UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

February 3, 2011

NMED - 100574

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

SUBJECT: FERMI POWER PLANT, UNIT 2, INTEGRATED INSPECTION REPORT 05000341/2010005

Dear Mr. Davis:

On December 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2. The enclosed report documents the results of this inspection, which were discussed on January 11, 2011, with J. Plona, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and 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, one NRC-identified finding and one self-revealed finding of very low safety significance were identified. The findings involved violations of NRC requirements. However, because of the very low safety significance, and because these issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Fermi Power Plant. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Fermi Power Plant.

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

Sincerely,

/RA/

John B. Giessner, Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2010005
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-341
License No:	NPF-43
Report No:	05000341/2010005
Licensee:	Detroit Edison Company
Facility:	Fermi Power Plant, Unit 2
Location:	Newport, MI
Dates:	October 1 through December 31, 2010
Inspectors:	R. Morris, Senior Resident Inspector R. Jones, Resident Inspector M. Bielby, Senior Operations Engineer J. Bozga, Reactor Engineer R. Jickling, Senior Emergency Preparedness Inspector D. Jones, Reactor Inspector B. Jose, Senior Reactor Engineer D. Kimble, Senior Resident Inspector, Davis Besse V. Meghani, Reactor Engineer M. Mitchell, Health Physicist J. Neurauter, Senior Reactor Engineer
Approved by:	J. Giessner, Chief Branch 4 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000341/2010005, 10/01/2010 – 12/31/2010; Fermi Power Plant, Unit 2; routine integrated IR. Operability Evaluations and Follow-Up of Events and Notices of Enforcement Discretion.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were identified by the inspectors for the licensee's failure to follow procedures and review the accident analysis in Updated Final Safety Analysis Report (UFSAR) Chapter 15 for the operability evaluation of a face shield lost in the reactor cavity, which could impact coolant flow to a fuel channel. Specifically, the licensee failed to follow Procedure MES27, "Fermi 2 Engineering Support Conduct Manual," which requires evaluations needed to understand the potential consequences of the plant condition. As corrective action, the licensee revised their operability evaluation, EFA-B11-10-011, to include the needed information to address the accident analysis with potential flow channel blockage.

  The inspectors determined the finding was more than minor because it impacted the configuration control attribute of the Barrier Integrity Cornerstone in IMC 0612, Appendix B, Reactor Safety. The deficiency adversely affected the Barrier Integrity Cornerstone objective to provide reasonable assurance that the clad barrier would be effective as a barrier from releases during plant events, in that the deficient evaluation could challenge the clad integrity. The Finding was determined to be of very low safety significance, Green, because the licensee took action before reactor start-up to ensure additional evaluation was completed, and the issue affects the fuel barrier only, in accordance with Table 4a of IMC 0609.04. This finding has a cross-cutting aspect in the area of Human Performance, Resources, conservative assumptions, because the licensee failed to provide complete information in the operability determination that would allow Operations to fully understand the potential consequences of the issue. Specifically, the licensee judged that the condition remained bounded without defining the analyzed parameters, and the licensee failed to validate the underlying assumptions in the evaluation. ((H.1(b)) (Section 1R.15.1)

Cornerstones: Occupational and Public Radiation Safety

- Green. A self-revealed finding of very low safety significance (Green) and associated NCV of Technical Specification (TS) 5.5.4.c, Radiation Effluent Controls Program, were self-revealed for failure to monitor an effluent release path when the condensate filter demineralizer (CFD) 'D' drain valve failed in the open position resulting in approximately 100,000 gallons of water being released into the radwaste and turbine buildings. An approximately 100-gallon mixture of the water and resin entered the plant sanitary waste system and traveled outside of the protected area as an unmonitored release. The design of the sanitary pipe that allowed crossing the power block boundary without a monitoring system was a performance deficiency. The licensee immediately stopped pumping sanitary waste and closed all facilities onsite until the system had been cleaned.

  The inspectors determined the finding was more than minor in accordance with IMC 0612, because the performance deficiency is associated with of the Plant Facilities/Equipment attribute of the Public Radiation Safety Cornerstone and the performance deficiency adversely affects the associated cornerstone objective. Specifically, the performance deficiency resulted in the unmonitored release of radioactive material to the public domain. The finding was assessed using the Effluent Release branch of the Public Radiation Safety SDP and was determined to be of very-low-safety significance, because the resultant dose impact to a member of the public from the radioactive release was less than the dose values in Appendix I to 10 CFR 50 and 10 CFR 20.1301 (e). Therefore, the finding is classified as Green. This finding has a cross-cutting aspect in the area of Human Performance, Decision-Making, Systematic Process. Specifically, the inspectors determined that design of the sanitary waste system was not properly evaluated and reviewed in a systematic process to meet the UFSAR requirements. (H.1(a)) (Section 4OA3.2)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

Fermi Unit 2 started this inspection period at 100 percent power and remained there until 1809 on October 24 when there was a reactor scram due to a turbine trip resulting from a low condenser vacuum. This prematurely began refueling outage (RFO)-14, which was scheduled to begin October 25. The plant remained in the outage until December 5. The plant exited the outage with the north condensate pump unavailable and was limited to 75 percent power. The plant achieved 75 percent power on December 6 at 1600; the north reactor feedwater pump control system did not function as expected and power was reduced to 60 percent on December 7 at 0520. The north reactor feedwater pump controller was repaired and power returned to 75 percent at 1730 on December 15 and remained there for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations (71111.01)

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the UFSAR and performance requirements for systems selected for inspection, and verified operator actions were appropriate as specified by plant specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed corrective action program (CAP) items to verify the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Residual heat removal (RHR) and emergency diesel generator (EDG) complex heating systems.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings 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:

- High pressure coolant injection (HPCI) system;
- Division 1 emergency equipment cooling water (EECW);
- Control rod drive system; and
- Division 1 emergency equipment service water (EESW).

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, TS requirements, outstanding work orders (WOs), 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 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.

Also, additional activities were performed during this system walkdown that were associated with Temporary Instruction (TI) 2515/177, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems.” These activities included review of high point vent locations and requirements for void determinations in HPCI, EECW, and EESW systems. Documents reviewed are listed in the Attachment to this report.

These activities constituted four partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On November 4, 2010, the inspectors performed a complete system alignment inspection of the RHR 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 WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure system equipment alignment problems were being identified and appropriately resolved.

Also, additional activities were performed during this system walkdown that were associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." These activities will be discussed in Section 1R04.3

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

b. Findings

No findings were identified.

.3 System Walkdown Associated with Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

a. Inspection Scope and Documentation

On November 4, 2010, the inspectors conducted a walkdown of the RHR system in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (Temporary Instruction (TI) 2515/177, Section 04.02.d). The areas of walkdown in 71111.04 included normally inaccessible areas. The inspectors also verified the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3).

In addition, the inspectors verified the licensee had isometric drawings that describe the RHR system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- High point vents were identified;
- High points that do not have vents were acceptably recognizable;
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation;
- Horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified;
- All pipes and fittings were clearly shown; and

- The drawings were up-to-date with respect to recent hardware changes and any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

The inspectors verified that piping and instrumentation diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the P&IDs were documented and entered into the CAP for resolution (TI 2515/177, Section 04.02.b).

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

b. Findings

No findings 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:

- Auxiliary building, second floor, relay room;
- Division 1 RHR/EDG building; and
- Auxiliary building, second floor, division 1 switchgear room.

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 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 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 minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted three quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08G)

From November 1 through November 5, 2010, the inspectors conducted a review of the implementation of the licensee's inservice inspection (ISI) program for monitoring degradation of the reactor coolant system, risk-significant piping and components and containment systems.

The inservice inspections described in Sections 1R08.1 and 1R08.2 below constituted one inspection sample as defined in IP 71111.08-05.

.1 Piping Systems ISI

a. Inspection Scope

The inspectors observed the following non-destructive examinations mandated by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements and, if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement.

- Report No. UT-F10-010; "Ultrasonic Examination of the Reactor Vessel Meridional Top Head Weld 1-319H";
- Report No. 09-025; "Radiographic Examination of the 'B' RHR Pump Drain Line Valve Weld FW-E11-3153-14 WOC1";
- Report No. PT-F10-001; "Liquid Penetrant Examination of the Standby Liquid Control Socket Weld FW-C41-2979-72S73"; and
- Report No. MT-F10-015; "Magnetic Particle Examination of the Reactor Vessel Head to Flange Weld (0 -120 degrees)."

The inspectors reviewed the following examination completed during the previous outage with relevant/recordable conditions/indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI or an NRC approved alternative.

- Report No. RF013-06; "Evaluation of Recirculation Inlet – Safe End to Nozzle Weld (1MS-07-SW08)."

The inspectors reviewed the following pressure boundary weld completed for a risk-significant system since the beginning of the last refueling outage to determine if the licensee applied the preservice non-destructive examinations and acceptance criteria required by the ASME Code Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedure was qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- WO 25984079; “E1100F071B, ‘B’ RHR Division 2 Pump Drain Line Valve Replacement.”

b. Findings

No findings were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems entered into the licensee’s CAP and conducted interviews with licensee staff to determine if the licensee had:

- established an appropriate threshold for identifying ISI-related problems;
- performed a root cause (if applicable) and taken appropriate corrective actions; and
- evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On October 5, 2010, the inspectors observed a crew of licensed operators in the plant’s simulator during licensed operator requalification examinations to verify 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 one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the individual Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from September 13 through October 15, 2010, as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process."
The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." The documents reviewed during this inspection are listed in the Attachment to this report.

Completion of this section constituted one biennial licensed operator requalification inspection sample as defined in IP 71111.11B.

b. Findings

No findings 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:

- B3100 vital power, condition assessment and resolution document (CARD) 10-29788; and
- C5100 nuclear instrumentation.

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 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 transition to RFO-14;
- Risk during reactor protection system and integrated plant computer system outage work;
- Risk during plant hydro and heatup following the outage;
- Risk during plant startup and loss of north reactor feedwater pump; and
- Risk during north reactor feedpump temporary modification.

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.

These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- CARD 10-28789, "Reactor Building, Fifth Floor Superstructure Column Welds";
- CARD 10-30935, "FME Plastic Face Shield Lost into Vessel Cavity"; and
- CARD 10-20765, "SLC Test Tank."

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 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 three samples as defined in IP 71111.15-05.

b. Findings

(1) Plastic Face Shield Lost in Reactor Cavity

Introduction: A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," were identified by the inspectors during review of CARD 10-30935 for the licensee's failure to adequately follow procedures and review the accident analysis of UFSAR Chapter 15 in the evaluation of a face shield lost in the reactor cavity. Specifically, Procedure MES27 requires evaluations to include key inputs and assumptions already in the design basis either directly or by reference that are of increased importance (due to the condition) that Operations needs to evaluate for the plant conditions.

Description: On November 20, 2010, a licensee decontamination worker lost a face shield when scrubbing the reactor cavity wall during cavity drain down. Attempts to locate and retrieve the face shield were unsuccessful. With vessel drain down in

progress, the face shield could have been drawn through the recirculation or RHR pumps, and the pump impellers would chop the polyester face shield material into smaller pieces. These pieces could have been deposited with the RHR heat exchanger or accumulated at the entrance orifices to the fuel bundles. The potentially blocked fuel bundles could adversely affect core cooling and fuel cladding integrity functions. To compensate for the degraded condition, the licensee elected to heat up the reactor coolant system using reactor power to degrade/melt the polyester face mask debris and clear the core of face mask debris.

On December 1, 2010, Fermi engineering approved EFA-B11-10-011, Evaluation of Degraded Condition: Plastic Face Shield Lost in Reactor Cavity. The inspectors reviewed the document against Fermi 2 Engineering Support Conduct Manual MES27, Revision 14. Based on MES27, 5.2.2, 4) Part 4: Evaluation, Section 3.a, states in part, "Directly identify evaluation inputs and assumptions. Include those that require revision from existing limits or conditions, require increased monitoring, require different control(s), or that are otherwise different from that already required by the design or license basis, or that are of increased importance relative to operability. Items requiring a change in value, monitoring, control, etc. to support operability or continued operability are to be listed as compensatory measures. Include key inputs and assumptions already in the design basis either directly or by reference that are of increased importance (due to the condition) that Operations needs to understand." The operability evaluation, EFA-B11-10-011, Revision 0, dated December 1, 2010, Section 4.3, Core Cooling, Accident Analysis, states in part, "No specific accident analysis has been performed for the proposed startup configuration. Based on the significantly lower power level in the core and flux suppression that would accompany an evacuated bundle, it is judged that the full power loss of coolant accident (LOCA) remains bounding. Accordingly, the EFA will require all ECS systems to be OPERABLE with the exception of post-startup required testing (e.g. HPCI) in support of the startup maneuver." The licensee failed to provide supporting analysis, inputs, and assumptions that were necessary to support the statement that "it is judged that the full power LOCA remains bounding." Specifically, the inspectors were concerned that a lack of cooling to a fuel assembly could adversely affect the cladding function as a fission product barrier under non-LOCA postulated UFSAR reactivity accidents/transients such as a sudden release of the debris and cold water addition (UFSAR Chapter 15.5.1 and 15.1.2), increased core flow (UFSAR 15.4.4 and 15.4.5), or control rod errors (UFSAR 15.4.1.2). The licensee revised EFA-B11-10-011 to include the information needed to address the analysis.

Analysis: The inspectors determined the failure to establish a documented basis to support the assumption that the accident analysis was not impacted by the condition of a blocked fuel channel was contrary to Engineering Support Conduct Manual MES27 and was a performance deficiency.

This finding is similar to IMC 0612, Appendix E, example 3.i (not minor if) the change required accident analysis calculations to be re-performed to assure the accident analysis requirements were met. In addition, the inspectors determined the finding was more than minor because it impacted the configuration control attribute of the Barrier Integrity Cornerstone in IMC 0612, Appendix B, Reactor Safety. The deficiency adversely affected the Barrier Integrity Cornerstone objective to provide reasonable assurance that the clad barrier would be effective as a barrier from releases during plant events in that the deficient evaluation could challenge the clad integrity. The Finding

was determined to be of very low safety significance, Green, because the licensee took action to ensure additional evaluation was completed before start-up and the issue affects the fuel barrier only, in accordance with Table 4a of IMC 0609.04, Phase 1 screening. This finding has a cross-cutting aspect in the area of Human Performance, Resources, conservative assumptions, because the licensee failed to provide complete information in the operability determination that would allow Operations to fully understand the potential consequences of the issue. Specifically, the licensee judged that the condition remained bounded without defining the analyzed parameters and the licensee failed to validate the underlying assumptions in the evaluation or the attached analytical document that lead to the judgment. ((H.1(b))

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," required, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished with these instructions, procedures and drawings."

MES27, Revision 14, a quality procedure, section 5.2.2, 4) Part 4: Evaluation, Section 3.a, states in part, "Directly identify evaluation inputs and assumptions. Include those that require revision from existing limits or conditions, require increased monitoring, require different control(s), or that are otherwise different from that already required by the design or license basis, or that are of increased importance relative to operability. Items requiring a change in value, monitoring, control, etc. to support operability or continued operability are to be listed as compensatory measures. Include key inputs and assumptions already in the design basis either directly or by reference that are of increased importance (due to the condition) that Operations needs to understand."

Contrary to the above, on December 1, 2010, as documented in EFA-B11-10-011, the licensee failed to provide a document with supporting analysis, inputs and assumptions that were necessary to support the statement that "it is judged that the full power LOCA remains bounding." Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's CAP as CARD 10-30935, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000341/2010005-01, Plastic Face Shield Lost in the Reactor Cavity). The licensee revised the evaluation before start-up.

(2) Standby Liquid Control Test Tank Operability

Introduction: The inspectors identified an unresolved item (URI) for past operability of the standby liquid control (SLC) system and for the adequacy of the procedures utilized to perform the periodic SLC pump test. Specifically, the inspectors identified that the demineralized water in the SLC test tank had not been drained following each periodic test of the SLC pumps as a legacy condition. Further, they noted the SLC test tank could affect the SLC system operability following a seismic event, if there was still demineralized water remaining in the test tank.

Description: The SLC system is designed to provide the capability of bringing the reactor to a subcritical condition with the reactor in the most reactive, xenon free state without taking credit for control rod movement. The SLC system is classified as a seismic category I system. The SLC testing subsystem, which is designed to periodically test the two SLC pumps, includes the SLC test tank, some valves and

piping. The SLC test tank is described in the USFAR as seismic category II/I. Therefore, it is a non-safety-related component within a safety-related envelope; and while not required to maintain its operability, it must not impact the category I portions of the system.

To test the SLC pumps, demineralized water is put into the test tank, the SLC tank remains isolated, and the SLC pumps are lined up and locally started to recirculate the demineralized water through the SLC testing subsystem.

The inspectors questioned whether the demineralized water in the SLC test tank was drained following the periodic test. Further, they questioned whether the SLC test tank could affect the SLC system operability following a seismic event, if there was still demineralized water remaining in the test tank.

The plant procedure (24.139.02) used to periodically test the SLC pumps, as required by TS 3.1.7, did not require draining of the SLC test tank following testing. The procedure did not incorporate the General Electric maintenance instruction guidance to drain the test tank following pump testing. As an interim measure, the SLC test tank was drained of demineralized water, and the SLC pump testing procedure was revised to include guidance to drain the SLC test tank following testing.

The initial operability evaluation provided by engineering concluded that the mounting of the SLC test tank would remain in place, and it would not impact the adjacent safety-related equipment. However, there are several outstanding technical questions regarding the evaluation. Engineering will revise the evaluation of past operability. Then the inspectors will review the revised operability evaluation to determine final resolution of this issue. Because the licensee is performing an engineering analysis of the SLC test tank mounting, this issue will be carried as an unresolved item in this report (URI 05000341/2010005-02, Standby Liquid Control Test Tank Operability).

1R18 Permanent Plant Modifications (71111.18)

a. Inspection Scope

The following engineering design packages (EDPs) were reviewed and selected aspects were discussed with engineering personnel:

- EDP 35621/36014; “Division 1, 4160V Degraded Voltage Modification”; and
- EDP 33415, “Security System Upgrade, Central Alarm Station Facility.”

These documents and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify installation was consistent with the design control documents. The modification for EDP 35621 closed the backfit issue for degraded voltage. EDP 33415 modified the security staging area in preparations for central alarm station upgrades. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted two permanent plant modification samples as defined in IP 71111.18-05.

b. Findings

No findings 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 procedures and test activities were adequate to ensure system operability and functional capability:

- Procedure 24.207.07; “Division 2 EECW/EESW Actuation Functional Test”;
- Procedure 24.207.11, Section 5.2; “RBCCW/EECW Division 2 Valve Position Indication Verification”;
- Procedure 24.207.09, Section 5.1; “Stroke Test of P4400F603B”;
- Procedure 24.207.07; “EECW/EESW Post-Maintenance Testing”;
- Procedure 24.203.03; “Division 2 CSS Pump and Valve Operability, PMT for WO E559100100”;
- WOs 27032905 and 27032902; “Perform 43.401.303 LLRT for Penetration X-9A:B2100F010A, B2100F076A as-left”; and WOs 27033187 and 27033180; Perform 43.401.304 LLRT for Penetration X-9B:B2100F010B, B2100F076B as-left”;
- SOE 10-12; “Post-Modification Testing of Division 2 Degraded Voltage Load Shed Logic”; and
- Procedure 54.000.03; “Control Rod Scram Insert Time Test”; Revision 51.

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 the TSs, 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 PM 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 eight post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the Unit 2 RFO-14, conducted October 24 through December 5, to confirm the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below. Documents reviewed during the inspection are listed in the Attachment to this report.

- Licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TS when taking equipment out of service;
- Implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- Controls over the status and configuration of electrical systems to ensure TS and OSP requirements were met, and controls over switchyard activities;
- Monitoring of decay heat removal processes, systems, and components;
- Controls to ensure outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- Reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- Controls over activities that could affect reactivity;
- Maintenance of secondary containment as required by TSs;
- Refueling activities, including fuel handling;
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify debris had not been left which could block ECCS suction strainers, and reactor physics testing;
- Licensee identification and resolution of problems related to RFO activities; and
- System walkdowns including high point vents and potential void locations in accordance with TI 2515/177.

This inspection constituted one refueling outage sample as defined in IP 71111.20-05.

b. Findings

No findings 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:

- Procedure 44.030.268; "ECCS – Reactor Steam Dome Pressure – RHR and CSS Injection Permissive, Division 2, Channel B Functional Test," and Procedure 44.030.270; "ECCS – Reactor Steam Dome Pressure – RHR and CSS Injection Permissive, Division 2, Channel A Functional Test" (routine);
- Procedure 44.030.070; "ECCS Reactor Recirculating Pump B dp, Division 2 Functional Test," and Procedure 44.030.071; "ECCS Reactor Recirculating Pump A dp Division 2" (inservice testing);
- Procedure 24.402.06; "Drywell to Suppression Chamber Bypass Leak Test" (routine);
- WOs 31727232 and 31727246; "Perform 43.401.303 LLRT for X-9A, B2100F010A, and B2100B076A as-found" (containment isolation valve);
- WOs 31727290 and 31727319; "Perform 43.401.304 LLRT for X-9B: B2100F010B and B2100F076B" (containment isolation valve);
- Procedure 24.307.02; "EDG 12 – Loss of Offsite Power and ECCS Start with Loss of Offsite Power Test" (routine);
- Procedure 24.137.21; "Reactor Pressure Vessel System Leakage Test" (reactor coolant leak);
- Procedure 24.206.04, Section 5.1; "RCIC Stem Flow Test" (routine);
- Procedure 24.202.02; "HPCI Flow Rate Test at 165 PSIG" (routine); and
- Procedure 24.203.03; "Division 2 CCS Pump and Valve Operability, and Automatic Actuation (routine)."

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;

- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, ASME code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Surveillance Testing associated with Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"

a. Inspection Scope

When reviewing Procedure 24.203.03, "Division 2 Containment Spray Systems (CSS) Pump and Valve Operability, and Automatic Actuation," the inspectors verified the procedure was acceptable for (1) testing core spray system with power operation, shutdown operation, maintenance, and subject system modifications, (2) void determination and elimination methods, and (3) post-event evaluation.

The inspectors reviewed procedures used for conducting surveillances and determination of void volumes to ensure the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.a). Also, the inspectors reviewed procedures used for filling and venting following conditions which may have introduced voids into the subject systems to verify the procedures acceptably addressed testing for such voids

and provided acceptable processes for their reduction or elimination (TI 2515/177, Section 04.03.b). Specifically, the inspectors verified:

- Gas intrusion prevention, refill, venting, monitoring, trending, evaluation, and void correction activities were acceptably controlled by approved operating procedures (TI 2515/177, Section 04.03.c.1);
- Procedure(s) ensured the system did not contain voids that may jeopardize operability (TI 2515/177, Section 04.03.c.2);
- Procedure(s) established that void criteria were satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.c.3);
- The licensee entered changes into the CAP as needed to ensure acceptable response to issues. In addition, the inspectors confirmed a clear schedule for completion is included for CAP entries that have not been completed (TI 2515/177, Section 04.03.c.5); and
- Procedure(s) included independent verification that critical steps were completed (TI 2515/177, Section 04.03.c.6).

The inspectors verified the following with respect to surveillance and void detection:

- Specified surveillance frequency was consistent with TS surveillance requirements (TI 2515/177, Section 04.03.d.1);
- Surveillance frequency as stated or, when conducted more often than required by TSs, the process for their determination was described (TI 2515/177, Section 04.03.d.2);
- Surveillance method was acceptably established to achieve the needed accuracy (TI 2515/177, Section 04.03.d.3);
- Surveillance procedure included up-to-date acceptance criteria (TI 2515/177, Section 04.03.d.4);
- Procedure included effective follow-up actions when acceptance criteria are exceeded or when trending indicates that criteria may be approached before the next scheduled surveillance (TI 2515/177, Section 04.03.d.5);
- Measured void volume uncertainty was considered when comparing test data to acceptance criteria (TI 2515/177, Section 04.03.d.6);
- Venting procedure and practice utilized criteria such as adequate venting durations and observing a steady stream of water (TI 2515/177, Section 04.03.d.7);
- An effective sequencing of void removal steps was followed to ensure gas does not move into previously filled system volumes (TI 2515/177, Section 04.03.d.8);
- Qualitative void assessment methods included expectations that the void will be significantly less than allowed by acceptance criteria (TI 2515/177, Section 04.03.d.9);
- Venting results were trended periodically to confirm the systems are sufficiently full of water and the venting frequencies are adequate. The inspectors also verified records on the quantity of gas at each location are maintained and trended as a means of preemptively identifying degrading gas accumulations (TI 2515/177, Section 04.03.d.10);
- Surveillances were conducted at any location where a void may form, including high points, dead legs, and locations under closed valves in vertical pipes (TI 2515/177, Section 04.03.d.11);

- The licensee ensure systems were not pre-conditioned by other procedures that may cause a system to be filled, such as by testing, prior to the void surveillance (TI 2515/177, Section 04.03.d.12); and
- Procedure included gas sampling for unexpected void increases if the source of the void is unknown and sampling is needed to assist in determining the source (TI 2515/177, Section 04.03.d.13).

The inspectors verified the following with respect to filling and venting:

- Revisions to fill and vent procedure to address new vents or different venting sequences were acceptably accomplished (TI 2515/177, Section 04.03.e.1); and
- Fill and vent procedure provided instructions to modify restoration guidance to address changes in maintenance work scope or to reflect different boundaries from those assumed in the procedure (TI 2515/177, Section 04.03.e.2).

The inspectors verified the following with respect to void control:

- Void removal methods were acceptably addressed by approved procedures (TI 2515/177, Section 04.03.f.1).

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later Inspection Report.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, Emergency Action Level and Emergency Plan changes were implemented based on your determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continues to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. Revisions to the Emergency Action Levels, RP-101, Revisions 37 and 38, and the Fermi 2 Radiological Emergency Response Preparedness Plan, Revision 38, were reviewed by the inspectors. The inspectors conducted a sampling review of the Emergency Plan changes and a review of the Emergency Action Level changes to evaluate for potential decreases in effectiveness of the Plan. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

This Emergency Action Level and Emergency Plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

These inspection activities supplement those documented in IR 05000341/2010004, and constitute one complete sample as defined in IP 71124.01-05.

.1 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors conducted walk downs of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions, and performed independent radiation measurements to verify conditions.

The inspectors selected the following radiologically risk-significant work activities that involved exposure to radiation.

- Inservice inspections;
- Drywell insulation removal;
- Drywell degraded voltage cable replacement;
- Drywell scaffolding installation and removal; and
- Refueling floor activities.

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if hazards were properly identified, including the following:

- identification of hot particles;
- the presence of alpha emitters;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials. (This evaluation may include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and

- severe radiation field dose gradients that can result in non-uniform exposures of the body.

The inspectors observed work in potential airborne areas and evaluated whether the air samples were representative of the breathing air zone. The inspectors evaluated whether continuous air monitors were located in areas with low background to minimize false alarms and were representative of actual work areas. The inspectors evaluated the licensee's program for monitoring levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904, "Labeling Containers," or met the requirements of 10 CFR 20.1905(g), "Exemptions to Labeling Requirements."

The inspectors reviewed the following radiation work permits (RWPs) used to access high radiation areas and evaluated the specified work control instructions or control barriers.

- RWP 10-3007; "Scaffold in the Reactor Building-1 Steam Tunnel";
- RWP 10-3010; "Insulation Removal Repair and Replacement in the Drywell and Steam Tunnel";
- RWP 10-3012; "Inservice Inspections in Drywell and Steam Tunnel";
- RWP 10-3037; "Degraded Voltage Cable Replacement"; and
- RWP 10-5001; "Refuel Activities on Reactor Building-5."

For these RWOs, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each RWP were clearly identified. The inspectors evaluated whether electronic personal dosimeter alarm set-points were in conformance with survey indications and plant policy.

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.3 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, RWPs, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee has properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors reviewed the following RWPs for work within potentially airborne radioactivity areas with the potential for individual worker internal exposures.

- RWP 10-3007; "Scaffold in the Reactor Building-1 Steam Tunnel";
- RWP 10-3010, "Insulation Removal Repair and Replacement in the Drywell and Steam Tunnel";
- RWP 10-3012; "Inservice Inspections in Drywell and Steam Tunnel";
- RWP 10-3037; "Degraded Voltage Cable Replacement"; and
- RWP 10-5001; "Refuel Activities on Reactor Building-5."

For these RWPs, the inspectors evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

The inspectors examined the posting and physical controls for selected high radiation areas and very high radiation areas to verify conformance with the occupational performance indicator.

b. Findings

No findings were identified.

.4 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the RWP controls/limits in place, and whether their performance reflected the level of radiological hazards present.

b. Findings

No findings were identified.

.5 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the RWP controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable Planning and Controls (71124.02)

This inspection effort constituted a partial sample as defined in IP 71124.02-05 and will be counted as a complete sample in a later inspection report.

.1 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors reviewed the assumptions and basis (including dose rate and man-hour estimates) for the current annual collective exposure estimate for reasonable accuracy for select as-low-as-is-reasonably-achievable (ALARA) work packages. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.

The inspectors evaluated whether the licensee had established measures to track, trend, and if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors

evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

.2 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice (e.g., workers are familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers are not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

This inspection constituted one complete sample as defined in IP 71124.05-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated TS requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors reviewed a listing of inservice survey instrumentation including air samplers and small article monitors, along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors reviewed personnel contamination monitors and portal monitors including whole-body counters to detect workers' internal contamination. The inspectors reviewed this list to assess whether an adequate number and type of instruments are available to support operations.

The inspectors reviewed licensee and third-party evaluation reports of the radiation monitoring program since the last inspection. These reports were reviewed for insights into the licensee's program and to aid in selecting areas for review ("smart sampling").

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological

conditions, including instruments used for underwater surveys. The inspectors reviewed the calibration and source check procedures for adequacy and as an aid to smart sampling.

The inspectors reviewed the area radiation monitor alarm setpoint values and setpoint bases as provided in the TSs and the UFSAR.

The inspectors reviewed effluent monitor alarm setpoint bases and the calculational methods provided in the offsite dose calculation manual.

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down effluent radiation monitoring systems, including at least one liquid and one airborne system. Focus was placed on flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors assessed whether the effluent/process monitor configurations align with Offsite Dose Calculation Manual descriptions and observed monitors for degradation and out-of-service tags.

The inspectors selected portable survey instruments in use or available for issuance and assessed calibration and source check stickers for currency as well as instrument material condition and operability.

The inspectors observed licensee staff performance as the staff demonstrated source checks for various types of portable survey instruments. The inspectors assessed whether high-range instruments are source checked on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they are appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

The inspectors selected personnel contamination monitors, portal monitors, and small article monitors and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings were identified.

.3 Calibration and Testing Program (02.03)

Process and Effluent Monitors

a. Inspection Scope

The inspectors selected effluent monitor instruments (such as gaseous and liquid) and evaluated whether channel calibration and functional tests were performed consistent with radiological effluent TSs/Offsite Dose Calculation Manual. The inspectors assessed whether; (a) the licensee calibrated its monitors with National Institute of Standards and Technology traceable sources; (b) the primary calibrations adequately represented the plant nuclide mix; (c) when secondary calibration sources were used, the sources were verified by the primary calibration; and (d) the licensee's channel calibrations encompassed the instrument's alarm set-points.

The inspectors assessed whether the effluent monitor alarm setpoints are established as provided in the Offsite Dose Calculation Manual and station procedures.

For changes to effluent monitor setpoints, the inspectors evaluated the basis for changes to ensure an adequate justification exists.

b. Findings

No findings were identified.

.4 Laboratory Instrumentation

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicate the frequency of the calibrations is adequate and there were no indications of degraded instrument performance.

The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

b. Findings

No findings were identified.

.5 Whole Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use of the instrument and assessed whether check sources were appropriate and align with the plant's isotopic mix.

The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

b. Findings

No findings were identified.

.6 Post-Accident Monitoring Instrumentation

a. Inspection Scope

Inspectors selected drywell high-range monitors and reviewed the calibration documentation since the last inspection.

The inspectors assessed whether an electronic calibration was completed for all range decades above 10 rem/hour and whether at least one decade at or below 10 rem/hour was calibrated using an appropriate radiation source.

The inspectors assessed whether calibration acceptance criteria are reasonable, accounting for the large measuring range and the intended purpose of the instruments.

The inspectors selected two effluent/process monitors that are relied on by the licensee in its emergency operating procedures as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments.

The inspectors reviewed the licensee's capability to collect high-range, post-accident iodine effluent samples.

As available, the inspectors observed electronic and radiation calibration of these instruments to verify conformity with the licensee's calibration and test protocols.

b. Findings

No findings were identified.

.7 Portal Monitors, Personnel Contamination Monitors, and Small Article Monitors

a. Inspection Scope

For each type of these instruments used on site, the inspectors assessed whether the alarm setpoint values are reasonable under the circumstances to ensure licensed material is not released from the site.

The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

b. Findings

No findings were identified.

.8 Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimetry, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for at least one of each type of instrument. For portable survey instruments and area radiation monitors, the inspectors reviewed detector measurement geometry and calibration methods and had the licensee demonstrate use of its instrument calibrator as applicable. The inspectors conducted comparison of instrument readings versus an NRC survey instrument if problems were suspected.

As available, the inspectors selected portable survey instruments that did not meet acceptance criteria during calibration or source checks to assess whether the licensee had taken appropriate corrective action for instruments found significantly out of calibration (greater than 50 percent). The inspectors evaluated whether the licensee had evaluated the possible consequences of instrument use since the last successful calibration or source check.

b. Findings

No findings were identified.

.9 Instrument Calibrator

a. Inspection Scope

As applicable, the inspectors reviewed the current output values for the licensee's portable survey and area radiation monitor instrument calibrator unit(s). The inspectors assessed whether the licensee periodically measures calibrator output over the range of the instruments used through measurements by ion chamber/electrometer.

The inspectors assessed whether the measuring devices had been calibrated by a facility using National Institute of Standards and Technology traceable sources and whether corrective factors for these measuring devices were properly applied by the licensee in its output verification.

b. Findings

No findings were identified.

.10 Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

.11 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Mitigating Systems and Emergency Preparedness

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power System (MS-06)

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator (PI) for the period from the fourth quarter 2009 through the third quarter 2010. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports, and NRC integrated inspection reports for the period of the fourth quarter 2009 through the third quarter 2010 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 emergency AC power system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - Cooling Water Systems (MS-09)

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems PI for the period from the fourth quarter 2009 through the third quarter 2010. 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 6, dated October 2009, 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 the fourth quarter 2009 through the third quarter 2010 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 cooling water system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Residual Heat Removal System (MS-10)

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - RHR System PI for the period from the fourth quarter 2009 through the third quarter 2010. 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 6, dated October 2009, 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 October 1, 2009, through September 30, 2010, 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 residual heat removal system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance, PI for the period from the first quarter 2009 through the third quarter 2010. 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 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify the licensee accurately reported the Drill/Exercise Performance indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions, and performance during exercises and other drills. Documents reviewed are described in the Attachment to this report.

This inspection constitutes one drill/exercise performance sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors sampled licensee submittals for the Emergency Response Organization Drill Participation PI for the period from the first quarter 2009 through the third quarter 2010. 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 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2009 through 2010 exercises and drills; and revisions of the roster of personnel assigned to key emergency response organization positions. Documents reviewed are described in the Attachment to this report.

This inspection constitutes one ERO drill participation sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.6 Alert and Notification System (EP03)

a. Inspection Scope

The inspectors sampled licensee submittals for the alert and notification system PI for the period from the first quarter 2009 through the third quarter 2010. 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 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI and results of periodic scheduled Alert and Notification System operability tests. Documents reviewed are described in the Attachment to this report.

This inspection constitutes one alert and notification system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstone: Mitigating Systems

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; 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 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 Attachment to this report.

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 were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection 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 were identified.

.3 Semi-Annual Trend Review (71152S)

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on licensee human performance issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and repetitive equipment issues. The inspectors' review nominally considered the 6-month period of July 2010 through December 2010 although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major engineering human performance, repetitive and/or rework of engineering products, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Observations

The CDBI team completed an inspection (IR 05000341/2010-006) identifying weaknesses in key electrical engineering design calculations. The initial assessment by the licensee (CARD 10-20823) only identified process weakness in the electrical discipline; the inspectors prompted the licensee to reconsider the other engineering disciplines since the ISFSI inspectors had identified weaknesses in civil/structural engineering design calculations.

The inspectors noted that the evaluation that was being performed for the missed opportunities on all of the violations from the CDBI inspection in early 2010 was started

in August 2010 and as of the end of this assessment period had not been completed. The 2010 Engineering Human Performance Excellence Plan Effectiveness review indicated that objective 4, upgrade written standards, was marked as complete in September 2010, but the documentation of all pertinent information on EFAs has been identified as weak or deficient in identifying assumptions and/or methodology as required by licensee procedures even after the objective was marked as complete.

During the assessment period the inspectors observed the engineering documentation for several major projects and current issues. There have been no findings that had cross cutting issues in the area of H.2(c), but there is an increase in issues concerning operability evaluations. These included the documentation of the structural as built versus the design of the reactor building 5th floor (to be documented in Fermi report 2011-002, the evaluation of the face shield in the reactor cavity (evaluated in Section 1R.15 of this report), and the evaluation of the drywell insulation (CARD 10-32197). The evaluations provided insufficient documentation for operations to perform an operability determination without further input from engineering.

The inspectors also observed the licensee's performance during the fall refueling outage. The licensee concluded the outage with several pieces of equipment failing or not available for operations. The plant was de-rated to 75 percent power, because of north condensate pump vibrations required the pump be taken off line after having been replaced during the refueling outage. Several other equipment failures delayed the start-up. These included failure of a condensate polisher drain valve, intermediate range nuclear instrumentation 'D', and one of the speed loop controllers for the north reactor feedwater pump. The equipment performance issues will be reviewed in 2011.

c. Findings

No findings were identified.

.4 Annual Sample Review

a. Inspection Scope

The inspectors completed two inspection samples regarding problem identification and resolution by conducting in-depth reviews for the following CARDs:

- CARD 10-20748, "CDBI identified cancelled DC-5264 may have to be reinstated"; and
- CARD 10-20823, "CDBI 2010 concern, and revise DC-0919 to include correct LTC Volts per tap."

CARD 10-20748 was initiated by the licensee during the 2010 Component Design Bases Inspection (CDBI) in response to questions raised by NRC inspectors on the superseded calculation DC-5264, operability evaluation of electrical equipment during system transient due to low-pressure coolant injection and low-pressure core spray, which was referenced in several active electrical calculations for inputs. The licensee performed an Apparent Cause Evaluation (ACE) and concluded that calculation DC-5264 should be reactivated and several existing calculations must be consolidated into fewer major calculations. Based on this, the licensee prepared and issued DC-6447, Revision 0, "Auxiliary Power System Analysis," as one of the major calculations. Inspectors performed a limited review of this calculation, discussed the scope, methodology, and

assumptions used with the preparer and third-party reviewer of this calculation. The inspectors observed that the calculation did not include a detailed quantitative analysis for the basis of degraded voltage setpoints and time delays as required by the Branch Technical Position (BTP) PSB-1. The inspectors, however, noted that the licensee had previously provided a reasonable qualitative analysis (letter NRC-10-006, dated July 23, 2010) to satisfy the BTP requirement in response to a request for additional information associated with Amendment No. 183. The licensee initiated CARD 10-30910 to include an appropriate analysis in this calculation to meet the BTP requirements.

CARD 10-20823 was also initiated during the 2010 CDBI due to several concerns raised by NRC inspectors on calculation DC-0919 (undervoltage relay setpoints). The licensee revised this calculation to address the immediate concerns raised by the NRC inspectors and included it in the scope of Electrical Calculation Reconstitution Project for major revision later. The inspectors performed a limited review of this calculation, discussed the scope, methodology and assumptions used, with the preparer and third-party reviewer of this calculation. During the review the inspectors noted an incorrect and misleading statement in Chapter 8 of the UFSAR that stated, "The second level of undervoltage protection will prevent the voltage at the safety-related buses from slipping below the minimums defined in Subsection 8.2.2.5.1." Subsection 8.2.2.5.1 listed the minimum and maximum continuous grid voltage acceptable to the plant and was not related to the degraded voltage situation. The licensee initiated CARD 10-30902 to address this issue.

The inspectors verified: 1) the problems were accurately identified; 2) the causes were adequately justified; 3) extent of condition and generic implications were appropriately addressed; 4) previous occurrences were considered; and (5) corrective actions proposed/implemented were appropriately focused to address the problems and were commensurate with the safety significance of the issues.

b. Findings

No findings were identified.

.5 Selected Issue Follow-Up Inspection Associated with Temporary Instruction (2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems": CARD 10-33219, Generic Letter 2008-01 Situational Event Detected Air Void In Core Spray Division 2

a. Inspection Scope and Documentation

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting the issue in CARD 10-33219, Generic Letter 2008-01 Situational Event Detected Air Void in Core Spray Division 2. On December 29, 2010, during the performance of a situational work order 32186223 for event X059 on core spray division 2 piping, the licensee discovered a 4.2 inch arc length void just downstream of the elbow weld FW-E21-3147-13W14 downstream of the core spray pump. The void that was detected by ultrasonic testing represents a single localized area. Based on engineering analysis the estimated air void size corresponds to a 4.2 arc on the outside diameter of a 14 inch pipe is 0.12 ft^3. The technical evaluation that was performed in response to NRC Generic Letter 2008-01 establishes allowable air void volumes for the core spray system to be 1.9 ft^3.

The inspectors verified the selected CAP entry acceptably addressed the areas of concern associated with the scope of GL 2008-01," Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (TI 2515/177, Section 04.01).

This review was part of the problem identification and resolution sample as defined in IP 71152-05. In addition, this inspection effort counts towards the completion of TI 2515/177 which will be closed on a later inspection report.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Automatic Reactor Scram due to a Turbine Trip Resulting from a Low Condenser Vacuum

a. Inspection Scope

The inspectors reviewed the plant's response to an automatic reactor scram on October 24, 2010, that resulted from a main turbine trip. Condenser vacuum had degraded actuating a relay that initiated a turbine control valve fast closure, which initiated the reactor scram. All control rods fully inserted except for control rod 10-35, which stopped moving at position 42. Control rod 10-35 was then manually inserted to the full in position. Cause of the degraded condenser vacuum was erosion of the No. 3 steam jet air ejector steam supply first stage nozzle. This resulted in a loss of air ejector capacity. The inspectors also reviewed and observed the actions taken to address control rod 10-35 and the steam jet air ejector erosion. Documents reviewed in this inspection are listed in the Attachment.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

No findings were identified.

.2 Failure of Condensate Filter Demineralizer 'D' Main Drain Valve

a. Inspection Scope

The inspectors reviewed the plant's response to a failure of the CFD 'D' drain valve on December 1, 2010, that led to 100,000 gallons of condensate water entering the radwaste and turbine buildings. The inspectors also reviewed and observed the actions during the cleanup and restoration of the facilities. Documents reviewed in this inspection are listed in the Attachment.

This event follow-up review constituted one sample as defined in IP 71153-05.

b. Findings

Introduction: A finding of very low safety significance (Green) and associated non-cited violation of TS 5.5.4.c, Radiation Effluent Controls Program, were self-revealed when the condensate filter demineralizer (CFD) 'D' drain valve failed in the open position resulting in approximately 100,000 gallons of water being released into the radwaste and turbine buildings. Approximately 100 gallons of the water entered the plant sanitary waste system and traveled outside of the protected area as an unmonitored release.

Description: On December 1, 2010, at approximately 12:50 p.m., operations personnel were told to investigate excessive water in the radwaste and turbine buildings. The operators discovered that valve N2000F008D (CFD-D, main drain valve) was in the open position. This allowed water from the discharge of the condensate pumps to overfill the condensate backwash receiver tank (CBWRT). The overfill line on the CBWRT was not sized to relieve the volume of water entering the tank and the water entered the tank vent. Because the CBWRT vent was connected to the radwaste ventilation system, the water and condensate polisher resins entered the radwaste ventilation system and exited the system through several different locations. Some of the water entered a room located on turbine building second floor mezzanine and leaked into the floor drain in the room that was connected to the sanitary waste system. An approximate 100-gallon mixture of water and condensate resin entered the sanitary waste drain and was collected in the sanitary waste collection tank outside of the plant protected area. Some of the water was pumped from the sanitary waste collection tank to the county sanitary system.

Fermi 2 UFSAR, Section 9A.2.3.7, states, "The methods of containing radioactive leakage and releases within these buildings (reactor, radwaste, and turbine buildings) are as follows: Liquid spillage or leakage from equipment within these buildings drains into the respective building floor drain sump." Additionally, Section 11.2 states, "Any leakage or spillage due to equipment failure or malfunction will be contained and re-collected in the system (liquid radwaste system). The liquid radwaste system is designed to function as follows: Use the plant drainage system to collect radioactive leakage or spillage due to equipment failure or malfunctions during normal plant operations." However, the water released into the radwaste and turbine buildings entered the sanitary waste system. During the design process, the licensee failed to properly obtain the radiological reviews and interdisciplinary input which would have evaluated the impact on the effluent release program of installing the sanitary waste piping inside the power block.

Analysis: The inspectors determined that the design of the sanitary pipe was a performance deficiency because it allowed crossing the power block boundary without a monitoring system that resulted in the unmonitored release of radioactive material. The inspectors determined that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct and should have been prevented.

The finding was not subject to traditional enforcement since the incidents did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and were not willful.

The inspectors reviewed the guidance in IMC 0612, Appendix E, Examples of Minor Issues, but did not identify any examples similar to the performance deficiency.

However, in accordance with IMC 0612, the inspectors determined that the finding was more than minor because the performance deficiency is associated with of the Plant Facilities/Equipment attribute of the Public Radiation Safety Cornerstone and the performance deficiency adversely affect the associated cornerstone objective. Specifically, the performance deficiency resulted in the unmonitored release of radioactive material to the public domain. The finding was assessed using the Effluent Release branch of the Public Radiation Safety SDP and was determined to be of very-low-safety significance because the resultant dose impact to a member of the public from the radioactive release was less than the dose values in Appendix I to 10 CFR 50 and 10 CFR 20.1301 (e). Therefore, the finding is classified as Green.

As described above, the licensee failed to properly obtain the radiological reviews and interdisciplinary input which would have evaluated the impact on the effluent release program of installing the sanitary waste piping inside the power block. Consequently, this finding has a cross-cutting aspect in the area of Human Performance, Resources, Decision Making, for failing to use a systematic process for reviews of risk significant decisions (H.1(a)).

Enforcement: Technical Specification 5.5.4.c, "Radiation Effluent Controls Program," requires in part, "Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM." Contrary to the above, on December 1, 2010, at 12:50 p.m., the licensee failed to monitor, sample, or analyze a liquid effluent release. Specifically, an approximately 100-gallon mixture of the water and resin entered the plant sanitary waste system and traveled outside of the protected area as an unmonitored release. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's CAP as CARD 10-31511, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000341/2010005-03, Failure of Condensate Filter Demineralizer 'D' Main Drain Valve). The licensee took immediate corrective actions to stop the flow of sanitary fluids until the system was cleaned.

4OA5 Other Activities

.1 (Open) NRC Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

As documented in Sections 1R04, 1R15, 1R18, 1R22, and 4OA2, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

.2 (Closed) Violation 05000341/2008005-03; Degraded Voltage Backfit Modification

As documented in IR 05000341/2008008, the inspectors had identified a concern with respect to the adequacy of the degraded voltage protection scheme at Fermi 2. After further review, the inspectors determined the provisions of 10 CFR 50.109(a) (4), were applicable and a modification was necessary to bring the facility into compliance with the rules or orders of the NRC. The licensee was subsequently requested to respond with a

description of the intended actions to address the noncompliance including a proposed schedule to complete those actions.

In a letter dated August 4, 2008, from J. Plona (ADAMS Accession No. ML0822502561), the licensee stated the installation of the modification which would bring the plant into full compliance with General Design Criterion 17 would be completed by the end of the fourteenth refueling outage in 2010. As stated in IR 05000341/2008008, this issue was not dispositioned as a violation because the NRC had accepted the inadequate degraded voltage protection scheme in 1981 and in 1985. However to ensure actions were completed to correct the condition, this issue was considered open pending completion of the licensee's modification in IR 05000341/2008005 and tracked as VIO 05000341/2008005-03.

During Fermi 2's fourteenth refueling outage in November 2010, inspectors discussed the contents of the degraded voltage modification with the licensee, reviewed the post-modification test results, the license amendment (Amendment No. 183) and associated safety evaluation report and TS changes, and verified the installation activities associated with the modification were completed. The inspectors concluded there are no outstanding concerns with the issues involved in this backfit. This issue is closed.

No findings were identified.

.3 NMED Item Number 100574 "Injured Individual Transported to Hospital"

Fermi 2 reported that on November 25, 2010, while reinstalling a 100-ton reactor shield block, an individual's fingers were pinched between the reactor cavity wall and the reactor shield block severing portions of two fingers. The injured individual was transported to an offsite hospital. Portions of the fingers remained in the glove and decontamination of the glove was unsuccessful. The fingers were transported to the hospital by radiation protection personnel; and when it was determined that the fingers could not be reattached they were returned to the Fermi site for disposal.

A regional health physics inspector reviewed the licensee's procedures for transporting potentially contaminated personnel, the surveys of personnel, materials and the offsite locations on November 25, 2010, to assure that all radioactive materials were accounted. The licensee personnel followed established procedures, used qualified personnel to conduct surveys using calibrated and functional equipment. Additionally, this was completed in a timely manner to assist with the emergent medical conditions. Standard medical practices prevented the spread of contamination to the public, which was confirmed by the licensee's follow-up surveys. There was no impact to the health and safety of the public or medical professionals.

This incident was recorded as NMED Item Number 100574 and is closed with no regulatory action.

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 11, 2011, the inspectors presented the inspection results to J. Plona 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:

- Radiological hazard assessment and exposure controls, and occupational ALARA planning and controls with Mr. E. Kokosky, Radiation Protection Manager on October 29, 2010;
- The results of the inservice inspection with Site Vice President, J. Plona, on November 5, 2010;
- On December 2, 2010, the inspectors presented the results for the annual Emergency Preparedness Performance Indicators inspection and review of the Emergency Action Level and Emergency Plan changes with Mr. R. Johnson and other members of the licensee staff;
- Radiation Monitoring Instrumentation with Rod Johnson, Manager of Licensing, on December 3, 2010; and
- The licensed operator requalification training annual operating test results with the Licensed Operator Requalification Training Lead, Mr. R. Duke, via telephone on December 9, 2010.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Plona, Site Vice-President
K. Hlavaty, Plant Manager
K. Scot, Senior Manager, Engineering
M. Brooks, ISI Program Manager
W. Colonnello, Director, Nuclear Support
R. Duke, Licensed Operator Requalification Training Lead
J. Ford, Performance Engineering Manager
G. Garber, Radiological Emergency Response Preparedness Specialist
R. Hambleton, RVIM Program Manager
T. Holmberg, Technical Training Specialist
R. Johnson, Licensing Manager
E. Kokowsky, Radiation Protection Manager
R. LaBurn, Assistant Radiation Protection Manager
G. Olemacher, Radiation Emergency Response Preparedness Supervisor
E. Kant, Contractor
M. Walsh, Contractor
S. Shepherd, Contractor

Nuclear Regulatory Commission

J. Giessner, Chief, Reactor Projects Branch 4

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000341 2010005-02	URI	Standby Liquid Control Test Tank Operability

Opened and Closed

05000341 2010005-01	NCV	Plastic Face Shield Lost in the Reactor Cavity
05000341 2010005-03	NCV	Failure of Condensate Filter Demineralizer ‘D’ Main Drain Valve

Closed

0500341 2008005-03	VIO	Degraded Voltage Backfit Modification

Discussed

None.

LIST OF DOCUMENTS REVIEWED

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

Section 1R01 – Adverse Weather Protection

- M-COLD10 and M-COLD10A; 10/30/2010
- Procedure 27.000.07, Attachment 3; Systems V4100, E1151; E1156; T4100; 05/07/2010
- Procedure 27.000.07, Attachment 3; Systems U4100, X8000; 05/05/2010
- Procedure 27.000.07, Attachment 3; Systems P4100, X4104, D4000; 05/14/2010
- Procedure 27.000.07; Attachment 3, System X4103; 05/06/2010
- Procedure 27.000.07, Attachment 3, Systems P 2100, W3300,W41006; 05/25/2010
- Procedure 27.000.07, Attachment 3, Systems P6100, X4105; 05/27/2010
- P4100 Cold Weather Operations Write-Up; 05/14/2010
- WO 28377404; Perform 27.000.07, Attachment 3, Cold Weather System Readiness Review Checklists; 02/01/2010

Section 1R04 – Equipment Alignment

- Drawing 6M721-5703-1; Control Rod Drive System; Revision AD
- Drawing 6M721-5706-3; RHR Service Water Make Up Decant and Overflow Systems; Revision Z
- Drawing 6M721-5708-1; HPCI System Functional Operating Sketch; Revision AL
- Drawing 6M721-5729-1; Emergency Equipment Cooling Water, Division 1; Revision BA
- Procedure 23.202, Attachment 1; Initial HPCI Valve Lineup; 11/02/2009

Section 1R05 – Fire Protection

- Procedure FP-AB-2-9b; Fire Pre-Plan Procedure; Revision 2
- Drawing 6A721-2408; Fire Protection Evaluation Reactor and Auxiliary Buildings Fourth Floor Plan; Revision U
- Procedure FP-RB-4-17b; Reactor Building Recirculation System Motor Generator Area, Zone 17, El. 659’6”; Revision 4

Section 1R08 - Inservice Inspection Activities (71111.08G)

- 39.NDE.001; Liquid Penetrant Examination, Solvent Removable; Revision 26
- 39.NDE.002; Magnetic Particle Examination by the AC/DC Yoke Method; Revision 24
- 39.NDE.011; ASME / ANSI Radiographic Examination; Revision 4
- 54-ISI-805; Ultrasonic Examination of Reactor Pressure Vessel Welds; Revision 7
- CARD 07-26591; E1100F071B Seat Underlay Eroded; 10/24/2007
- CARD 07-26657; Valve Seats Damaged Beyond Repair; 10/25/2007
- CARD 09-22473; Leak Path Causing ‘B’ RHR Pump Discharge Pressure to Rise when Isolated; 04/08/2009
- CARD 09-25057; Review Applicability of OE28984 to Fermi; 07/21/2009
- CARD 10-29737; Guide Clearance Less Than Shown On Hanger Sketch; 10/29/2010
- CARD 10-29822; Recommend Scope Add For WO 30959367; 11/01/2010
- 3071-364; General Welding Specification For ASME/ANSI Components; Revision D

- Welding Process Control Sheet, WPCS-25984079-1; 04/16/2009
- Weld Procedure Specification A11-3.1; Manual GTAW / SMAW; 01/08/1988
- Weld Procedure Qualification Record WA11-3.1; SMAW Manual; 01/17/1984
- Weld Procedure Qualification Record WA11-3.3 CH; Manual GTAW / SMAW; 01/26/1984
- MMA09; Welding / Brazing Program; Revision 9
- WO 25984079; Replace Valve E1100F071B

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- Fermi 2 Evaluation Scenario SS-OP-904-0183; SRVs Inoperable / Jet Pump Failure / RPV Flooding; Revision 4
- Fermi 2 Evaluation Scenario SS-OP-904-1016; 2B Transformer Leak / Turbine Vibration / Turbine Trip with CF Flashover / ATWS; Revision 2

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- CARD 10-29788; B3100 Vital Power
- Maintenance Rule Functional Failure Evaluation; System B3100; 09/16/2010
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- Scheduled Risk Profile Summary; Week of 11/28/2010
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- CARD 10-20765; SLC Test Tank
- CARD 10-28090; Reactor Building Superstructure Re-Analysis; 09/14/2010
- CARD 10-28611; Have Gaps Greater Than 3/16" on Crane Rail Clips; 09/29/2010
- CARD 10-28694; NRC Issue: Request for Shear Check in TE-T22-10-070 Concrete Evaluation; 09/30/2010
- CARD 10-28789; Reactor Building Fifth Floor Superstructure Column Welds for Built-up Section Does Not Meet the Drawing; 10/03/2010
- CARD 10-29017; Two Linear Indications in the Edge of the Existing W30 Column South Side of Flange; 10/09/2010
- CARD 10-29026; Air In-Leakage from Corner Seam in Siding on RB-5; 10/10/2010
- CARD 10-29038; Negative Trend in Weld Quality has been Identified on RB-5; 10/11/2010
- CARD 10-28885; NRC Concern – RB5 Superstructure Columns; 10/06/2010
- CARD 10-28916; NRC Question – EFA-T22-10-010 R0 Analytical Basis; 10/06/2010
- CARD 10-30935; FME Plastic Face Shield Lost into Vessel Cavity; 11/20/2010
- Coverall Face Shields Model 2807, Supplied by AlphaPro Tech Inc. (CARD 10-30935)
- EDPs 35621 and 36014; Division 1, 4160V Degraded Voltage Modification
- EFA-B11-10-011; Evaluation of Degraded Condition: Plastic Face Shield Lost in Reactor Cavity; Revision 0
- EFA-T-10-101; Past Operability of the RB5 Superstructure; Revision 0
- EFA-T22-10-008; Reactor Building superstructure Girts; Revisions 0 and A
- EFA-T22-10-009; Reactor Building Crane Rail Clips Underneath the Crane and South Wall Girts; Revision 0
- EFA-T22-10-010; RB5 superstructure built-up column welds are not installed per plant design drawings; Revisions 0, B, and C

- Engineering Support Conduct Manual MES27; Verification of System Operability; Revision 14
- Memo TMFR-10-0116, J. Ford to M. Caragher; Lost Parts Analysis Implementation; 11/27/2010
- Memo TMTE-10-0130, I. Finney to File; Control Rod 10-35 Failure to Scram; 11/24/2010
- MSDS; AlphaPro Tech Shields, Shieldmates
- NRC Senior Resident / Region III Questions Related to the Face Shield Foreign Material Resolution; 11/27/2010
- TE-C41-10-105; Past Operability of SLC Test Tank Mounting; Revision 0
- TE-E11-09-047; Technical Evaluation to Support GL 2008-01 Supplemental Response; Revision 0
- TE-T22-10-082; EFA-T22-10-010, Beam as a Solid Unit with Welds to Address NRC Question 1006-02; Revision 0
- WOs 27032905 and 27032902; Perform 43.401.303 LLRT for Penetration X-9A:B2100F010A, B2100F076A as-left
- WOs 2703318 and 27033180; Perform 43.401.304 LLRT for Penetration X-9B:B2100F010B, B2100F076B as-left

Section 1R18 – Plant Modifications

- CARD 10-31430; Failure of CFD 'D' Main Drain Caused Entry into TB Flooding AOP; 12/01/2010
- CARD 10-31507; Security Staging Area Toilet, Sink, and Floor Drain Disposition; 12/07/2010
- CARD 10-31511; Potential unmonitored release pathways via the Security System Muster Area unisex toilet waste / vent piping; 12/03/2010
- ECR 33415-1; Security System Upgrade CAS Facility; Revision 0
- ECR 33415-2; Security System Upgrade CAS Facility / Update drawing to support installation; Revision 0
- ECR 33415-2; CAS Sanitary Waste System Upgrade; Revision 0
- ECR 33415-4; Security System Upgrade CAS Facility; Revision C
- ECR 33415-5; CAS Sanitary Waste System Upgrade "As-Built" Documentation; Revision 0
- ECR 33415-6; Revised Penetration details for E-17419 in the new CAS Facility; Revision B
- EDP-36659; Installation of Manual Isolation Valve in IAS Header for Air Operated Drain Valve N2000F008H; Revision A
- WO 32107497; Install At-risk EDP 36659; 12/03/2010

Section 1R19 – Post-Maintenance Testing

- CARD 10-20748; CDBI Identified Cancelled DC-5264 May Have to be Reinstated
- CARD 10-20823; CDBI 2010 Concern, Revise DC-0919 to Include Correct LTC Volts Per Tap
- CARD 10-30398; RF14 LL: B2100F010B Work Delays; 11/10/2010
- CARD 10-30902; UFSAR Section 8.2.2.5 Clarification
- CARD 10-30910; Electrical Design Calculation Improvements (DC-6447)
- DC-6447; Auxiliary Power System Analysis; Revision 0
- DC-0919; Undervoltage Relay Setpoints; Revision A
- Procedure 24.203.03; Division 2 CSS Pump and Valve Operability, PMT for WO E559100100
- Procedure 24.207.07; EECW/EESW Post-Maintenance Testing; Revision 37
- Procedure 24.207.09, Section 5.1; Stroke Test of P4400F603B
- Procedure 24.207.11, Section 5.2, RBCCW/EECW Division 2 Valve Position Indication Verification; Revision 3
- Procedure 54.000.03; Control Rod Scram Insert Time Test; Revision 51
- SOE 10-11; Post Modification Testing of Division 2 Degraded Voltage Load Shed; Revision 0

- SOE 10-12; Post Modification Testing of Division 2 Degraded Voltage Load Shed Logic; Revision 0
- WO 29636698; Perform 24.207.07, Division 2 EECW/EESW Actuation Functional Test; 10/31/2010
- WO 27032905; Perform 43.401.303 LLRT for X-9A (TEST-1:B2100F010A); 11/05/2010
- WO 29636687; Perform 24.203.03, Section 5.3, Division 2 CSS Sim Auto Act; 11/02/2010

Section 1R20 - Outage Activities

- CARD 10-29380; MGA 17 Violation; 10/21/2010
- CARD 10-29381; MGA 17 Violation; 10/21/2010
- CARD 10-29382; MGA 17 Scheduling Inputs; 10/21/2010
- Conduct Manual MGA17; Working Hour Limits; Revision 6
- Core Verification Sign-off Sheet; 11/15/2010
- Drawing C2801; Slot Plug
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- Procedure CP-ER-828; RERP Emergency Plan Orientation; Revision 10
- Procedure CP-ER-838; Radiological Emergency Teams; Revision 8
- Procedure 20.000.19; Shutdown from Outside the Control Room; Revision 37
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- SNM-RFL-15-01; RF14 Core Shuffle #1
- SNM-RFL-15-02; RF14 Maintenance Shuffle
- SNM-RFL-15-03; FR14 Core Shuffle #2
- Startup Checklist; 12/03/2010
- WO 29636743; Perform 24.207.11 Sec-5.2 RBCCW/EECW Division 2 Valve Position Indication Verification; 10/31/2010
- Work Schedules; RFO-14

Section 1R22 – Surveillance Testing

- Detroit Edison letter EF2-7038 to James G. Keppler; February 12, 1985
- Control Components Inc. letter to Fermi Plant Manager; October 29. 2010
- NRC Inspection Manual Part 9900: Technical Guidance; Maintenance – Preconditioning of Structures, Systems, and Components before Determining Operability
- Procedure 24.137.21; Reactor Pressure Vessel System Leakage Test; Revision 25
- Procedure 24.202.02; HPCI Flow Rate Test at 165 PSIG Reactor Steam Pressure; Revision 43
- Procedure 24.203.03 Division 2 CCS Pump and Valve Operability, and Automatic Actuation
- Procedure 24.206.04; RCIC System Automatic Actuation and Flow Test; Revision 49
- Procedure 24.206.04, Section 5.1; “RCIC Stem Flow Test;
- Procedure 24.307.02; EDG 12 – Loss of Offsite Power and ECCS Start with Loss of Offsite Power Test; Revision 44
- Procedure 24.402.06; Drywell to Suppression Chamber Bypass Leak Test; Revision 35
- Procedure 44.030.070; ECCS Reactor Recirculating Pump B dp, Division 2 Functional Test; Revision 32
- Procedure 44.030.071; ECCS Reactor Recirculating Pump A dp Division 2
- Procedure 44.030.268; ECCS – Reactor Steam Dome Pressure – RHR and CSS Injection Permissive, Division 2, Channel B Functional Test
- WOs 31727232 and 31727246; Perform 43.401.303 LLRT for X-9A, B2100F010A, and B2100B076A as-found;

- WOs 31727290 and 31727319; Perform 43.401.304 LLRT for X-9B: B2100F010B and B2100F076B
- Startup Checklist; Cycle 15 BOC Startup; Revision 1
- Test Review and Approval Request SOE Nos. 10-11 and 10-12; Revision 0
- WO 29413947; Perform 44.020.430, NS4 Main Steam Line Tunnel Temperature, Trip System B, B21N614D, Cal/Func; 10/14/2010
- WO 29413949; Perform 44.020.431, NS4 Main Steam Line Tunnel Temperature, Trip System B, B21N615D, Cal/Func; 10/14/2010
- WO 29636749; Perform 24.307.02, Section 5.1 EDG 12 Loss of Offsite Power Test; 11/12/2010
- WO 29637159; Perform 24.206.05 Sec-5.2; RCIC System Automatic Actuation Test; 11/18/2010
- WO 29746628; Perform 54.000.03 Sec-6.3 and 6.5; Control Rod Scram Insert Time Test; 11/12/2010
- WO 29780478; Perform 44.030.070; ECCS Reactor Recirculating Pump B DP, Division 2, Functional Test B3100; 10/15/2010
- WO 29780480; Perform 44.030.071, ECCS Reactor Recirculating Pump A DP, Division 2; Functional Test; 10/14/2010
- WO 29782936; Perform 44.030.268, ECCS Reactor Steam Dome Pressure (RHR-CSS Inject) Division 2 Chl B, Cal/Func; 10/14/2010
- WO 29782938; Perform 44.030.270 ECCS Reactor Steam Dome Pressure (RHR-CSS Inject), Division 2, Chl D, Cal/Func; 10/14/2010
- WO 31727232; Perform 43.401.303, LLRT for X-9A, B2100F010A, As Found; 10/29/2010
- WO 31727246; Perform 43.401.303, LLRT for X-9A, B2100F076A, As Found; 10/29/2010
- WO 31727290; Perform 43.401.304, LLRT for X-9B, B2100F010B, As Found; 10/29/2010
- WO 31727319; Perform 43.401.304, LLRT for X-9B, B2100F076B, As Found; 10/29/2010

Section 1EP4 - Emergency Action Level and Emergency Plan Changes

- Fermi 2 Radiological Emergency Response Preparedness Plan; Revisions 37 and 38
- EP-101; Classification of Emergencies; Revisions 36, 37, and 38
- Fermi 2 RERP Plan EAL Technical Basis Document, October 1995; Revision 1
- 10-026-REP; Licensing Change Requests and 10 CFR 50.54(q) Evaluations for Revisions 37 and 38
- NRC-95-0123; Detroit Edison Response to NRC Request for Additional Information Regarding Revision 13 to the Fermi 2 RERP Plan Dated August 16, 1995; November 3, 1995

Section 2RS1 - Radiological Hazard Assessment and Exposure Controls

- CARD 10-27672; Unintended Exposure Greater Than Radiation Work Permit Limit; 08/31/2010
- CARD 10-28411; Poor Radiologically Restricted Area Controls and Work Practices; 09/23/2010
- CARD 10-29236; Procedural Violations Overlooked to Expedite Reactor Building Crane Work; 10/17/2010
- MRP04; Accessing and Working in the Radiologically Restricted Area; Revision 28
- MRP06; Accessing High Radiation, Locked High Radiation and Very High Radiation Areas at Fermi 2; Revision 12
- MRP 31; Control of Keys for High Radiation, Locked High Radiation, and Very High Radiation Areas at Fermi 2 Including Storage and Inventory of Fermi 1 Keys; Revision 0

- PTP 65.000.515; Receipt, Storage, Inventory, Inspection, and Packing of Radioactive Material Shipping Packages; Revision 15
- PTP 67.000.101; Performing Surveys and Monitoring Work; Revision 33

Section 2RS2 - Occupational ALARA Planning and Controls

- MRP05; ALARA/Radiation Work Permits; Revision 7
- PTP 63.000.200; ALARA Reviews; Revision 27
- RWP 10-3007; Scaffold in the Reactor Building-1 Steam Tunnel; Revision 0
- RWP 10-3010; Insulation Removal Repair and Replacement in the Drywell and Steam Tunnel; Revision 0
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- RWP 10-3037; Degraded Voltage Cable Replacement; Revision 0
- RWP 10-5001; Refuel Activities on Reactor Building-5; Revision 0

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- Fermi 2 UFSAR, Section B 3.3; Instrumentation; Revision 3.0
- Fermi 2 UFSAR, Section 11.4.4.4; Post Accident Sampling System; Revision 16
- Fermi 2 UFSAR, Section 12.2.4; Airborne Radioactivity Monitoring; Revision 16
- 64.080.102; Radwaste Effluent radiation Monitor Radiological Calibration; Revision 6
- 44.080.101; Radwaste Effluent Radiation Monitor Functional Test; Revision 31
- 44.080.301; Area Radiation Monitoring System, Functional Test; Revision 31
- 64.120.040; Containment Area High Range Radiation Monitor Division 1 Calibration; Revision 15
- 66.000.405; Residual Heat Removal Service Water (RHRSW) division 1 Radiation Monitor Radiological Calibration and Functional Test; Revision 5
- 64.080.203; Standby Gas Treatment Exhaust Process Radiation Monitoring System Calibration, Division 1; Revision 14
- 64.120.026; Standby Gas Treatment Exhaust Division 1 Accident Range Radiation Monitoring system (AXM) Calibration/Functional; Revision 13
- 66.000.142; Operation of the NE SAM-11 Small Articles Monitor; Revision 3
- 66.000.143; Operation of the IPM-9 Monitor; Revision 3
- 66.000.144; Operation of the GEM-5 Portal Monitor; Revision 2
- 66.000.205, Attachment 1; Ion Chamber Instrument Calibration; 11/03/2010
- 66.000.207; Ludlum 177 Calibration; 11/08/2010
- 66.000.245; SAM-11 Calibration; 10/02/2010
- 66.000.247; IPM-9D calibration; 11/18/2010
- 66.000.251; Attachment 1 Telepole Calibration; 10/19/2010
- 66.000.252; GEM-5 Calibration Data; 11/07/2010
- 66.000.304; Gamma Calibrator Dose Rate Verification; 06/24/2010
- CARD 08-23751; Both Off Gas Radiation Monitors Inoperable; 06/06/2008
- CARD 08-25497; Division 1 Standby Gas Treatment System SPING Momentary Fail High Indication; 08/26/2008
- CARD 08-27780; Turbine Building SPING Skid Sample Valves Leak; 11/20/2008
- CARD 09-20052; D11K601B Channel B Off Gas Radiation Monitor Readings Out of Service Low During Performance of 44.080.120; 01/06/2009
- CARD 09-20192; Procedure 65.000.148, Operation of Ludlum 2000/43-10 Alpha Counter-Enhancement; 01/12/2009
- CARD 09-20544; Reactor Building Sub-basement Northwest Corner Room Area Radiation Monitor Bringing in Intermittent Down Scale failure Alarms; 01/27/2009

- CARD 09-20617; Anomaly Noted on Gamma Spectroscopy Print-outs for High Efficiency Detector Number 4; 01/30/2009
- CARD 09-27267; SS-1 Radiation Monitor Causing Spurious Alarms Due to Radwaste SPING Channel 7; 09/17/2009
- CARD 09-27855; Off Gas Radiation Monitor B Showing Erratic Behavior; 10/08/2009
- CARD 09-28854; AB2 Area Radiation Monitor Downscale Alarming Intermittently; 11/15/2009
- CARD 09-28802; Radwaste SPING Off-line; 11/12/2009
- CARD 10-20621; Turbine Building Heating Ventilation and Air Conditioning (HVAC) Exhaust Monitoring Sample Points May Be Affected Due to HVAC Exhaust Discharge Stack Opening on Northeast Corner; 01/25/2010
- CARD 10-21398; B Off Gas Radiation Monitor D11K601B Had a Sudden Step Change From 5.6 to 3.0 millirem per hour; 02/15/2010
- CARD 10-24025; Area Radiation Monitor Detector Channel 48 Cable Connection Degradations; 05/13/2010
- CARD 10-27821; Division 1 Residual Heat Removal Service Water Radiation Monitor Work Results in Leak; 09/05/2010
- CARD 10-27987; Division 1 Residual Heat Removal Service Water Radiation Monitor Spurious Upscale and Upscale Trip; 09/10/2010
- CARD 10-31508; NRC Issue; Question on Method for Off Gas Radiation Monitoring Recorder Maintenance; 12/03/2010
- D11-N507D; Reactor Building SPING Channel 5 (Low Range Noble Gas) Set-point Change; 09/25/1992
- NPRP-09-0090; The Impact of the Current Fermi 2 Radionuclide Mix on Radiation Surveys; 04/16/2009
- NPRP-10-045; Re-evaluation of Fermi 2 Alpha source term; 04/06/2010
- Report Number 7214, Electrometer Ion Chamber Calibration; 03/19/2010
- Audit Report 07-0110; Quality Assurance Audit of the Radiation Protection Program; 01/04/2008
- Audit Report 09-0112; Quality Assurance Audit of the Radiation Protection Program; 11/13/2009
- Audit Report 10-0111; Quality Assurance Audit of the Environmental Protection (Non-REMP) and Radiological Protection Programs; 10/01/2010
- Self-Assessment of Radiation Protection Instruments; 11/06/2010

Section 4OA1 - Performance Indicator Verification

- CARD 10-24427; May 2010 Alert Notification System Not Activated Per Procedure; 05/28/2010
- CARD 10-26353; July 2010 Drill Inaccurate Initial Notification Form; 07/27/2010
- CARD 10-27891; August 2010 Siren Test Data Not Captured Per Procedure; 09/08/2010
- CARD 10-27900; Hole found in penetration seal P-040-1; 09/08/2010
- E11 Residual Heat Removal; SH-1C-331-101-001; Revision 0
- EP-540; Drills and Exercises; Revision 30
- EP-560; Alert Notification System Siren Operation and Maintenance; Revision 0
- LCO Log; 09/01/2010 – 10/01/2010
- MSPI Derivation Report; Unavailability Index (MS-09); September 2010
- Monthly Emergency Response Organization Drill Participation Records; March 2009 – September 2010
- Monthly Drill/Exercise Performance Totals; January 2009 – September 2010
- Monthly Drill/Exercise Performance Records; January 2009 – September 2010
- Monthly Siren Test Results; January 2009 – September 2010

- Operator Logs; 04/01/2010 to 05/01/2010, 09/01/2010 to 10/01/2010, and 12/01/2010 to 01/01/2010
- Siren Test Status Results; January 2009 – September 2010

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- CARD 10-20748; CDBI identified cancelled DC-5264 may have to be reinstated
- CARD 10-20823; CDBI 2010 concern, and revise DC-0919 to include correct LTC Volts per tap
- Drawing 6M721-3163-2; Hangers – Piping Isometric-HPCI Booster Pump Suction from Suppersion Chamber and Condensate Storage Hdr.;
- Letter dated April 11, 2008; DTE Energy to USNRC; NRC-08-0032; 3-Month Response to NRC Generic Letter 2008-01
- Letter dated October 14, 2008; DTE Energy to USNRC; NRC-08-0064; Fermi 2 9-Month Response to NRC Generic Letter 2008-01, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems”
- Letter dated July 29, 2009; DTE Energy to USNRC; NRC-09-0045; GL2008-01; Supplement to Fermi 2 9-Month Response to NRC Generic Letter 2008-01, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems”
- Letter dated January 22, 2010; DTE Energy to USNRC; NRC-10-0005; GL2008-01; Response to the NRC Request for Additional Information Regarding Generic Letter 2008-01
- TE-E11-08-061; Technical Evaluation to Support Response to GL 2008-01 (Gas Intrusion); Revisions 0 and A

Section 4OA3

- Air Sample No. 02310-A10; 12/02/2010
- CARD 10-29509; Control Rod 10-35 Did Not Fully Insert during Scram; 10/25/2010
- CARD 10-29533; Perform Diagnostics on N6200F040 OG 20” Manifold Outboard Valve to #4 SJAE; 10/26/2010
- CARD 10-29534; Perform Diagnostics on N6200F041 OG 20” Manifold Outboard Valve to #3 SJAE; 10/26/2010
- CARD 10-29535; Perform Diagnostics on N6200F054 OG 20” Manifold Outboard Valve to #4 SJAE; 10/26/2010
- CARD 10-29536; Perform Diagnostics on N6200F055 OG 20” Manifold Outboard Valve to #3 SJAE; 10/26/2010
- CARD 10-29877; Indications Found on Fuel within Control Cell 10-35; 11/01/2010
- CARD 10-30268; Request FAC Inspection of SJAE First Stage Diffuser Exhaust Elbow; 11/07/2010
- CARD 10-31436; Backwash Receiving Tank Level Indicators Pegged High from Water Intrusion into Instrument Lines; 12/01/2010
- CARD 10-31440; HVAC Ducting Damaged during Condensate Event; 12/01/2010
- CARD 10-31441; Inspect RWHVAC Prior to Startup Following Flooding; 12/01/2010
- CARD 10-31444; Walkdown Identified a 1dpm Leak on the G11P111 Lighting Panel; 12/01/2010
- CARD 10-31445; Water and Resin in Elevator Pit Needs to be Evaluated and Cleaned; 12/01/2010
- CARD 10-31446; TB Walkdown Observations following TB 12/01/2010 Flooding Incident; 12/01/2010
- CARD 10-31458; Septic Tank Contamination; 12/02/2010

- CARD 10-31464; Determine if Sanitary Sewer or Pumping Station have Leaked Licensed Material to Ground; 12/02/2010
- CARD 10-31501; Decontamination and Recovery of Security Areas at RW 2-1/2 Mezzanine; 12/03/2010
- CARD 10-31504; Decontamination and Recovery of Radwaste Ventilation; 12/03/2010
- CARD 10-31511; Potential Unmonitored Release Pathways via the Security System Muster Area Unisex Toilet Waste / Vent Piping; 12/03/2010
- CARD 10-31516; Personal Contamination Events Caused by RWHVAC Overfill; 12/03/2010
- CARD 10-31546; S/U Walkdown – Reddish Brown Residue on Floor on 3 4 5 S FW Htr room; 12/04/2010
- CARD 31943; Investigate if Contaminated Sewage Backed Up into EF1 License Termination Area; 12/16/2010
- Drawing 6M721-2017-1; Off-Gas Process System and Vacuum System and Recombiner Chains; Revision BD
- Drawing 6M721-5716-1; Feedwater Heater Drains, Vents and Emergency Drains; Revision AA
- DVDs; Orientation Check, Seating Check, Serial 1 - 5
- Radiological Survey 06497-R10; Security Muster; 12/01/2010
- Radiological Survey 06498-R10; Security Bathroom / Drain Area; 12/01/2010
- Radiological Survey 06499-R10; Turbine Building Basement; 12/01/2010
- Radiological Survey 06501-R10; RW First Floor General Areas; 11/30/2010
- Radiological Survey 06505-R10; Turbine Building Basement; 12/01/2010
- Radiological Survey 06529-R10; RWB Mezzanine, Second Floor; 12/02/2010
- Radiological Survey 06530-R10; Condensate Backwash Recv Tank & Pumps; 12/02/2010
- Radiological Survey 06570-R10; RW-g; 12/03/2010
- Radiological Survey 06581-R10; Sewage Pump House; 12/04/2010
- Radiological Survey 06610-R10; Parking Lot Sewage Pump House; 12/04/2010
- Radiological Survey 06622-R10; Sewage Pump Station; 12/02/2010
- Radiological Survey 06638-R10; Sewage Pump House; 12/04/2010
- Radiological Survey 06742-R10; Pointe Aux Peaux; 12/08/2010
- WO 29746628; Perform 54.000.03 Sect 6.3 and 6.5; Control Rod Scram Insert Time Test; 11/12/2010

Section 4OA5

- CARD 10-32219; Generic Letter 2008-01 Situational Event Detected Air Void In Core Spray Division 2; 12/29/2010

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
BTP	Branch Technical Position
CAP	Corrective Action Program
CARD	Condition Assessment and Resolution Document
CBWRT	Condensate Backwash Receiver Tank
CFD	Condensate Filter Demineralizer
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EDP	Engineering Design Package
EECW	Emergency Equipment Cooling Water
EESW	Emergency Equipment Service Water
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ISI	Inservice Inspection
LOCA	Loss of Coolant Accident
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OSP	Outage Safety Plan
PI	Performance Indicator
PM	Post-Maintenance
RCIC	Reactor Core Isolation Cooling
RFO	Refueling Outage
RHR	Residual Heat Removal
RWP	Radiation Work Permit
SDP	Significance Determination Process
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

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Sincerely,

/RA/

John B. Giessner, Chief
Branch 4
Division of Reactor Projects

Docket No. 50-341
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Letter to J. Davis from J. Giessner dated February 3, 2011

SUBJECT: FERMI POWER PLANT, UNIT 2, INTEGRATED INSPECTION REPORT 05000341/2010005

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