
04-01842	Ground Detected on BOP Battery System	11/14/04
04-23862	CTG 11-2 through CTG 11-4 Auto-Started with NO Operator Action	08/25/04
05-10283	Procedure Enhancement for 23.412	01/13/05
05-26492	Design Calculation for RHR Complex Depressurization Is Not Available	11/17/05
06-20446	AFCC 3 Relay OTH Failed During Testing; Event R295060100	01/30/06
06-20534	EDG 12 Trip On Overvoltage When Exciter Reset During Pmt Test Sequence	02/02/06
06-20574	EDG 12 Output Breaker Fails to Open	02/03/06
06-20584	After AVR Replacement, Generator Voltage Could Not be Adjusted Above ~3000V From Local Control Panel	02/05/06
07-10001	NQA Surveillance 06-0125, Fermi Vulnerability to Underground Cable Failures	01/05/07
07-10001-01	Complete Effectiveness Review	10/13/08

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

Number	Description or Title	Date
07-20860	Information Notice 2007-05 Vertical Deep Draft Pump Shaft and Coupling Failures	02/13/07
07-22460	Minimum CST Level for Pump Starting Does Not Protect Minimum Submergence Requirements for CS and SBFW Pumps	05/04/07
07-22838	WANO/IMPO AFI CM.3-1 Calculation Errors	05/22/07
07-23630	UFSAR Anti-Vortex Methodology Non-Conservative	06/11/09
07-23998	CDBI RAI on Two RHR Safety Evaluations	09/23/09
07-27685	Inadequate EDP	11/29/07
08-20544	Test 4.16KV Unshielded RHR Div. 1 Anaconda Cables in RF13	01/29/08
08-22662	NRC Information Notice, IN-2008-02 Findings Identified During Component Design Bases Inspections	04/22/08
08-25007	DC-5003 Enhancements Identified by PSE Independent Challenge Board	08/04/08
08-27182	Declining Trend in RHRSW Pump A Hydraulic Performance	10/29/08
08-27295	RCIC Hydraulic Calculation Quality Review	11/03/08
08-28060	DC-0230 Vol. 1, Core Spray System Key Calculation Review Results	12/03/08
08-28393	WGI Review of Calculation DC-2913, Vol. 1, Rev. N	12/15/08
09-20006	WGI Review Of Design Calculation DC-4943, Vol. I, Revision N	01/02/09
09-21353	Investigate Two NRC Issues Related to PI&R Cross Cutting Aspect of Corrective Action	03/04/09
09-21669	Evaluate NRC IN 2009-02	03/18/09
09-22161	MOV Actuator Very Difficult To Get Into Manual Operation	04/02/09
09-24210	Trip of N. TBHVAC Exhaust Fan Root Cause Team Report	07/10/09
09-24325	Operations Training Review of OE28932 – Initial License Exam High Failure Rate	06/04/09
09-24985	Improper Flow Controller Settings Renders Injection Systems Inoperable and Surveillance Did Not Identify	06/29/09
09-26366	Key Calc Review of DC-5489 Vol. 1, Ventilation Air Quality for EDGs	08/19/09
09-27471	Cell To Cell and Terminal Connection Resistance May Need To Be Addressed In DC-0213	09/25/09
09-28748	Underground Cable Manholes Sump Pump Monitoring	11/11/09
09-28894	EDG 12 Output Breaker Fuse Clips, RM, Loose	11/16/09
09-29829	While Performing 24.307.15 for EDG 12 Observed Lowering Load With No Operator Action	12/23/09
09-29830	EDG 12 Load Not Stable (Decreased Without Demand) During Surveillance Test	12/24/09
09-29843	Failed PMT - EDG 12 Load Not Stable After Replacement of Digital Reference Unit	12/25/09
09-29856	Catastrophic Failure of the North Turbine HVAC Exhaust Fan. Repeat Occurrence	12/27/09

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

Number	Description or Title	Date
10-20147	Battery Operated Emergency Light Fails Discharge Test	01/07/10
10-20432	High Viscosity in EDG 13 Starting Air Compressor	01/19/10
10-20519	Cracked Battery Fill Caps	01/21/10
10-20539	Green Trickle Charge Light is Burned out	01/22/10
10-21657	Center TBHVAC Exhaust Fan Nose Cone Failure	02/23/10

DRAWINGS

Number	Description or Title	Revision
E21-3144-G33	Support Drawing	B
6C721N-2273	RHR Complex Framing Plan EL 590'-0" – Center South Area	AC
6C721N-2274	RHR Complex Framing Plan EL 590'-0" – Center North Area	AF
6C721N-2277	RHR Complex Framing Plan EL 617'-0" – Center South Area	AA
6C721N-2296	RHR Complex Framing Area South Area	0
6I721-2231-01	S/D RCIC Turbine Gland Seal Condenser and Vacuum Pumps	U
6I721-2231-03	S/D RCIC Steam Line Inboard Isolation Valve and Trip and Throttle Valve	Y
6I721-2231-04	S/D RCIC Steam Line Outboard Isolation Valve and Condenser Tank Pump Suction Valve	W
6I721-2231-05	S/D RCIC Pump Discharge Valves to Feed water Header	X
6I721-2231-06	S/D RCIC suppression Pool Isolation Valves	S
6I721-2231-07	S/D RCIC Valves E51F045 and F046	AA
6I721-2231-08	S/D RCIC Minimum Flow Bypass and Test Valves	AA
6I721-2231-09	S/D RCIC Vacuum Breaker Isolation Valves F062 and F084	T
6I721-2231-10	S/D RCIC Turbine Exhaust and Vacuum Pump Discharge Valves F001 and F002	J
6I721-2231-11	S/D RCIC Steam Inlet Bypass Valve F095	C
6I721-2421-01	Schematic Diagram Reactor Building Closed Cooling Water Pump North P4200C001	L
6I721-2441-01	Schematic Diagram Emergency Equipment Cooling Water System Pump "A" P4400C001A	R
6I721-2571-01	One Line Synchronizing Diagram 4160V System Service and EDG Breakers	E
6I721-2571-2B	One Line Diagram 4160V Bus and Line Potential Connecting Division 1	E
6I721-2572-13	Schematic Diagram 4160V ESS Bus 64C Pos "C8"	P
6I721-2572-14	Schematic Diagram 4160V ESS Bus 64C Pos "C9"	P
6I721-2572-15	Schematic Diagram 4160V ESS Bus "64C" -Pos "C6"	S
6I721-2572-16	Schematic Diagram 4160V ESS Bus 64C Pos "C11"	H
6I721-2572-28	Schematic Diagram 4160V ESS Buses 64B & 64C – Load Shedding Strings	R

DRAWINGS

Number	Description or Title	Revision
6I721-2572-29	Schematic Diagram 4160V ESS Buses 64E and 64F – Load Shedding Strings	M
6I721-2573-07	Schematic Diagram 480V ESS Bus 72C Pos “1B” and “1C”	K
6I721-2573-08	Schematic Diagram 480V ESS Bus 72C Pos “2A” and “2B”	J
6I721-2578-07	Relay and Metering Diagram 4160V ESS Bus 64C	N
6I721-2578-19	Relay and Metering Diagram 480V ESS Bus 72EA EB B, C, and S	L
6I721-2581-02	Schematic Diagram – Cooling Circuit 4160V SS Transformer No. 64	B
6I721-2581-03	Schematic Diagram – Cooling Circuit 4160V SS Transformer No. 64	D
6I721-2581-04	Schematic Diagram – Cooling Circuit 4160V SS Transformer No. 64	B
6I721-2581-05	Schematic Diagram – Annunciator Circuit 4160V SS Transformer No. 64	F
6I721-2611-35	Schematic Diagram Main Control Room A/C Chiller Compressor T4100B009 Div. 1	Z
6I721-2641-01	Schematic Diagram Standby Gas Treatment Cont Panel 1 and 2 480V Bus 72C Pos 4D and ESS Bus 72F Pos 3A	J
6I721N-2572-11	Schematic Diagram 4160V ESS Diesel Bus 12EB Pos EB3	X
6I721N-2572-12	Schematic Diagram 4160V ESS Diesel Bus 12EB Pos EB5	P
6I721N-2578-08	Relay and Metering Diagram Diesel Generator No. 12	Y
6M721-2015	Station and Control Air	CB
6M721-2034	Core Spray System – CSS Reactor Building	AN
6M721-2045	Reactor Core Isolation Cooling (RCIC) System Barometric Condenser	AQ
6M721-2083	Residual Heat Removal System Division 2	BL
6M721-2084	Residual Heat Removal System Division 1	BF
6M721-2135-01	Diagram Fire Protection System	AY
6M721-2135-02	Diagram Fire Protection System	AY
6M721-2656	Ventilation – Duct Layout 3rd FL	N
6M721-3144-1	North Core Spray Pump Discharge to RPV Penetration	V
6M721-3144-2	Hanger Piping Isometric North Core Spray Pump Discharge to RPV Penetration Reactor Building	L
6M721-5357	Emergency Equipment Cooling Water System Division II	BJ
6M721-5728-1	TBCCW System 2nd and 3rd	AH
6M721-5734	Emergency Diesel Generator System Functional Operating Sketch	BB
6M721N-2052	RHR Service Water System Division 1 RHR Complex	AD
6M721N-2053	RHR Service Water System Division 2 RHR Complex	AG
6SD721-2500-01	One Line Diagram Plant 4160V and 480V System Service Unit 2	AK
6SD721-2500-02	One Line Diagram 13.8kV	AB

DRAWINGS

Number	Description or Title	Revision
6SD721-2500-03	One Line Diagram 4160V System Service Buses 64B 64C	O
6SD721-2500-04	One Line Diagram 4160V System Service Buses No. 64E 65F 65G – Reactor Bldg. Unit No. 2	P
6SD721-2500-05	One Line Diagram 4160V System Service Buses 64A 64D 64L	U
6SD721-2500-08	One Line Diagram 4160V Diesel Gen. Buses No. 11EA 12EB 13EC and 14ED Diesel Generator Building	O
6SD721-2500-09	Phasing Diagram Main Power System	N
6SD721-2510-01	One Line Diagram 480v E.S.S. Bus No. 72B 72C 72E and 72F	AF
6SD721-2510-05	One Line Diagram Diesel Gen Buses No. 72EA 72EB T2EC 72ED	M
6SD721-2530-10	One Line Diagram 260/130V ESS Dual Battery 2PA Distribution Division 1	AK

MISCELLANEOUS

Number	Description or Title	Date or Revision
	Fermi Grid Adequacy Study	12/08 & 11/09
Black & Veatch Project 27022	Fermi 2 TBHVAC Fan Test Study	06/16/95
CI-7281	RF-13 Cable Monitoring Program Summary	10/23/09
DBD E11-XX	Residual Heat Removal Service Water System	B
DBD E21-00	Core Spray System	C
DBD R30-00	Emergency Diesel Generator	F
EMD 5285 CS 06	Piping Stress Analysis Report	06/14/78
E11-XX	Residual Heat Removal Service Water System	B
E21-00	Core Spray System	C
GEK-5651A	Load-Tap-Changing Equipment	A
GEK-6143C	Automatic Static Control for Load-Tap-Changer Equipment, Revision	C
HEOFMSOVOM1	Operator Fails To Keep MSIV's Open Following Scram	12/06/09
HEOFSBFWHESF1	Operator Fails To Start SBFW System	12/06/09
HERFACHRPLNT	Operator Fails To Tie In Alternate Charger	12/06/09
HERFCACSHEOLB	Failure To Manually Crosstie Div. 1 And 2 Control Air	12/06/09
HERFRMOVPLNT	Failure To Manually Operate An RHR MOV Locally	12/06/09
HERFXMXTPLNT4H	Operator Fails To Align 4160V Maint X-Tie 65T/64T Within 4 Hours	12/06/09
MES60	Electrical Cable Monitoring Program	1
NQA Report 09-11	NQA Quarterly Report October – December 2009	01/27/10
NRC-07-0017	Detroit Edison's 90-Day Response to Generic Letter 2007-01	05/04/07

MISCELLANEOUS

Number	Description or Title	Date or Revision
ODE-15	Compensatory Monitoring Plan – TBHVAC Exhaust Fan Differential Pressure	02/03/10
P.O. 1E87829	VertiLine Fire Pump Performance and Construction Data Sheet	09/21/10
R1200S002	Maintenance Strategy	01/26/10
SE 95-0017	LCR 95-049-UFS	0
Spec. 3037-A	Horizontal and Vertical A.C. Electric Motors 2300 Volts and Above for Power Plant Duty Standard Specification	Addendum C
Spec. 3067	460 Volt AC Motors Power Plant Service	03/68
TDDATA	Nuclear Plant Operating Agreement	4
TE-E11-08-078	Removal of RHR Complex Pump Room Plugs under LCO 3.0.9	A
TE-U41-09-049	Evaluate Operation on the Center TBHVAC Exhaust Fan with a Missing Hub Nose Cone	0
TM-09-0030	Nuclear Engineering Plant Indicators – November 2009	12/17/09
TMPE-09-0227	2009 Component Design Bases Inspection (CDBI) Self-Assessment Final Report	11/24/09
VME8-11	General Electric Inductrol Type AIRT Voltage Regulators	F
95-010	Maintenance Rule Program Position Paper	0
97-006	Maintenance Rule Program Position Paper	0

MODIFICATIONS

Number	Description or Title	Date or Revision
ECR-35621-1	Revision of Calculation DC-0919 Vol I to Reflect Minimum And Maximum Error Evaluation and Motor Starting Transient Study	A
EDP 4921	Removal of Clutch Trippers from Fifteen Limitorque Valve Motor Operators	A
EDP 30405	Replacement of Division 1, 130/260 VDC batteries	12/10/99
ERE 32781	Replacement Pump Column Assemblies and Stuffing Boxes for Three RHR Complex Pumps	B
EDP-35621	DC-0919 Vol. 1 Under-Voltage Relay Setpoints	0
EDP-36014	DC-0919 Vol. 1 Under-Voltage Relay Setpoints	0
EDP-35607	Replace EDG Feeder Cables to 4.16kV Buses	B
RID-78612	Replace Relay E21A-K16C in panel H11P626	0
TSR-35286	Incorporate Revisions into DC-4388, Vol. I and DC-0919 Vol I	0
TSR-35664	Clarify HPCI and RCIC Pump Suction and Discharge Design Temperature	A
TSR-35792	Revise HPCI/RCIC DBD's	A

MODIFICATIONS

Number	Description or Title	Date or Revision
TSR-36184	Suggested Improvement for DC-0106 Vol. 1 RHRSWS Minimum Flow Analysis	0
TSR-36383	Update of DC-5424 for CARD 09-22041	0

OPERABILITY EVALUATIONS

Number	Description or Title	Date
EFA-R14-10-002	Analysis to determine Electrical Equipment Functionality During a Transient due to LPCI and LPCS Initiation for a DBA-LOCA with Degraded Grid (canceled)	A
EFA-R14-10-004	Analysis to Determine Electrical Equipment Functionality of 4160 Volt 480 Volt Motors and SS64 LTC	A
EFA-R16-07-003	Analysis of the Fermi 5kV 3/C 500 MCM Copper Non-Shielded Cables to Perform Their Safety-Related Functions While Operating In Continuously Wetted Environment.	A
EFA-R32-10-003	Engineering Functional Analysis To Determine Battery Functionality Due To Incomplete Accounting Of Inter-Cell Resistance In The DC-0213 Vol. 1 Calculation For Terminal Voltage	0

PROCEDURES

Number	Description or Title	Revision
ARP 3D18	IPCS Monitored Inputs Abnormal	25
ARP 7D3	Div I RHR Reservoir Level Abnormal	15
ARP 7D4	Div II RHR Reservoir Level Abnormal	16
ARP 9D22	Div I Bus Voltage Low	15
ARP 10D43	Div II Bus Voltage Low	14
FIP-OP1-04	Equipment Labeling and Signs	5
MES02	Design Configuration Management	19
MES06	Preparation and Control of Design Basis Documents	6
MES15	Design Calculations	26
MGA03	Procedure Use and Adherence	20
MLS04	Fermi 2 Licensing/Safety Engineering Conduct Manual for Operating Experience Program	22
MOP App B	Plant Labeling Guidelines	1
MOP03	Operations Conduct Manual Chapter 3 – Policies and Practices	26
MOP05	Control of Equipment	30
MOP17	Plant Labeling	4
MMA08	Scaffolding	13
MMR03	Maintenance Rule Conduct Manual	1

PROCEDURES

Number	Description or Title	Revision
MMR10	Maintenance Rule Conduct Manual Monitoring	7
MMR App C	Maintenance Rule Scoping Summary Report	2
MQA11	Fermi 2 Quality Assurance Conduct Manual for Condition Assessment Resolution Document	29
ODE-2	Operations Department Expectation Operations Conduct	22
ODE-12	Operations Department Expectations	18
ODMI-09-006A	South TBHVAC Exhaust Fan	08/28/09
ODMI-10-001	TBHVAC System Reliability	02/11/10
PEP 47.306.01	Signature Analysis of Motor-Operated Valves	28
20.300.GRID	Grid Disturbance	2
20.300.65E	Att. 1, Bus 65E De-Energized Loads – MCR	4
23.106	Control Rod Drive Hydraulic System	95
23.127	Reactor Building Closed Cooling Water / Emergency Equipment Cooling Water System	118
23.129	Station and Control Air System	92
23.138.01	Reactor Recirculation System	101
23.138.02	Operation of Recirculation System Motor Generator Set Fan Coil Units	17
23.203	Core Spray System	42
23.208	RHR Complex Service Water Systems	97
23.307	Emergency Diesel Generator System	108
23.308	120V AC Instrument and Control Power System	61
23.309	260/130V DC Electrical System	56
23.310	48/24V DC Electrical System	25
23.316	RPS 120V AC and RPS MG Sets	51
23.320	Balance of Plant Auxiliary Electrical Distribution System	46
23.321	Engineered Safety Features Auxiliary Electrical Distribution System	46 - 48
23.412	Turbine Building Heating, Ventilation, and Air Conditioning System	50
23.413	Control Center HVAC	83
23.414	Steam Tunnel Cooling	17
23.420	RHR Complex Heating and Ventilation	33
23.426	Reactor Building Heating Ventilation Air Conditioning	54
23.707	Reactor Water Cleanup	126
23.708	Fuel Pool Cooling and Cleanup System	68
24.206.01	RCIC System Pump and Valve Operability Test	69
35.LIM.003	Limitorque SMB-0 Through SMB-4 and 4T Operator – Maintenance	35
35.301.001	4160V Switchgear	34
35.304.006	ITE Circuit Breaker Types 5HK250 and 5HK350 General Maintenance and Inspections	22

PROCEDURES

Number	Description or Title	Revision
35.304.010	Refurbishing 5HK Air Circuit Breakers	13
35.306.001	480 Volt Switchgear Breaker and Relay Control Testing	37
35.306.005	MCC Bus and Compartment General Inspection and Maintenance	30
35.306.006	Motor Operated Valve Setup Verification	35
35.306.012	Stroke Trace Recording of Motor Operated Valves	8
35.306.020	Motor Operated Valve Mini Periodic Inspection	4
35.318.014	Medium Voltage Switchgear Breaker and Relay Control	35
42.302.07	Cal and Functional Test of Div 1 4160 V Bus 64B Undervoltage Relays	33
42.302.08	Cal and Functional Test of Div 1 4160 V Bus 64C Undervoltage Relays	34
42.302.09	Cal and Functional Test of Div 2 4160 V Bus 65E Undervoltage Relays	32
42.302.10	Cal and Functional Test of Div 2 4160 V Bus 65F Undervoltage Relays	32
42.309.02	Division 1/2 Quarterly 130/260 VDC Battery Check	36
47.000.20	Diagnostic Testing of Medium Voltage Cables	2

SURVEILLANCES (COMPLETED)

Number	Description or Title	Date or Revision
42.309.02	Division ½ Quarterly 130/260 VDC Battery Check	12/28/09
42.309.05	Division 1 (5 year) 130/260 VDC Battery Check	04/06/06
42.309.03	Division 1 18 month 130/260 VDC Battery Check	04/07/09
24.203.02	Division 1 CSS Pump and Valve Operability, and Automatic Actuation	48
24.203.03	Division 2 CSS Pump and Valve Operability, and Automatic Actuation	50
24.205.05	Division 1 RHRSW Pump and Valve Operability Test	47
24.205.06	Division 2 RHRSW Pump and Valve Operability Test	46

WORK ORDERS/WORK REQUESTS

Number	Description or Title	Date or Revision
	Double Test Report	04/04/06
A839050100	Perform Mini Periodic MOV Inspection and MPM Stroke Test	03/13/05
E581961116	Inspect Lube and Test Motor Op Valve, Test, Associated Feeder Position	02/02/00

WORK ORDERS/WORK REQUESTS

Number	**Description or Title**	**Date or Revision**
WO R05070100	Inspect, Clean, Megger Bus 64C and Calibrate Current Indicator	04/06/09
WO 26926949	Perform Mini Periodic MOV Inspection And VPM Stroke Test	02/12/08
WO 27035002	Perform 24.203.02 Sec-5.1 CSS Pump and Valve Operability Test	12/23/08
WO 27067666	Perform 24.203.02 Sec-5.1 CSS Pump and Valve Operability Test	04/11/09
WO 27303748	Perform 24.203.02 Sec-5.1 Division 1 CSS Pump and Valve Operability Test	06/23/09
WR E200070100	Perform MOV Thrust (Viper) Testing Per GL 96-05 Program	09/09/07
WRR371940708	Inspect 72C-2A for Cleanliness Damage and Megger Bus	11/24/04
WRR517070100	Inspect and Test 480V Unit Substation	11/19/04
WRZ325100100	PM Inspect, Clean, Test and Functionally Check SS Xfmr No. 64 and its Components	04/12/06

LIST OF ACRONYMS USED

AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
CAP	Corrective Action Program
CARD	Condition Assessment and Resolution Document
CDBI	Component Design Bases Inspection
CFR	Code of Federal Regulations
DC	Direct Current
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EECW	Emergency Equipment Cooling Water
EFA	Engineering Functional Analysis
HPCI	High Pressure Cooling Injection
IN	Information Notice
IP	Inspection Procedure
IST	Inservice Testing
kV	Kilovolt
LCO	Limiting Conditions of Operations
LOCA	Loss of Coolant Accident
LOOP	Loss of Off-site Power
LTC	Load Tap Changer
NCV	Non-Cited Violation
NPP	Nuclear Power Plant NRC
ODE	Operations Department Expectation
ODMI	Operational Decision Making Issue
PM	Preventative Maintenance
PMT	Post Maintenance Test
RHR	Residual Heat Removal
RCIC	Reactor Core Isolation Cooling
SBO	Station Blackout
SDP	Significance Determination Process
SS	System Service
SSC	Systems, Structures, and Components
TBHVAC	Turbine Building Heating Ventilation and Air Conditioning
TS	Technical Specification
TSR	Technical Service Request
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
Vac	Volts Alternating Current
Vdc	Volts Direct Current
WO	Work Order
WR	Work Request

Bob,

Following the referenced evaluation of EFA-R14-10-004 Revision A by the CDBI team, I am forwarding a question and a comment. Please advise CDBI Lead, Zelig Falevits, and the Residents of your reply.

Thx.

Bob Jones
Resident Inspector

APPENDIX
Ref: Evaluation of EFA-R14-10-004 Revision A, George Skinner

QUESTION

Section 4.1 of Revision 0 of the EFA addressed the implementation of administrative controls to ensure that the relays remain within the values evaluated in the EFA, in lieu of the criteria in the current surveillance procedures. Inexplicitly, this provision has been removed from Revision A of the EFA. Similarly, neither Revision 0 nor Revision A lists the requirement to implement alternate criteria as a compensatory action in Section 5.0 of the EFA. In order to establish reasonable assurance of continued operability of the offsite power sources, the EFA needs to address what measures are being implemented to assure that the relays will not drift above their new limits. This affects the conclusion of the finding on Offsite Power Calculations.

COMMENT

Attachment 7 compared 460V motor protective device trip times with motor start times. The attachment referred to the ETAP static motor starting analysis for motor start durations but these values were artificial since they were manually entered based on assumed values described in Section 3.1.1, not calculated based on a dynamic analysis. The dynamic ETAP case in Attachment 17 could not be used to determine start durations because it only modeled the 4kV RHR and Core Spray pumps starting and did not model 460V motors starting. Start durations for 460V motors were affected by the starting durations of the RHR and CS motors, but these may also be non-conservative, as described in the next item. The margins for spurious trip avoidance listed in Attachment 8 were small for some motors. (Motor T4100C041 showed negative margin but this was determined to be a typographical error.) Consequently, it was not clear that 460V motor would accelerate without activating their protective devices. This item affects the conclusion of the finding on Motor Starting Voltage Calculations. Affected motors are listed in Attachment 8 of the EFA.

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).

Sincerely,

/RA/

V. Patricia Lougheed, Acting Chief
Engineering Branch 2
Division of Reactor Safety

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

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w/Attachment: Supplemental Information

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