



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

November 12, 2008

Mr. Jack M. Davis
Senior Vice President and
Chief Nuclear Officer
Detroit Edison Company
Fermi 2 - 210 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMIL POWER PLANT, UNIT 2 INTEGRATED INSPECTION
REPORT 05000341/2008-004

Dear Mr. Davis:

On September 30, 2008, 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 October 16, 2008, with you and other members of your staff.

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

Based on the results of this inspection, three NRC-identified findings of very low safety significance were identified, two of which involved violations of NRC requirements. However, because of their very low safety significance and because the issues were entered into your corrective action program (CAP), the NRC is treating the issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy. One licensee-identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of these findings, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Fermi 2 Facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document

J. Davis

-2-

Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John Giessner, Branch Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2008-004
w/Attachment: Supplemental Information

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

J. Davis

-2-

Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

John Giessner, Branch Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2008-004
w/Attachment: Supplemental Information

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

DOCUMENT NAME: G:\1-Secy\1-Work In Progress\FER 2008 004.doc

Publicly Available Non-Publicly Available Sensitive Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII						
NAME	RLerch:cms		JGiessner						
DATE	11/12/08		11/12/08						

OFFICIAL RECORD COPY

Letter to J. Davis from J. Giessner dated November 12, 2008

SUBJECT: FERMIL POWER PLANT, UNIT 2 INTEGRATED INSPECTION
REPORT 05000341/2008-004

DISTRIBUTION:

Tamara Bloomer

RidsNrrDorLpl3-1

RidsNrrPMFermi2 Resource

RidsNrrDirIrib Resource

Mark Satorius

Kenneth Obrien

Jared Heck

Carole Ariano

Linda Linn

Cynthia Pederson

DRPIII

DRSIII

Patricia Buckley

Tammy Tomczak

ROPreports@nrc.gov

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000341/2008-004

Licensee: Detroit Edison Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: July 1 through September 30, 2008

Inspectors: R. M. Morris, Senior Resident Inspector
T. C. Steadham, P.E., Resident Inspector
J. Cassidy, Senior Health Physicist
A. Dunlop, Senior Reactor Engineer, DRS
D. Jones, Reactor Inspector
V. Meghani, Reactor Inspector
M. Phalen, Health Physicist
F. Tran, Reactor Engineer
A. Wilson, Resident Inspector, Davis-Besse

Approved by: J. Giessner, Branch Chief
Branch 4
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS.....	1
REPORT DETAILS	3
Summary of Plant Status.....	3
1. REACTOR SAFETY	3
1R01 Adverse Weather Protection (71111.01).....	3
1R04 Equipment Alignment (71111.04)	3
1R05 Fire Protection (71111.05).....	5
1R11 Licensed Operator Requalification Program (71111.11)	8
1R12 Maintenance Effectiveness (71111.12).....	9
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)	9
1R15 Operability Evaluations (71111.15).....	12
1R18 Plant Modifications (71111.18)	12
1R19 Post-Maintenance Testing (71111.19).....	13
1R22 Surveillance Testing (71111.22).....	14
2. RADIATION SAFETY	15
2OS1 Access Control to Radiologically Significant Areas (71121.01).....	15
2PS3 Radiological Environmental Monitoring Program And Radioactive Material Control Program (71122.03)	17
4. OTHER ACTIVITIES	21
4OA1 Performance Indicator Verification (71151).....	21
4OA2 Identification and Resolution of Problems (71152).....	23
4OA5 Other Activities	27
4OA6 Management Meetings	30
4OA7 Licensee-Identified Violations	31
SUPPLEMENTAL INFORMATION	1
KEY POINTS OF CONTACT	1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	1
LIST OF DOCUMENTS REVIEWED.....	2
LIST OF ACRONYMS USED	8

SUMMARY OF FINDINGS

IR 05000341/2008-004; 07/01/2008 – 09/30/2008; Fermi Power Plant, Unit 2; Fire Protection, Maintenance Risk Assessments and Emergent Work Control, Problem Identification and Resolution.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Severity Level IV and Two Green findings were identified by the inspectors, two of which were considered Non-Cited Violations (NCVs) of the Nuclear Regulatory Commission's (NRC's) regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- **Green**. A finding of very low safety significance was identified by the inspectors for the licensee's failure to adequately control loose materials in the 345kV switchyard. Specifically, the inspectors identified a wooden pallet and multiple wooden boards, stanchions, and saw horses inside the switchyard fence. Once this condition was identified, the licensee removed the material from the switchyard. No violation of regulatory requirements occurred.

The finding was greater than minor because, if left uncorrected, it would become a more significant safety concern. Specifically, the loose items could affect the proper operation of the switchyard during periods of high winds. This finding was determined to be of very low safety significance because the finding was not a loss-of-coolant accident initiator, did not increase the likelihood of a fire or a flood, and did not contribute to the likelihood that mitigating equipment relied upon during a loss of Division II offsite power sources would not be available. The inspectors determined that the failure to ensure supervisory and management oversight of work activities also affected the cross-cutting area of Human Performance, Work Practices (H.4.c). (Section 1R13.1)

Cornerstone: Mitigating Systems

- **Green**. The inspectors identified an NCV of Condition 2.C.(9) of the Fermi-2 Facility Operating License NPF-43 for the failure to have adequate fire detection installed in the reactor building first floor in accordance with the applicable National Fire Protection Association codes. Specifically, the licensee failed to install detectors in two beam pockets. Once this condition was identified, the licensee implemented additional compensatory measures for the lack of adequate detectors.

The finding was greater than minor because it affected the Mitigating Systems Cornerstone attribute of protection against external factors (fire) and it impacted the objective of the Mitigating Systems Cornerstone. As a result of not having an adequate number of detectors, detection of a fire in the reactor building could have been delayed. This finding was determined to be of very low safety significance based on the

availability of safe shutdown equipment and the low number of ignition sources. The inspectors determined that the failure to have adequate detection and compensatory measures also affected the cross-cutting area of Problem Identification and Resolution, CAP, Corrective Action (P.1.d). (Section 1R05.1)

- SL IV. The inspectors identified a Green (Severity Level IV) NCV for an inadequate 10 CFR 50.59, "Changes, Tests, and Experiments," evaluation resulting in failure to receive prior NRC approval for changes in licensed activities associated with protection of safety-related equipment against tornado generated missiles. Specifically, the licensee failed to demonstrate that the proposed change did not result in an increase in the probability of a malfunction of equipment important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). As part of the corrective actions, the licensee installed missile shields and initiated a study to determine the appropriate long-term corrective actions.

The finding was greater than minor because the change had the potential for impacting the NRC's ability to perform its regulatory function as the inspectors determined the change would have required prior NRC approval. Based on a phase 3 significance determination, the senior risk analyst determined the finding was of very low safety significance because the change in core damage frequency for this finding was calculated to be less than 1.0E-7. This was determined to be a Severity Level IV NCV of 10 CFR 50.59(a)(2)(i) (1989). (Section 4OA2.3)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Fermi Unit 2 started this inspection period at full power where it remained at or near for the duration of the inspection period with one exception. On September 13, operators reduced reactor power to approximately 80 percent for a routine rod pattern adjustment that lasted approximately 12 hours. Operators returned the reactor to full power on September 14.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the UFSAR for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site, which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier.

This inspection constituted one external flooding sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Reactor building, heating, ventilation, and air conditioning (HVAC) following maintenance;
- Diesel fire pump following maintenance, and
- Combustion turbine generator (CTG) 11-1 following Mark V computer replacement.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders, condition reports, 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 and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

This inspection constituted three partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

During the week of September 8, 2008, the inspectors performed a complete system alignment inspection of the reactor core isolation cooling (RCIC) system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

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 walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Cable spreading room;
- Auxiliary building, third floor DC/Motor control center (MCC) area;
- Reactor building, first floor mezzanine;
- Division I and II standby gas treatment (SGT);
- Residual heat removal (RHR) heat exchanger room;
- Emergency diesel generator (EDG)-14 room;
- EDG-13 room;
- Reactor building, first floor truck bay and equipment airlock; and
- Reactor building, second floor.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; fire detectors and sprinklers were unobstructed; transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

This inspection constituted nine quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

Introduction: The inspectors identified a Green NCV of the Fermi 2 Facility Operating License NPF-43, Condition 2.C.(9) for the failure to install required smoke detectors in two beam pockets in the reactor building first floor.

Description: During a walkdown of the reactor building first floor, the inspectors identified a lack of smoke detection capability in two beam pockets in a mezzanine area of the reactor building first floor. The beam pockets were greater than 18 inches deep and the general area contained several cable trays and containment penetrations. In

response to the inspectors' observation, the licensee provided information, which showed that although the licensee previously identified lack of adequate smoke detection in the beam pockets, a recently completed upgrade to the detectors in the reactor building first floor failed to install fire detectors in either beam pocket.

As described in condition assessment and resolution document (CARD) 01-20359, a self-assessment conducted in May 2002 identified potential National Fire Protection Association (NFPA) compliance concerns with the Fermi fire detection system and recommended further review to evaluate the issue. Specifically, the ceiling in the reactor building first floor was not considered a smooth ceiling because it was partitioned by multiple beam pockets that were more than 18 inches in depth and more than 8 feet on center. Paragraph 3330 of NFPA 72D-1975 stated that fire detecting equipment shall be installed in accordance with NFPA 72E. Section 4-4.2 of NFPA 72E-1974 stated, "On a smooth ceiling, with no forced air flow, spacing of 30 feet may be used as a guide. In all cases, the manufacturer's recommendations shall be followed. Other spacing may be used depending on ceiling height, different conditions or response requirements." Section 4-4.6 of NFPA 72E-1974 stated, "In beam construction over 8 inches in depth, movement of heated air and smoke may be slowed by the pocket or bay formed by the beams. In this case, spacing shall be reduced. If the beams exceed 18 inches in depth and are more than 8 feet on centers, each bay shall be treated as a separate area requiring at least one detector."

On March 12, 2004, the licensee issued evaluation EVAL-DE0035-02, which substantiated significant NFPA fire detection non-compliance issues in the reactor building. As a result, the licensee documented the issue as CARD 04-22965 and implemented compensatory measures. Attachment D of the evaluation provided a section-by-section compliance evaluation for the detection system with NFPA 72E-1974. Attachment D indicated that the detector spacing criteria for beam construction were not met in the reactor building first floor by noting that there were pockets requiring individual detectors. The licensee prepared Engineering Design Package (EDP) 34946 to modify to the fire detection system to resolve the non-compliance issues.

The licensee performed modifications to the fire detection system for the reactor building first floor during the first quarter of 2008. The inspectors walked the area down after the modifications were completed and noted that detectors were not installed in two beam pockets. Based on inspection walkdowns, discussions with licensee staff, and document reviews, the inspectors determined that EVAL-DE0035-02 identified the need for detectors in the beam pockets but that the licensee failed to include the detectors within the scope of EDP 34946.

Analysis: The inspectors determined that the failure to install adequate detection in the two beam pockets in the reactor building first floor was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," in that the finding involved the attribute of protection against external factors (fire), which affected the Mitigating Systems Cornerstone objective of ensuring the availability of systems that respond to initiating events. Smoke from a fire in that area could have accumulated in the beam pocket areas where the lack of required detection existed and delayed detection of a postulated fire. This delay in detection would also have delayed any subsequent manual fire suppression activities. The inspectors determined that the failure to have adequate detection and compensatory measures also

affected the cross-cutting area of PI&R, CAP, Corrective Action, because the licensee did not install adequate detection in this fire zone although the licensee previously identified the need to do so. Specifically, the evaluation by engineering identified that the detectors need to be installed but the modifications to the first floor reactor building did not adequately address the beam pockets. (P.1.d)

The inspectors completed a Phase I significance determination of this issue using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005. The inspectors assigned a degradation rating of low because the lack of smoke detectors would have impacted the performance of fire detection in this location. However, the fire protection element impacted by the finding was still expected to provide some substantial defense-in-depth benefit due to other fire detectors located in the area. The inspectors reviewed the equipment and manual actions credited for post-fire safe shutdown operations to determine if, for a postulated fire in this area, there was equipment available and/or the manual actions were feasible. The inspectors determined that based on the availability of a safe shutdown train which would not be impacted by a fire in the area and the low number of ignition sources in the locations where the lack of detection existed, the change in core damage frequency value as a result of a fire in this fire zone was very low. Therefore, this finding was considered to be of very low safety significance (Green).

Enforcement: The Fermi 2 Facility Operating License NPF-43, Condition 2.C.(9) stated, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in its UFSAR. Section 9A.5 of the UFSAR provided a point-by-point comparison with Appendix A to NRC BTP APCSB 9.5-1, dated August 23, 1976. Position E.1(a) on fire detection stated, "Fire detection systems should as a minimum comply with NFPA 72D, 'Standard for Installation Maintenance and Use of Proprietary Protective Signaling Systems.' Deviations from the requirements of NFPA 72D should be identified and justified." Section 4-4.6 of NFPA 72E-1974 stated, "If the beams exceed 18 inches in depth and are more than 8 feet on centers, each bay shall be treated as a separate area requiring at least one detector."

Contrary to the above, the fire detection system installed in the reactor building first floor did not comply with NFPA 72E-1974. Specifically, two beam pockets that exceeded 18 inches in depth and more than 8 feet on center, located in the fire zone did not have detectors. Once identified, the licensee implemented compensatory measures and reviewed their engineering process to determine why the required detectors were not included in the EDP. Because this violation was of very low safety significance (Green) and was entered into the licensee's CAP, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000341/2008004-01, Failure to Install Smoke Detectors in the Reactor Building, First Floor, Beam Pockets.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On August 6, the inspectors observed a fire brigade activation of an unannounced drill, fire in the radioactive waste building MCC. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical

manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives. Documents reviewed are listed in the Attachment to this report.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On July 15 and September 24, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification assessments to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly licensed operator requalification program samples as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- Main feedwater primary containment isolation check valves; and
- Diesel fire water pump.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

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

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify the appropriate risk assessments were performed prior to removing equipment for work:

- Risk during degraded turbine first stage pressure issues;
- Risk during turbine building HVAC exhaust fan failure and division I SGT safety system outage;
- Risk during feedwater controller degradation, single tower circuit contingency, CTG 11-1 maintenance, and emergency equipment cooling water (EECW) temperature control valve maintenance; and
- Risk during CTG 11-1 maintenance and 120kV switchyard trenching activities.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst 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.

This inspection constituted four maintenance risk assessment and emergent work control activities samples as defined in IP 71111.13-05.

b. Findings

(1) Failure to Adequately Control Loose Materials in the Switchyard

Introduction: A finding of very low safety significance (Green) was identified by the inspectors for the failure to adequately control loose materials in the 345kV switchyard. Specifically, the inspectors identified a wooden pallet and multiple wooden boards, stanchions, and saw horses inside the switchyard fence. No violation of regulatory requirements occurred.

Description: On September 18, the inspectors conducted a walkdown in the vicinity surrounding the 345kV switchyard because the licensee was protecting the switchyard due to other work in the plant. During the walkdown, the inspectors noted multiple loose wooden materials inside the switchyard fence. The inspectors concluded that the loose materials inside the switchyard fence combined with high velocity winds increased the potential to lose Division II offsite power sources because the materials could become missiles and damage switchyard equipment.

The licensee had a reactive procedure for tornado watches and warnings (20.000.01, Revision 32, "Tornado") which directed plant personnel to verify all outside equipment, cranes, etc. were properly secured or other compensatory measures were taken for equipment use. However, the inspectors did not identify any procedures to prepare for adverse weather conditions with respect to tornado and high wind conditions, nor did the inspectors identify any preparatory procedures to control loose materials in the protected area or switchyard. The inspectors found no specified actions or proactive elements that required the licensee to minimize the number of missile hazards prior to seasonal susceptibilities to occurrences of high winds.

Licensee Procedure MOP-21, "Housekeeping," Revision 1, established responsibilities and criteria for the performance of plant material and housekeeping readiness inspections. The procedure did not address the inspection of out-of-plant material storage areas. Licensee Procedure 20.000.01 discussed securing loose equipment (not material); however, this procedure would only be used if the plant was notified of a tornado watch or warning. Additionally, the licensee's Quality Assurance Program Manual committed the licensee to American National Standards Institute (ANSI) N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants," during the plant operational phase. This standard required scheduled inspections of work areas and construction practices to ensure protection of installed equipment from weather-related movement of stored items.

The inspectors interviewed plant personnel and determined that personnel failed to remove the materials from the switchyard subsequent to completing assigned work activities. Specifically, workers re-routing a portion of the fence around the switchyard failed to remove the wooden barriers after the re-routing was complete and contractors performing maintenance on a switchyard breaker failed to remove the pallet when the work was complete. In both cases, the licensee failed to provide effective worker oversight to ensure the materials were removed from the switchyard following completion of the respective jobs.

Analysis: The inspectors determined that the licensee's failure to control material near risk-significant equipment was contrary to the standards contained within ANSI N45.2.3-1973 and was a performance deficiency.

The finding was determined to be more than minor because, if left uncorrected, it would become a more significant safety concern. Specifically, the loose items could affect the proper operation of the switchyard during periods of high winds. The inspectors concluded this finding was associated with the Initiating Events Cornerstone.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Initiating Events cornerstone. The inspectors answered "No" to all three screening questions because the finding was not a loss of coolant accident initiator, did not increase the likelihood of a fire or a flood, and did not contribute to the likelihood that mitigating equipment relied upon during a loss of Division II offsite power sources would not be available. Therefore, this finding screened as Green.

This finding has a cross-cutting aspect in the area of Human Performance, Work Practices, because the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Specifically, the licensee's failure to control material near risk-significant equipment was due to inadequate oversight of work in and around the 345kV switchyard. (H.4.c)

Enforcement: Because no 10 CFR 50, Appendix B, components were impacted by the finding, no violation of regulatory requirements occurred. The licensee included this finding in their CAP as CARD 08-26161. Once this condition was identified, the licensee removed the material from the switchyard. FIN 05000341/2008004-02: Failure to Adequately Control Loose Materials in the Switchyard.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- CARD 08-24305, Off-loaded a Shipment of Ultra Low Sulfur Diesel Fuel to Division I EDGs;
- CARD 08-23948, Feedwater Digital Control System Problems While in Automatic;
- CARD 08-24420, Minimum Fuel Oil Requirement For Diesel Fire Pump Fuel Oil Tank Does Not Account For Potential Reduced Energy Content of Blended No. 1 and No. 2 Fuel;
- CARD 08-24488, Trash and Laundry Receptacles May Impact RHR Ventilation Operation; and
- CARD 08-25969, EDG-14 Air Trap has Significant Leak.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted five operability samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification(s):

- Technical Service Request (TSR)-27583, Scram Discharge Header Temporary Shielding;

- TSR 35595, "Removable Delay Barrier Fences"; and
- ERE 34552, Replace Obsolete ITE Molded Case Circuit Breakers.

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the UFSAR, and the TSs, as applicable, to verify the modification did not affect the operability or availability of the affected systems. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance.

This inspection constituted three temporary modification samples as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Work Order (WO) 28039465, Feedwater Control Digital Control System Trouble;
- WO A909080100, Calibrate Division I SGT System Air Heater Temperature Controller and Switch;
- WO A913080100, Calibrate and Inspect Division I SGT System Exhaust Fan Control Loop;
- WO 28611096, Received Average Power Range Monitor Trouble Annunciator in Main Control Room;
- WO 25669620, Replace Hydraulic Control Unit Accumulator 46-47; and
- WO 26153214, Repack P44F400A, EECW Temperature Control Valve.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was

returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure the test results adequately ensured the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted six post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

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:

- 44.020.157, Reactor Water Cleanup (RWCU) Area and Non-Regenerative Heat Exchanger Discharge Temperature, Division II, (Routine);
- 44.020.156, RWCU Area Temperature Division I Functional Test, (Routine);
- WO VB61080721, Division I EECW and Thermal Recombiner Room Cooler Monthly Vibration, (Routine);
- 54.000.06, Average Power Range Monitor Calibration, (Routine);
- WO 26833820, Perform 24.307.14 Section 5.1, EDG-11 Start and Load Test-Slow Start, (Routine);
- 42.610.03, Perform Trip System B Alternate Feed Breaker, Functional Testing, (Routine);
- 24.000.02, Attachment 1, Reactor Coolant System (RCS) Operational Leakage Calculations from August 1 through August 5, (RCS Leak);
- 24.409.03 Division II Post Loss of Coolant Accident Thermal Recombiner System Valve Operability Test, (IST);
- 27.207.05, EECW Division I Valve Flow Verification, (Routine);
- 24.206.04, Division II RHR Pump Surveillance, (IST);
- 24.206.04, Division II RHR Torus Isolation Valve Surveillance, (PCIV); and
- 24.110.05, High Pressure Control Valve #1 Stroke Test, (Routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were

adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as-left setpoints were within required ranges; the calibration frequency was in accordance with TSSs, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP. Documents reviewed are listed in the Attachment to this report.

This inspection constituted eight routine surveillance testing samples, two inservice testing samples, one reactor coolant system leak detection inspection sample, and one containment isolation valve sample as defined in IP 71111.22-02 and -05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

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

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.2 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following job that was 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: Internal decontamination of the centrifuge feed tank. The inspectors reviewed radiological job requirements for this activity, including radiation work permit (RWP) requirements and work procedure requirements.

This inspection constituted one sample as defined in IP 71121.01-5.

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

This inspection constituted one sample as defined in IP 71121.01-5.

The inspectors reviewed radiological work in high radiation work areas having significant dose rate gradients to evaluate whether the licensee adequately monitored exposure to personnel and to assess the adequacy of licensee controls. These work areas involved areas where the dose rate gradients were severe, thereby increasing the necessity of providing multiple dosimeters or enhanced job controls.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation safety work requirements. The inspectors evaluated whether workers were aware of any significant radiological conditions in their workplace; of the RWP controls and limits in place; and of the level of radiological hazards present. The inspectors also observed worker performance to determine if workers accounted for these radiological hazards.

This inspection constituted one sample as defined in IP 71121.01-5.

The inspectors reviewed radiological problem reports for which 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. Problems or issues with planned or completed corrective actions were discussed with the radiation protection manager.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation protection technician (RPT) performance with respect to radiation safety work requirements. The inspectors evaluated whether technicians 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.

This inspection constituted one sample as defined in IP 71121.01-5.

The inspectors reviewed radiological problem reports for which the cause of the event was RPT 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.

This inspection constituted one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program And Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the Radiological Environmental Monitoring Program (REMP) was implemented as required by TS and the Offsite Dose Calculation Manual (ODCM). The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring commitments, in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and analysis of data. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, licensee event reports, and interlaboratory comparison program results. The inspectors reviewed the UFSAR for information regarding the environmental monitoring

program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c).

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down 80 percent of the air sampling stations and approximately 14 percent of the thermoluminescence dosimeter monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors observed the collection and preparation of a variety of environmental samples (e.g., ground and surface water, milk, vegetation, sediment, and soil) and verified that environmental sampling was representative of the release pathways (as specified in the ODCM) and that sampling techniques were in accordance with procedures.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify if there were any line loss differences.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report, which involved a missed sample, inoperable sampler, lost thermoluminescence dosimeter, or anomalous measurement for the cause and corrective actions. The inspectors also conducted a review of the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection and established background levels). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed the calibration and maintenance records for four air samplers and composite water samplers. The inspectors reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to TS/ODCM were utilized for counting samples (i.e., the samples met the TS/ODCM required LLDs). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance.

The inspectors reviewed the results of the REMP sample vendor's quality control program, including the interlaboratory comparison program, to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations the licensee performed on the vendor's program. The inspectors reviewed quality assurance audit results of the program to determine whether the licensee met the TS/ODCM requirements.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.3 Unrestricted release of material from the Radiologically Restricted Area

a. Inspection Scope

The inspectors observed several locations where the licensee monitors potentially contaminated material leaving the radiologically restricted area, and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm which indicates the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. The inspectors verified that the licensee performed radiation surveys to detect

radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, licensee event reports, and special reports related to the REMP since the last inspection to determine if identified problems were entered into the CAP for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also reviewed corrective action reports from the REMP since the previous inspection, interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- 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.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - High Pressure Injection Systems performance indicator (PI) for the period from the second quarter 2007 through the second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of April 1, 2007, through July 31, 2008, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI high pressure injection system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Heat Removal System performance indicator for the period from the second quarter 2007 through the second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC integrated inspection reports for the period of April 1, 2007, through July 31, 2008, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI heat removal system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specification (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences performance indicator for the period of December 2007 through August 2008. The inspectors used Performance Indicator (PI) definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between December 2007 and August 2008 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Specific Activity PI for the period from the second quarter 2007 through the first quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline." Revision 5, was used. The inspectors reviewed the licensee's RCS chemistry samples, TS requirements, issue reports, event reports and NRC Integrated Inspection reports for the period of July 2007 through April 2008, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Specific documents reviewed are described in the Attachment to this report.

This inspection constituted one reactor coolant system specific activity sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

.1 Routine Review of Items Entered Into the CAP

a. Scope

As part of the various baseline IPs 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 CAP at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily CAP Reviews

a. Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Annual Sample: Review of Tornado Missile Hazard Analysis, CARD 08-20821

a. Scope

The inspectors reviewed the licensee's response to the concerns that were raised with the licensee's use of the TORMIS methodology to justify a change to UFSAR 3.5.1.3.2.3. This change allowed various penetrations in safety-related buildings to remain unprotected from the effects of tornado-generated missiles. The inspectors reviewed the licensee's subsequent evaluations of potential vulnerabilities to determine if any additional vulnerabilities were identified that could present a current safety concern. The inspectors also reviewed the licensee's long-term corrective actions to determine if they were appropriately prioritized commensurate with the safety significance of the issue. The inspectors utilized the guidance contained in the NRC Safety Evaluation Report regarding the use of the TORMIS computer code, pertinent sections from the Standard Review Plan, and Regulatory Guides 1.76 and 1.117, Revisions 0 and 1, respectively, to evaluate the acceptability of licensee corrective actions.

This review constituted one annual review inspection sample as defined in IP 71152-05.

b. Findings

(1) Inadequate 10 CFR 50.59 Evaluation for Reactor Building Missile Protection

Introduction: The inspectors identified a Green (Severity Level IV) NCV of 10 CFR 50.59(a)(2)(i) for the failure to obtain NRC approval prior to revising UFSAR Section 3.5.1.3.2.3 to include the tornado missile hazard analysis for the reactor and auxiliary building exterior wall penetrations and openings.

Description: As described in Section 1R01.1 of Inspection Report 05000341/2008002, the inspectors identified an unresolved item for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for a UFSAR change. The change documented the approval of approximately 55 penetrations in the reactor and auxiliary building walls that were not adequately protected against the effects of tornado-generated missiles. The licensee utilized the results of a probabilistic evaluation, documented as report SAD-524, "Probabilistic Analysis of Tornado Missile Hazard Due to Some Penetrations and Openings in Reactor/Auxiliary Building Walls," dated February 23, 1989. The evaluation concluded that the aggregate probability of damage to all 55 newly identified vulnerable areas was 1.15E-7 per year. The methodology used in estimating these probabilities utilized the Electric Power Research Institute topical report NP-2005, August 1981 edition, "Tornado Missile Risk Evaluation Methodology" commonly referred to as "TORMIS."

To support the UFSAR change, the licensee approved safety evaluation SE-89-0094 on September 22, 1989. SE-89-0094 concluded that prior NRC approval of the UFSAR change was not required because the probability of damage was low enough not to be a design basis consideration. The licensee made this determination based on their review of NRC Standard Review Plan 3.5.1.4 and Regulatory Guide 1.117 which stated that

additional missile protection was not required if the cumulative site-wide probability of damage was less than $1.0E-7$. The licensee determined that the actual probability was likely less than $1.15E-7$ and revised the UFSAR without seeking prior NRC approval.

The inspectors questioned the adequacy of SE-89-0094 and on February 5, 2008, the licensee initiated CARD 08-20821 to review the tornado missile hazard analysis design and licensing basis. As part of that evaluation, the licensee contracted an independent consultant to review the adequacy of report SAD-524. The contractor identified several significant deficiencies with SAD-524 that were contrary to the requirements described in the NRC Safety Evaluation Report, dated October 1983, regarding TORMIS.

The inspectors contacted the staff in the Office of Nuclear Reactor Regulation to determine the basis for the NRC's safety evaluation and the acceptability of the licensee using this methodology in 1989. Based on this discussion, the use of TORMIS was considered a change to the plant's current licensing basis, which required a license amendment. Further, upon consideration of the identified deficiencies with SAD-524, the inspectors concluded that the NRC likely would not have accepted the results of SAD-524 if used to support a license amendment.

Based on the above, the inspectors determined that the licensee's UFSAR revision involved an unreviewed safety question that required NRC approval prior to implementation and that such approval likely would not have been obtained because of deficiencies with the licensee's evaluations as they existed at the time.

As part of the evaluation in CARD 08-20821, the licensee concluded that vulnerabilities with safety-related piping in the auxiliary building and with the mechanical draft cooling tower fan brakes required resolution. Consequently, the licensee implemented modifications to provide missile shields to those affected components. The inspectors reviewed the licensee's planned long-term corrective actions for this issue which included an evaluation of providing appropriate missile protection to identified vulnerabilities, performing an analysis to accept the vulnerabilities as-is and submitting a license amendment, or a combination of both.

Analysis: The inspectors determined that the failure to obtain NRC approval prior to revising UFSAR Section 3.5.1.3.2.3 to include the tornado missile hazard analysis for the reactor and auxiliary building exterior wall penetrations and openings was contrary to the requirements of 10 CFR 50.59 and was a performance deficiency. Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the SDP described in IMC 0609, "Significance Determination Process." The finding was determined to be greater than minor because the change had the potential for impacting the NRC's ability to perform its regulatory function as the inspectors determined the change would have required prior NRC approval.

Because the vulnerable penetrations in the reactor and auxiliary building walls potentially impacted the ability of the RHR system to function during severe weather (namely tornado), the inspectors concluded that this issue affected the Mitigating Systems Cornerstone and that the issue required a Phase 3 screening in accordance with question 5 for Mitigating Systems, Table 4a, to attachment 0609.04 for IMC 0609.

The RIII Senior Reactor Analyst (SRA) performed a Phase 3 Significance Determination for this finding. The inspectors determined that the scenario of concern is a tornado-generated missile which impacts the reactor building, perforates the penetrations, and strikes components inside. In order to select a bounding, but not incredible, damage scenario, both divisions of RHR were assumed to be completely lost in this scenario.

This scenario assumes no operator action to restore RHR. The SRA performed a bounding analysis assuming that a tornado of strength F3 or greater strikes Fermi and generates missiles which penetrate enough of the reactor building penetrations to damage RHR components. The SRA assumed that the tornado causes a loss of offsite power. In addition, no credit was given for the "direction factor" in that all tornado-generated missiles were assumed to strike the penetrations at the correct angle with no tumbling. The probability that sufficient missiles penetrate the reactor building with sufficient energy to render all four RHR pumps unavailable was very conservatively estimated at 0.1.

The SRA used tornado data from NUREG/CR-4461, Revision 2, "Tornado Climatology of the Contiguous United States," which gives the frequency of tornados with characteristic wind speeds representative of F3 tornados for Fermi at 1.0E-5/year.

The SRA calculated a conditional core damage probability using NRC's Standardized Plant Analysis Risk (SPAR) SAPHIRE/GEM Model (Version 7.27) model for Fermi assuming that the tornado results in a weather-related loss of offsite power with common cause failure of all of the RHR pumps without recovery. The calculated conditional core damage probability was 6.0E-2. The dominant core damage sequence involved a loss of offsite power causing a reactor scram with failures of suppression pool cooling, shutdown cooling, containment spray, containment venting, and late injection after containment failure.

As a result, considering the tornado initiating event frequency, the Δ CDF for this finding was calculated to be less than 1.0E-7. Therefore, this finding was best characterized as having very low safety significance (Green) and was, therefore, assigned a Severity Level IV.

The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred approximately 19 years ago.

Enforcement: Title 10 CFR 50.59(a)(2)(i) (1989) stated, in part, that a licensee shall obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would result in an increase in the probability of a malfunction of equipment important to safety previously evaluated in the UFSAR.

Contrary to the above, on September 22, 1989, the licensee approved a 10 CFR 50.59 evaluation (SE-89-0094) incorporating a change to the Fermi design basis which resulted in an increase in the probability of a malfunction of equipment important to safety previously evaluated in the UFSAR without obtaining a license amendment. Corrective actions included modifications to provide missile shields to affected components. At the conclusion of this inspection, long term corrective actions were still being evaluated. However, because this violation was of very low safety significance and it was entered into the CAP as CARD 08-20821, this Severity Level IV violation is

being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy, NCV 05000341/2008004-03: Inadequate 10 CFR 50.59 Evaluation for Reactor Building Missile Protection.

.4 Selected Issue Follow-up Inspection: Engineering 10CFR50.59 Reviews and Documentation

a. Scope

Because there are several CARDS in the licensee's CAP related to incomplete Applicability Determination (AD) reviews, the inspectors chose to review a sample of completed ADs. The inspectors reviewed the ADs to determine if they were adequately performed. The inspectors utilized TSs, the UFSAR, RERP plan, and other documents to determine what programs could be potentially affected by the respective changes and reviewed the ADs to ensure that the affected programs were evaluated.

This inspection constituted completion of one in-depth problem identification and resolution sample.

b. Observations

The inspectors reviewed the AD performed for modifications to a security building and noted that neither the radiation protection nor the security plans were checked in Part III which was contrary to the licensee's conduct manual, Procedure MLS14, "Changes, Tests, and Experiments." The radiation protection plan was applicable because the modification potentially affected the egress route during a radiological emergency and the security plan was potentially affected because the modification was to a security building. The licensee reviewed additional ADs and found other examples of incomplete reviews of plans and programs. Because there were several CARDS documenting this issue (06-21199, 07-21083, 07-21360, and 08-24598), the inspectors concluded that this is a repeat issue. For example, CARD 07-21360 was closed on August 12, 2007, but ADs continued to miss evaluation requirements of some plans and programs. The inspectors expanded the scope of review and identified other examples of incomplete reviews. However, the inspectors did not identify any incomplete ADs that would have required altered the original conclusion that the change did not require a full 10CFR50.59 evaluation. Consequently, this issue constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's enforcement Policy. The licensee entered this issue into their CAP as CARD 08-26449.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspectors' observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Closed) Unresolved Item (URI) 05000341/2007003-06: Inadequate Determination of Maximum Allowable Temperature for High Pressure Coolant Injection Pump Operation

During the component design basis inspection, the inspectors identified an unresolved item (URI) concerning the maximum design temperature for operation of high pressure coolant injection (HPCI) pump. The HPCI pump specification identified a maximum design temperature of 140°F; however, the licensee's emergency operating procedure (EOP) allowed operation of HPCI and RCIC pumps above 140°F without providing an adequate description of the consequences of this operation. During certain scenarios, suppression pool temperature could be as high as 170°F. Since the HPCI pump and turbine lubrication oil and turbine governor fluid were self-cooled by HPCI process flow, the higher HPCI fluid temperatures could lead to loss of lubrication. The consequences of this loss could go beyond the loss of the HPCI pumping function. The loss of lubrication and turbine governor fluid for a multistage high-pressure pump could lead to a loss of pressure boundary due to the loss of pump and/or turbine seals, resulting in possible catastrophic failure of the pump and/or turbine cases, and even possible missile generation.

To address this concern, General Electric (GE) performed an evaluation documented in GE Report 0000-0084-6483, "Enrico Fermi Energy Center Unit 2 HPCI & RCIC Operation with Elevated Suppression Pool Temperatures," to clarify the basis for HPCI and RCIC temperature design requirements. Extended power uprate analyses for Fermi (extended power uprate had not been implemented at Fermi) were used to conservatively identify worst case suppression pool temperatures and time frame temperatures would be above 140°F. The analysis by the lube oil vendor indicated that there would not be a concern with the lube oil performing its function at temperatures at 180°F for up to 8 hours and 15 minutes of operation with temperatures to 210°F. The GE analysis determined that the longest time frame temperature would be above 140°F was approximately 2 hours, such that the higher suction temperature would not prevent the HPCI pump from performing its required function at these elevated temperatures. The analysis did note that at the high temperatures there would be increased wear on the pump components, but no catastrophic failure. Based on this analysis, it was confirmed that the HPCI and RCIC systems would be able to operate with high suction fluid temperatures for short periods of time.

In order to update all the applicable design and operations documents to be consistent, the licensee issued TSR-35664, "Clarify HPCI and RCIC Pump Suction and Discharge Design Temperatures," to update the UFSAR, design specifications, design basis documents, drawings, and procedures. To ensure operators had sufficient guidance, the EOP was revised to state that operation of HPCI with suction temperatures above 140°F can cause increased equipment wear and operation above 170°F can cause equipment damage. The inspectors did not identify a performance deficiency or violation of NRC

requirements. Based on the revised analyses, updated design documents, and the revised precaution in the EOP, this URI is closed.

.3 (Closed) URI 05000341/2007003-07: Inadequate Determination of Minimum Flow Setting for High Pressure Coolant Injection Pump

During the component design basis inspection, the inspectors identified a URI concerning the licensee’s response to Bulletin 88-04, “Potential Safety-Related Pump Loss,” regarding establishing minimum flow requirements for the HPCI pump. The licensee recognized that the conditions reported in the bulletin were present in all safety-related pumps, including the HPCI pump, but did not determine an appropriate minimum pump flow value to minimize and manage, or to eliminate, the potential for pump damage. Additionally, the inspectors’ review identified that the calculation used to verify the currently specified minimum flow rate appeared non-conservative. The concerns with calculation DC-0204, “Sizing Restricting Orifice Diameters and Thickness,” included: (1) HPCI minimum flow was based on the condensate storage tank (CST) suction alignment with a maximum fluid temperature of 100°F versus the suppression pool suction alignment with a maximum fluid temperature of 170°F and no suction pressure contribution; (2) the calculation was not revised to reflect the change from a four to five-vane impeller for the HPCI booster pump; and (3) the methodology used over-predicted the point of choked flow through the orifice. In addition, the inspectors’ review of the operating procedures (normal and emergency) and discussions with the licensee’s operating staff determined that there were no procedural restraints for the HPCI minimum flow operation.

To resolve the minimum flow requirement for the HPCI pump, the licensee contacted the pump vendor (Flowserve) and obtained the following information for the HPCI main and booster pump. The minimum flow rates identified in Fermi design documents were also listed.

Pump	Minimum flow less than 60 hrs	Minimum flow less than 1500 hrs	Minimum flow unlimited hours	Minimum flow existing
HPCI Booster	500 gpm	2030 gpm	2900 gpm	500 gpm
HPCI Main	500 gpm	2000 gpm	2850 gpm	500 gpm

Based on the above information, the licensee did not determine a high enough minimum flow for unlimited operation, however, the licensee’s existing flow rate was in line with the minimum flow limit for less than 60 hours. The licensee reviewed the operating history and determined that the HPCI pump was run at minimum flow for approximately 15 hours since plant startup. As such, there was not a past concern for potential pump damage due to running the pump on minimum flow.

Calculation DC-0204 was also revised to incorporate the inspectors’ three concerns as follows. The revised calculations analyzed both scenarios (suction from the CST and suction from the suppression pool) to determine the most limiting case. The pump vendor indicated in a letter to the licensee that the net positive suction head curve for the booster pump five-vane impeller essentially duplicated that of the four-vane impeller, such that there was no change in pump performance (five-vane pump curve used in

revised analysis). The licensee used the methodology in NUREG/CR-6031, "Cavitation Guide for Control Valves," to determine the choked flow through the minimum flow line. The results of the revised calculation determined that the NUREG methodology predicted a choked flow of 857 gallons per minute (gpm), while the previous methodology had predicted a flow of 778 gpm through the minimum flow line. An independent check was also performed using the Homogeneous Equilibrium Model from "The Thermal-Hydraulics of a Boiling Water Reactor," which provided a lower-bound flow estimate of 713 gpm when a conservative 0.6 multiplier was included in the results. Based on these new analyses, the previously determined choked flow was reasonable compared to the values obtained using the NUREG methodology.

To ensure the operators would not maintain HPCI at low flow conditions, the licensee revised SOP 23.203, "High Pressure Coolant Injection," to include the following precaution: "Limit extended HPCI pump operation with indicated flow less than 1200 gpm to minimize time HPCI is on minimum flow, and to prevent draining CST to Suppression Pool."

Since the minimum flow line valve opened when flow was approximately 600 gpm and closed when flow reached 1200 gpm, the minimum flow for the HPCI pump through either a throttled discharge path or through the minimum flow line would have always exceeded the minimum flow requirements established by the pump vendor for short periods of time. In addition, past operation of the HPCI pump on minimum flow was well within this limit, as the time frame for operating the pump on minimum flow during testing or postulated accident scenarios did not appear sufficient to potentially damage the pump due to low flow operation. The inspectors did not identify a performance deficiency or violation of NRC requirements. Based on these revised analyses and the precaution added to the operating procedure, this URI is closed.

.4 (Closed) URI 05000341/2008002-01, Failure to Perform Adequate Evaluation for Penetrations in Reactor and Auxiliary Building Walls

As described in Section 1R01.1 of Inspection Report 05000341/2008002, the inspectors identified a URI for the licensee's failure to perform an adequate 10 CFR 50.59 evaluation for a UFSAR change. This item was unresolved pending the inspectors' review of the licensee's evaluation of the cumulative probability of damage to vulnerable penetrations from tornado-generated missiles in order to assign a significance level to this issue. As described in Section 4OA2.4 of this report, the inspectors reviewed the licensee's corrective actions taken in response to the inspectors' concerns. Although the licensee did not complete an evaluation of the cumulative probability of damage, the inspectors were able to assign a significance level to this issue based partly on subsequent licensee evaluations and independent inspector assessments. This issue is documented as a Severity Level IV violation in Section 4OA2.4 of this report. This URI is closed.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 16, 2008, the inspectors presented the inspection results to Mr. Davis and other members of the licensee staff. The licensee acknowledged the issues presented.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The preliminary results of the licensee's radiological environmental monitoring and radioactive material control programs, and verification of the performance indicator for dose equivalent iodine for the RCS barrier integrity cornerstone inspection with the Operations Manager, Mr. K. Scott, on May 02, 2008.
- The closure of URIs 05000341/2007003-06 and 05000341/2007003-07 with Mr. K. Howard, and other members of the licensee's staff via telephone on September 17, 2008.
- The results of the Access Control to Radiologically Significant Areas program inspection with the Site Vice President J. Plona, on September 19, 2008.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

40A7 Licensee-Identified Violations

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

Cornerstone: Public Radiation Safety

- Title 10 of CFR 20.1802 states that each licensee shall control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage. Contrary to the above, on July 22, 2007, a radiologically contaminated air hose was identified in the unrestricted area inside Building 41. The air hose alarmed a small articles monitor (SAM-11), and a smearable contamination survey detected loose surface contamination at a nominal 60dpm. Subsequent to this event, the licensee identified several additional items with detectable low levels of contamination that were on-site and outside of the radiological restricted area (RRA). This incident was identified by and documented in the licensee's CAP as CARD 07-24065. Initial corrective actions included taking immediate possession and control of the radioactive material. Additionally, an extensive extent-of-condition review was initiated by the licensee in Building 41, and additional radiological surveys extended to other outside material storage areas in search of potentially radiologically contaminated items. Long-term corrective actions included a review of applicable work practices and procedures to institute additional administrative controls for the handling, radiological survey, and release of radioactive materials.

The inspectors determined that this finding was a performance deficiency because licensees are required to adhere to the regulations of 10 CFR Part 20 and that the deficiency was reasonably within the licensee's ability to foresee and correct. The finding was more than minor because it impacted the program and process attribute of the Public Radiation Safety Cornerstone and affected the cornerstone

objective to ensure adequate protection of public health and safety from exposure to radioactive material released into the public domain, in that inadequate surveys resulted in the failure to control radioactive material and the issue was not isolated. The finding was assessed using Public Radiation Safety SDP and was determined to be of very low safety significance (Green). The finding was not a transportation issue, and the radioactive material found offsite was of low activity and would not have produced a dose to a member of the public in excess of 0.005 rem.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Davis, Chief Nuclear Officer
K. Hlavaty, Plant Manager
G. Baustian, Training Manager
R. Brown, Supervisor, Human Performance
R. Gaston, Manager, Nuclear Licensing
A. Hassoun, Supervisor, Nuclear Licensing
K. Howard, Manager, Plant Support Engineering
J. Janssen, Manager, Nuclear Maintenance
R. Johnson, Supervisor, Compliance
M. Lawson, Radiation Protection Manager
B. Rumans, Supervisor Technical Services
K. Scott, Operations Manager
K. Snyder, Manager, Systems Engineering
S. Stasek, Director, Nuclear Projects
T. Vandermay, Staff Health Physicist
C. Walker, Director, Organization Effectiveness
M. Williams, Design Engineering

Nuclear Regulatory Commission

R. Telson, Acting Chief, Branch 4
J. Giessner, Branch Chief, Branch 4

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000341/2008004-01	NCV	Failure to install Smoke Detectors in the Reactor Building, First Floor, Beam Pockets (Section 1R05.1)
05000341/2008004-02	FIN	Failure to Adequately Control Loose Materials in the Switchyard (Section 1R13.1)
05000341/2008004-03	NCV	Inadequate 10 CFR 50.59 Evaluation for Reactor Building Missile Protection (Section 4OA2.3)

Closed

05000341/2007003-06	URI	Inadequate Determination of Maximum Allowable Temperature for HPCI Pump Operation (Section 4OA5.2)
05000341/2007003-07	URI	Inadequate Determination of Minimum Flow Setting for HPCI Pump (Section 4OA5.3)
05000341/2008002-01	URI	Failure to Perform Adequate Evaluation for Penetrations in Reactor and Auxiliary Building Walls (Section 4OA5.4)

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 or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Section 1R01 Adverse Weather Protection

- CARD 08-26341; Inadequate Inspection of the Reactor Building Siding in 2004; 09/26/2008 (NRC-Identified) CARD 08-26161; Wood in Switchyard; 09/19/2008 (NRC-Identified)
- CARD 08-26155; Reactor Building Roof Drains Are Partially Plugged with Debris; 09/19/2008 (NRC-Identified)

Section 1R04 Equipment Alignment

- Drawing 6I721-2095-25; Schematic Diagram Jet Pump Instrumentation System; Revision N
- Drawing 5I721-2105-12; Schematic Diagram Reactor Recirculation Pump and M-G Set Testability Modification; 10/30/1998
- Drawing 5I721-2615-04; Auto Temperature Control System Control Panel H21P527, P527A, P528 and P529 Control Diagram Ventilation; Revision M
- Drawing 6I721-2611-07; Schematic Diagram Reactor Building Exhaust Fan West T4100C006; Revision L
- Drawing 6I721-2611-08; Schematic Diagram Reactor Building Exhaust Fans, Auxiliary Relays, and Recirculation Air Control; Revision R
- Drawing 6M721-2707; Flow Diagram Reactor and Auxiliary Building Ventilation System; Revision N
- Drawing 6M721-2833; Diagram Reactor Recirculation System Nuclear Boiler System; Revision AH
- System Health Fermi 2, E5100 Reactor Core Isolation Cooling

Section 1R05 Fire Protection

- Procedure FP-AB-5-16a; Auxiliary Building, North SGTS Room, Zone 16, Elevation 677'6"
- Procedure FP-AB-5-16b; Auxiliary Building, South SGTS Room, Zone 16, Elevation 677'6"; Revision 2
- Procedure FP-RDWST; Radwaste Building Zones 22, 23, 24, and 25; Revision 5
- UFSAR Figure 9A-10; Fire Protection Evaluation Reactor and Auxiliary Buildings, Fifth Floor Plan (Elevations 677.5' and 684.5')
- UFSAR Figure 9A-14; Fire Protection Evaluation Residual Heat Removal Complex Grade Floor Plan (Elevation 590.0')

Section 1R11 Licensed Operator Regualification Program

- Fermi 2 Evaluation Scenario SS-OP-904-1062; RBCCW Pump Trip/Unitized Actuator Failure/CW Pump Failures/ATWS; Revision 3

Section 1R12 Maintenance Effectiveness

- CARD 01-20101; Failed LLRT; 11/03/2001
- CARD 01-20794; Classification of Feedwater Check Valves and RHR System Injection Check Valves As a Component (a)(1) Class under the Maintenance Rule; 11/14/2001
- CARD 03-10829; Unexpected Response During SOP Run; 07/11/2003
- CARD 04-01585; Battery Voltage; 09/24/2004
- CARD 04-23373; Fire Protection Systems Evaluated for MR a(1) Status; 07/28/2004
- CARD 04-23992; Fire Protection System P8000 Maintenance Rule Functional Failure Evaluations Inconsistent; 09/02/2004
- CARD 05-20016; DFP Took Extended Time to Start During Monthly Local Manual Test Run; 01/03/2005
- CARD 05-24341; Battery Voltage Treading Low for DFP; 07/22/2005
- CARD 06-21724; LLRT Failure of B2100F010A; 03/31/2006
- CARD 06-21751; LLRT Failure of B2100F076A; 04/01/2006
- CARD 06-25471; Diesel Fire Pump Did Not Auto Start When Pressure Was Dropped; 08/24/2006
- CARD 06-25477; DFP Failed to Auto Start in Expected Timeframe; 08/25/2006
- CARD 07-22216; NRC Concern - Potential Inadequate of CARD 06-21751; 04/24/2007
- CARD 07-23048; NRC Concern: Feedwater Check Valve Inappropriate Returned to (a)(2); 05/31/2007
- CARD 07-25836; LLRT Failure of B2100F076B Exceeds La; 10/07/2007
- CARD 08-20368; Diesel Started on Lower-Than-Expected Pressure; 01/21/2008
- CARD 08-23558; DFP Did Not Start on Manual #2 Position on Run #2; 05/30/2008
- CARD 08-24360; Crew Clock Reset DFP Surveillance; 07/07/2008
- CARD 08-25650; DFP Started at Lower-Than-Expected Pressure; 09/01/2008
- Drawing 6M721-2135-1; Fire Protection System (Sheet 2); Revision AH
- DTE Memorandum TMIS-04-0140; Summary of Expert Panel Meeting 169 Conducted October 12, 2004; 10/18/2004
- Purchase Order NM424227; Battery Wholesale; 01/23/2007
- Procedure 28.504.02; Diesel Fire Pump Engine Weekly Operability Test; Revision 28
- Procedure 28.504.07; Diesel Fire Pump Engine Monthly Operability Test; Revision 10
- Root Cause Analysis Report for CARD 07-25836; "LLRT Failure of B2100F076B Exceeds La"; 01/08/2008
- Surveillance Performance FP96050714; Perform 47.501.03 Weekly Diesel Fire Pump Battery Inspection; 07/14/2005
- Surveillance Performance FP96050721; Perform 47.501.03 Weekly Diesel Fire Pump Battery Inspection; 07/21/2005
- Surveillance Performance 28467408; Perform Partial 24.409.03 to Stroke Test T4804F604B; 08-05-08
- Surveillance Procedure 42.610.03, Division II Alternate Supply Reactor Protection System (RPS) Electrical Protection Assembly Calibration/Functional Test; Revision 27
- Technical Service Request TSR-29613; Starter Motor Assembly Part Number Change; Revision 0
- Work Request 000Z013525; Diesel Fire Pump Electrical Work; 10/31/2001
- Work Request P003070100; Replace the Diesel Fire Pump Starting Batteries; 05/18/2007

Section 1R13 Maintenance Risk Assessments and Emergent Work Control

- CARD 08-24812; Main Turbine First Stage Pressure Gage Reading Low Out of Green Band; 07/28/2008
- CDF Risk Profile for the Week of 8/25 to 9/1/2008
- Drawing 6I721-2842-08; Instrument Tubing Installation Turbine Building – Northwest Area Second Floor (EI 613'6") Unit #2; Revision 0
- Fermi 2 Plan of the Day; Monday, August 25, September 12, 22, and 24, 2008
- Risk Management Plan; Leak Investigation TB-2-ST First Stage 3" Instrument Manifold; 07/31/2008
- Scheduler's Evaluation for Fermi 2; 08/25-29/2008
- Technical Evaluation TE-N30-08-056; Main Turbine First Stage Pressure Instrumentation Reading Lower Than Green Band; 08/26/2008

Section 1R15 Operability Evaluations

- CARD 08-24305; Off Loaded a Shipment of Ultra Low Sulfur Diesel Fuel to Division I EDG's; 07/02/2008
- CARD 08-26528; Document Basis for EDG Room Heater Quality Classification
- Engineering Functional Analysis EFA-R30-08-008; Unapproved Additions of Ultra Low Sulfur Diesel Fuel to EDG Fuel Oil Storage Tanks; 07/04/2008
- Selected Oil Sample Data Sheets
- Temporary Modification 08-0025; Feedwater Control DCS Power Supply Monitoring Using a Voltage Data Recording Device; 09/05/2008
- CARD 08-24420: Minimum Fuel Oil Requirement For Diesel Fire Pump Fuel Oil Tank Does Not Account For Potential Reduced Energy Content of Blended No. 1 and No. 2 Fuel

Section 1R18 Plant Modifications

- Design Calculation DC-5725; Seismic Analysis of Hangers G144 of Iso. 51721-213-110 and G145 of Iso. 51721-2113-111 Per TSR-27583; 08/22/95
- DTE Memorandum TMPE-07-0198; RF12 Startup Verification Checklist Item 2.8.1, Shielding Cameras; 11/07/2007
- Technical Service Request TSR-27583; Scram Discharge Header Temporary Shielding; 05/22/2008
- TSR 35595, "Removable Delay Barrier Fences", Rev. 0

Section 1R19 Post-Maintenance Testing

- Procedure 35.306.009; Motor Power Monitoring Using the Viper 20 System; Revision 2
- WO 25669620; 04-HCU Accumulator Replacement; 09/21/2007
- WO 26153214; Obtain AOV Diagnostic Data on P44F400A and Repack Valve; 09/15/2008
- WO 26823557; Perform 54.000.03 SECT 6.1 & 6.5 Control Rod Scram; 06/01/2008
- WO 28611096; Received APRM Trouble Annunciator in MCR; 08/27/2008
- WO A903080100; Calibrate Division I SGT Air Heater Temperature Switch; 08/24/2005
- WO A909080100; Calibrate Division I SGT Air Heater Temperature Controller; 11/21/2006
- WO A913080100; Calibrate & Inspect Div 1 SGTS Exhaust Fan Control Loop; 08/26/2008
- WO B803080100; Perform Mini Periodic MOV Inspection and MPM Stroke Test; 08/05/2008

Section 1R22 Surveillance Testing

- CARD 08-24718; Issues with Shifting RBHVAC Fans Resulted in an EOP Entry; 07/23/2008
- CARD 08-24729; Division I EECW and TRS Room Coolers High Vibration; 07/23/2008
- CARD 08-25032; Unstable Temperatures During Performance of 47.220.02 (Division II Thermal H2 Recombiner Cal); 08/05/2008
- Procedure 23.426; Reactor Building Heating Ventilation and Air Conditioning; Revision 53
- Procedure 24.204.06; Division II LPCI and Suppression Pool Cooling/Spray Pump and Valve Operability Test; Revision 58
- Procedure 27.207.03, Division EECW Throttled Valve Flow Verification; Revision 5
- Procedure 44.020.156; NSSSS – RWCU Area Temperature Division I, Functional Test; Revision 41
- Procedure 47.000.02; Mechanical Vibration Measurements for Trending; Revision 38
- RCS Operational Leakage; Procedure 24.000.02, Attachment 2; Eight Hour – Mode 1,2,3 – Control Room; 08/01-03/2008
- WO 26684789; Perform 44.020.156 NS4 RWCU Area Temperature Division I CF; 07/15/2008
- WO 26833820; Perform 24.307.14, EDG-11 Start and Load Test
- WO 27309768
- Work Request VB61080721; Perform 47.000.02 VIBE Measurements for Division I Room Coolers & CCHVAC CLG Water Pump; 07/21/2008

Section 2OS1 Access Control to Radiologically Significant Areas

- CARD 08-25596; Near-Miss – System Engineers Did Not Have Correct Dosimetry for Entry into the Torus Room; dated August 26, 2008
- CARD 08-25215; High Radiation Area Entry on Incorrect Task; dated August 14, 2008
- CARD 07-25061; MRP04 Violation; Working over RP Boundary; dated September 10, 2007
- CARD 08-22600; ED Dose Rate Alarms Caused by Inexperienced Workers; dated April 18, 2008
- CARD 07-25406; ED Alarm Received; dated September 26, 2007
- CARD 07/25802; Evaluate Trend for Radiation Posting Adherence Violations; dated October 6, 2007
- Focused Self Assessment; Access Control for Radiologically Significant Areas; dated August 08, 2008
- MRP06; Accessing and Control of High Radiation, Locked High Radiation, and Very High Radiation Areas at Fermi 2; Revision 9
- Positive Body Count Investigation; Bioassay Case 07-0001; dated February 21, 2007
- Procedure 67.000.101; Performing Surveys and Monitoring Work; Revision 26
- Radiation Work Permit and Associated ALARA Review files; RWP 08-1028; Centrifuge Feed Tank
- WI-RP-011; Work Instruction for RP Routine Surveys; Revision 8

Section 2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Program 71122.03

- AREVA NP Semi Annual Quality Assurance Status Report; March 22, 2008
- CARD 07-24065; Purple Paint on Come-Along Tool Found in Building 41; July 22,2007
- CARD 07-25208; Ladder with Purple Paint Found Outside the RRA; September 17, 2007
- CARD 07-26655; Item with Fixed Contamination Found Outside of RRA; October 25, 2007
- CARD 07-27228; Purple Tool with Fixed Contamination Found Outside RRA; November 10,2007

- CARD 07-27295; Canvas Tool Bag Contained Radioactive Material Inside; November 12, 2007
- CARD 07-27829; Control of Tools in the RRA – Emerging Trend; December 5, 2007
- CARD 08-21561; Radioactive Material Found Outside the RRA in the RHR Diesel Complex; March 4, 2008
- D976070100; Calibration of Meteorological System Instruments (Secondary) 10 and 60 Meter; April 11, 2007
- D976060200; Calibration of Meteorological System Instruments (Secondary) 10 and 60 Meter; October 11, 2006
- D975060100; Calibration of Meteorological System Instruments (Primary) 10 and 60 Meter; May 15, 2006
- Gamma Spectroscopy LLD Assessment Detector 2; January 8, 2008
- Gamma Spectroscopy LLD Assessment Detector 4; April 24, 2008
- NPRP-07-0183; Tritium Rainwater Washout Study; September 10, 2007
- NRPR-07-0214; Discharge of Water Containing Tritium from Portable Tanks; November 5, 2007
- NRPR-08-0030; Quick Hit Self-Assessment of the REMP; February 28, 2008
- NPRP-08-0056; Potential Dose to Members of the Public from Contaminated Items; May 5, 2008
- NUPIC Joint Audit Report of AREVA NP, Inc. Environmental Laboratories; November 16, 2006
- Offsite Dose Calculation Manual; 16, 17, and 18
- Procedure MRP-04; Accessing and Working in the RRA; Revision 22
- Procedure MRP-15; Controlling Radioactive Material Outside the Plant RRA, Revision 09
- Procedure MRP-18; Release of Potentially Clean Fluids; Revision 12
- Procedure MRP-25; Release of Potentially Clean Bulk Solids; Revision 06
- Procedure WI-RP-009; Work Instruction for Determining the Radiation Protection Performance Indicators; Revision 00
- Procedure WI-RP-009; Work Instruction for INPO CDE Data; Revision 01
- Procedure 62.000.201; Airborne Particulate and Iodine Sampling Using RADeCO Model AVS-28A Air Sampler; Revision 01
- Procedure 62.000.210; Aquatic Monitoring Sample Collection; Revision 04
- Procedure 65.000.107; Operation of the Ludlum 177 / Eberline RM-14; Revision 04
- Procedure 65.000.142; Operation of the NE SAM11 Small Articles Monitor; Revision 03
- Procedure 66.000.007; Calibration of the RADECO Model AVS-28A Air Sampler; Revision 00
- Procedure 67.000.101; Performing Surveys and Monitoring Work; Revision 25
- Procedure 74.000.19; RCS Iodine Analysis Surveillance – Weekly; Mode 1; April 30, 2008
- Procedure 76.000.05; Operation of the Chemistry Gamma Spectroscopy Systems; Revision 15
- Procedure 76.000.34; Reactor Coolant Analysis; Revision 10
- 2006 Fermi 2 Annual Radiological Environmental Operating Report; May 2007
- 2007 Fermi 2 Annual Radiological Environmental Operating Report; Draft Submittal

Section 4OA1 Performance Indicator Verification

- CARD 08-24978; EPA Breaker Testing Procedure Enhancement; 08/04/2008
- CARD 08-25861; Reporting of Unavailable Hours and the Need for Possible Run Time Failure Associated with RCIC Events in July and August 2007
- Surveillance Performance 0268070821; Perform 24.206.01 RCIC System Pump Operability and Valve Test at 1000 PSIG
- Fermi 2 Archived Operator Log; 04/01/2007 to 08/07/2008

- Fermi 2 RCIC Performance Indicators; July 2007
- MSPI Heat Removal System Derivation Report; June 2008
- Task ID: Perform 64.713.019 ATT 17, Effluent Cumulative and Projected Dose; dated January 2007 through August 2008

Section 4OA2

- Applicability Determination: CARD 08-21991; Installation of Several Short Removable Sections of Fence Inside the Protected Area, Revision 0
- Applicability Determination: EP-205-01; Removed the Use of the Truck Lock Gate as an Exit Point for a Site Area Evacuation. Added Security Shall Ensure Each Person Passes through the Passive Radiation Monitors before Exiting the PAP
- CARD 08-24598; Applicability Determination for Plant Change Did not Adequately Document Reviews; 07/16/2008 (NRC-Identified)
- CARD 08-20821; Review of Tornado Missile Hazard Analysis; 02/05/2008 (NRC-Identified) Safety Evaluation SE-89-0094; 09/22/1989
- CARD 08-22967; Vulnerabilities Identified in Draft Tornado Hazards Report; 05/02/2008
- RERP Procedure EP-205-01, Security Force, Revision 24

Section 4OA5 Other Activities

- Flowserve Letter; Minimum Flow Analysis High Pressure Coolant Injection Booster Pump; dated May 14, 2008
- Flowserve Letter; Minimum Flow Analysis High Pressure Coolant Injection Pump; dated August 30, 2007
- Flowserve Letter; Certification of Flowserve Curve PC-36658; dated July 13, 2007
- SOP 23.202; High Pressure Coolant Injection System; Revision 94
- CARD 07-24128; HPCI Min Flow Calculation Discrepancies; dated July 26, 2007
- CARD 07-24172; Operation of HPCI with Suppression Pool Above 140°F; dated July 26, 2007
- 50.59 Screen 08-0113; TSR-35664; Revision 0
- GE Report 0000-0084-6483; Enrico Fermi Energy Center Unit 2 HPCI & RCIC Operation with Elevated Suppression Pool Temperatures; dated June 18, 2008
- EOP 29.100.01, sheet 6; Curves, Cautions and Tables; Revision 10
- TSR-35664; Clarify HPCI and RCIC Pump Suction and Discharge Design Temperatures; Revision 0
- DC-0204, Volume 1; Sizing Restricting Orifice Diameters and Thickness; dated March 4, 2008
- LCR-08-023-UFS; Revises Table and Figure to Correct Inconsistencies; dated July 22, 2008

LIST OF ACRONYMS USED

AD	Applicability Determination
ANSI	American National Standards Institute
CAP	Corrective Action Program
CARD	Condition Assessment and Resolution Document
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
DRP	Division of Reactor Projects
EDP	Engineering Design Package
EDG	Emergency Diesel Generator
EECW	Emergency Equipment Cooling Water
EOP	Emergency Operating Procedures
GE	General Electric
gpm	gallons per minute
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilating, and Air Conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
kV	Kilovolt
MCC	Motor Control Center
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PM	Post-Maintenance
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RETS	Radiological Effluent Technical Specification
RHR	Residual Heat Removal
RPT	Radiation Protection Technician
RRA	Radiological Restricted Area
RWCU	Reactor Water Cleanup
RWP	Radiation Work Permit
SDP	Significance Determination Process
SGT	Standby Gas Treatment
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order