

August 2, 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 05000341/2006003

Dear Mr. Cobb:

On June 30, 2006, 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 July 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, five 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.

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Sincerely,

**/RA/**

Christine A. Lipa, Chief  
Branch 4  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2006003  
w/Attachment: Supplemental Information

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

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000341/2006003

Licensee: Detroit Edison Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, Michigan

Dates: April 1 through June 30, 2006

Inspectors: R. Michael Morris, Senior Resident Inspector  
T. Steadham, Resident Inspector  
A. Wilson, NRC Headquarters  
M. Franke, Senior Resident Inspector, Perry  
M. Jordan, NRC Consultant  
R. Langstaff, Senior Reactor Inspector  
M. Mitchell, Radiation Specialist

Approved by: C. Lipa, Chief  
Branch 4  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000341/2006003; 04/01/2006-06/30/2006; Fermi Power Plant, Unit 2; Fire Protection, Maintenance Risk Assessment, Operability Evaluations, Refueling and Outage Activities.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by a regional radiation specialist inspector. Five Green findings, all of which were associated with non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green 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: Initiating Events**

- Green. The inspectors identified an NCV of 10 CFR 50.65(a)(4) for the failure to perform an adequate risk assessment for the Division I battery load test. The licensee failed to consider the effect the test would have on the temperature in the reactor protection system motor generator set rooms. Consequently, the load bank used for the test caused the room temperature to increase which necessitated the unanticipated installation of a temporary fan to cool the room. The licensee entered this issue into their corrective action program to evaluate any programmatic or procedural deficiencies that may have contributed to this event.

This finding is more than minor because the licensee's risk assessment failed to consider maintenance activities that could increase the likelihood of an initiating event, specifically a loss of shutdown cooling from a reactor protection system motor generator set trip on high temperature. The finding is of very low safety significance because it did not affect the ability of operators to recover from a loss of shutdown cooling if it had occurred. The cause of the finding is related to the cross-cutting element of Human Performance. (Section 1R13.2)

#### **Cornerstone: Mitigating Systems**

- Green. The inspectors identified an NCV of license condition 2.C(9) due to the presence of unauthorized transient combustible materials in the residual heat removal complex. An office chair and a plastic trash bin half filled with paper were secured next to the electrical panel and associated cable raceway for emergency diesel generator 12 ventilation in the emergency diesel generator 12 switchgear room. The licensee entered this issue into their corrective action program and removed the unauthorized transient combustible materials from the residual heat removal complex.

This finding is more than minor because it affected the Mitigating Systems Cornerstone attribute for protection against external factors. Specifically, a fire involving the unauthorized transient combustibles could have affected a nearby electrical panel and associated cable raceway containing mitigating system equipment important to safety.

The finding is of very low safety significance because the unauthorized transient combustible materials would not have ignited from existing sources of heat or electrical energy. The cause of the finding is related to the cross-cutting element of Problem Identification and Resolution. (Section 1R05.2)

- Green. The inspectors identified an NCV of Technical Specification 3.1.5.a.2, Amendment 38, for the standby liquid control (SLC) system being inoperable for longer than the allowed time without the plant being placed in hot shutdown. The licensee failed to properly evaluate the operability of SLC during sparging activities when the issue was raised in 1999. As a result, the licensee initiated a 21-hour sparge on the SLC tank on August 24, 1999, and failed to take actions in accordance with the Technical Specifications. After the deficient evaluation was identified on June 1, 2006, the licensee revised the applicable procedures to declare the SLC system inoperable during sparging the SLC tank. The licensee entered this issue into their corrective action program.

This finding is more than minor because it represented a programmatic deficiency in the licensee's chemical control program which affected the ability of the fire brigade to respond to and mitigate the effects of a fire. Upon management review, the finding is of very low safety significance because the quantities of the relevant chemicals were low and the storage location was sufficiently remote from mitigating equipment. (Section 1R05.3)

#### **Cornerstone: Emergency Preparedness**

- Green. The inspectors identified an NCV of license condition 2.C(9), for the failure to appropriately store chemicals in accordance with the fire hazards analysis. The licensee failed to evaluate the fire fighting response guidelines in NFPA-49 for various chemicals brought into the protective area and, therefore, failed to appropriately store them as required by the licensee's fire hazards analysis. As a result, five normally stored chemicals in the building have recommended fire fighting strategies that are inconsistent with the licensee's approved fire protection pre-plan. The licensee entered this issue into their correction action program.

This finding is more than minor because it affected the equipment performance attribute of the reactor safety cornerstone objective of ensuring the availability, reliability, and capability of mitigating equipment to respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance because the total time of sparging activities was short. (Section 1R15.2)

#### **Cornerstone: Occupational Radiation Safety**

- Green. A self-revealed NCV was identified for the licensee's failure to comply with Technical Specification 5.4.1.a, written procedures shall be established, implemented, and maintained covering applicable procedures recommended in Regulatory Guide 1.33. The licensee did not adequately control the modification of the ventilation equipment used to vent airborne radioactive particulate to the refuel floor during reactor vessel floodup. Consequently, while raising reactor vessel water level, the improper venting led to personnel contaminations, uptakes of radioactive material, and the

evacuation of the Reactor Building. The licensee entered this issue into their corrective action program and conducted an investigation into the event. The corrective actions recommended the development and implementation of an acceptable methodology for raising reactor water level.

This finding is more than minor because it affected the Occupational Radiation Safety Cornerstone of Radiation Safety due to individual worker unplanned, unintended dose. The finding was evaluated using the SDP and was determined to be a finding of very low safety significance because there was not a substantial potential for overexposure and the licensee's ability to assess dose was not compromised. (Section 1R20)

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective actions are listed in Section 4OA7 of this report.



## **REPORT DETAILS**

### **Summary of Plant Status**

Unit 2 began this inspection period shutdown for refueling outage 11 (RF11). Reactor startup began on May 3 but was halted at 95 percent power on May 9 due to indications of a fuel leak. Suppression testing commenced that same day, reducing reactor power to approximately 63 percent until May 12 when the operators began increasing reactor power after suppressing the fuel leak. On May 14, the reactor was at full power where it remained at or near until May 19 when the operators began a reactor shutdown to replace the leaking fuel assembly. After completing the work, operators began a reactor startup on May 28. The reactor reached full power on May 30 where it remained at or near until June 15 when an automatic reactor scram occurred as a result of a failure of main unit transformer 2B. The failed transformer was disconnected and reactor startup began on June 16. On June 21, the reactor reached 63 percent power (maximum planned with transformer 2B out of service) and remained there for the remainder of the inspection period.

### **1. REACTOR SAFETY**

#### **Cornerstone: Mitigating Systems, Barrier Integrity, Initiating Events, Emergency Preparedness**

##### **1R01 Adverse Weather (71111.01A)**

###### **a. Inspection Scope**

The inspectors reviewed licensee procedures for mitigating the effects of hot weather. The inspectors reviewed severe weather procedures, emergency plan implementing procedures related to severe weather, and annunciator response procedures, and performed walkdowns. This included the reactor building and turbine building ventilation preparations. Additionally, the inspectors reviewed condition assessment resolution documents (CARD) and verified problems associated with adverse weather were entered into the corrective action program with the appropriate significance characterization.

These activities represented one hot weather systems preparation inspection sample.

###### **b. Findings**

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Partial System Walkdowns (71111.04Q)

a. Inspection Scope

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

- C Safety Relief Valves performed the week of April 3, 2006;
- C SLC "A" performed the week of April 24, 2006;
- C Division II Residual Heat Removal (RHR) and Residual Heat Removal Service Water (RHRSW) Lineup performed the week of May 14, 2006;
- C Standby Electrical Power (emergency diesel generator [EDG]) lineup performed the week of May 14, 2006; and
- C Division I RHR and RHRSW Shutdown Cooling performed the week of May 21, 2006.

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 TS, 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 five 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:

- General Service Water (GSW) performed the week of April 24, 2006

The inspectors reviewed operating procedures, system diagrams, TS requirements, and applicable sections of the Updated Final Safety Analysis Report (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 (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Condensate Pump Room;
- Standby Gas Treatment, Pipe Room;
- Top of Torus;
- RHR Complex, Division I RHR;
- RHR Complex, Division I EDG, Switchgear Rooms, Ventilation Rooms;
- RHR Complex, Division I RHRSW Pump Room;
- Hemyc Wrap for the Fire Barrier;
- Division I, RHR Pump Room;
- Division II, RHR Pump Room;
- Main Unit Transformer 2B; and
- Division II Electrical Switchgear Room.

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 eleven routine quarterly fire protection inspection samples.

b. Findings

No findings of significance were identified.

.2 RHR Complex, Division II EDG, Switchgear and Ventilation Rooms

a. Inspection Scope

The inspectors also conducted fire protection tours of the RHR complex, Division II EDG, switchgear and ventilation rooms which are risk-significant plant areas.

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 one routine quarterly fire protection inspection sample.

b. Findings

Introduction: The inspectors identified an NCV of license condition 2.C(9) having very low safety significance (Green) for the presence of unauthorized transient combustible materials in the RHR complex.

Description: On May 15, 2006, the inspectors identified unauthorized transient combustible materials in the RHR complex EDG 12 switchgear room. Specifically, the inspectors identified an office chair and a plastic trash bin approximately half full of paper secured approximately one foot from panel H21-P351, a safety-related electrical panel for EDG 12 room ventilation, and associated cable raceway.

Section 9A.1.3.2.e of the UFSAR stated that the fire protection program had a component to minimize the amount of combustibles to which safety-related areas may be exposed. Procedure MOP11 implemented the fire protection program by prescribing methods for controlling transient combustible material and the location of plant support equipment. Step 3.5.1 of procedure MOP11 required a Plant Support Equipment Approval form be obtained before placing any support equipment in the RHR complex. The procedural requirement existed to ensure the introduction of transient combustible materials was reviewed by fire protection personnel. However, no Plant Support Equipment Approval form was submitted for the chair and trash bin identified in the EDG 12 switchgear room within the RHR complex.

After the inspectors informed the fire protection supervisor of the issue, the fire protection supervisor initiated CARD 06-23388 to initiate corrective actions. Licensee personnel performed a walkdown of the RHR complex and identified three additional trash bins and two chairs in other switchgear rooms within the RHR complex. The trash bins and chairs were removed from the switchgear rooms.

Analysis: The inspectors determined the licensee's failure to properly control transient combustibles was a performance deficiency because the licensee is expected to comply with their fire hazards analysis and because it was within the licensee's ability to foresee and prevent. The finding was greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued September 30, 2005, because the finding affected the Mitigating Systems Cornerstone attribute for protection against external factors, i.e., fire. Specifically, a fire involving the unauthorized transient combustibles could have affected a nearby electrical panel and associated cable raceway containing mitigating system equipment important to safety. The inspectors identified that a credible fire scenario existed in that equipment important to safety was located within the zone of influence of

the unauthorized transient combustible materials as described by Table 2.3.2, "Calculated Values (in feet) for Use in the Ball and Column Zone of Influence Chart for Fires in an Open Location Away from Walls" of IMC 0609, Appendix F, "Fire Protection Significance Determination Process," issued February 28, 2005.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix F. The inspectors reviewed IMC 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," and determined the unauthorized transient combustible materials represented a low degradation rating because the materials would not have ignited from existing sources of heat or electrical energy. As such, the finding screened to Green under Question 1 of IMC 0609, Appendix F, Task 1.3.1, "Qualitative Screening for All Finding Categories," and was considered a finding of very low safety significance. The primary cause of this finding was related to the cross-cutting aspect of problem identification and resolution because the licensee's response to several recent instances of unauthorized transient combustibles was not effective in preventing this instance of unauthorized transient combustibles.

Enforcement: License condition 2.C.(9) required the licensee to implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR. Section 9A.1.3.2.e of the UFSAR stated the fire protection program had a component to minimize the amount of combustibles to which safety-related areas may be exposed. Procedure MOP11 implemented the fire protection program by prescribing methods for controlling transient combustible material and the location of plant support equipment. Step 3.5.1 of procedure MOP11 required a Plant Support Equipment Approval form be obtained before placing any support equipment in the RHR complex, a safety-related area. Contrary to the above, on May 15, 2006, the inspectors identified support equipment, i.e., a chair and a trash bin, had been placed in the EDG 12 switchgear room within the RHR complex without a Plant Support Equipment Approval form having been obtained. Once identified, the licensee initiated CARD 06-23388, performed a walkdown of the RHR complex, and removed unauthorized chairs and trash bins from the switchgear rooms in the RHR complex. Because this violation is of very low safety significance and because it was entered into the licensee's corrective action program as CARD 06-23388, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000341/2006003-01: Unauthorized Transient Combustibles in Safety-Related Areas.

.3 Fire Protection - Drill Observation (71111.05A)

a. Inspection Scope

The inspectors assessed fire brigade performance and the drill evaluators' critique during an unannounced fire brigade drill on June 21, 2006. The drill simulated a fire in the chemical storage room in the radioactive waste building. The inspectors focused on the command and control of fire brigade activities, fire fighting and communication practices, material condition and use of fire fighting equipment, and implementation and adequacy of pre-planned fire fighting strategies.

These activities represented one annual fire protection - drill observation inspection sample.

b. Findings

Introduction: The inspectors identified a Green NCV of license condition 2.C(9) for the failure to appropriately store chemicals in accordance with the fire hazards analysis.

Description: The inspectors watched Fire Brigade Drill Scenario Number 6 which involved a simulated fire in the chemical storage room on the first floor of the radioactive waste building. Firefighters entered the room wearing full protective clothing and positive-pressure, self-contained breathing apparatus. In accordance with fire protection Pre-Plan FP-RDWST, Rev. 4, Radioactive Waste Building Zones 22, 23, 24, and 25, the brigade simulated extinguishing the fire by using a water hose in a fog pattern.

The inspectors later questioned the adequacy of the fire protection pre-plan because it did not appear to take into account differences in fire fighting strategies with the various types of chemicals in the room. After reviewing the list of chemicals in the room against the fire fighting strategies recommended by NFPA-49, Hazardous Chemicals Data 1994 Edition, the inspectors identified four chemicals normally stored in the room where NFPA-49 recommends using special protective clothing when fighting a fire involving those chemicals: monoethylamine solution, sodium hydroxide, potassium hydroxide, and sulfuric acid. Additionally, NFPA-49 recommends against the use of water when fighting fires involving sulfuric acid.

The inspectors reviewed the storage locations of these chemicals and determined they were not segregated in such a manner to ensure a fire in that room did not involve any of those chemicals. Further, the fire protection pre-plan contained no guidance on any special precautions to be followed when fighting a fire involving any of those four chemicals. The inspectors determined it was unreasonable to assume the responding fire brigade would be able to easily determine what chemicals were on fire given the lack of labeling and amount of smoke that likely would be present in the room during an actual fire.

The licensee's fire hazards analysis, as documented in UFSAR, Section 9A.5.G.3, required chemicals be stored in accordance with the guidelines of NFPA-49. Although the literal storage requirements for these chemicals were generally adhered to, e.g., stored in a cool, dry, ventilated room in metal cabinets, etc., the inspectors determined the fire fighting strategies for the four chemicals of interest above were inseparable from the storage guidelines because the licensee is expected to take all relevant information into account when determining the appropriate chemical storage requirements. For example, although NFPA-49 contained no guidance to store sulfuric acid separately from nitric acid, the fact that water is suitable for fires involving nitric acid but not for fires involving sulfuric acid logically concludes either, a) water should not be used if the chemicals are in the same cabinet, b) the sulfuric acid should be stored in a separate container, or c) the quantity of sulfuric acid is controlled sufficiently low so as to not require segregation; none of which occurred. Likewise, because chemical suits are recommended for those four chemicals but standard fire fighter "turnout gear" is suitable for all other normally stored chemicals in the room, it is reasonable to expect the



licensee will take the emergency response personal protective equipment guidelines into account when storing chemicals which the licensee also failed to do.

The inspectors questioned the licensee on how chemicals were controlled such that they did not adversely affect the fire protection strategy and were informed that chemicals are evaluated based on the effect they would have on the plant but not on the effect they would have on fire fighting techniques. For example, there were no controls in place to either ensure the fire brigade did not use water on fires involving sulfuric acid or to control the amount of sulfuric acid below some threshold to preclude any alteration in the fire fighting strategy.

Analysis: The inspectors determined the licensee's failure to properly store chemicals in accordance with guidelines contained in NFPA 49 was a performance deficiency because the licensee is expected to comply with their fire hazards analysis and because it was within the licensee's ability to foresee and prevent. The finding is more than minor because it represented a programmatic deficiency in the licensee's chemical control program which affected the ability of the fire brigade to respond to and mitigate the effects of a fire. This finding affected the emergency planning cornerstone because it affected the ability of the fire brigade to respond to a fire which could potentially affect the licensee's emergency plan.

The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a finding of very low safety significance (Green) because the quantities of the relevant chemicals were low and the storage location was sufficiently remote from mitigating equipment.

Enforcement: Fermi 2 Facility Operating License NPF-43, condition 2.C(9), required, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in Section 9A of the UFSAR as amended and approved in the Fermi 2 safety evaluation report through supplement 6. UFSAR 9A.5.G.3 required hazardous chemicals be stored in accordance with the guidelines of NFPA 49-1994, "Hazardous Chemicals Data 1994 Edition." Contrary to the above, on June 21, 2006, the licensee failed to utilize the guidelines contained in NFPA 49-1994 when storing chemicals in the radioactive waste building. Because this violation is of very low safety significance and because it was entered into the licensee's corrective action program as CARD 06-24243, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000341/2006003-02: Improper Storage of Chemicals Affecting Fire Fighting Response.

#### 1R06 Flood Protection (71111.06)

##### a. Inspection Scope

The inspectors performed an inspection related to the licensee's precautions to mitigate the risk from internal flooding events. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable:

- High Pressure Coolant Injection Pump Room;
- Reactor Core Isolation Cooling Pump Room;
- Division I Core Spray Pump Room;
- Division II Core Spray Pump Room; and
- Auxiliary Building "T" Room.

The inspectors also reviewed the work activities associated with internal flooding to verify identified problems were being entered into the corrective action program with the appropriate characterization and significance.

These activities represented one internal flood protection inspection sample.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed completed test reports and observed the performance of inspections for the RHR service water heat exchanger.

The inspectors selected this heat exchanger because its associated systems were risk significant in the licensee's risk assessment and were required to support the operability of other risk-significant, safety-related equipment. During these inspections, the inspectors observed the as-found condition of the heat exchanger and verified no deficiencies existed that would mask degraded performance. The inspectors discussed the as-found condition as well as the historical performance of the heat exchanger with engineering department personnel and reviewed applicable documents and procedures.

In addition, the inspectors verified heat sink problems were entered into the corrective action program with the appropriate significance characterization, and completed corrective actions were adequate and appropriately implemented.

These activities represented one heat sink performance inspection sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On June 13, 2006, the inspectors observed an operations support crew during the annual regualification examination in mitigating the consequences of events in SS-OP-802-330, "Anticipated Transient Without Scram with Small Steam Leak," Rev. 0, dated January 26, 2006, on the simulator. The inspectors evaluated the following areas:



- C licensed operator performance;
- C 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;
- C control board manipulations;
- C oversight and direction from supervisors; and
- C 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 one quarterly licensed operator requalification inspection sample.

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 three risk-significant systems:

- C Station Blackout Diesel Generators CTG 11-1, 2, 3, 4, and 120 kV switchyard;
- C RHR System A and B; and
- C Molded Case Circuit Breakers.

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:

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

These activities represented three quarterly maintenance effectiveness inspection samples.

b. Findings

No findings of significance were identified.

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

.1 Routine Maintenance Risk Assessments

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 listed below:

- maintenance risk for week of April 2, 2006;
- maintenance risk for week of April 17, 2006;
- maintenance risk for week of April 30, 2006; and
- maintenance risk for week of June 26, 2006.

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

b. Findings

No findings of significance were identified.

.2 Inadequate Maintenance Risk Assessment

a. Inspection Scope

The inspectors reviewed the activities surrounding the Division I battery load test performed during RF11 to determine if the licensee appropriately considered the risk impacts of performing the test. The inspectors interviewed licensee staff, reviewed documents, and performed walkdowns. The inspectors considered ancillary equipment affected by the test to determine what affect, if any, the test would have on it.

These activities represented one quarterly maintenance risk assessment and emergency work control inspection sample.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.65(a)(4) for the failure to perform an adequate risk assessment for the Division I battery load test.

Description: On April 3, 2006, the inspectors identified a temporary fan installed in the blocked-open doorway to the dc motor control center (DC MCC) area. Upon entering the room, the inspectors noticed that additional doors inside the DC MCC area leading to each of the reactor protection system motor generator (RPSMG) set rooms were open. After questioning why the doors were blocked open and a fan installed, the inspectors learned operators took those actions to provide additional cooling to the RPS MG sets because the Division I 130/260 VDC battery load surveillance test, procedure 42.309.05, was in progress.

Because the air-cooled load bank used for the test was temporarily installed in the DC MCC area, temperatures in the room started to increase after the test commenced. However, two area room coolers were out of service due to a scheduled outage of the GSW system which left the DC MCC, vital battery, battery charger, and RPS MG set rooms with no cooling. In order to help prevent a loss of shutdown cooling, which would have occurred had the RPS MG sets tripped, the operators had previously blocked opened the doors to the RPS MG set rooms which further increased the temperature in the DC MCC area. Operators then blocked open the double doors to the DC MCC area and installed a large utility fan in the doorway to provide additional cooling to the area. The test was successfully completed, temperatures dropped, and the fan was removed.

The outage risk associated with this test did not consider the effects it would have on the key safety function of maintaining decay heat available due to the additional heat from the load bank with no room cooling. Moreover, the outage risk associated with the GSW outage assumed that the RPS MG sets would not be running. Consequently, prudent risk management actions were not developed prior to performing the battery load test. However, because operators installed a fan in the open doorway early enough into the test, shutdown cooling remained in operation.

Analysis: The inspectors determined the failure to perform an adequate risk analysis of maintenance activities prior to performing maintenance was a performance deficiency because the licensee is expected to comply with the requirements of the maintenance rule. This finding is more than minor because the licensee's risk assessment failed to consider maintenance activities that could increase the likelihood of an initiating event, specifically a loss of shutdown cooling. In addition, this finding affected the initiating event cornerstone because it is associated with an increase in the likelihood of an initiating event. The inspectors utilized the maintenance risk and shutdown risk SDP to assess the risk of this finding. The finding is of very low safety significance because the finding did not affect the ability of operators to recover from a loss of shutdown cooling had it occurred. The inspectors determined the cause of this finding impacted the Human Performance cross-cutting area because the cause of the inadequate risk assessment was due to a personnel error.

Enforcement: 10 CFR 50.65(a)(4) requires, in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk

that may result from the proposed maintenance activities. Contrary to the above, beginning on April 1, 2006, and continuing through April 6, 2006, the licensee performed surveillance procedure 42.309.05 without adequately assessing and managing the increase in risk prior to performing the activity. Because this violation is of very low safety significance and because it was entered into the licensee's corrective action program as CARD 06-21892 and 06-24495, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000341/2006003-03: Inadequate Maintenance Risk Assessment.

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

a. Inspection Scope

The inspectors reviewed the licensee's actions in response to the following non-routine events to ensure the licensee took appropriate actions in accordance with licensee procedures:

- unplanned reactor building contamination, CARD 06-21534;
- control rod position indication malfunction, CARD 06-23491 & 06-23489;
- main turbine bypass valves opened at power, CARD 06-24113; and
- mode 5 reactor scram during installation of shorting links, CARD 06-23588.

The inspectors reviewed operator logs, procedures, corrective action documents, other documents, and interviewed personnel. The inspectors also evaluated the licensee's operational decision making involved with these non-routine events.

These activities represented four inspection samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Routine Review of Operability Evaluations

a. Inspection Scope

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

- CARD 06-23114, Motor Operator Valve Motor Replacement for RHR Shutdown Cooling Inboard Suction Bypass Valve; and
- CARD 06-23898, Division II Emergency Equipment Cooling Water Makeup Pump In-Service Test Flow Unattainable.

These activities represented two operability evaluation inspection samples.

b. Findings

No findings of significance were identified.

.2 Standby Liquid Control Operability During Air Sparging Operations

a. Inspection Scope

The inspectors reviewed the licensee's practice of placing an air sparge on the SLC tank to determine if system operability was justified. The inspectors reviewed previous engineering evaluations to determine the technical adequacy of the conclusions. The inspectors reviewed operator logs, TS, design basis documents, UFSAR, and other documents. The inspectors interviewed operators, engineers, and other licensee staff.

These activities represented one operability evaluation inspection sample.

b. Findings

Introduction: The inspectors identified a Green NCV of TS for the SLC system being inoperable for longer than the action time to be in hot shutdown with both SLC subsystems inoperable.

Description: In April 1999, the licensee reviewed an operating experience report issued by another licensee discussing the inoperability of the SLC system during air sparging activities. Air sparging the SLC tank was done to facilitate mixing of the sodium pentaborate in the tank and was performed prior to the monthly chemistry analysis and after any chemical addition to the tank. The air sparge header was located near the bottom of the tank in proximity to the SLC pump suction line. The concern was that if the pumps were operating while the air sparge was operating, air could be drawn into the pumps and compromise their ability to perform their design function. The licensee initiated CARD 99-13240 to evaluate the applicability of the issue to Fermi.

The licensee determined that although pump performance would be impacted if the pumps were required while an SLC tank air sparge was in progress, the pumps remained operable. Based on input from the pump vendor, the licensee concluded that entrained air in the pumped water would cause increased pump vibration and a negligible reduction in delivered flow rate. Because the vendor stated the increased vibration would only affect long-term pump reliability, the licensee concluded that long-term pump degradation was not a concern because SLC had a 2 hour mission time.

In an effort to lessen the probability of requiring the SLC pumps during an actual event while the air sparge was operating, the licensee identified the need to revise the system operating procedures to minimize duration of sparge operations from hours to minutes. The action to revise procedure 23.149, "Standby Liquid Control System," was originally due on June 30, 1999.

The inspectors reviewed the licensee's evaluation and noted the CARD did not contain either any documentation from the vendor or any attempt to quantify the reduction in

flow rate to ensure the minimum required flow was maintained. The inspectors asked the licensee for the vendor's recommendations in writing but were later told the pump vendor declined to support their previous conclusion in writing. The inspectors were concerned that if the pump vendor was unwilling to state in writing that the pumps would operate for at least 2 hours during sparging, then pump operability was not justified.

The inspectors brought their concern to the licensee who entered the issue into their corrective action program as CARD 06-23785 on June 1, 2006. After further review, the licensee concluded that SLC operability during sparging could not be supported and revised procedure 23.149 accordingly. Upon review of control room logs, the inspectors determined that although the licensee significantly reduced the total sparging time since 1999, the tank was air sparged for 21 hours on August 24, 1999, which exceeded the time to be in hot shutdown of 20 hours with both SLC subsystems inoperable while in Mode 1 or 2. In addition, the inspectors concluded the maximum unavailability in any 1-year period after identification of the issue in 1999 was approximately 90 hours.

Analysis: The inspectors determined the licensee's failure to appropriately evaluate SLC operability during sparging operations was a performance deficiency because the licensee is expected to adequately evaluate issues that affect the operability of TS equipment and because it was within the licensee's ability to foresee and prevent. The finding is more than minor because it affected the equipment performance attribute of the reactor safety cornerstone objective of ensuring the availability, reliability, and capability of mitigating equipment to respond to initiating events to prevent undesirable consequences.

The inspectors assessed the finding using the SDP. Because the inspectors considered this finding to represent an actual loss of a safety function of SLC, the inspectors performed a phase 2 SDP analysis. A phase 3 analysis was subsequently performed by the senior reactor analyst (SRA). The SRA performed the risk evaluation using the Fermi Standardized Plant Analysis Risk (SPAR) Model, Level 1, Revision 3P, Change 3.21, created October 2005. The SRA ran the SPAR model assuming common cause failure of both SLC pumps, with an exposure time of 90 hours. Using the above information the SRA obtained a change in core damage frequency ( $\Delta$ CDF) of  $3.1\text{E-}8$  (Green) for internal events. The dominant sequences involved a failure of the reactor to scram after a transient, loss of condenser heat sink, and loss of main feedwater, and failure of the SLC system.

Anticipated transient without scram events are not assumed to be caused by external events and, therefore, the risk contribution from external events is insignificant. Similarly, because the internal events  $\Delta$ CDF is less than  $1\text{E-}7$ , large early release frequency ( $\Delta$ LERF) is not significant per IMC 0609, Appendix H. The SRA concluded the total  $\Delta$ CDF considering internal events, external events, and LERF is estimated at  $3.1\text{E-}8$  (Green).

Enforcement: Technical Specification 3.1.5.a.2, Amendment 38, required that while in Modes 1 and 2, with the SLC system otherwise inoperable, the licensee must restore the system to operable status within 8 hours or be in at least hot shutdown within the next 12 hours and was in effect on August 24 and 25, 1999. Contrary to the above, beginning on August 24, 1999, and continuing until August 25, 1999, while in Modes 1



and 2, the SLC system was inoperable for 21 hours while the SLC tank was being air sparged; therefore, on August 25, 1999, with the SLC system inoperable for greater than 20 hours, the plant was not in at least hot shutdown. Because this violation is of very low safety significance and because it was entered into the licensee's corrective action program as CARD 06-23785, this finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000341/2006003-04: Improper Evaluation of Standby Liquid Control Operability During Tank Sparging.

.3 Inappropriate Use of Risk in Operability Evaluations

a. Inspection Scope

The inspectors reviewed CARD 06-23913 to ensure that the identified condition did not render the involved equipment inoperable or result in an unrecognized increase in plant risk and that the licensee appropriately applied TS limitations and appropriately returned the affected equipment to an operable status.

These activities represented one operability evaluation inspection sample.

Introduction: The inspectors identified an Unresolved Item (URI) when the licensee removed pipe insulation, credited for environmental qualification of nearby equipment, while at power without an adequate engineering evaluation.

Description: On June 8, 2006, the licensee initiated CARD 06-23913 to request a work request to replace contaminated insulation on the suction and discharge pipe for the "B" RHR pump. As a result, Work Request (WR) 000Z062027 was released and work began on June 13, 2006. While performing a plant tour on June 15, 2006, the inspectors identified the insulation was missing from the suction pipe for the "B" RHR pump and questioned the licensee if the insulation removal had an approved engineering evaluation. Because the equipment was in a potentially harsh environment, the uninsulated pipe would increase the temperature profile of the room during accident conditions which could affect the environmental qualification of electrical equipment in the room. The licensee stated the evaluation was documented in CARD 06-23913 and concluded that removing the insulation while at power was acceptable.

The inspectors reviewed the subject evaluation and became concerned that one of the assumptions for the evaluation was that an accident was not considered as credible during the period of time the insulation was to be removed. Upon further review, the inspectors learned the licensee used non-accident heat loads to determine the environmental effects of removing the insulation. The licensee's justification was that if the total time the insulation was removed was less than 168 hours, then the probability of either a high energy line break or loss of coolant accident was negligible and, hence, did not need to be assumed to occur.

The definition of operability stated, however, the equipment must be capable of performing its specified function(s). The inherent assumption was the occurrence, conditions, or event would exist and the safety function could be performed. Therefore,

the inspectors concluded the use of probabilities of the occurrence of accidents while the insulation was removed was an unacceptable assumption in the subsequent operability evaluation.

While reviewing this evaluation, the inspectors discovered the licensee used the same method of evaluating on-line insulation removal since at least September 20, 2001, and found five additional CARDS where the licensee approved removing insulation from equipment in potentially harsh areas while at power, likewise with unacceptable evaluations. Because the extent of condition of this issue is potentially significant and could extend to work other than on-line insulation removal, this item is unresolved pending the inspectors' review of the licensee's full extent of condition review and subsequent risk evaluation and is identified as Unresolved Item (URI) 05000341/2006003-05: Inappropriate Use of Risk in Operability Evaluations.

#### 1R19 Post-Maintenance Testing (71111.19)

##### a. Inspection Scope

The inspectors reviewed post-maintenance testing (PMT) activities associated with the following scheduled maintenance:

- Division I Switchyard Modifications, EDP 31880;
- Feedwater Check Valve PMT, WR T210040100;
- Drywell Cooler Number 4 Replacement, WR 000Z052131;
- Reactor Core Isolation Cooling PMT;
- Reactor Recirculation Pump Discharge Valve B310SF031A, Stem Replacement, WR 000Z050487;
- Main Steam Isolation Valve (MSIV), Limit Switch Replacement; and
- WR 000Z060156, Replace Control Rod Drive Pump Inboard Bearing Oil Level Sight glass.

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified PMT. The inspectors verified the PMT was performed in accordance with approved procedures, the procedures clearly stated acceptance criteria, and the acceptance criteria were met. The inspectors interviewed operations, maintenance, and engineering department personnel and reviewed the completed PMT documentation.

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

These activities represented seven PMT inspection samples.

##### b. Findings

No findings of significance were identified.



## 1R20 Refueling and Outage Activities (71111.20)

### .1 Routine Refueling Outage Inspection Activities

#### a. Inspection Scope

The inspectors observed the licensee's performance during RF11, which was in progress at the beginning of this inspection and concluded on May 5, 2006.

This inspection consisted of a review of the licensee's outage schedule, safe shutdown plan and administrative procedures governing the outage, periodic observations of equipment alignment, and plant and control room outage activities. Specifically, the inspectors determined whether the licensee effectively managed elements of shutdown risk pertaining to reactivity control, decay heat removal, inventory control, electrical power control, and containment integrity.

The inspectors performed the following activities daily, during the outage:

- attended control room operator and outage management turnover meetings to verify the current shutdown risk status was well understood and communicated;
- performed walkdowns of the main control room to observe the alignment of systems important to shutdown risk;
- observed the operability of reactor coolant system (RCS) instrumentation and compared channels and trains against one another;
- performed walkdowns of the turbine, auxiliary, and reactor buildings and the drywell to observe ongoing work activities, to ensure work activities were performed in accordance with plant procedures, and to verify procedural requirements regarding fire protection, foreign material exclusion, and the storage of equipment near safety-related structures, systems, and components were maintained;
- verified the licensee maintained secondary containment in accordance with TS requirements; and
- reviewed selected issues the licensee entered into its corrective action program to verify identified problems were being entered into the program with the appropriate characterization and significance.

Additionally, the inspectors performed the following specific activities:

- monitored refueling activities to verify the licensee adhered to established procedures and TS requirements for handling of irradiated fuel;
- performed drywell closeout;
- verified shutdown cooling tagouts;
- verified completion of restart restraint items; and
- observed control rod withdrawal to criticality and portions of the plant power ascension.

In particular, the inspectors reviewed the licensee's restart restraint process and verified the closure of selected issues. Documents reviewed during these inspection activities are listed at the end of this report.

Because inspection activities for this refueling outage constituted one inspection sample in Inspection Report 05000341/2006002, and since only one sample is counted per outage, the inspection activities for this inspection period do not constitute an additional refueling and outage inspection sample.

b. Findings

Introduction: The inspectors identified a Green NCV of Technical Specification 5.4.1.a, for the failure to adequately control the modification of the ventilation equipment used to vent airborne radioactive particulate to the refuel floor during reactor vessel floodup.

Description: At 1450, on March 26, 2006, operators initiated core spray at approximately 3000 gpm to raise reactor water level, to permit removal of the reactor vessel head. The reactor vessel head vent pipe had been disconnected, to permit installation of a ventilation unit for the venting of gases to the refuel floor. The ventilation unit consisted of a nominal 3600 scfm fan, a charcoal filter, and a HEPA particulate filter. Neither filter had been recently tested. The ventilation unit was configured with two hoses placed to take suction close to the reactor vessel head vent. The exhaust of the ventilation unit ran to a point below an intake for the Standby Gas Treatment System (SGTS), to permit capture of the exhaust by the SGTS.

At approximately 1500, the ventilation unit intake hoses were observed being pushed away from the reactor vessel head vent, due to flow from the vent. Core spray was shut down at 1502 and at 1504 visible moisture was seen being emitted from the vent. A continuous air monitor on the refuel floor alarmed at 1510 and RP ordered the evacuation of all but essential personnel from the refuel floor. By 1525 all personnel were removed from the floor and shortly after this, the entire reactor building was evacuated due to the spread of contamination. Decontamination of several workers was required. Twenty-eight workers were whole body counted, with 26 showing uptakes of varying levels of Co-60, Co-58, and Mn-54.

There were three conditions that contributed to the cause of the event. First of all, coolant activity levels were higher than expected due to a "crud burst" during shutdown and the temporary loss of RWCS allowed Co-60 to enter and remain in the coolant, possibly plating out on reactor internals. The second condition related to the temperature of the material vented from the reactor vessel head. Reactor vessel outside shell temperatures indicated 215 degrees F, which equates to internal metal temperatures above the atmospheric boiling point of water. This indicates that some of the coolant flashed to steam as the level in the reactor vessel rose, which could increase the carryover of coolant activity to the vented gas. The third condition was the inadequate processing of vented material from the reactor vessel head. The venting of the airborne radioactive particulate would not have resulted in building contamination and personnel uptakes if the ventilation unit had effectively removed this material to the SGTS.

The use of the ventilation system was not in accordance with its design configuration. The ventilation system for previous outages had suction hoses connected to a hood that was placed over the reactor vessel head vent, to improve the capture of vented material. The use of the hood was discontinued due to its impact on water level instrumentation.

An engineering evaluation was not performed on the impact of the change in configuration of the ventilation system. In addition, the exhaust arrangement from the ventilation unit to the SGTS had not been evaluated for effectiveness. Licensee Procedure MES12, "Performing Temporary Modifications," requires the modification process be followed and an evaluation be performed.

Furthermore, licensee procedural guidance did not exist for the overall process of taking the operating reactor to a condition allowing fuel movement. The event could have been prevented if appropriate acceptance criteria for allowable reactor vessel temperature and coolant activity levels existed. Thus, the root cause of the event was determined to be a procedural and programmatic weakness.

The licensee initiated CARD 06-21534, "Continuous Air Monitor Alarm on Refueling Floor," to track the investigation of the event in their CAP. The primary corrective action recommendation is to develop and implement an acceptable methodology for raising reactor vessel water level. In addition, the design and configuration of the current ventilation exhaust capture system will be evaluated and modified, as appropriate to assure that it is adequate for the expected reactor vessel fill rate and radioactive material concentrations. The methodology may involve an alternate vent path, such as using the attached piping to vent the reactor vessel to the drywell.

Analysis: The inspectors determined the licensee's lack of control of the Temporary Modification process constituted a design control issue. The licensee's failure to adequately control the process used to vent airborne radioactive particulate to the refuel floor during reactor vessel floodup represents a performance deficiency as defined in NRC Inspection Manual Chapter 0612, Appendix B, "Issue Screening." The issue was determined to be more than minor because if left uncorrected the issue could become a more significant safety concern if coolant activity levels were higher or if the vessel was flooded quicker.

The finding was assessed using NRC Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process" due to individual worker unplanned, unintended dose. The finding was determined to be of very low safety significance because the inspectors answered, "NO," to all four phase 1 screening questions.

Enforcement: Technical Specification 5.4.1.a requires that procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, be established, implemented and maintained. Section 4.a of that document, in part requires instructions for filling, venting, and draining the reactor pressure vessel. Contrary to the above, the initial installation of the ventilation system and the changes made to the ventilation system that was used as part of the reactor vessel floodup during outages was not processed through the Temporary Modification Procedure. This finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000341/2006003-06: Inadequate Controls for Venting the Reactor Pressure Vessel Head. This issue is in the licensee's corrective action program as CARD 06-22667.

.2 Forced Outage 06-01

a. Inspection Scope

The inspectors observed the licensee's performance during Forced Outage 06-01 from May 20, 2006, through May 29, 2006, which was scheduled to locate and replace a failed fuel assembly. During power ascension following RF11, operators identified a potential fuel leak because off gas radiation levels were slightly elevated from normal. Operators began suppression testing later that day, which identified the failed assembly. Operators initiated a manual unit shutdown to replace the failed fuel. While the unit was shutdown, additional assemblies subjected to similar flux profile histories were also replaced although fuel sipping operations identified only one fuel assembly with a fuel cladding defect.

This inspection consisted of a review of the licensee's outage schedule, safe shutdown plan and administrative procedures governing the outage, periodic observations of equipment alignment, and plant and control room outage activities. Specifically, the inspectors determined whether the licensee effectively managed elements of shutdown risk pertaining to reactivity control, decay heat removal, inventory control, electrical power control, and containment integrity.

The inspectors performed the same daily activities, during the outage as described in Section 1R20.1 for the refueling outage.

These activities represented one forced outage inspection sample.

b. Findings

No findings of significance were identified.

.3 Forced Outage 06-02

a. Inspection Scope

The inspectors observed the licensee's performance during Forced Outage 06-02 from June 15, 2006, through June 17, 2006. On June 15, a reactor scram occurred due to a main turbine generator trip which occurred when main unit transformer 2B failed. The inspectors responded to the control room and to the transformer area to assess the licensee's response to the event.

This inspection consisted of a review of the licensee's outage schedule, safe shutdown plan and administrative procedures governing the outage, and plant and control room outage activities. Specifically, the inspectors determined whether the licensee effectively managed elements of shutdown risk pertaining to reactivity control, decay heat removal, inventory control, and electrical power control.

The inspectors performed the following activities during the outage:

- attended control room operator and outage management turnover meetings to verify the current shutdown risk status was well understood and communicated;
- performed walkdowns of the main control room to observe the alignment of systems important to shutdown risk;
- observed the operability of RCS instrumentation and compared channels and trains against one another; and
- observed control rod withdrawal to criticality and portions of the plant power ascension.

These activities represented one forced outage inspection sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22Q)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- MSIV Limit Switch (routine);
- SLC Squib Valve Test (routine);
- Integrity Test for Containment Penetrations X-7A, X-7B, X-7C, and X-7D (LLRT);
- Scram Nitrogen Accumulator Integrity Test (routine);
- Scram Discharge Volume Vent and Drain Valves Operability (routine);
- Secondary Containment Integrity Test (LLRT);
- MSIV Channel Functional Test (isolation valve);
- LOOP/LOCA Test (routine);
- Reactor Core Isolation Cooling System Automatic Actuation and Flow Test (routine); and
- High Pressure Coolant Injection Flow Rate Test at 165 psig Reactor Steam Pressure (routine).

The inspectors reviewed the test methodology and test results to verify equipment performance was consistent with safety analysis and design basis assumptions. In addition, the inspectors verified surveillance testing problems were being entered into the corrective action program with the appropriate significance characterization.

These activities represented seven routine, two local leak rate test (LLRT), and one containment isolation valve surveillance inspection samples.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the licensee perform classifications and protective action recommendations during licensed operator requalification training on June 20, 2006. The inspectors observed activities in the control room simulator. The inspectors also attended the post-drill critique in the simulator. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the shift manager's performance as emergency director and ensure the licensee evaluators noted the same weaknesses and deficiencies and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package included in the list of documents reviewed at the end of this report.

These activities represented one drill evaluation inspection sample.

b. Findings

No findings of significance were identified.

2OS1 Access Control to Radiologically Significant Areas (IP 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:

- Turbine Building Main Steam Reheater Replacement;
- Drywell Activities; and
- Refuel Floor Activities.

These activities represented one inspection sample.

The inspectors reviewed the radiation work permits (RWPs) and work packages used to access the three areas and other high radiation work areas to identify the work control instructions and control barriers that had been specified. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed.

These activities represented one inspection sample.

The inspectors walked down and surveyed (using an NRC survey meter) the three areas to verify the prescribed RWPs, procedure, and engineering controls were in place, licensee surveys and postings were complete and accurate, and air samplers were properly located.

These activities represented one inspection sample.

The inspectors reviewed RWPs for the following airborne radioactivity areas to verify barrier integrity and engineering controls performance, e.g., high efficiency particulate air filter ventilation system operation, and to determine if there was a potential for individual worker internal exposures of greater than 50 millirem committed effective dose equivalent. There were no areas where there was a potential for individual worker internal exposures of greater than 50 millirem committed effective dose equivalent. Work areas having a history of, or the potential for, airborne transuranic isotopes were evaluated to verify the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection. There were no areas having a history of, or the potential for, airborne transuranic isotopes.

These activities represented one inspection sample.

The adequacy of the licensee's internal dose assessment process for any actual internal exposures greater than 50 millirem committed effective dose equivalent was assessed. There were no internal exposures greater than 50 millirem committed effective dose equivalent.

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 three 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.

.3 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following three jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- Drywell Cooler Number Four Removal;
- Cutout and Replace Check Valve E1100F031A; and
- Perform Refuel Activities.

The inspectors reviewed radiological job requirements for the three activities including RWP requirements and work procedure requirements, and attended As-Low-As-Is-Reasonably-Achievable (ALARA) job briefings.

These activities represented one inspection sample.

Job performance was observed with respect to these requirements to verify radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. The inspectors also verified the adequacy of radiological controls including required radiation, contamination, and airborne surveys for system breaches; radiation protection job coverage which included audio and visual surveillance for remote job coverage; and contamination controls.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present.



These activities represented one inspection sample.

The inspectors reviewed radiological problem reports which found the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These problems, along with planned and taken corrective actions were discussed with the Radiation Protection Manager.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.5 Radiation Protection Technician (RPT) Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated RPT performance with respect to radiation protection work requirements and evaluated whether they were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

These activities represented one inspection sample.

The inspectors reviewed two radiological problem reports which found the cause of the event was radiation protection technician error to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

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

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective exposure history, current exposure trends, ongoing and planned activities in order to assess current performance and exposure challenges. This included determining the plant's current 3-year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment.

These activities represented one inspection sample.

The inspectors reviewed the outage work scheduled during the inspection period and associated work activity exposure estimates for the following five work activities which were likely to result in the highest personnel collective exposures:

- Drywell Cooler Number Four Removal;
- Cutout and Replace Check Valve E1100F031A;
- Refuel Floor Activities;
- Main Steam Reheater Replacement; and
- In-Service Inspections.

These activities represented one inspection sample.

The inspectors determined site specific trends in collective exposures and source-term measurements. The inspectors reviewed procedures associated with maintaining occupational exposures ALARA and processes used to estimate and track work activity specific exposures.

These activities represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors evaluated the licensee's list of planned work activities for RF11 ranked by estimated exposure that were in progress and reviewed the following three work activities of exposure significance:

- 06-1113, CRD Exchange;
- 06-1205, East/West MSR Replacement; and
- 06-1124, Drywell Cooler Number Four Removal.

For these three activities, the inspectors reviewed the ALARA 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 ALARA. 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.

The inspectors compared the results achieved including dose rate reductions and person-rem used with the intended dose established in the licensee's ALARA planning for these three work activities. Reasons for inconsistencies between intended and actual work activity doses were reviewed.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The licensee's process for adjusting exposure estimates or re-planning work, when unexpected changes in scope, emergent work or higher than anticipated radiation levels were encountered, was evaluated. This included determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles and not adjusted to account for failures to control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors observed the following five jobs that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers.

- Drywell Cooler Number Four Removal;
- Cutout and Replace Check Valve E1100F031A;
- Refuel Floor Activities;
- Main Steam Reheater Replacement; and
- In-Service Inspections.

The licensee's use of engineering controls to achieve dose reductions was evaluated to verify procedures and controls were consistent with the licensee's ALARA reviews, sufficient shielding of radiation sources was provided for, and the dose expended to install/remove the shielding did not exceed the dose reduction benefits afforded by the shielding.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

.5 Radiation Worker Performance

a. Inspection Scope

Radiation worker and RPT performance was observed during work activities being performed in radiation areas, airborne radioactivity areas, and high radiation areas that presented the greatest radiological risk to workers. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope and tools to be used, by utilizing ALARA low dose waiting areas, and that work activity controls were being complied with. Also, radiation worker training and skill levels were reviewed to determine if they were sufficient relative to the radiological hazards and the work involved.

These activities represented one inspection sample.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's corrective action system at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed.

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:

- C trend reports or performance indicators,
- C major equipment problem lists,

- C repetitive and/or rework maintenance lists,
- C departmental problem/challenges lists,
- C system health reports,
- C quality assurance audit/surveillance reports,
- C self assessment reports,
- C maintenance rule assessments, or
- C 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 inspectable area portions of the program with those issues identified by the licensee.

b. Issues

Unidentified drywell leakage was fluctuating after startup from RF11 but has since leveled out. From the lowest value, unidentified leakage has increased from about 0.06 gpm to an average daily value of 0.14 gpm. Additionally, the inner seal pressure for the "B" reactor recirculation pump has been fluctuating by as much as 40-60 psig; however, there does not appear to be a correlation between the seal pressure oscillations and drywell leakage. These issues are in the licensee's corrective action program as CARDS 06-24313 for the unidentified leakage and 06-23791 for the seal pressure oscillations.

4OA3 Event Followup (71153)

.1 Reactor Scram due to Main Transformer Fault

a. Inspection Scope

As described in Section 1R20.3 of this report, the inspectors responded to the control room on June 15, 2006, when the reactor automatically shut down as a result of the failure of main unit transformer 2B. The inspectors observed plant parameters and status, evaluated the performance of mitigating systems and licensee actions, confirmed that the licensee properly classified the event in accordance with emergency action level procedures and made timely notifications to NRC and state/county governments, as required by 10 CFR 50.72 (Event Number 42643). The inspectors determined and communicated details regarding the event to NRC management, risk analysts and others in Region III and Headquarters as input to an evaluation per Management Directive 8.3 for determining the appropriate level of event response. Based on the events that occurred, routine resident inspection efforts were deemed appropriate.

b. Findings

No findings of significance were identified.

.2 Review of Licensee Event Reports (LER)

- a. (Closed) LER 50-341/2006-001: At 0039 hours on April 1, 2006, Fermi 2 feedwater line check valves B2100F010A and B2100F076A failed their LLRT. The air leakage rate of the inboard check valve B2100F010A was 324.21 standard cubic feet per hour (SCFH), and the leakage rate of outboard check valve B2100F076A was above the measurement capability of the leak rate monitor. The penetration (X-9A) minimum-pathway air leakage value was determined to be 324.21 SCFH which is greater than the allowable containment leakage rate (La) value of 296.3 SCFH per TS 5.5.12 and higher than the allowable secondary containment bypass leakage rate of 0.1 La or 29.63 SCFH per TS Surveillance Requirement 3.6.1.3.11. The B2100F076A failure was attributed to soft seat degradation which was primarily caused by extending its service time to three operating cycles. The B2100F010A valve failure was attributed to soft seat degradation due to a slight misalignment of the valve disc to the in-body seat, compounded by wear between the internal shaft and valve disc. The slight misalignment caused the soft seat along the top portion of the disc to contact the seat first, resulting in a scraping action as the disc flexed to its full seat position. For both valves, the soft seats were replaced, and the soft seat service time has been limited to two operating cycles. The internal shaft for the B2100F010A valve was replaced, and the alignment between the disc and the valve seat was adjusted. Both valves were retested and met their associated LLRT acceptance criteria prior to restart of the unit.

The LER was reviewed by the inspectors. No findings of significance were identified and no violation of NRC requirements occurred. The licensee documented the LLRT failure in CARD 06-21751. This LER is closed.

4OA6 Exit Meetings

.1 Exit Meeting Summary

On July 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

On April 7, 2006, an interim exit meeting was conducted for the Access Control to Radiological Areas and ALARA inspection with Mr. Kevin Hlavaty, Plant Manager, and other licensee staff.

4OA7 Licensee-Identified Violations

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements, which meet the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as an NCV.

### **Cornerstone: Public Radiation Safety**

The licensee's procedure 67.000.103, "Surveying of Outgoing Shipments," directs the staff to survey outgoing vehicles used to carry an exclusive use shipment of radioactive material. The procedure relies on the proper identification of the incoming shipment as an exclusive use shipment. This procedure is used to implement the requirements of 49 CFR 173.443 and 49 CFR 177.843 that require the specific release survey of vehicles in exclusive use situations. Contrary to the above, and as described in CARD 06-21389, on March 20, 2006, an exclusive use radioactive material shipment was received by the licensee. The shipment contained one package of Limited Quantity radioactive material and four boxes of non-radioactive material and the radiation protection staff assigned to accept the shipment incorrectly identified the shipment as a non-exclusive use shipment. After the packages were removed from the conveyance, the vehicle was released without the required survey. This was identified by licensee supervision but not before the vehicle had departed the site. The carrier was contacted and the vehicle returned to the licensee's site before further transportation activity had commenced and a survey was completed. No contamination was found and no dose rates above background were identified. The finding is of very low safety significance because it did not result in an unmonitored release nor were any dose limits approached.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

### Licensee

D. Gipson, Chief Nuclear Officer  
D. Cobb, Assistant Vice President, Nuclear Generation  
K. Hlavaty, Plant Manager  
S. Bartman, Nuclear Production  
J. Davis, Manager, Outage Management  
R. Gaston, Licensing Manager  
S. Hassoun, Principal Engineer, Licensing  
H. Higgins, Radiation Protection Manager  
J. Korte, Manager, Nuclear Security  
J. Plona, Engineering Director

### NRC

C. Lipa, Chief, Division of Reactor Projects, Branch 4



## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

05000341/2006003-05	URI	Inappropriate Use of Risk in Operability Evaluations (Section 1R15.3)
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### Opened and Closed

05000341/2006003-01	NCV	Unauthorized Transient Combustibles in Safety-Related Areas (Section 1R05.2)
05000341/2006003-02	NCV	Improper Storage of Chemicals Affecting Fire Fighting Response (Section 1R05.3)
05000341/2006003-03	NCV	Inadequate Maintenance Risk Assessment (Section 1R13.2)
05000341/2006003-04	NCV	Improper Evaluation of Standby Liquid Control Operability During Tank Sparging (Section 1R15.2)
05000341/2006003-06	NCV	Inadequate Controls for Venting the Reactor Pressure Vessel Head (Section 1R20.1)

### Closed

05000341/2006-001	LER	Excessive Feedwater Check Valve Leakage at Containment Penetration
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### 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.

### **1R01: Adverse Weather Protection**

CARD 06-23861, 06/05/06; Procedure Enhancement for TBHVAC (NRC Comment)  
Procedure 27.000.06, Rev 0, 02/27/03; Performance Evaluation Procedure, Hot Weather Operations  
Open/Closed Work Requests by Related Work Code; 05/04/06

### **1R04: Equipment Alignment**

Drawing 6M721-5706-3, 2/16/00; RHR Service Water Make Up Decant and Overflow Systems Functional Operating Sketch  
Drawing 6M721-5706-1, 3/5/04; Residual Heat Removal (RHR) Division II Functional Operating Sketch  
03-00120, 01/02/03; Pinhole leak in piping  
03-13694, 6/17/03; Document the Condition of General Service Water Piping  
04-24918, 10/25/04; P4100F402A installed at the bottom of the pipe  
06-11615, 05/19/06; EDG Electrical Lineup Load Description Changes  
06-21618, 03/28/06; E1100F050A Failed PI Leak Test SR 3.4.5.1  
06-22730, 4/24/06; NRC-Identified Concerns in GSW Pumphouse  
06-23447, 05/18/06; 23.205 Att 1B enhancement  
06-23494, 05/20/06; E1100F050A actuator failed to open valve  
23.131, Rev.86; General Service Water System  
43.000.005, Rev. 30; Visual Examination of Piping and Components (VT-2)  
23.208, Rev. 81; RHR Complex Service Water Systems  
23.205, Rev. 94; Residual Heat Removal System

### **1R05: Fire Protection**

CARD 06-23365; Door is not latching; Dated May 15, 2006 (NRC-Identified)  
CARD 06-23388; Transient Combustibles in the RHR; Dated May 16, 2006 (NRC-Identified)  
MOP11; Fire Protection; Revision 10  
Fire Brigade Drill Scenario 6, Rev. 11/29/94; First Floor Radioactive Waste Chemical Lab Storage Area  
Fire protection Pre-Plan FP-RDWST, Rev. 4; Radwaste Building Zones 22, 23, 24, and 25

### **1R06: Flood Protection Measures**

CARD 06-21354; High Pressure Coolant Injection Room Flooded due to Drains backing Up; 3/18/06  
CARD 06-22600; Moderate Energy Line Break Evaluation; 4/21/06 (NRC-Identified)

Nuclear Generation Memo TMPE-94-0308; May 18, 1994; Flood Protection Review  
6M721-2223, Rev U, 11/24/06; Diagram Equipment Drains All Floors Auxiliary and Reactor Buildings  
6M721-2224, Rev W, 11/24/04; Diagram Floor Drains All Floors Auxiliary and Reactor Buildings  
6M721-2032, Rev BO, 04/19/06; Sump Pump Diagram Radwaste System  
6M721-2032-1, Rev AI, 04/19/06; Sump Pump Diagram Radwaste System

#### **1R07: Heat Sink Performance**

WR TG25060421; Perform RHR Division II Heat Exchanger Performance Test; 3/22/06

#### **1R11: Licensed Operator Requalification**

Scenario SS-OP-802-3300, Rev. 0; Anticipated Transient Without Scram with Small Steam Leak; 1/26/06

#### **1R12: Maintenance Effectiveness**

Design Specification 3071-128-EZ-06; Electrical Design Instructions Molded Case Circuit Breakers  
Maintenance Rule Conduct Manual MMR, Appendix E, Rev 4; Maintenance Rule SSC Specific Functions  
Memo dtd 01/30/06, TMIS-06-0011; Summary of Expert Panel Meeting 184 Conducted January 24, 2006  
CTG11-1 Get Well Plan; July 2003  
Deviation Event Report 93-0528, 09/15/93  
Vendor Manual VME5-18, Rev 0; Spectrum Technologies, Series 5600, MCC  
CARD 97-10182, 10/27/97; Defective Molded Case Circuit Breaker  
CARD 03-01098, 05/30/03; Reactor Protection System - Function Failure  
03-19510, 07/20/03; Safety Eval 95-0002 is Used as an Operability Evaluation for LPCI with the RHR Minimum Flow Valves Open  
CARD 04-22685, 07/02/04; Generator Transformer - Function Failure  
CARD 04-23307, 08/03/04; Motor Control Centers & Dist. Cabinets  
CARD 05-23490, 06/21/05; Auxiliary Electrical - Function Failure  
CARD 06-21363, 04-02-06; Auxiliary Electrical - Function Failure  
CARD 06-21527, 04/09/06; Residual Heat Removal System - Function Failure  
CARD 06-22270, 04/12/06, Maintenance Rule Function T4100-09 should be included in Maintenance Rule Scope Investigation  
Procedure 35.306.008, Rev 46; Maintenance Procedure, ITE Gould Motor Control Center Load Compartment  
Procedure 35.306.018, Rev 5; Maintenance Procedure, Spectrum Technology Motor Control Center Load Compartment

#### **1R13: Maintenance Risk Assessment and Emergent Work Evaluation**

Fermi 2 Daily Plant Status, April 2, 2006  
Scheduler's Evaluation for Fermi 2, April 2, 2006  
Fermi 2 Daily Plant Status, April 17, 2006  
Scheduler's Evaluation for Fermi 2, April 17, 2006

Fermi 2 Daily Plant Status, April 30, 2006  
Scheduler's Evaluation for Fermi 2, April 30, 2006  
Fermi 2 Daily Plant Status, June 26, 2006  
Scheduler's Evaluation for Fermi 2, June 26, 2006  
CARD 06-21892, 4/4/06; NRC Questions related to Temporary Cooling Installed for Division I Battery Test (NRC-Identified)  
CARD 06-24495, 7/7/06; Work Risk Assessment and Temporary Equipment Controls (NRC-Identified)  
WR 0219060414; Perform 42.309.05 Division I (5 Year) 130/260 VDC batter Check (2A-1 Only)  
WR 1219060414; Perform 42.309.05 Division I (5 Year) 130/260 VDC batter Check (2A-2 Only)

#### **1R14: Non-Routine Events**

CARD 06-24113; Main Steam Bypass Valves Opened Unintentionally During Power Ascension; 6/18/06  
CARD 06-23588; Mode 5 Reactor SCRAM During Installation of SRM Shorting Links; 5/24/06  
CARD 06-23501; Full In Light for Control Rod 50-27 on Full Core Display is Intermittent; 5/20/06

#### **1R15: Operability Evaluations**

Drawing - 5744, Rev. BK; Emergency Equipment Cooling Water Division I; 11/23/05  
WR 000Z060107; Remove and Reinstall Insulation on E1100F031B; 2/9/06  
WR 000Z062027; Replace Contaminated Insulation; 6/12/06  
CARD 06-24156; Affects of Accidents not Addressed in Insulation Removal Evaluation for E1100F031B; 6/20/06 (NRC Identified)  
CARD 01-17302; There are no Site Guidelines for Insulation Removal on Operable Equipment; 8/14/01  
CARD 06-23898; EECW M/U Pump IST Flow Unattainable; 6/7/06  
CARD 02-14782; Engineering Evaluation for On-Line Insulation Removal; 6/27/02  
CARD 03-16498; Engineering Evaluation for On-Line Insulation Removal; 9/9/03  
CARD 05-21940; Engineering Evaluation for On-Line Insulation Removal; 3/23/05  
CARD 06-23913; Replace Contaminated Insulation; 6/8/06  
CARD 06-23785; Standby Liquid Control Operability During Sparging Activities; 6/1/06 (NRC-Identified)  
CARD 99-13240; Inoperability of Standby Liquid Control During Air Sparging; 4/15/99

#### **1R19: Post-Maintenance Testing**

EDP - 31880 120 KV Switchyard Upgrade  
Engineering Change Request 33690-1, Rev A, 03/14/06; Replacement of Drywell Cooler Coils T470B003 and T4700B004  
Equivalent Replacement Evaluation (ERE) 34173, Rev 0, 04/18/06; E1150F608 MOV Motor Replacement  
Oil Sample Analysis Reports for C1106C001A, "E" Control Rod Drive Pump; 01/01/06 - 06/29/06  
CARD 06-22258, 04/12/06; CTG equipment issues discovered during IPTE 04-02  
CARD 06-22982, 4/30/06; Inboard MSIV A will not slow close  
CARD 06-23031, 5/1/06; MSIV B2103F028B RPS Limit Switch did not actuate when expected

CARD 06-22634, 4/22/06; "A" Inboard MSIV limit switch, PIS B21N572A, will not change state  
 Drawing SD-F-0179, Rev. A, 9/25/05; Diagram Line Breaker Control 120KV, POS GK  
 Drawing SD-2500-01, Rev. A, 2/28/06; One Line Diagram Plant 4160V & 480V  
 Drawing SD-2500-02, Rev. A, 2/23/06; One Line Diagram 13.8KV  
 Drawing SD-F-0001, Rev. A, 2.23/06; One Line Diagram 120 KV Switchyard  
 IPTE 04-02, 120KV Switchyard Upgrade  
 Procedure 24.137.01, Rev. 34; Main Steam Isolation Channel Functional Test  
 24.206.01, Rev 63, 05/08/06; RCIC System Pump and Valve Operability Test  
 43.000.005, Rev 30, 03/22/06; Visual Examination of Piping and Components (VT-2)  
 43.401.303, Rev 32, 10/24/05; Local Leakage Rate Testing for Penetration X-9A  
 WR B203040100, 04/10/06; B2100F010A - Nuclear Boiler Feedwater Supply Inboard Primary  
 Containment Check Valve  
 WR 000Z050487, 04/29/06; B3105F031A - Reactor Recirculation Pump "A" Discharge Valve  
 WR T210040100, 04/10/06; B2100F076A - Nuclear Boiler Feedwater Supply Check Valve  
 WR 000Z052131, 04/19/06; Inservice Testing, Drywell Cooler #4  
 WR 000Z060156, 6/19/06; "E" Control Rod Drive Inboard Pump Bearing Oil level Bulls eye Dirty

## **1R20: Refueling and Outage Activities**

Apparent Cause Determination for Damage Found in the Main Generator During RF11 Robot  
 Inspections CARD 06-21922  
 Inspection Requirement Form, Requisition Number: 9086929; 04/19/2006  
 Drawing 6M721-3722, Rev A; Flow Diagram & Details of Purging Unit - Reactor Pressure  
 Vessel - Unit 2  
 Safety Tagging Record 2006-002089  
 CARD 06-21534, 03/26/2006; Continuous Air Monitor Alarm on Refueling Floor  
 CARD 06-22590, 04/21/2006; NRC identified concern with Div 1 Core Spray and Defense in  
 Depth Investigation  
 CARD 06-22642, 04/22/2006; Are EDG Surveillance's Testing What They Are Setup to Test  
 CARD 06-22667, 04/23/2006; RPV Venting Unit Configuration Control Discrepancies  
 CARD 06-23114, 05/03/2006; NRC Concern: Review of ERE-34173 "E1150F608 MOV Motor  
 Replacement  
 CARD 06-23793, 06/02/2006; NRC Concern - Material Released Without the Requirements of  
 EED Being Verified  
 Procedure 24.106.06, Rev 25; Surveillance Procedure, SCRAM Discharge Volume Vent and  
 Drain Valves SCRAM Operability Test  
 Procedure 32.000.07, Rev 33; Crane Operation Procedure, Reactor Building Crane Operation  
 Procedure 35.717.001, Rev 29; Maintenance Procedure, Reactor Building Crane - Quarterly  
 Preventive Maintenance  
 Procedure 35.717.003, Rev 3; Maintenance Procedure, Reactor Building Crane - Annual PM  
 Inspection  
 Procedure 43.401.303, Rev 32; Surveillance Procedure, Local Leakage Rate Testing for  
 Penetration X-9A  
 Work Control Conduct Manual MWC13, Rev 0; Outage Nuclear Safety  
 Maintenance Conduct Manual MMA07, Rev 14; Hoisting, Rigging and Load Handling

## **1R22: Surveillance Testing**

Drawing 6M721-5703-1, Rev. Y; Control Rod Drive System Functional Operating Sketch  
CARD 06-22739, 4/24/06; Acrid smell from EDG #13 local control cabinet  
CARD 06-23031, 5/1/06; MSIV B2103F028B RPS Limit Switch did not actuate when expected  
CARD 06-22653, 04/23/06; HCU 46-27 Conduit for wiring to accumulator pressure switch needs repair  
CARD 06-22999, 05/01/06; Enhancements to 24.405.03  
CARD 06-21681; Potential Enhancement for MSIV Switch Calibrations; 3/20/06 (NRC-Identified)  
CARD 06-21720; NRC Question Regarding MSIV Switch Testing; 3/31/06 (NRC-Identified)  
CARD 06-22046; Loss of SLC Squib Valve "A" Continuity Light During Performance of 24.139.03; 4/7/06  
Procedure 24.106.06, Rev 25; Surveillance Procedure, SCRAM Discharge Volume Vent and Drain Valves SCRAM Operability Test  
Procedure 24.106.08, Rev. 3; CRD Hydraulic Unit Accumulator Integrity Test  
Procedure 24.137.01, Rev. 34; Main Steam Isolation Channel Functional Test  
Procedure 24.405.03, Rev. 33; Secondary Containment Operability Test  
Procedure 24.307.03, Rev. 38; EDG 13 - Loss of Offsite Power and ECCS Start with Loss of Offsite Power Test  
Procedure 24.202.02, Rev. 42; HPCI Flow Rate Test at 165 psig Reactor Steam Pressure  
Procedure 24.206.04, Rev. 44; RCIC System Automatic Actuation and Flow Test  
Procedure 43.401.500, Rev 34; Surveillance Procedure, Local Leakage Rate Testing for Penetration X-7A, X-7B, X-7C, and X-7D  
Procedure 43.401.500, Rev 35; Surveillance Procedure, Local Leakage Rate Testing for Penetration X-7A, X-7B, X-7C, and X-7D  
Procedure 24.402.06; Rev. 32; Drywell to Suppression Chamber Bypass Leak Test  
Procedure 35.139.002; Rev. 27; SLC System Explosive Valve Insert Replacement  
Procedure 24.139.03, Rev. 40; SLC Manual Initiation, RWCU Isolation, and Storage tank Heater Operability Test  
WR 0311060425; Perform 24.402.06 Drywell to Suppression Chamber Bypass Leak Test; 3/25/06  
WR 0518041022; Perform 44.010.063 RPS MSIV Outboard Valve Limit Switch, Div. I and II, Calibration  
WR 1245060421; Perform 24.139.03 SLC Loop "B" Pump Flow, Manual Initiate, and Squib Firing; 4/21/06

## **1EP6: Drill Evaluation**

Scenario SS-OP-802-3300, Rev. 0; Anticipated Transient Without Scram with Small Steam Leak; 1/26/06

## **2OS1: Access Control to Radiologically Significant Areas**

CARD 05-26818; Primary Containment Atmosphere Sample Pump; T5001-C003 Will Not Start; dated December 5, 2005  
CARD 06-11546; WGI Employee Felt Something in His Left Eye after Removing Protective Clothing at Drywell Step-off Pad; dated April 5, 2006  
CARD 06-21534; High Radiation Alarm on Refuel Floor; dated March 26, 2006



CARD 06-21640; Unnecessary Contamination of Personnel; dated March 29, 2006  
CARD 06-21639; Evaluate Dose and Dose Rate Alarms for Fast Entry Electronic Dosimeters; dated March 29, 2006  
CARD 06-20962; Worker Electronic Dosimeter Alarm on Incorrect Task; dated February 23, 2006  
CARD 06-21177; Unexpected Dose Rate Alarm; dated March 8, 2006  
CARD 06-21787; Entering High Radiation Area on Incorrect Task; dated April 1, 2006  
CARD 06-21807; Evaluate Reactor Building Ventilation Impact on the Spread of Contamination during RF11 Vessel Fill Up; dated April 2, 2006  
CARD 06-21857; Drywell Stepoff Pad Poor Radiation Protection Practices; dated April 3, 2006  
CARD 06-21873; Potential Release of Radioactive Contamination; dated April 4, 2006  
CARD 06-21868; Workers Entered Top of Torus High Radiation Area on Wrong Radiation Work Permit; dated April 4, 2006  
CARD 06-21944; Foreign Material Found Inside Main Condenser Upper Steam Space; dated April 5, 2006  
CARD 06-21958; Worker Received Puncture Wound; dated April 6, 2006  
EP-225; Radiological Medical Emergencies; Revision 13  
RF11 ALARA Self-Assessment; dated April 4, 2006

## **2OS2 As-Low-As-Is-Reasonably-Achievable Planning And Controls (ALARA)**

RWP 06-1110; In-Service Inspections; Revision 0  
RWP 06-1103; Install and Remove Temporary Shielding, Install Permanent Shielding; Revision 0  
RWP 06-1105; Job Progress for Scaffold Activities in the Reactor Building Steam Tunnel and Drywell; Revision 0  
RWP 06-1124; Replace Number 4 Drywell Cooler; Revision 4  
RWP 06-1164; E1100F031A Cutout and Replace Check Valve; Revision 0  
RWP 06-1251; Perform Refuel Activities on Reactor Building 5; Revision 0  
CARD 06-21765; Work Initiated Without Radiation Protection Review; dated April 1, 2006  
CARD 06-21911; E100F031A Glovebag Not Installed Properly; dated April 5, 2006  
CARD 06-21947; E1100F060A Re-pack Extra Time and Dose Above Initial Estimate; dated April 5, 2006  
Procedure 63.000.100; Respirator Evaluation Work Sheet (RWP 06-1117); Revision 0

## **4OA2: Identification and Resolution of Problems**

CARDs initiated between 1/1/06 and 06/30/06

## **4OA3: Event Followup (71153)**

NRC-06-0037 Letter; Licensee Event report No. 2006-001, "Excessive Feedwater Check Valve Leakage At Containment Penetration;" dated May 24, 2006

## **4OA7 Licensee-Identified Violations**

CARD 06-21389; Failure to Perform Required Surveys in Accordance with Procedure 67.000.102; dated March 21, 2006  
Procedure 67.000.103; Survey of Outgoing Radioactive Material Shipments; Revision 16  
Procedure 67.000.102; Survey of Incoming Radioactive Material Shipments; Revision 0

## LIST OF ACRONYMS USED

ALARA	As Low As Reasonable Achievable
CARD	Condition Assessment Resolution Document
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CTG	Combustion Turbine Generator
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
GSW	General Service Water
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
LER	Licensee Event Report
LERF	Large Early Release Frequency
LLRT	Local Leak Rate Test
MCC	Motor Control Center
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PI	Performance Indicator
PMT	Post-Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RPS	Reactor Protection System
RPSMG	Reactor Protection System Motor Generator
RPT	Radiation Protection Technician
RWCU	Reactor Water Cleanup
RWP	Radiation Work Package
SCFH	Standard Cubic Feet Per Hour
SCFM	Standard Cubic Feet Per Minute
SDP	Significance Determination Process
SGTS	Standby Gas Treatment System
SLC	Standby Liquid Control
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
TM	Temporary Modifications
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
WR	Work Request