February 13, 2006

Mr. Donald K. Cobb
Assistant Vice President
Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI POWER PLANT, UNIT 2 NRC INTEGRATED INSPECTION REPORT 05000341/2005019

Dear Mr. Cobb:

On December 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2. The enclosed report documents the inspection findings which were discussed on January 11, 2006, with you 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, three findings of very low safety significance were identified, all of which involved violations of NRC requirements. However, because these findings were of very low safety significance and because the issues were entered into your corrective program, the NRC is treating these findings as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, 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 2 facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Thomas J. Kozak
Team Leader, Technical Support Services
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2005019
w/Attachment: Supplemental Information

cc w/encl: N. Peterson, Manager, Nuclear Licensing
D. Pettinari, Legal Department
Compliance Supervisor
G. White, Michigan Public Service Commission
L. Brandon, Michigan Department of Environmental Quality - Waste and Hazardous Materials Division
Monroe County, Emergency Management Division
Planning Manager, Emergency Management Division
MI Department of State Police

DOCUMENT NAME: C:\MyFiles\Roger\ML060450177.wpd
☐ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☐ Non-Sensitive
**To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy**

| OFFICE | RIII | | RIII | | | | | |
|---|---|---|---|---|---|---|---|---|
| NAME | MPhillips:dtpTJK for | | TKozak | | | | | |
| DATE | 02/13/06 | | 02/13/06 | | | | | |

***OFFICIAL RECORD COPY***

ADAMS Distribution:
LXR1
DHJ
RidsNrrDirsIrib
GEG
KGO
RMM3
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov (inspection reports, final SDP letters, any letter with an IR number)

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000341/2005019

Licensee: Detroit Edison Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, Michigan

Dates: October 1 through December 31, 2005

Inspectors: R. Morris, Senior Resident Inspector
T. Steadham, Resident Inspector
Z. Falevits, Senior Engineering Inspector
D. Jones, Reactor Engineer
M. Mitchell, Radiation Specialist
M. Bielby, Chief Examiner
D. Reeser, Examiner
J. Rutkowski, Resident Inspector - Davis Besse
C. Thomas, Senior Resident Inspector - Davis Besse

Approved by: T. Kozak
Team Leader, Technical Support Services
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000341/2005019; 10/01/2005-12/31/2005; Fermi Power Plant, Unit 2; Non-Routine Events, Event Follow-Up.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional based engineering, radiation protection, fire protection, and security inspectors. Three Green findings associated with three-non-cited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Findings for which the Significance Determination Process 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 3, dated July 2000.

### A. NRC-Identified and Self-Revealed Findings

**Cornerstone: Mitigating Systems**

- Green. The inspectors identified a finding of very low safety significance and an associated non-cited-violation of 10CFR50, Appendix B, Criterion V, when licensee personnel failed to establish adequate foreign material exclusion controls for emergency diesel generator 12 during a safety system outage. During post-maintenance testing on emergency diesel generator 12, the blower failed because a screw passed through it. The inspectors determined the licensee did not log fasteners either into or out of the foreign material exclusion zone. Immediate corrective actions included securing the EDG, shutting down the plant, making the necessary repairs and inspection to the EDG, and reviewing the FME program.

  This finding is more than minor because the failure to maintain effective foreign material exclusion controls for the emergency diesel generator could have caused the blower failure during operation thereby affecting the Mitigating Systems Cornerstone for emergency AC power. Further, if left uncorrected, the condition would lead to a more significant safety concern. This finding is of very low safety significance because the multi-train function of the emergency AC power system was maintained since only one of four emergency diesel generators was affected. (Section 4OA3.1)

  Green. The inspectors identified a finding of very low safety significance and an associated non-cited violation of license condition 2.C(9) for the failure to implement adequate corrective actions in a timely manner. From December 21, 2004, to July 17, 2005, the licensee failed to implement requirements delineated in calculation DC-4921, "Appendix R Calculation," Revision E, to rack out (open) four 4160 V maintenance tie breakers to ensure that one safe shutdown division is maintained free of fire damage. This finding also affected the cross-cutting area of Problem Identification and Resolution (corrective action) because the licensee failed to take appropriate corrective actions when the issue was discovered in December 2004. Once identified in July 2005, the licensee implemented an hourly fire watch, racked out the four affected maintenance tie breakers, and revised the relevant operating procedures.

The finding was more than minor because a potential existed whereby postulated fire-induced cable damage due to hot shorts at the maintenance tie breakers could have adversely affected the emergency diesel generators in the alternate division rendering safe shutdown equipment inoperable. The finding was of very low safety significance because the postulated fire scenario involved a low fire frequency combined with the likelihood of a random loss of offsite power to the opposite division and the probability of two hot shorts. (Section 4OA3.2(3))

**Cornerstone: Public Radiation Safety**

- Green. The inspectors identified a finding of very low safety significance and an associated non-cited violation of Technical Specification 5.4.1.a for the failure to follow procedures that ensure the control of radioactivity to the environment during the processing of radioactive waste. Procedures required the radioactive waste building ventilation system to be in operation during the processing of radioactive waste. Immediate corrective actions included the issuance of night orders prohibiting waiving the prerequisite and revising the relevant procedures to clearly identify this requirement. The primary cause of this finding was related to the cross-cutting area of Problem Identification & Resolution (corrective action) because the licensee failed to take effective corrective actions when a related question was raised within the corrective action process on two previous occasions.

  The issue was more than minor because it was associated with the Program/Process attribute of the Public Radiation Safety Cornerstone and potentially affected the cornerstone objective to ensure adequate protection of the public from exposure to radioactive materials released into the environment. Also, waiving a prerequisite for equipment required to limit offsite radiological dose to members of the public without a proper assessment can reasonably be viewed as a precursor to a more significant event. The issue represents a finding of very low safety significance because no radiological release occurred during radioactive waste processing; therefore, there was minimal actual risk to the public. (Section 1R14.1)

## B. Licensee-Identified Violations

Two violations of very low safety significance which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violations are described in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 2 began this inspection period at 100 percent power where it remained at or near until October 28 when operators lowered power to 85 percent to complete maintenance on a hydraulic control unit for the number 1 high pressure stop valve. Reactor power was returned to 100 percent approximately 2 hours later following maintenance. The reactor remained at or near 100 percent power until December 17, when the licensee reduced power to 75 percent to perform control rod scram time and friction testing. Approximately 18 hours later, operators returned the reactor to full power where it remained at or near for the remainder of the inspection period.

### 1. REACTOR SAFETY

**Cornerstone: Mitigating Systems**

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors reviewed licensee procedures for mitigating the effects of high winds. The inspectors reviewed Updated Final Safety Analysis Report (UFSAR) descriptions, severe weather procedures, and emergency plan implementing procedures related to severe weather. The inspectors performed walkdowns of the storage areas inside the protected area with particular emphasis on storage locations within proximity of the switchyard and incoming power lines. Additionally, the inspectors observed the securing of the reactor building crane.

These activities represented one external adverse weather inspection sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial System Walkdown (71111.04Q)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk significant systems:

- division 2 emergency equipment cooling water performed on December 7 and 8, 2005;
- division 1 standby gas treatment performed on December 7, 2005; and
- divisions 1 and 2 emergency equipment service water performed on December 28, 2005.

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed operating procedures, system diagrams, Technical Specification (TS) requirements, Administrative TSs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components were aligned correctly.

In addition, the inspectors verified equipment alignment problems were entered into the corrective action program with the appropriate significance characterization.

These activities represented three quarterly partial system walkdown inspection samples.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown (71111.04S)

a. Inspection Scope

The inspectors performed a complete system walkdown of the following risk significant system:

- division 1 emergency equipment cooling water performed October 26, 2005, through October 28, 2005.

The inspectors reviewed operating procedures, system diagrams, TS requirements, and applicable sections of the UFSAR to ensure the correct system lineup. The inspectors verified acceptable material condition of system components, availability of electrical power to system components, and that ancillary equipment or debris did not interfere with system performance.

These activities represented one semi-annual complete system walkdown inspection sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection - Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection tours of the following risk significant plant areas:

- standby liquid control pump room performed on October 12, 2005; and
- reactor building steam tunnel penetrations performed on October 27, 2005.

The inspectors verified fire zone conditions were consistent with assumptions in the licensee's Fire Hazards Analysis. The inspectors walked down fire detection and suppression equipment, assessed the material condition of fire fighting equipment, and evaluated the control of transient combustible materials. In addition, the inspectors verified fire protection related problems were entered into the corrective action program with the appropriate significance characterization.

These activities represented two quarterly inspection samples.

b. Findings

No findings of significance were identified

1R06 Flood Protection - External Flooding (71111.06)

a. Inspection Scope

The inspectors evaluated the potential for flooding from external factors by reviewing plant design parameters pertinent to controlling the potential for flooding from external means. The evaluation included a review to check for deviations from the descriptions provided in the UFSAR for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors reviewed the conditions of roof drains on the residual heat removal building, checked for obstructions that could prevent draining, and checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event.

These activities represented one external flooding inspection sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

The following activities (Items .1 through .9) represented one biennial licensed operator requalification inspection sample.

.1 Facility Operating History (71111.11B)

a. Inspection Scope

The inspectors reviewed the plant's operating history from October 2003 through October 2005 to assess whether the Licensed Operator Requalification Training (LORT) program had identified and addressed operator performance deficiencies at the plant.

b. Findings

No findings of significance were identified.

.2 Licensee Requalification Examinations (71111.11B)

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT test/examination program. The operating examination material reviewed consisted of five operating tests, each containing two, three, or four dynamic simulator scenarios, and five job performance measures (JPMs). The written examinations reviewed consisted of five written examinations, each containing approximately 32 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test and compared the operating test material from this year's operating tests (2005) with last year's operating tests (2004). The annual operating tests were conducted in October/November 2004 and October/November 2005. The examiners assessed the amount of written examination material duplication from week-to-week for the written examination administered in October/November 2005. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications.

b. Findings

No findings of significance were identified.

.3 Licensee Administration of Requalification Examinations (71111.11B)

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors evaluated the performance of one shift crew in parallel with the facility evaluators during two dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented under Section 1R11.8, "Conformance With Simulator Requirements Specified in 10 CFR 55.46," of this report.

b. Findings

No findings of significance were identified.

.4 Examination Security (71111.11B)

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias). The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process.

b. Findings

No findings of significance were identified.

.5 Licensee Training Feedback System (71111.11B)

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT program up to date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions.

b. Findings

No findings of significance were identified.

.6 Licensee Remedial Training Program (71111.11B)

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training planned for the current examination cycle to ensure they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans.

b. Findings

No findings of significance were identified.

.7 Conformance With Operator License Conditions (71111.11B)

a. Inspection Scope

The inspectors reviewed the facility and individual operator license's conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53 (e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59 (c). Additionally, medical records for 15 licensed operators were reviewed for compliance with 10 CFR 55.53 (l).

b. Findings

No findings of significance were identified.

.8 Conformance With Simulator Requirements Specified in 10 CFR 55.46 (71111.11B)

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, scenario test and discrepancy resolution validation test), simulator discrepancy and modification records, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the inspection procedure 71111.11, Appendix C dated December 16, 2003, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d).

b. Findings

No findings of significance were identified.

.9 Biennial Written Examination and Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of individual biennial written examinations, JPM annual operating tests, and simulator annual operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee during calender year 2005. The overall results were compared with the significance determination process (SDP) in accordance with NRC Manual Chapter 0609, Appendix I dated August 22, 2005, "Operator Requalification Human Performance Significance Determination Process." Year 2005 was the second year of the licensee's 24-month training program.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.10 Routine Quarterly Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors observed operations crews during the annual requalification examination in mitigating the consequences of events for the following two scenarios on the simulator:

- SS-OP-904-0011 performed on November 8, 2005; and
- SS-OP-904-0013 performed on November 15, 2005.

The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and directions from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

These activities represented two quarterly operator requalification testing/training inspection samples.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following two risk-significant systems:

- main condenser and auxiliaries; and
- nuclear boiler.

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. Specifically, the inspectors independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b);
- characterizing system reliability issues;
- tracking system unavailability;
- trending key parameters (condition monitoring);
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification and/or re-classification; and
- verifying appropriate performance criteria for systems classified as (a)(2) and/or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. The inspectors opened one unresolved item to conduct a further review of the adequacy of the maintenance history of the nuclear boiler system.

These activities represented two quarterly maintenance effectiveness inspection samples.

b. Findings

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13Q)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and operational activities affecting risk-significant and safety-related equipment.

The inspectors reviewed planned and emergent maintenance for the following weeks:

- October 30 through November 5, 2005;
- November 13 through November 18, 2005;
- November 27 through December 3, 2005;
- December 11 through December 17, 2005; and
- December 18 through December 24, 2005.

These weeks were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst and/or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These activities represented five quarterly maintenance risk assessment and emergency work control inspection samples.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events (71111.14)

The following activities (Items 1R14.1 through 1R14.5) represent five operator performance during non-routine evolutions inspection samples.

.1 Evaluation of Waste Processing with Radioactive Waste Ventilation Shutdown

a. Inspection Scope

The inspectors reviewed the events and circumstances surrounding the loss of the radioactive waste building heating and ventilation system (RWHVAC) on November 24, 2005. The inspectors reviewed operator logs, procedures, corrective action documents, and interviewed personnel.

b. Findings

Introduction: The inspectors identified a Green Non-Cited Violation (NCV) of TS 5.4.1.a for the failure to follow procedures for the control of the release of radioactivity during liquid radioactive waste processing activities.

Description: On November 19, 1998, operations requested that engineering evaluate the prerequisite of having RWHVAC in operation during radioactive waste (radwaste) processing. This question was entered into the licensee’s corrective action program as condition assessment resolution document (CARD) 98-23097. Engineering evaluated the question and recommended that the prerequisite remain.

On January 21, 2005, operations requested that engineering re-evaluate the prerequisite. The licensee entered the question in their corrective action program as CARD 05-20385. Operations requested this re-evaluation due to a long-standing issue with the freeze status monitors for the RWHVAC heating coils tripping the RWHVAC system when the outside temperature was less than approximately 20°F. The freeze status monitors measure the air temperature downstream of the heating coils and will trip the system at 35°F when the system is in automatic. This setpoint is intended to ensure the water in the heating coils does not freeze and break the tubes.

On January 31, 2005, engineering sent memorandum TMPE-05-0013, Evaluation of Transfer of Liquid Radwaste During RWHVAC Shutdown, to the operations manager. Engineering determined that performing liquid radwaste transfers without RWHVAC in operation was contrary to requirements in the offsite dose calculation manual and, therefore, would not be permitted. Specifically, the function of RWHVAC is to ensure the radwaste building is maintained at a negative pressure relative to the outside environment. With the system shutdown during the processing of radwaste, the potential exists for an unmonitored/uncontrolled release to the environment and spread of contamination into the turbine building.

On November 24, 2005, the freeze status monitors tripped the RWHVAC system three times within 80 minutes. Operators left the system shutdown on the third trip and entered the issue into their corrective action program as CARD 05-26583. However, with the system tripped, the licensee processed liquid radwaste ten times over the course of two operating shifts. The procedures used for five of those events included the prerequisite for RWHVAC being in service which the licensee waived; however, the procedures used for the other five events did not include the necessary prerequisite.

While reviewing operator logs on November 25, 2005, the inspectors identified the licensee waived the prerequisite several times the previous day and questioned the licensee on the appropriateness of doing so. The licensee acknowledged the guidance in memorandum TMPE-05-0013 remained in effect and entered this issue into their corrective action program as CARD 05-26589. Immediate corrective actions were to issue operations night orders on the prohibition of waiving that prerequisite and to revise all relevant procedures to include the guidance from memo TMPE-05-0013.

Procedure MGA05, “Procedure Use and Adherence,” Step 4.1.6, allowed either the shift manager or control room supervisor to waive a prerequisite if it was warranted. The inspectors concluded, based upon the information contained in CARDs 98-23097 and 05-20385 and memorandum TMPE-05-0013, the licensee did not adequately evaluate the necessity of the prerequisite prior to waiving it. Specifically, the licensee failed to adequately evaluate and, consequently, determine radwaste processing could be performed safely without the RWHVAC operable.

The inspectors determined the licensee did not implement effective corrective actions to ensure operators would not inappropriately waive the relevant prerequisite. Further, several procedures failed to include the necessary prerequisite. The licensee closed CARD 05-20385 without incorporating the conclusions into any procedure or including the prerequisite into those procedures lacking it. The inspectors concluded the failure to take effective actions contributed to the event on November 24, 2005. Specifically, no

relevant procedures were revised and no formal training was provided, such as in the form of night orders or just-in-time training, as a result of CARD 05-20385.

Analysis: The inspectors determined that the licensee's failure to follow procedures for placing RWHVAC in service before processing liquid radwaste or otherwise determine through an adequate evaluation that the operation of the RWHVAC was not warranted, represents a performance deficiency as defined in NRC Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B dated September 30, 2005. The inspectors determined the issue was associated with the Program/Process attribute of the Public Radiation Safety Cornerstone and potentially affected the cornerstone objective to ensure adequate protection of the public from exposure to radioactive materials from a release to the environment. Additionally, waiving a prerequisite for equipment required to limit offsite radiological dose to members of the public without a proper assessment can reasonably be viewed as a precursor to a more significant event. Specifically, the RWHVAC system was required to be in operation during radwaste processing to prevent an uncontrolled/unmonitored radioactive effluent release to the environment.

Since the finding involved a problem with the licensee's radiological effluent monitoring program that was contrary to licensee procedures, the inspectors utilized IMC 0609, "Significance Determination Process," Appendix D dated December 16, 2003, "Public Radiation Safety SDP," to assess its significance. The licensee's failure to adequately evaluate the potential radiological environmental (dose) consequence associated with an inoperable RWHVAC during radioactive waste processing represents an impaired ability to assess dose. However, because there was no measurable radiological release associated with the event, there was minimal actual risk to the public. Therefore, the inspectors concluded that the SDP assessment for this finding was of very low safety significance (Green).

The primary cause of this finding was related to the cross-cutting area of Problem Identification & Resolution (corrective action) because the licensee failed to take appropriate and effective long-term corrective actions when a related question was raised within the corrective action process on two previous occasions.

Enforcement: Technical Specification 5.4.1.a required that the licensee implement and maintain procedures recommended by Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33, Revision 2, Appendix A, Section 7.a, required procedures for processing liquid radwaste and Section 1.d required procedures for procedure adherence. MGA03, Revision 12, allowed either the shift manager or the control room supervisor to waive a procedure prerequisite only if warranted. Procedure 23.701.10, steps 4.1.2.3 and 5.1.2.3, were prerequisites that RWHVAC be in operation during the associated liquid radwaste processing. Contrary to the above, the licensee inappropriately waived prerequisites 4.1.2.3 and 5.1.2.3 of procedure 23.710.10 four times on November 24, 2005, and once on November 25, 2005, when the licensee processed liquid radwaste without RWHVAC in operation.

Because this violation was of very low safety significance and because it has been entered into the licensee's corrective action program, CARD 05-26589, it is being treated as an Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement

Policy. Immediate corrective actions included the issuance of night orders prohibiting waiving the prerequisite and revising the relevant procedures to clearly identify this requirement. (Non-Cited Violation 05000341/2005019-01, Failure to Adequately Assess a Procedural Prerequisite)

.2 Operator Response to Unexpected Loss of Integrated Plant Computer System

a. Inspection Scope

On October 3, 2005, an unexpected loss of integrated plant computer system occurred while engineers were performing troubleshooting activities on the transient recording and analysis computer. The inspectors evaluated the licensee's operational decision making involved with this non-routine evolution. In addition, the inspectors evaluated the operators' application and adherence to the operating procedures. The licensee entered this issue into their corrective action program as CARD 05-25582.

b. Findings

No findings of significance were identified.

.3 Operator Response to Number 1 High Pressure Stop Valve Closure

a. Inspection Scope

On October 4, 2005, number 1 high pressure stop valve closed due to a failed oil dump solenoid valve. The inspectors evaluated the licensee's operational decision making involved with this non-routine evolution. In addition, the inspectors evaluated the operators' response to the event including the application and adherence to the operating procedures. The licensee entered this issue into their corrective action program as CARD 05-25615.

b. Findings

No findings of significance were identified.

.4 Moisture Separator Reheater Transported into the Protected Area

a. Inspection Scope

On December 18, 2005, a replacement moisture separator reheater (MSR) was moved into the protected area and prepared to be lifted into the turbine building. The inspectors observed the security contingency measures during the movement of the MSR into the protected area. As the MSR was transported to the edge of the turbine building, the roll-up doors on the first and third floors of the turbine building were opened. With the outside air temperature at 6°F and the turbine building at a lower pressure than the outside, the cold outside air caused the turbine building temperature to decrease. The operators noticed the temperature decrease and secured one train of the turbine building ventilation system to minimize the pressure differential and, consequently, the air in-leakage to the turbine building. Operators performed walkdowns of systems and

components that were in the vicinity of the roll-up doors and began monitoring the firewater header temperature. Operations follow-up actions included increased monitoring of equipment in the area and placing heaters near the firewater header which never dropped below 40°F.

The inspectors evaluated the licensee's operational decision making involved with this non-routine evolution. In addition, the inspectors evaluated the operators' communications during the evolution and the operators' application and adherence to the operating procedures.

b. Findings

No findings of significance were identified.

.5 Operator Response to Number 2 High Pressure Stop Valve Closure

a. Inspection Scope

On December 28, 2005, number 2 high pressure stop valve closed due to a failed oil dump solenoid valve. The inspectors observed the operators response and subsequent power decrease to 93 percent. The licensee entered this issue into their corrective action program as CARD 05-27172.

The inspectors evaluated the licensee's operational decision making involved with this non-routine evolution. In addition, the inspectors evaluated the operator's communications during the evolution and the operator's application and adherence to the operating procedures.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following CARDs to ensure either the condition did not render the involved equipment inoperable or result in an unrecognized increase in plant risk, or the licensee appropriately applied TS limitations and appropriately returned the affected equipment to an operable status:

- CARD 05-25531, Emergency Diesel Generator Muffler Replacement;
- CARD 05-25610, Discrepancy Between the Room Coolers in the Plant and Seismic Qualification Report B9-643; and
- CARD 05-26863, Emergency Diesel Generator Damper Alignment.

These activities represented three operability evaluation inspection samples.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

.1 Review of Selected Operator Workarounds

a. Inspection Scope

The inspectors evaluated the operator workaround listed below to identify any potential effect on the functionality of mitigating systems or on the operators' response to initiating events:

- Operator Impediments to Performing Field Operations.

The inspectors selected this issue to review as a potential operator workaround in order to understand how this task is accomplished and the potential effect on plant operations. The inspectors reviewed selected procedures and documents.

This activity represented one risk significant operator workaround inspection sample.

b. Findings

No findings of significance were identified.

.2 Operator Workaround Aggregate Assessment

a. Inspection Scope

The inspectors reviewed the “Active Operations Challenge Index” dated December 2, 2005, and the Nuclear Generation Memorandum NPOP-05-0009, “Aggregate Assessment of Operator Workarounds,” dated January 24, 2005. The inspectors evaluated the cumulative effect of operator workarounds, control room deficiencies, and degraded conditions on equipment availability, initiating event frequency, and the ability of the operators to implement abnormal or emergency operating procedures. In particular, the cumulative effects of operator workarounds on the following attributes were considered:

- the reliability, availability, and potential for mis-operation of a system;
- the ability of operators to respond to plant transients or accidents in a correct and timely manner; and
- the potential to increase an initiating event frequency or affect multiple mitigating systems.

In addition, the inspectors verified operator workaround issues were entered into the corrective action program with the appropriate significance characterization.

These activities represented one cumulative affects of operator workarounds inspection sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

During completion of the post-maintenance test inspection procedure samples, the inspectors observed in-plant activities and reviewed procedures and associated records to determine if:

- testing activities satisfied the test procedure acceptance criteria;
- effects of the testing were adequately addressed prior to the commencement of the testing;
- measuring and test equipment calibration was current;
- test equipment was within the required range and accuracy;
- applicable prerequisites described in the test procedures were satisfied;
- affected systems or components were removed from service in accordance with approved procedures;
- testing activities were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, and valid;
- test equipment was removed after testing;
- equipment was returned to a position or status required to support the operability of the system in accordance with approved procedures; and
- all problems identified during the testing were appropriately entered into the corrective action program.

During this inspection period, the inspectors reviewed the following post-maintenance activities:

- wide range condenser pressure transmitter;
- wide range standby feedwater flow indicator;
- moisture separator reheater lifting rig; and
- division 2 residual heat removal cross-tie valve.

In addition, the inspectors verified post-maintenance testing problems were entered into the corrective action program with the appropriate significance characterization.

These activities represented four post-maintenance testing inspection samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

During completion of the inspection procedure samples, the inspectors observed in-plant activities and reviewed procedures and associated records to determine if:

- preconditioning occurred;
- effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, properly documented, as-left setpoints were within required ranges, and the calibration frequency was in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy;
- applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability;
- tests were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for in-service testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data was accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the corrective action program.

During this inspection period, the inspectors observed activities associated with the following surveillance procedures:

- torus room to steam tunnel penetration;
- condenser pressure trip system channel B;
- reactor core isolation cooling steam line flow, trip system B functional test; and
- reactor coolant system leakage rate calculation.

These activities represented three surveillance testing inspection samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed temporary modification 05-0026, “Repair Steam Leak on Condenser,” and verified the installation was consistent with design modification documents and the modifications did not adversely impact system operability or availability.

The inspectors verified configuration control of the modifications was correct by reviewing design modification documents and confirmed appropriate post-installation testing was accomplished. The inspectors interviewed engineering and operations personnel and reviewed the design modification documents and 10 CFR 50.59 evaluations against the applicable portions of the TS and UFSAR.

These activities represented one temporary plant modification inspection sample.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

**Cornerstone: Occupational Radiation Safety**

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed licensee controls and surveys in the following three radiologically significant work areas within radiation areas, high radiation areas, and airborne radioactivity areas in the plant and reviewed work packages which included associated licensee controls and surveys of these areas to determine if radiological controls including surveys, postings, and barricades were acceptable:

- reactor building;
- turbine building; and
- on-site storage facility.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed two corrective action reports related to access controls and high radiation area radiological incidents. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk significant operational experience feedback.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable Planning And Controls (71121.02)

.1 Radiological Work Planning.

a. Inspection Scope

The inspectors evaluated the licensee's list of planned work activities for refueling outage 11 ranked by estimated exposure that were in progress and reviewed the following two work activities of exposure significance:

- 06-1113, CRD Exchange; and
- 06-1205, East/West MSR.

For these two activities, the inspectors reviewed the as low as is reasonably achievable work activity evaluations, exposure estimates, and exposure mitigation requirements in order to verify the licensee had established procedures and engineering and work controls that were based on sound radiation protection principles in order to achieve occupational exposures that were as low as is reasonably achievable. This also

involved determining that the licensee had reasonably grouped the radiological work into work activities based on historical precedence, industry norms, and/or special circumstances.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed dose records of declared pregnant workers for the current assessment period to verify the exposure results and monitoring controls employed by the licensee complied with the requirements of 10 CFR Part 20.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolutions

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program to determine if repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution had been addressed.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152)

1. Biennial Licensed Operator Requalification Sample Review

a. Inspection Scope

The inspectors reviewed several licensee training department self-assessment reports and minutes of the station's Curriculum Review Committee. The licensee's self-assessments reviewed the licensed operator training program for approximately

12 months prior to this inspection activity. Curriculum Review Committee minutes for the past 24 months were reviewed. These documents were reviewed to ensure any issues identified were appropriately evaluated, prioritized, and controlled.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a screening review of each item entered into the licensee's corrective action program to identify trends that might indicate the existence of a more significant safety issue. The inspectors considered repetitive or closely related issues that may have been documented by the licensee outside the normal corrective action program, such as in:

- trend reports or problem identifications;
- major equipment problem lists;
- repetitive and/or rework maintenance lists;
- departmental problem/challenges lists;
- system health reports;
- quality assurance audit/surveillance reports;
- self-assessment reports;
- maintenance rule assessments; or
- corrective action backlog lists.

The inspectors verified the licensee was identifying issues at an appropriate threshold and entering them into their corrective action program by comparing those issues identified by the NRC during the conduct of the plant status and inspectible area portions of the program with those issues identified by the licensee.

b. Issues

Inspection reports 05000341/2004008 and 05000341/2005012 documented a potential degrading trend with the licensee's ability to resolve equipment-related problems. The inspectors discussed six equipment issues in the respective semi-annual trend review where the licensee expended significant effort in resolving repeat equipment problems on multiple occasions. During the current semi-annual trend review, the inspectors noted more examples of repeat equipment issues.

- Repeat failures of the south auxiliary boiler: The auxiliary boilers are important to provide heating steam to the plant HVAC systems during cold weather so they do not trip on freeze-status monitors. However, the south boiler has either failed to start or tripped unexpectedly at least seven times since October 26, 2005.
- Repeat trips of RWHVAC: As described in Section 1R14.1 of this report, the ability of RWHVAC to operate reliably during cold weather has been a long-standing issue.

- Repeat failures of turbine control valve dump solenoid valves: As described in Section 1R14.3 and 1R14.5 of this report, two different turbine valves unexpectedly closed because their respective dump solenoid valves failed.
- Repeat endbell gasket leaks on the battery room cooler: This non-safety-related cooler leaked on June 22 and December 20, both times due to a failed endbell gasket. This cooler also has a long-standing history of endbell leaks.

Lastly, the licensee issued four licensee event reports (LERs) during 2005 related to fire protection deficiencies, LER 2005-002 on May 18, LER 2005-003 on June 29, LER 2005-005 on August 25, and LER 2005-006 on September 15, 2005. In addition, as described in inspection report 05000341/2005006, the trienniel fire protection inspectors identified four non-cited violations and opened one unresolved item. Taken collectively, these issues could indicate a negative trend in the health of the licensee's fire protection program.

4OA3 Event Followup (71153)

.1 Unresolved Item 05000341/2004007-05: Emergency Diesel Generator 12 Blower Failure

a. Inspection Scope

The inspectors opened this unresolved item to document a self-revealed issue with the failure of the emergency diesel generator (EDG) 12 blower. The inspectors reviewed the licensee's root cause investigation for the failure of the blower. The inspectors reviewed the CARD written for the failure and interviewed maintenance and engineering personnel.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) with an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to establish appropriate foreign material exclusion controls for the EDG 12 blower.

Description: As described in Section 4OA3.2 of inspection report 05000341/2004007, on August 6, 2004, the inspectors responded to and reviewed the circumstances surrounding the failure of the blower on EDG 12. The licensee completed a safety system outage on the EDG and it was started for testing per procedure 24.307.46, "Emergency Diesel Generator 12, Fast Start Followed by a Load Reject." After completing the load reject, personnel in the EDG 12 room observed abnormal noise, vibration, and smoke from the diesel and an operator tripped the diesel. The catastrophic failure of the blower was documented on CARD 04-23549.

The blower was sent to the manufacturer for disassembly and inspection. The blower internals had indications of severe heat on the end plates and seal area. The seal area also exhibited severe wear and the two impellers showed signs of metal-to-metal contact. Markings consistent of a 0.25-inch diameter, 24 threads-per-inch fastener were identified on the end plate and the end of a blower lobe. End plate and lobe clearances

were smaller than the diameter of the screw. Tools used in the diesel maintenance, which included inspection mirrors and feeler gages, were examined for a missing screw of similar size but no screws were found to be missing.

After reviewing vendor manual VME8-1.5, the licensee identified six 10-24 x ½ inch setscrews used to attach the turbo charger blower side oil seal to the casing (piece 31). The screws were required to be staked to prevent coming loose and possibly entering the air flow stream that leads to the blower. The screws were inaccessible without taking the diesel out of service; however, the licensee assumed the path from the turbocharger to the blower was too tortuous for a screw to reach the blower. The licensee performed a test at the vendor's facility which verified their assumption.

Nevertheless, the licensee concluded that the most probable cause of the blower failure was foreign material entering the blower. The material caused metal-to-metal contact and a seal failure. The inspectors questioned whether the blower internals were ever exposed during the maintenance and discovered the licensee had removed the inspection covers during the safety system outage. The inspectors determined a screw may have entered the blower internals during the safety system outage, thereby causing the catastrophic failure of the blower during operation.

The inspectors reviewed Maintenance Conduct Manual MMA-17, "Foreign Material Exclusion," and discovered a foreign material exclusion (FME) area was required to be established when breaching the EDG for maintenance. The inspectors toured the area during the August maintenance and observed that an FME area had been established. The inspectors reviewed FME material control log in WR W840040100 to identify whether any fasteners had been logged into and out of the FME area. None were listed. Maintenance Conduct Manual MMA-17 defined a material control log as a list used to account for all material introduced and removed into an FME area. Maintenance personnel were interviewed to determine whether fasteners were typically logged into and out of FME areas and the inspectors discovered this practice was never performed despite numerous fasteners crossing the boundary during maintenance.

Analysis: The inspectors determined the failure to log fasteners into and out of an FME area was a performance deficiency warranting a significance determination. The inspectors concluded the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B dated September 30, 2005, "Issue Disposition Screening," because the failure to maintain FME inside the blower could have caused the catastrophic failure of the blower and a failure of the EDG during operation, thereby affecting the Mitigating Systems Cornerstone for emergency AC power. Further, if left uncorrected, the condition could lead to a more significant safety concern.

The inspectors completed a significance determination of this issue using IMC 0609, "Significance Determination Process (SDP)," Appendix A, Attachment 1 dated November 22, 2005, "User Guidance for Determining the Significance of Reactor Inspection Findings for At Power Situations." The inspectors performed a phase 1 screening of the issue and concluded this finding affected the Mitigating System cornerstone for emergency AC power availability and reliability because EDG 12 had an actual loss of function. The inspectors assumed an actual loss of function of a single division for

greater than the TS allowed outage time of 7 days since it took greater than 7 days to repair the blower. The inspectors conducted a phase 2 analysis using the Fermi 2 site specific SDP notebook. The inspectors determined the multi-train function of the emergency AC power system was maintained with a loss of function to one of four EDGs for the loss of offsite power and the loss of one of two EDGs in a train for the loss of division 1 offsite power. Therefore, this finding was considered to be of very low safety significance (Green).

Enforcement: 10 CFR 50, Appendix B, Criterion V, required activities affecting quality shall be prescribed by documented instructions or procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions and procedures. Maintenance Conduct Manual MMA-17, "Foreign Material Exclusion," was a procedure affecting quality and required establishing an FME area when breaching the EDG for maintenance. Entering the FME area required logging all material into and out on a material control log.

Contrary to the above, sometime before August 6, 2004, fasteners were neither logged into or out of the FME zone for EDG 12 and a screw could have entered the EDG blower internals causing a catastrophic failure of the EDG. Because this violation was of very low safety significance and because it was entered into the licensee's corrective action program, CARD 04-23549, it is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. Immediate corrective actions included securing the EDG, shutting down the plant, making the necessary repairs and inspection to the EDG, and reviewing the FME program. (Non-Cited Violation 5000341/2005019-02, Failure to Provide Adequate Foreign Material Exclusion Protection for Emergency Diesel Generator 12)

.2 Review of Licensee Event Reports (LERs)

The closure of the following three LERs (Items 4OA3.2(1), (2), and (3), represent three event followup inspection samples.

(1) (Closed) LER 05000341/2004-001: Technical Specification Required Due to Emergency Diesel Generator Failure

On August 6, 2004, during the cooldown run following completion of the load reject surveillance, personnel in the EDG 12 room observed abnormal noise, vibration, and smoke from the diesel and an operator tripped the diesel. Subsequent inspection determined the scavenging air blower had failed and the EDG could not be repaired within the remainder of the 7-day allowed out-of-service time. The inspectors reviewed Maintenance Conduct Manual MMA-17, "Foreign Material Exclusion," and discovered that an FME area was required to be established when breaching the EDG for maintenance. The inspectors reviewed FME material control log in WR W840040100 to identify whether any fasteners had been logged into and out of the FME area. The failure of the blower was documented on CARD 04-23549. This condition was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, and is documented in Section 4OA3.1 of this report. This LER is closed.

(2) (Closed) LER 05000341/2005-002: Combustion Turbine Generator 11-1 Unable to Perform as Designed During Certain Appendix R Scenarios.

On May 18, 2005, the licensee reported via LER 05-002, an unanalyzed condition related to several possible design and operating procedure deficiencies affecting Appendix R and Station Blackout (SBO) events. Specifically, the LER documented that the applicable Appendix R success criteria could not be assured under all postulated scenarios described in the UFSAR. The LER stated that this unanalyzed condition could preclude achievement of the original design intent during an Appendix R fire concurrent with assumed loss of offsite power. The postulated scenarios included various initial conditions, existing alternate shutdown design features and multiple hot shorts resulting from a fire. The postulated scenarios and the root cause analysis report were documented in the licensee's corrective action program as CARD 05-21500, dated October 12, 2005, to evaluate the root cause(s) of these deficiencies and to implement permanent equipment and procedural changes.

Non-safety-related Combustion Turbine Generator (CTG) 11-1 (the dedicated Appendix R alternate AC source) is being used in combination with the dedicated shutdown panel to meet the Appendix R requirements of achieving and maintaining the plant in safe shutdown condition during an Appendix R fire. The LER involves the ability of CTG 11-1 to provide emergency power to Appendix R loads under circumstances where postulated Appendix R fire occurs that forces evacuation of the main control room and shutdown of the plant from the dedicated shutdown panel, concurrent with a loss of offsite power (LOOP) and in some cases the right combination of multiple postulated hot shorts occurring at the wrong time.

Using the postulated scenarios, the licensee identified the following design and procedure issues which had the potential to compromise the integrity of CTG 11-1 and its subsequent ability to power the post-fire emergency loads:

- Under certain conditions, where CTG 11-1,11-2, 11-3, or 11-4 are operating in parallel with the grid, availability of the dedicated alternate AC source could not be assured.
- A potential existed to parallel CTG 11-1 asynchronously with an operating EDG from postulated repositioning of multiple circuit breakers due to hot shorts.
- An automatic breaker closure design feature, used during operation from the dedicated shutdown panel when undervoltage conditions were detected during a LOOP, was not recognized in the dedicated shutdown panel abnormal operating procedure AOP 20.000.18, "Control of the Plant from the Dedicated Shutdown Panel." Consequently, use of this feature with CTG 11-1 running during an Appendix R fire would have automatically closed breakers A2 and A6 before the downstream loads had been removed by the operator, potentially overloading CTG 11-1.
- Insufficient procedural guidance was provided to the operators to strip DC breaker control power prior to operating the breakers that connect CTG 11-1 and the EDGs to divisional loads, consequently, the breakers could have repositioned in response to multiple hot shorts and either parallel and asynchronously tie CTG 11-1 to operating EDGs or add unplanned electrical loads to the system.
- Insufficient procedural guidance was provided to the operators to ensure that the

required loads were properly fed by the operating CTGs or to locally trip the operating CTGs when they were running at minimum load at the time of the event.

- No positive method existed for disconnecting the CTGs from the 13.2 kV buses during a LOOP.
- No conclusive analysis or testing could be found to confirm the assumption that the CTG 11 output breakers would trip during a loop with CTG11 unit in operation.
- The UFSAR and other design documents stated that CTG 11-1 will trip on under-frequency during a LOOP. The licensee determined that no under-frequency trips from breaker A2 existed.

Some of the corrective actions taken by the licensee to address these concerns included:

- Declaring CTG 11-1 inoperable for Appendix R purposes whenever any CTG is being operated as a peaking unit in parallel on the grid;
- Implemented temporary modification 05-0007 which changed undervoltage logic to inhibit automatic closure of breaker A6 when LOOPoccurs until manually permitted by the operator action. EDP 31880, Revision A will be implemented in May 2006 to make this change permanent;
- Revised abnormal operating procedure AOP 20.000.18 to remove breaker control power from the breakers being repositioned before they are manually repositioned to eliminate the possibility of circuit breaker mis-positioning due to hot shorts;
- Revised operating procedure 23.324 to require any running CTG be manned and to trip any CTG, other than CTG 11-1, when it reaches rated speed in response to an appendix R fire;
- Implemented fast start of CTG 11-1 in DCS for Appendix R and SBO events to reduce CTG 11-1 startup time to 6-7 minutes; and
- Initiated CARD 05-25736 to correct the UFSAR concerning CTGs tripping on low frequency.

Additional long-term corrective actions will be pursued in EDPs 31880 and 32110 and are planned as discussed in root cause report documented in CARD 05-21500, dated October 12, 2005.

This issue also resulted in a licensee-identified finding of very low safety significance (Green) as discussed in Section 4OA7.1 of this inspection report. This LER is closed.

(3) Review of Licensee Actions Related to LER 50-341/2005-006: Potential Fire Scenario Affecting Opposite Division Emergency Diesel Generators

The guidelines established by branch technical position CMEB 9.5-1, Section C.4, “Quality Assurance [QA] Program,” Paragraph h, required that measures be established to ensure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and nonconformance, are promptly identified, reported, and corrected.

a. Inspection Scope

The inspectors reviewed LER 2005-006, "Potential Fire Scenario Affecting Opposite Division Emergency Diesel Generators," dated September 15, 2005, to determine effectiveness of cause determination and implementation of corrective actions for the identified issues. The inspectors verified whether the licensee's root cause evaluation and corrective actions were appropriate, timely, and commensurate with the safety significance of the problem.

b. Findings

Introduction: The inspectors identified a finding involving an NCV of operating condition 2.C.(9) having very low safety significance (Green) for failing to implement adequate corrective actions in a timely manner. Specifically, the results of the assessment and new plant configuration change requirements, delineated in calculation DC-4921, "Appendix R Calculation," dated December 21, 2004, were not implemented until July 17, 2005. During the triennial fire protection inspection, completed on July 15, 2005, the inspectors questioned the licensee's lack of timely implementation of DC-4921 calculation results and prompted the licensee to evaluate effectiveness of implementation of the resulting configuration change requirements.

Description: Between 2002 and 2005, the licensee performed a comprehensive Appendix R re-analysis and documented the results in calculation DC-4921, "Appendix R Calculations," dated December 21, 2004. The re-analysis included review of original assumptions used to determine if the completed associated circuit analysis could present a significant risk increase when compared to regulatory requirements as clarified by NRC Regulatory Issue Summary 2004-003, Revision 1, "Risk-Informed Approach for Post-Fire Safe-Shutdown Circuit Inspections."

Calculation DC-4921 identified that for the two 4.16 kV divisional switchgear room fire zones, certain postulated hot shorts in the division 1 switchgear room, concurrent with a loss of offsite power (LOOP) could cause the spurious operation of maintenance tie feeder breakers in the division 2 switchgear room, and vice-versa. Specifically, a fire in a 4.16 kV divisional tie breaker cubicle concurrent with a LOOP could have caused multiple hot shorts that could have resulted in the asynchronous paralleling of the opposite division EDGs. This could have damaged the fire free division emergency power source thereby rendering safe shutdown equipment inoperable and adversely affecting the ability to safely shutdown the plant. Further, since the balance of plant buses in the division 1 switchgear room are tied to both divisional switchgear buses, a fire in this switchgear room could have resulted in a LOOP. This issue resulted in a licensee-identified finding of very low safety significance as discussed in Section 4OA7 of this inspection report.

The calculation results required licensee action to change the plant operating configuration and modify operating procedures for the four 4.16 kV tie feeder breakers to ensure that one safe shutdown division is maintained free of fire damage. Specifically, the calculation stated, in part, that maintenance tie feeder breakers 64B-B9,

64C-C9, 65E-E9, and 65F-F9 must be racked out (open) during normal plant operation to prevent their spurious operation and to prevent non-synchronous paralleling and damage of the EDGs that are used for safe shutdown following a postulated fire.

During the triennial fire protection inspection completed on July 15, 2005, the inspection team determined that the licensee had not performed the required plant operating configuration changes (i.e., racking out the 4 tie breakers) nor were operating procedures changed. Inspector questions regarding the lack of timely implementation of actions to address calculation DC-4921 results prompted the licensee to take the following corrective actions as of July 17, 2005: institute an hourly fire watch, rack out the four maintenance tie feeder breakers that could be affected and revise operating procedures to require those breakers be racked out in modes 1, 2, and 3 of plant operation.

On September 15, 2005, the licensee reported this unanalyzed condition related to postulated multiple hot shorts during fire scenarios in either of the 4160 V divisional switchgear rooms via LER 05-006. During review of LER 2005-006, the inspectors identified that the licensee failed to implement adequate and timely corrective actions for prerequisite requirements delineated in calculation DC-4921, "Appendix R Calculation," dated December 21, 2004.

Analysis: The inspectors determined that the failure to implement adequate and timely corrective actions was a performance deficiency warranting a significance evaluation. This performance deficiency was considered greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued on May 19, 2005. This performance deficiency affected the Mitigating Systems Cornerstone and affected the mitigating systems objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences because the information used until July 17, 2005, was not in conformance with the calculation analysis results and requirements.

The inspectors determined that the failure to implement adequate corrective actions in a timely manner also affected the cross-cutting area of Problem Identification and Resolution (corrective action) because the Appendix R calculation analysis results requirements were previously identified by the licensee but no corrective actions were taken. Upon discovering this discrepancy, the licensee initiated an hourly fire watch, racked out the four affected maintenance tie breakers, and revised the applicable operating procedures.

The RIII SRA performed a phase 2 analysis of this finding using IMC 0609 Appendix F, "Fire Protection Significance Determination Process." The fire scenario that would result in adversely affecting the EDGs and as a result safe shutdown, requires a fire in one breaker cabinet in the switchgear room, a LOOP to the alternate division, and two hot shorts. For a bounding analysis, a fire in the division 1 switchgear room, specifically breaker 64T, was considered. A fire in the similar breaker for division 2 would be less risk significant because the combustion gas turbine CTG 11-1 could still supply power to equipment, even if the EDGs failed due to the postulated hot shorts.

The frequency of a fire in a breaker cabinet from Appendix F was combined with the frequency of a LOOP to division 2. The licensee's IPEEE analysis for fire in the switchgear room determined the opposite division offsite power would not be affected by the fire. Therefore, the random LOOP to the division was considered by using the initiating event frequency from the Fermi internal events SDP notebook. The analysis did not consider the possibility of suppression prior to fire damage. The probability of spurious operation for thermoset cables was used to determine the likelihood of two hot shorts which could cause the division 2 EDGs to be asynchronously paralleled. No additional consideration of remaining mitigation capability was considered because the fire frequency combined with the random loss of offsite power to division 2 and the probability of two hot shorts was less than 1.0E-6. Therefore, this finding was considered to be of very low safety significance (Green).

Enforcement: Section 2.C(9) of the Fermi 2 Operating License stated, in part, that the licensee shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the UFSAR. Section 9A of the UFSAR outlined the licensee commitments for fire protection. Section 9A.5 of the UFSAR provided a point-by-point comparison with Appendix A to NRC BTP APCSB 9.5-1, dated August 23, 1976. Position c.8 listed in Section 9A.5 of the UFSAR identified the NRC position regarding quality assurance requirements for corrective action. The licensee response was that this item is included in the quality assurance program. Section 17 of the UFSAR is the quality assurance program for the licensee. Section 17.2.16 of the UFSAR established the quality assurance requirements for corrective action. Section 17.2.16 of the UFSAR stated, in part, that measures are established to ensure conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above, the licensee failed to implement adequate and timely corrective actions to ensure maintenance tie feeder breakers 64B-B9, 64C-C9, 65E-E9 and 65F-F9 were racked out (open) during normal plant operation in modes 1, 2, and 3 to prevent their spurious operation and their non-synchronous paralleling and damage to the EDGs that are used for safe shutdown following a postulated fire. The licensee entered the issue of corrective action timeliness into its corrective action program as CARDs 05-24251 and 05-24254, dated July 17, 2005, to evaluate this event and assess the multiple, diverse fire protection regulatory non-compliance issues that have been identified in recent Fermi 2 licensee evaluation reports. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000341/2005019-03). This LER is closed.

4OA5 Other Activities

.1 Temporary Instruction 2515/161 - Transportation of Reactor Control Rod Drives in Type A Packages

a. Inspection Scope

The inspectors conducted interviews and record reviews to verify the licensee:

- had undergone refueling activities since calender year 2002; and
- had not shipped irradiated control rod drive mechanisms in Department of Transportation specification 7A, type A packages.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On January 11, 2006, the inspectors presented the inspection results to Mr. D. Cobb and other members of licensee management at the conclusion of the inspection. The inspectors asked the licensee whether any material examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Biennial Operator Requalification Program inspection with Mr. D. Cobb on October 28, 2005;
- Licensed Operator Requalification Program annual examination results review with Mr. R. Duke on November 21, 2005, via telephone;
- Radiological Environmental Monitoring Program inspection with Mr. S. Stasek on December 16, 2005; and
- Fire Protection Inspection with R. Salmon on January 8, 2006, via telephone.

4OA7 Licensee-Identified Violations

Two violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors (Sections 4OA3(1) and 4OA3(2) of this report. These violations of NRC requirements meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as Non-Cited Violations.

.1 Fermi 2 Facility Operating License Condition 2.C.(9) required, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection plan as described in the UFSAR through Amendment 60 and as approved in the Safety Evaluation Report through Supplement 5. Section 9A.3 of the UFSAR stated, in part,

that an alternative shutdown system had been designed and installed to meet the technical requirements of 10 CFR Part 50, Appendix R, Sections III.G.3 and L. Appendix R of 10 CFR Part 50, Section III.L.3 stated, in part, that the alternative shutdown capability shall be independent of the specific fire area(s).

Contrary to the above, on May 18, 2005, the licensee reported via LER 05-002, an unanalyzed condition related to several possible design and operating procedure deficiencies affecting Appendix R and station blackout events. Specifically, the applicable Appendix R success criteria could not be assured under all postulated scenarios described in the UFSAR. The licensee determined that this unanalyzed condition could preclude achievement of the original design intent during an Appendix R fire concurrent with assumed loss of offsite power. The postulated scenarios and the root cause analysis report were documented in the licensee's corrective action program as CARD 05-21500 dated October 12, 2005, to evaluate the root cause(s) of these deficiencies and to implement permanent equipment and procedural changes.

This issue resulted in a licensee-identified finding of very low safety significance (Green). This finding is not suitable for SDP evaluation and therefore is subject to NRC management review. The finding cannot be assessed using IMC 0609, Appendix F, because it involves control room evacuation scenarios which are not covered explicitly by the evaluation techniques of Appendix F. However, the inspectors, the Region III senior reactor analyst, and Region III management reviewed the finding and determined that it was of very low safety significance. No credible fire scenario was identified which would result in conditions described by the LER. In addition, no actual fire occurred, operators were not required to respond to an actual event, and the lack of adequate electrical separation did not cause equipment to be inoperable.

.2) Section 2.C.(9) of the Fermi 2 Facility Operating License stated, in part, that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in its UFSAR. Section 9A of the UFSAR outlined the licensee commitments for fire protection. Section 9A.5 of the UFSAR provided a point-by-point comparison with Appendix A to NRC BTP APCSB 9.5-1, dated August 23, 1976. Position d.1(a)(2) in Section 9A.5 of the UFSAR identified the NRC position regarding separation of redundant safety-related systems from each other so that both are not subject to damage from a single fire hazard. The licensee's response was that locations where redundant systems are exposed to a single fire hazard are identified in the fire hazard analysis and provided with adequate fire protection for these areas.

Contrary to the above, on December 21, 2004, the licensee identified potential fire scenario affecting opposite division EDGs. This condition was reported on September 15, 2005, via LER 2005-006. The licensee determined this condition could have resulted in non-synchronous paralleling and damage to the EDGs that are used for safe shutdown following a postulated fire. As part of the corrective action, on July 17, 2005, the licensee racked out (opened) four 4.16 kV maintenance tie feeder breakers to ensure one safe shutdown division is maintained free of fire damage as per the prerequisite requirements delineated in calculation DC-4921, "Appendix R Calculation," Revision E. The licensee entered the issue of corrective action timeliness into its corrective action program as CARDs 05-24251 and 05-24254, dated July 17, 2005. The RIII senior reactor analyst performed a phase 2 analysis of this finding using IMC 0609

Appendix F, “Fire Protection Significance Determination Process,” and concluded the safety significance of this finding was very low (Green).

ATTACHMENT: SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee

R. Anderson, Principal Engineer, Nuclear Engineering PE Programs PDM (fire protection)
J. Bond, Principal Technical Specialist, Nuclear Engineering PSE - Electrical/I&C
K. Burke, Supervisor, Nuclear Engineering PE Programs PDM (fire protection)
D. Cobb, Assistant Vice-President, Nuclear Generation
K. Hlavaty, Plant Manager
R. Gaston, Director, Licensing
J. Lavelline, Supervisor, Nuclear Engineering PSA
D. Craine, General Supervisor, Radiological Engineering
H. Higgins, Radiation Protection Manager
R. Libra, Director Nuclear Engineering
K. Morris, Emergency Preparedness Supervisor
D. Noetzel, Manager Nuclear System Engineering
N. Peterson, Nuclear Licensing Manager
M. Philippon, Operations Manager
R. Slottke, Principal Engineer, Nuclear Engineering PSA
R. Salmon, Principal Engineer, Nuclear Licensing
J. South, Lead Engineer, Nuclear Engineering PSE - Electrical / I&C

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---|---|---|
| 05000341/2005019-01 | NCV | Failure to Adequately Assess a Procedural Prerequisite (Section 1R14.1) |
| 05000341/2005019-02 | NCV | Failure to Provide Adequate Foreign Material Exclusion Protection for Emergency Diesel Generator 12 (Section 4OA3.1) |
| 05000341/2005019-03 | NCV | Failure to Implement Required Corrective Actions for a Self-Identified Fire Protection Circuit Analysis Issue in a Timely Manner (Section 4OA3.2) |

Closed

| | | |
|---|---|---|
| 05000341/2004007-05 | URI | Emergency Diesel Generator 12 Blower Failure |
| 05000341/2004-01 | LER | Technical Specification Required Due to Emergency Diesel Generator Failure |
| 05000341/2005-002 | LER | Combustion Turbine Generator 11-1 Unable to Perform as Designed During Certain Appendix R Scenarios |
| 05000341/2005-006 | LER | Potential Fire Scenario Affecting Opposite Division Emergency Diesel Generators |

Discussed

None.

## 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.

**Section 1R01: Adverse Weather Protection**
Procedure EP-101; Classification of Emergences; Revision 29
Procedure 20.000.01; Acts of Nature; Revision 34
Procedure 32.000.07; Reactor Building Crane Operation; Revision 33
UFSAR, Section 3.3.2.3.4; Crane and Crane Support Structures

**Section 1R04: Equipment Alignment**
Drawing 4A721-4278, Rev. A; Steam Tunnel Floor Reactor Building
Drawing 6M721-5706-3; RHR Service Water Make Up Decant And Overflow System Functional Sketch
Drawing 6M721-5729-1; Emergency Equipment Cooling Water Division 1 Functional Operating Sketch
Drawing 6M721-5729-2, Rev. AN; Emergency Equipment Cooling Water (Division II) Functional Operating Sketch
Drawing 6M721-5737, Rev. 0; Standby Gas Treatment System Functional Operating Sketch
Procedure 23.128, Rev. 36; Turbine Building Closed Cooling Water System
Procedure 24.129.01, Rev. 35; Station and Control Air System Valve Operability Test
Procedure 24.207.02, Rev. 39; EECW / EESW Valve Lineup Verification
Procedure 24.208.03, Rev. 49; D2 EESW Pump and Valve Operability, Revision 49
Procedure 24.207.09, Rev. 25, SEC-5.1; Division 2 EECW Pump and Valve Operability Test
P45-00; Design Basis Document - Emergency Equipment Service Water System
ST-OP-315-0020-001, Rev. 14; Standby Gas Treatment System
ST-OP-315-0067-001, Rev. 17; Reactor Building Closed Cooling Water / Emergency Equipment Cooling Water

**Section 1R05: Fire Protection**
Fire Protection Pre-Plan FP-RB-4-17a, Rev. 2; Reactor Building SLC System Zone 17
UFSAR Figure 9A-4; Fire Protection Evaluation Reactor and Auxiliary Buildings First Floor
UFSAR Figure 9A-9; Fire Protection Evaluation Reactor and Auxiliary Buildings Fourth Floor
UFSAR Section 9A.4.1.6: Reactor Building First Floor, Zone 5
UFSAR Section 9A.4.1.9: Reactor Building Fourth Floor, Zone 8

**Section 1R06: Flood Protection Measures**
Fermi 2 Individual Plant Examination (External Events)
Fermi 2 Individual Plant Examination (Internal Events)
Fermi 2 Updated Final Safety Analysis Report 1R06

**Section 1R11: Licensed Operator Requalification**
24-Month Training Plan for Current Cycle 2004-2005 (Licensed Operator Requalification)
2004 (Simulator) Quadrennial Testing, Schedules/Procedures
2004 (Simulator) Quadrennial Testing, Plant Startup Test

2004 (Simulator) Quadrennial Testing, Surveillance Procedures
2004 (Simulator) Quadrennial Testing, Malfunction Events, Annual Events
SS-OP-904-0011, Rev. 1; Control Rod Drift, Instrument Malfunction, Loss of Turbine Building Closed Cooling Water, Loss of Coolant Accident; dated September 22, 2005
CP-OP-202; Licensed Operator Requalification; Revision 18
CP-OP-202- Cycle (1- 3) 2004 and Cycle (1- 3) 2005 Attendance Records
Evaluation Summary Report; Management Observation of Training; 1/1/04 - 10/14/05
Evaluation Summary Report; Classroom Instructor Observation of Training; 1/1/04 - 10/14/05
Evaluation Summary Report; Simulator Instructor Observation of Training; 1/1/04 - 10/14/05
Fermi 2 Nuclear Training Work Instruction Section 5.0; Implementation of Training Instruction 5.03; Conduct of Simulator Training; Revision 5
Fermi 2 Nuclear Training Work Instruction Section 5.0; Implementation of Training Instruction 5.12; Conduct of Simulator Assessments and Evaluations; Revision 5
Fermi 2 Nuclear Training Work Instruction Section 5.0; Implementation of Training Instruction 5.14; Job Performance Measures; Revision 0
Fermi 2 Nuclear Training Work Instruction Section 5.0; Implementation of Training Instruction 5.16; Examination Analysis; Revision 4
Fermi 2 Nuclear Training Work Instruction Section 4.0; Training Development Instruction 4.04; Development and Revision of Training and Evaluation or Assessment Material for the Simulator; Revision 8
Fermi 2 Nuclear Training Work Instruction Section 4.0; Training Development Instruction 4.05; Expectations and Strategies for Continuing Training; Revision 1
Fermi 2 Nuclear Training Work Instruction Section 4.0; Training Development Instruction 4.07; Review and Approval of Training Material; Revision 8
Fermi 2 Nuclear Training Work Instruction Section 4.0; Training Development Instruction 4.08; Examination Development; Review and Approval; Revision 6
Fermi 2 Nuclear Training Work Instruction Section 3.0; Design Instruction 3.05; Design and Development of Simulator Evaluations and Assessments; Revision 0
Fermi 2 Nuclear Training Work Instruction Section 5.0; Implementation of Training Instruction 5.09; Proctoring and Grading Written Exams; Revision 4
Fermi 2 Nuclear Training Work Instruction Section 1.0; Administrative Instruction 1.20; Simulator Fidelity; Revision 1
Instruction 5.12, Revision 5, Attachment 8; Dynamic Simulator Crew Evaluation Scenario SS-OP-904-0011, Shift 1; dated November 8, 2005
Licensed Operator CRC Meeting Minutes - Various 2004-2005
Licensed Operator CRC Meeting Minutes - Various 2004-2005
Licensed Operator Requalification 2004-2005 Training Plan
Licensed Operator Requalification Annual Operating Examinations - Various; 2004-2005
Licensed Operator Requalification Biennial Written Examinations - Various; 2005
LORT Related Condition Reports Written 2004-2005
MNT09; Nuclear Training Conduct Manual-Control Room Simulator Controls; Revision 6
Nuclear Quality Assurance Audit Report 04-109; Quality Assurance Audit of the Training and Qualification of Unit Staff; dated July 6-26, 2004
Nuclear Quality Assurance Audit Report 05-105; Plant Operations Program Audit; April 11-May 10, 2005
Nuclear Training Configuration Management Systems (Simulator) Open TWRs; dated October 18, 2005

Nuclear Training Configuration Management Systems (Simulator Closed "B" DRs 10/1/04-10/18/05) TWR Details; dated October 18, 2005
Nuclear Training Configuration Management Systems (Simulator Closed "D" DRs October 1, 2004-October 18, 2005) TWR Details; dated October 18, 2005
Nuclear Training Configuration Management Systems Open TWRs (Simulator Modifications); dated October 5, 2005
Nuclear Training Configuration Management Systems Open TWRs (Simulator Hardware Work Requests); dated October 5, 2005
Nuclear Training Work Instruction Section 1.0; Administrative Instruction 1.15; Simulator Maintenance; Revision 6
ODE-8; Attachment 3; Shift (1-5) Active License Required Hours (1st - 4th) Quarters 2004 and (1st - 3rd) Quarters 2005
ODE-8; Attachment 3; Off Shift Active SRO (RO) License Required Hours (1st - 4th) Quarters 2004 and (1st - 3rd) Quarters 2005
SS-OP-904-0013, Rev. 1; Standby Liquid Control and Control Center Heating Ventilation and Air Conditioning Failures, Loss of Turbine Building Closed Cooling Water, Anticipated Transient Without Scram, and Reactor Pressure Vessel Flooding; dated September 21, 2005
Simulator Differences 2005; Licensed Operator Requal-Cycle 2

**Section 1R12: Maintenance Effectiveness**
CARD 05-24766; Three Consecutive Failures of 44.020.064
CARD 04-25832; TS Allowable Value Exceeded During Performance of 44.010.063
CARD 04-25885; Three Consecutive Out of Tolerances for B21N574D During 44.010.063
CARD 05-26634; Inadequate Maintenance Rule Functions for RPS Trip Signals (NRC-Identified)
Design Calculation DC-4550, Vol. 1, Rev. F; Low Condenser Vacuum Trip Instrumentation Surveillance Procedure Validation
Job 0518030328; Perform 44.010.063 RPS MSIV-Outboard Valve Limit Switch Div. 1 & 2 Cal
Job 0518030818; MSIV Outboard Limit Switch Calibration
Maintenance Rule Conduct Manual, Appendix F, Rev. 4; Maintenance Rule Performance Criteria
Maintenance Rule Conduct Manual, Appendix E, Rev. 3; Maintenance Rule SSC Specific Functions
Nuclear Boiler Functional Failure Evaluations dated November 1, 2002, through December 1, 2005
Nuclear Boiler System Monthly Maintenance Rule Report from November 1, 2002 through October 1, 2005
Procedure 24.137.01, Rev. 34; Main Steam Isolation Channel Functional Test

**Section 1R13: Maintenance Risk Assessment and Emergent Work Evaluation**
Performance Analysis Review Week of November 28, 2005
FERMI 2, Plan of the Day, Division 2 Week, dated November 28, 2005
Performance Analysis Review Week of December 12, 2005
FERMI 2, Plan of the Day, Division 2 Week, dated December 12, 2005
Performance Analysis Review Week of December 19, 2005
FERMI 2, Plan of the Day, Division 2 Week, dated December 19, 2005
Radiological Survey Number 05072-R05; Turbine Building Level 3, Hatch, and MSR Beam; dated December 19, 2005

**Section 1R14: Non-Routine Events**
CARD 05-25582; Loss of IPCS and Subsequent AOP Entry During Software Modification
CARD 05-25615; #1 High Pressure Stop Valve Closed During Power Operations
CARD 05-26319; NRC Concern on Threshold for Initiation of CARDs (NRC-Identified)
CARD 05-26589; Processed Radioactive waste Liquids Without RWHVAC in Operation (NRC-Identified)
Procedure 23.109, Rev. 61; Turbine Operating Procedure
Selected Operator Logs from November 23, 2005, through November 25, 2005

**Section 1R15: Operability Evaluations**
CARD 05-25610; Discrepancy Between the Room Coolers in the Plant and Seismic Qualification Report B9-643
Engineering Functional Analysis EFA-T41-003, Rev. 0; Reactor Building Fan Coil Units
Report CTi WA 40321; Stress and Seismic Analysis of Fan Coil Units for Switch Gear Room Enrico Fermi Atomic Power Plant Unit 2 Detroit Edison, DECO Contract 1A95607

**Section 1R16: Operator Workarounds**
Active Operations Challenge Index; dated December 2, 2005
Nuclear Generation Memorandum NPOP-05-0009; Aggregate Assessment of Operator Workarounds; dated January 24, 2005

**Section 1R19: Post-Maintenance Testing**
AD-1.8 R; Fan Reading Sheet; RHR Complex, EDG Room #14, page 3 of 18; dated July 27, 1984
CARD 02-16766; NRC Issue Regarding Content of 24.107.03
CARD 05-26266; Transmitter Out of Required Limits
CARD 05-26863; Reevaluate TSR 26598, Revision A; RHR Damper Actuators Drawing CD-Mo-1051; RHR Complex Dampers; dated June 21
Design Calculation DC-5489; RHR Damper Flow Calculations; Volume 1 Revision A
ERE 33910, Rev. 0; Replacement Rosemount Transmitter
Nuclear Generation Memorandum; Senior Line Manager Designation for IPTE-05-03; dated November 3, 2005
WR C973050100; Residual Heat Removal Division 2 Reservoir South Service Water Cross-tie Valve, dated December 12, 2005
WR 000Z052548; Replace Nuclear Boiler Main Condenser Pressure Transmitter
WR 000Z052672; Flow Indicator Erratic: Standby Feedwater Flow

**Section 1R22: Surveillance Testing**
CARD 03-23076; Suspected Incorrect Wiring
CARD 04-20627; Transmitter Found Outside of Required Limit During Surveillance
CARD 05-24694; Transmitter As-Found Readings Not Within Required Limit
Drawing 4A721-4278, Rev. A; Steam Tunnel Floor Reactor Building
Procedure 44.020.064, Rev. 38; NSSSS - Condenser Pressure Trip System B, Channel B Calibration/Functional
Procedure 44.020.232; Perform NS4 RCIC Steam Line Flow, Trip System B, Functional Test; dated November 29, 2005
Procedure 44.030.155; ECCS - HPCI Torus Level Functional Test; Revision 39

**Section 1R23: Temporary Plant Modifications**

Maintenance Conduct Manual MMA14, Rev. 8; On-Line Leak Sealing
Procedure QA-4-04, Rev. 3; Reinjection Procedure
Procedure QA-4-07, Rev. 3; Enclosure Procedure
TM 05-0026; On-Line leak Repair on Ten-Inch Drain Header to the Condenser (Connection 27)
WR 000Z052993; Install Furmanite Enclosure

**Section 2OS1: Access Control to Radiologically Significant Areas**
CARD 05-23987; Increasing Dose Rates on Overhead Drain Line; dated July 3, 2005
CARD 05-25778; Dose Budget Exceeded; dated October 13, 2005

**Section 2OS2: As Low As Is Reasonably Achievable Planning And Controls (ALARA)**
CARD 04-25799; ALARA Work Planning; NRC Exit Meeting Area of Improvement; dated November 19, 2004
CARD 04-26699; Poor Planning Leads to Less Than Optimum Work Conditions; dated December 16, 2004
CARD 05-10400; RF-10 FAC Program Critique Items; dated January 7, 2005
CARD 05-20784; RF-10 Critique Items for Drywell Team; dated February 6, 2005
CARD 05-24420; ALARA Assessment; dated July 26, 2005
DE 963-6762-3-85CS; RWP Preparation Status; dated December 14, 2005
MRP 05; ALARA/RWPs; Revision 5
MRP 10; Fetal Protection Program; Revision 3
Procedure 63.000.200; ALARA Reviews; Revision 17
RD-10 ALARA Assessment; April 2005

**Section 4OA3 Event Followup (71153)**
CARD 05-24251; Fire Damage in D1 or D2 Switchgear Room Can Cause Opposite Division EDGs , July 17, 2005
CARD 05-24254; Multiple, Diverse Fire Protection Program Regulatory Non-Compliance Issues; July 17, 2005
CARD 05-21500, Possible Design and Operating Procedure Deficiencies for Appendix R and SBO Events - Final Root Cause Analysis Report; March 7, 2005 and October 12, 2005
6SD721-2500-01; One Line Diagram Plant 4160V & 480V System Service Unit 2, Rev.
AC DC-4921; Appendix R Calculation, Volume Number I; Rev E
Fermi 2 Operator Log from 7/17/2005 to 7/19/2005
LER 2005-002; Combustion Turbine Generator 11-1 Unable to Perform as Designed During Certain Appendix R Scenarios; May 18, 2005
LER 2005-006; Potential Fire Scenario Affecting Opposite Division Emergency Diesel Generators; dated September 15, 2005
RIS 2004-003; Risk-Informed Approach for Post-Fire Safe-Shutdown Circuit Inspections; Revision 1
20.000.18; Plant Abnormal Operating Procedure - Control of the Plant from the Remote Shutdown Panel; Revision 36
R1100; CTG 11-1 Get Well Plan CARD 00-24766 - Attachment A; Revision A

## LIST OF ACRONYMS USED

| | |
|---|---|
| AC | Alternating Current |
| BOP | Balance of Plant |
| CARD | Condition Assessment Resolution Document |
| CFR | Code of Federal Regulations |
| CTG | Combustion Gas Turbine |
| CMEB | Chemical Engineering Branch |
| DC | Cirect Current or Design Calculation |
| DRP | Division of Reactor Projects |
| DRS | Division of Reactor Safety |
| EDG | Emergency Diesel Generator |
| EDP | Engineering Design Package |
| FPP | Fire Protection Program |
| kV | Kilovolts |
| FME | Foreign Material Exclusion |
| JPM | Job Performance Measure |
| LER | Licensee Event Report |
| LOP | Loss of Offsite Power |
| LORT | Licensed Operator Requalification Training |
| MSIV | Main Steam Isolation Valve |
| MSR | Moisture Separator Reheater |
| NCV | Non Cited Violation |
| NRC | Nuclear Regulatory Commission |
| RPS | Reactor Protection System |
| RWHVAC | Radioactive Waste Heating Ventilation and Air Conditioning |
| SBO | Station Blackout |
| SDP | Significance Determination Process |
| SRA | Senior Risk Analyst |
| SSD | Safe Shutdown |
| TS | Technical Specifications |
| UFSAR | Updated Final Safety Assessment Report |
| V | Volts |
| Vac | Volts - alternating current |
| WR | Work Request |