



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

April 27, 2012

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

SUBJECT: FERMI POWER PLANT, UNIT 2, NRC INTEGRATED INSPECTION
REPORT 05000341/2012002

Dear Mr. Davis:

On March 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Fermi Power Plant, Unit 2. The enclosed inspection report documents the inspection results which were discussed on April 11, 2012, with Mr. T. Conner, Plant Manager, 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.

No NRC-identified or self-revealing findings were identified during this inspection.

However, two licensee-identified violations which were determined to be of very low safety significance are listed in Section 4OA7 of this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, 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 NRC Resident Inspector at the Fermi Power Plant.

J. Davis

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Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000341/2012002
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: 05000341/2012002

Licensee: Detroit Edison Company

Facility: Fermi Power Plant, Unit 2

Location: Newport, MI

Dates: January 1 through March 31, 2012

Inspectors: R. Morris, Senior Resident Inspector
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Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000341/2012002; 1/1/2012 – 3/31/2012; Fermi Power Plant, Unit 2; Routine Integrated Inspection Report.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. 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

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Public Radiation Safety

No findings were identified.

B. Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Fermi Unit 2 operated at 100 percent power until March 25, 2012, at which time operators initiated shutdown for refueling outage 15. The unit remained in shutdown for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition – High Wind Conditions

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for March 8, 2012, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On March 7, 2012, the inspectors walked down the switchyard area, in addition to the licensee's emergency alternating current power systems, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of corrective action program items to verify the licensee-identified adverse weather issues at an appropriate threshold and dispositioned them through the corrective action program in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition 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:

- Division 2 core spray system;
- Control rod drive system; and
- Standby feedwater system.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (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 corrective action program with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

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

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:

- Reactor building sub-basement and basement, division 2 residual heat removal (RHR) pump room;
- Auxiliary building, second floor mezzanine, cable spreading room;
- Auxiliary building, second floor, cable tray area;

- Turbine building, first floor, north and south reactor feedwater pump rooms; and
- Turbine building, second floor, 3/4/5N feedwater heater 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 corrective action program. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of emergency diesel generator (EDG) 11 jacket cooling, air cooling, and lube oil cooling heat exchangers to verify potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. Documents reviewed for this inspection are listed in the Attachment to this document.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On January 24, 2012, 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 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

- a. On March 25-26, 2012, the inspectors observed activities in the control room during a power reduction to shutdown for the refueling outage. This was an activity that required heightened awareness or was related to increased risk. 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 procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance, and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11.

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:

- P4200, reactor building closed cooling water system;
- CARD 10-29052 (Scoping of P7900 noble metal chemistry system); and
- N3021, unitized actuators.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in or could have resulted in valid or invalid system transients 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 corrective action program with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three 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 emergency equipment service water (EESW) and standby feedwater work;
- Risk during EDG 11 safety system outage (SSO) for 2-year preventative maintenance (PM);
- Risk during division 1 Instrumentation and Control (I and C) emergency core cooling system (ECCS) surveillances, reactor core isolation cooling (RCIC) motor operated valve (MOV) outage, division 1 non-interruptible instrument air SSO, and EDG 11 surveillance;
- Risk during high pressure safety injection (HPSI) SSO and division 2 EECW work; and
- Risk during start of refueling outage.

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

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 Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- CARD 11-30831 (Fire seals T2225X1051(V-253) and T2225X1052(V253) failed 28.507.05);
- CARD 12-20138 (Combustible loading evaluation of interim installation condition for EDG cable replacement in Engineering Design Package (EDP) 35607);
- CARD 12-20207 (NRC Concern – Transport scaffold material through a control room emergency filtration boundary door);
- CARD 12-21428 (H₂O₂ sample pump returned to service with discharge tubing not reinstalled);
- CARD 12-21134 (Evaluate OE35219 for applicability to Fermi); and
- CARD 11-29253 (Operational Decision Making Issues (ODMI) for main unit turbine 2B pump 1 out of service).

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 six samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- TM 12-0001 (Supply temporary power to distribution cabinet 72K-2D and diesel fire pump control panel H21P458).

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify the modification did not affect the operability or availability of the affected system. The inspectors, as applicable, observed ongoing and completed work activities to ensure the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted one temporary modification sample plant modification sample 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 activities to verify procedures and test activities were adequate to ensure system operability and functional capability:

- WO 32700518 (Replace compressed air pressure controller);
- Post-Maintenance Testing (PMT) EDG 11 following 2-year preventive maintenance;
- WO 32786762 (Install replacement for condenser pressure switch);
- WO 24230708 (Replacement of tin whisker susceptible Rosemount 710DU MTU);
- EDG 11 run after water jacket cooling leaks; and
- Replacement of main steam line low pressure trip unit (Channel D) after surveillance failure.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various

NRC generic communications to ensure the test results adequately ensured the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings 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 refueling outage (RFO), beginning March 26, 2012, 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 TS.
- Licensee fatigue management, as required by 10 CFR Part 26, Subpart I.
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage.
- Licensee identification and resolution of problems related to RFO activities.

This inspection constituted one RFO 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:

- WO 31444126 (Perform 44.010.072 RPS – Scram Discharge Volume High Water Level, Trip System B, Channel Functional Test) (routine);
- Procedure 24.203.02 Section 5.2, (Division 1 CSS Simulated Automatic Actuation Test) (routine);
- WO 31579205 (Perform 24.307.36 DGSW, SFOT and Starting Air) (IST);
- Procedure 24.307.32 (EDG 13 Start from the Control Room) (routine);
- Procedure 24.307.30 (EDG 11 Start from the Control Room) (routine);
- WO 31785615 (Perform 24.321.07, Operability of 480V Swing Bus 72CF Automatic Throwover Scheme) (routine); and
- CR 10-35 (Friction Testing, Insert and Withdrawal Stall Flow Measurement) (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 USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;

- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, 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 corrective action program.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted six routine surveillance testing samples and one inservice testing sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

This inspection constituted one complete sample as defined in IP 71124.06-05.

.1 Inspection Planning and Program Reviews (02.01)

Event Report and Effluent Report Reviews

a. Inspection Scope

The inspectors reviewed the radiological effluent release reports issued since the last inspection to determine if the reports were submitted as required by the Offsite Dose Calculation Manual/TSSs. The inspectors reviewed anomalous results, unexpected trends, or abnormal releases identified by the licensee for further inspection to determine if they were evaluated, entered in the corrective action program, and adequately resolved.

The inspectors identified radioactive effluent monitor operability issues reported by the licensee as provided in effluent release reports, to review these issues during the onsite inspection, as warranted, given their relative significance and determine if the issues were entered into the corrective action program and adequately resolved.

b. Findings

No findings were identified.

.2 Offsite Dose Calculation Manual and Updated Final Safety Analysis Report Review

a. Inspection Scope

The inspectors reviewed Updated Final Safety Analysis Report descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths so they could be evaluated during inspection walkdowns.

The inspectors reviewed changes to the Offsite Dose Calculation Manual made by the licensee since the last inspection against the guidance in NUREG-1301, 1302 and 0133, and Regulatory Guides 1.109, 1.21 and 4.1. When differences were identified, the inspectors reviewed the technical basis or evaluations of the change during the onsite inspection to determine whether they were technically justified and maintain effluent releases as-low-as-is-reasonably-achievable.

The inspectors reviewed licensee documentation to determine if the licensee has identified any non-radioactive systems that have become contaminated as disclosed either through an event report or the Offsite Dose Calculation Manual since the last inspection. This review provided an intelligent sample list for the onsite inspection of any 10 CFR 50.59 evaluations and allowed a determination if any newly contaminated systems have an unmonitored effluent discharge path to the environment, whether any required Offsite Dose Calculation Manual revisions were made to incorporate these new pathways and whether the associated effluents were reported in accordance with Regulatory Guide 1.21.

b. Findings

No findings were identified.

.3 Groundwater Protection Initiative Program

a. Inspection Scope

The inspectors reviewed reported groundwater monitoring results and changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

b. Findings

No findings were identified.

.4 Procedures, Special Reports, and Other Documents

a. Inspection Scope

The inspectors reviewed Licensee Event Reports, event reports and/or special reports related to the effluent program issued since the previous inspection to identify any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

The inspectors reviewed effluent program implementing procedures, particularly those associated with effluent sampling, effluent monitor set-point determinations, and dose calculations.

The inspectors reviewed copies of licensee and third party (independent) evaluation reports of the effluent monitoring program since the last inspection to gather insights into the licensee's program and aid in selecting areas for inspection review (smart sampling).

b. Findings

No findings were identified.

.5 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down selected components of the gaseous and liquid discharge systems to evaluate whether equipment configuration and flow paths align with the documents reviewed in 02.01 above and to assess equipment material condition. Special attention was made to identify potential unmonitored release points (such as open roof vents in boiling water reactor turbine decks, temporary structures butted against turbine, auxiliary or containment buildings), building alterations which could impact airborne, or liquid effluent controls, and ventilation system leakage that communicates directly with the environment.

For equipment or areas associated with the systems selected for review that were not readily accessible due to radiological conditions, the inspectors reviewed the licensee's material condition surveillance records, as applicable.

The inspectors walked down filtered ventilation systems to assess for conditions such as degraded high-efficiency particulate air /charcoal banks, improper alignment, or system installation issues that would impact the performance or the effluent monitoring capability of the effluent system.

As available, the inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent (including sample collection and analysis) to evaluate whether appropriate treatment equipment was used and the processing activities align with discharge permits.

The inspectors determined if the licensee has made significant changes to their effluent release points, e.g., changes subject to a 10 CFR 50.59 review or require NRC approval of alternate discharge points.

As available, the inspectors observed selected portions of the routine processing and discharge liquid waste (including sample collection and analysis) to determine if appropriate effluent treatment equipment is being used and that radioactive liquid waste is being processed and discharged in accordance with procedure requirements and aligns with discharge permits.

b. Findings

No findings were identified.

.6 Sampling and Analyses (02.03)

a. Inspection Scope

The inspectors selected effluent sampling activities, consistent with smart sampling, and assessed whether adequate controls have been implemented to ensure representative samples were obtained (e.g. provisions for sample line flushing, vessel recirculation, composite samplers, etc.)

The inspectors selected effluent discharges made with inoperable (declared out of service) effluent radiation monitors to assess whether controls were in place to ensure compensatory sampling was performed consistent with the radiological effluent TSs/Offsite Dose Calculation Manual and that those controls were adequate to prevent the release of unmonitored liquid and gaseous effluents.

The inspectors determined whether the facility was routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory comparison program to evaluate the quality of the radioactive effluent sample analyses and assessed whether the inter-laboratory comparison program includes had-to-detect isotopes as appropriate.

b. Findings

No findings were identified.

.7 Instrumentation and Equipment (02.04)

Effluent Flow Measuring Instruments

a. Inspection Scope

The inspectors reviewed the methodology the licensee uses to determine the effluent stack and vent flow rates to determine if the flow rates were consistent with radiological effluent TSs/Offsite Dose Calculation Manual or Updated Final Safety Analysis Report values, and that differences between assumed and actual stack and vent flow rates did not affect the results of the projected public doses.

b. Findings

No findings were identified.

.8 Air Cleaning Systems

a. Inspection Scope

The inspectors assessed whether surveillance test results since the previous inspection for TS required ventilation effluent discharge systems (high-efficiency particulate air and charcoal filtration), such as the standby gas treatment system and the containment/auxiliary building ventilation system, met TS acceptance criteria.

b. Findings

No findings were identified.

.9 Dose Calculations (02.05)

a. Inspection Scope

The inspectors reviewed all significant changes in reported dose values compared to the previous radiological effluent release report (e.g., a factor of 5, or increases that approach Appendix I criteria) to evaluate the factors which may have resulted in the change.

The inspectors reviewed radioactive liquid and gaseous waste discharge permits to assess whether the projected doses to members of the public were accurate and based on representative samples of the discharge path.

Inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides are included within detectability standards. The review included the current Part 61 analyses to ensure hard-to-detect radionuclides are included in the source term.

The inspectors reviewed changes in the licensee's offsite dose calculations since the last inspection to evaluate whether changes were consistent with the Offsite Dose Calculation Manual and Regulatory Guide 1.109. Inspectors reviewed meteorological dispersion and deposition factors used in the Offsite Dose Calculation Manual and effluent dose calculations to evaluate whether appropriate factors were being used for public dose calculations.

The inspectors reviewed the latest Land Use Census to assess whether changes (e.g., significant increases or decreases to population in the plant environs, changes in critical exposure pathways, the location of nearest member of the public or critical receptor, etc.) have been factored into the dose calculations.

For the releases reviewed above, the inspectors evaluated whether the calculated doses (monthly, quarterly, and annual dose) are within the 10 CFR Part 50, Appendix I, and TS dose criteria.

The inspectors reviewed, as available, records of any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc.) to ensure the abnormal discharge was monitored by the discharge point effluent monitor. Discharges made with inoperable effluent radiation monitors, or unmonitored leakages were reviewed to ensure an evaluation was made of the discharge to satisfy 10 CFR 20.1501 so as to account for the source term and projected doses to the public.

b. Findings

No findings were identified.

.10 Groundwater Protection Initiative Implementation (02.06)

a. Inspection Scope

The inspectors reviewed monitoring results of the Groundwater Protection Initiative to determine if the licensee had implemented its program as intended and to identify any anomalous results. For anomalous results or missed samples, the inspectors assessed whether the licensee had identified and addressed deficiencies through its corrective action program.

The inspectors reviewed identified leakage or spill events and entries made into 10 CFR 50.75 (g) records. The inspectors reviewed evaluations of leaks or spills and reviewed any remediation actions taken for effectiveness. The inspectors reviewed onsite contamination events involving contamination of ground water and assessed whether the source of the leak or spill was identified and mitigated.

For unmonitored spills, leaks, or unexpected liquid or gaseous discharges, the inspectors assessed whether an evaluation was performed to determine the type and amount of radioactive material that was discharged by:

- assessing whether sufficient radiological surveys were performed to evaluate the extent of the contamination and the radiological source term and assessing whether a survey/evaluation had been performed to include consideration of hard-to-detect radionuclides; and
- determining whether the licensee completed offsite notifications, as provided in its Groundwater Protection Initiative implementing procedures.

The inspectors reviewed the evaluation of discharges from onsite surface water bodies that contain or potentially contain radioactivity, and the potential for ground water leakage from these on-site surface water bodies. The inspectors assessed whether the licensee was properly accounting for discharges from these surface water bodies as part of their effluent release reports.

The inspectors assessed whether on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year were documented in the Annual Radiological Environmental Operating Report for the radiological environmental monitoring program or the Annual Radiological Effluent Release Report for the Radiological Effluent TSs.

For significant, new effluent discharge points (such as significant or continuing leakage to ground water that continues to impact the environment if not remediated), the inspectors evaluated whether the Offsite Dose Calculation Manual was updated to include the new release point.

b. Findings

No findings were identified.

.11 Problem Identification and Resolution (02.07)

a. Inspection Scope

Inspectors assessed whether problems associated with the effluent monitoring and control program were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program. In addition, they evaluated the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving radiation monitoring and exposure controls.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07)

This inspection constituted one complete sample as defined in IP 71124.07-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the annual radiological environmental operating reports and the results of any licensee assessments since the last inspection to assess whether the radiological environmental monitoring program was implemented in accordance with the TSs and Offsite Dose Calculation Manual. This review included reported changes to the Offsite Dose Calculation Manual with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the Offsite Dose Calculation Manual to identify locations of environmental monitoring stations.

The inspectors reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audit results of the program to assist in choosing inspection "smart samples" and audits and technical evaluations performed on the vendor laboratory program.

The inspectors reviewed the annual effluent release report and the 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," report, to determine if the licensee was sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

b. Findings

No findings were identified.

.2 Site-Inspection (02.02)

a. Inspection Scope

The inspectors walked down select air sampling stations and thermoluminescent dosimeter monitoring stations to determine whether they were located as described in the Offsite Dose Calculation Manual and to determine the equipment material condition. Consistent with smart sampling, the air sampling stations were selected based on the locations with the highest X/Q, D/Q wind sectors, and thermoluminescent dosimeters were selected based on the most risk-significant locations (e.g., those that have the highest potential for public dose impact).

For the air samplers and thermoluminescent dosimeters selected, the inspectors reviewed the calibration and maintenance records to evaluate whether they demonstrated adequate operability of these components. Additionally, the review included the calibration and maintenance records of select composite water samplers.

The inspectors assessed whether the licensee had initiated sampling of other appropriate media upon loss of a required sampling station.

The inspectors observed the collection and preparation of environmental samples from different environmental media (e.g., ground and surface water, milk, vegetation, sediment, and soil) as available to determine if environmental sampling was representative of the release pathways as specified in the Offsite Dose Calculation Manual and if sampling techniques were in accordance with procedures.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and licensee procedures. The inspectors assessed whether the meteorological data readout and recording instruments in the control room and, if applicable, at the tower were operable.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the annual environmental monitoring report. The inspectors selected events that involved a missed sample, inoperable sampler, lost thermoluminescent dosimeter, or anomalous measurement to determine if the licensee had identified the cause and had implemented corrective actions. The inspectors reviewed the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection) and reviewed the associated radioactive effluent release data that was the source of the released material.

The inspectors selected structures, systems, or components that involve or could reasonably involve licensed material for which there is a credible mechanism for licensed material to reach ground water, and assessed whether the licensee had implemented a sampling and monitoring program sufficient to detect leakage of these structures, systems, or components to ground water.

The inspectors evaluated whether records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection were retained in a retrievable manner.

The inspectors reviewed any significant changes made by the licensee to the Offsite Dose Calculation Manual as the result of changes to the land census, long-term meteorological conditions (3-year average), or modifications to the sampler stations since the last inspection. They reviewed technical justifications for any changed sampling locations to evaluate whether the licensee performed the reviews required to ensure the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors assessed whether the appropriate detection sensitivities with respect to TSs/Offsite Dose Calculation Manual were used for counting samples (i.e., the samples meet the TSs/Offsite Dose Calculation Manual required lower limits of detection). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance. The licensee uses a vendor laboratory to analyze the radiological environmental monitoring program samples so the inspectors reviewed the results of the vendor's quality control program, including the inter-laboratory comparison, to assess the adequacy of the vendor's program.

The inspectors reviewed the results of the licensee's inter-laboratory comparison program to evaluate the adequacy of environmental sample analyses performed by the licensee. The inspectors assessed whether the inter-laboratory comparison test included the media/nuclide mix appropriate for the facility. If applicable, the inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the radiological environmental monitoring program.

b. Findings

No findings were identified.

.3 Identification and Resolution of Problems (02.03)

a. Inspection Scope

The inspectors assessed whether problems associated with the radiological environmental monitoring program were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's corrective action program. Additionally, they assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved the radiological environmental monitoring program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours (1E01)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator for the period from the first quarter 2011 through the fourth quarter 2011. 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, issue reports, event reports and NRC Inspection Reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications (1E03)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications performance indicator for the period from the first quarter 2011 through the fourth quarter 2011. 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, event reports and NRC Integrated Inspection Reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams with complications sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Unplanned Transients per 7000 Critical Hours (1E04)

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours performance indicator for the period from the first quarter 2011 through the fourth quarter 2011. 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, maintenance rule records, event reports and NRC Integrated Inspection Reports for the period of January 2011 through December 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned transients per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings were identified.

40A2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.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 corrective action program 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 corrective action program 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 corrective action program. 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 Selected Issue Follow-Up Inspection: CARD 11-26699 (Operational Excellence Plan)

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting the operations excellence plan and the corrective actions associated with the plan. Some of the inputs for the excellence plan are the INPO assessment and the NRC observations and inspection reports. The inspectors reviewed the excellence plan and the associated inputs to determine if the issues identified by the outside sources were reflected correctly in the plan. The inspectors also reviewed the plan to determine if the corrective actions were adequate to correct the issues identified both in the short term and provide a method to prevent the issue from reoccurring.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Observations

The inspectors determined the plan's corrective actions were effective and the plan was adequate. One area of concern was the apparent lack of a mechanism for an effectiveness review of the various areas and tracking of the completed issues over a long period of time in the plan. The excellence plan is a living document and as such will change as issues are corrected and new issues are identified. The inspectors discussed this concern with the licensee and the licensee provided the site excellence plan

overview document for all departments that provides for tracking and review process for issues that have been completed in each individual department plan.

c. Findings

No findings were identified.

.4 CARD 11-30357 (HCU 10-35, CR 10-35; Root Cause Evaluation)

a. Inspection Scope

During a review of items entered in the licensee's corrective action program, the inspectors recognized a corrective action item documenting that control rod 10-35 failed to fully insert during scram time testing. The times were greater than TS limits and the rod was fully inserted until the refueling outage. The investigation will not be completed until later in the refueling outage in April 2012. Therefore this inspection will be carried over into the second quarter

b. Findings

This review will continue into the second quarter during the refueling outage.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

4OA5 Other Activities

.1 Temporary Instruction – 2515/182 – Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, Nuclear Energy Institute (NEI) 09-14, "Guideline for the Management of Buried Piping Integrity" (ADAMS Accession No. ML 1030901420) to describe the goals and actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML 110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued Temporary Instruction (TI)-2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks" to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe, underground piping and tanks in accordance with TI-2515/182 to determine if the program attributes and completion dates identified in Sections 3.3 A and 3.3 B of NEI 09-14 Revision 1 were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes with completion dates that had passed, the inspectors reviewed records to determine if the attribute was in fact complete and to

determine if the attribute was accomplished in a manner which reflected good or poor practices in program management.

Based upon the scope of the review described above, Phase 1 of TI-2515/182 was completed.

b. Observations

The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraphs 03.01a through 03.01.c of TI-2515/182 and was found to meet all applicable aspects of NEI 09-14 Revision 1, as set forth in Table 1 of the TI.

c. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 11, 2012, the inspectors presented the inspection results to Mr. T. Conner, Plant Manager, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks (TI-2515/182) with Ms. J. Ford, Manager, Performance Engineering, and other members of the licensee staff on February 15, 2012.
- The inspection results for the areas of radioactive gaseous and liquid effluent treatment; and radiological environmental monitoring with Mr. T. Conner, Plant Manager, on February 17, 2012.

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.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

- TS 5.4.1 requires the licensee to establish, implement, and maintain applicable written procedures for the safety-related systems and activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. Section 9.a, "Procedures for Performing Maintenance," of Regulatory Guide 1.33, Revision 2, Appendix A, further states, in part, that: "Maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in

accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.” Revision 20 of the licensee’s Work Conduct Manual, MWC10, “Work Package Preparation,” describes requirements for configuration control. Step 4.10.2.3.e states, “Upon completion of the maintenance activity or prior to completing the work package (work activity), all temporary alterations shall be removed and the equipment/SSCs shall be returned to the ‘As-Designed’ condition.” Contrary to the above, on February 22, 2012, the licensee failed to properly restore the configuration of Division 1 H₂O₂ sample pump following maintenance. Specifically, the pump discharge tubing hoses were left unconnected causing the system to trip when it was attempted to be restarted.

The inspectors reviewed this issue using the guidance contained in Appendix B, “Issue Screening,” of Inspection Manual Chapter 0612, “Power Reactor Inspection Reports.” The inspectors determined the violation was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Configuration Control and affected the cornerstone objective of providing reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the as-found condition of the H₂O₂ sample pump discharge tubing potentially introduced a leakage path from the primary containment to the secondary containment. The inspectors evaluated the finding using IMC 0609, Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” using the Phase 1 Significance Determination Process worksheet for the Barrier Integrity Cornerstone. The finding screened as very low safety significance (Green) because the inspectors answered “No” to the screening questions under the Containment Barrier column of Table 4a. Specifically, because maintenance had installed Swagelok fittings on the ends of the discharge tubing, an actual open pathway in the physical integrity of the primary containment did not exist. The licensee had entered this issue into their corrective action program as CARD 12 21428. A local leak rate test was performed for the as-found condition which measured the leakage at 28.1 scfh (standard cubic feet per hour), which added a small amount to the existing primary containment total leakage rate (70.44 scfh). The total leakage rate remained below the TS 3.6.1.1 limit of La (296.3 scfh).

- TS 3.3.1.2, Table 3.3.1.2-1 requires functional testing of TS 3.3.1.2. Table 3.3.1.2-1 requires functional testing of the source range monitors (SRMs) to be conducted within 12 hours following shutdown. Enclosure A, Section 2.E.1 of MWC 13, “Outage Nuclear Safety” specifies requirements that, in Mode 4, at least three SRM channels are maintained operable. Enclosure D, “Risk Assessment,” of MWC 13 requires written risk management actions to operate with less than three operable SRMs. Contrary to the above, on March 26, 2012, the licensee’s operators failed to properly assess the risk impact of losing three SRMs in Mode 4 due to a failure of the SRM drive-in pushbutton in accordance with Title 10 CFR 50.65(a)(4). Specifically, the licensee did not properly recognize the risk impact on the outage defense-in-depth requirements of declaring three SRMs inoperable that led to orange nuclear safety risk for reactivity management.

The inspectors reviewed this issue using the guidance contained in Appendix B, “Issue Screening,” of IMC 0612, “Power Reactor Inspection Report.” The

inspectors determined the violation was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Configuration Control and was similar to the not-minor-if statement of example 4.e of IMC 0612, Appendix E, "Examples of Minor Issues." Specifically, the inoperability of three SRMs placed the overall plant risk in a higher licensee-established risk category. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The finding screened as very low safety significance (Green).

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Conner, Plant Manager
M. Caragher, Director, Nuclear Engineering
J. Ford, Manager, Performance Engineering
R. LaBurn, Radiation Protection Manager
J. Pendergast, Principal Engineer, Licensing
R. Salmon, Acting Licensing Manager
K. Scott, Director, Organizational Effectiveness

Nuclear Regulatory Commission

J. Cameron, Chief, Reactor Projects Branch 6

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

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

1R01 – Adverse Weather Protection

- CARD 12-21945; Plant transient due to loss of Monroe-Custer line; 03/13/2012

1R04 – Equipment Alignment

- CARD 10-28228-02; Evaluate cable tunnel CO2 system; 10/22/2010
- Drawing 6M721-5703-1; Control Rod Drive System Functional Operating Sketch; Revision AD
- Drawing 6M721-5703-2; Control Rod Drive Scram Discharge System Functional Operating Sketch; Revision R
- Drawing 6M721-5707; Core Spray System Functional Operating Sketch; Revision AD
- Drawing 6M721-5715-3; Standby Feedwater System Functional Operating Sketch; Revision N
- Procedure 23.106, Attachment 2; Control Rod Drive Hydraulic System Electrical Lineup
- Procedure 23.106, Attachment 5; Control Rod Drive Hydraulic System HCU Electrical Lineup

1R05 – Fire Protection

- CARD 10-28228; 2010 FPSA Concern – Investigate the manual carbon dioxide suppression and automatic detection of the auxiliary building cable tunnel; 09/17/2010
- CARD 10-28228-02; Evaluate cable tunnel CO2 system; 10/22/2010
- CARD 10-28228-03; Evaluate FPEE-09-0046; 10/22/2010
- CARD 11-30831; Fire seals T2225X1051(V-252) and T2225X1052(V-253) failed 28.507.05; 12/08/2011
- CARD 12-22400; NRC concern, Paint coating on floor between heaters 4 and 5 damaged; 03/29/2012
- Chemetron Fire Systems; Low Pressure Carbon Dioxide Flow Calculations, Cable Tunnels A and B, Job No. FL-425686; 12/13/1982
- Drawing 6A721-2401; Fire Protection Evaluation Reactor Building Sub-Basement Plan, EL. 540'-0"; Revision L
- Drawing 6A721-2402; Fire Protection Evaluation Reactor and Auxiliary Buildings Basement Plan, EL. 562'-0"; Revision P
- Drawing 6A721-2405; Fire Protection Evaluation Reactor and Auxiliary Buildings Second Floor Plan, EL. 613'6"; Revision Y
- Drawing 6A721-2406; Fire Protection Evaluation Reactor and Auxiliary Buildings Cable Spreading Area Plan, EL. 630'-6"; Revision N
- Drawing 6A721-2413; Fire Protection Evaluation Turbine Building-First Floor Plan, EL. 583'6"; Revision K
- Drawing 6I721-2868-3; Installation, Fire Detection System, Cable Spreading Room, Zone 11; Revision H
- Drawing 6I721-2868-13; Installation—Fire Detection System, Reactor Building 2nd Floor, EL. 613'6"; Revision N
- Drawing 6I721-2878-21; Installation Fire Detection System North Half, 1st Floor, EL. 583'6" Turbine Building. – Zone 19; Revision A

- Drawing 6I721-2878-22; Installation Fire Detection North Half 2nd Floor, El. 613'6", Turbine Building Zone 20; Revision B
- Drawing 6I721-2878-25; Installation Fire Detection System South Half First Floor, EL. 583'6" Turbine Building. – Zone 19; Revision E
- 6M721-5078; Low Pressure CO2 General Arrangement Auxiliary Building, El. 613'6"; Revision H
- Drawing 6M721-5733-3; CO2, Halon & FM-200 Fire Detection System RWB, AUX, Service Building, Guardhouse and RHR Complex; Revision L
- Letter - Detroit Edison to US NRC, EF2-61,562, 03138 208; Changes in Provisions for Plant Fire Protection; 03/01/1983
- Letter – NRR to Detroit Edison Company, TAC No. MB2832; Fermi 2 – Issuance of Amendment Re: Revision to Control Room Emergency Filtration System Requirements; 06/28/2002
- Procedure 28.502.19, Enclosure C; Planning and Preparation; 09/28/2003
- Procedure 28.502.19, Enclosure D; Impact Statement; 12/16/2009
- Procedure FP-RB-SB-3a, Reactor Building Sub-Basement Southwest Corner Room, Zone 3, El 540'0"; Revision 4

1R07 – Annual Heat Sink Performance

- CARD 12-20434; Findings of EDG 11 heat exchanger inspections – January 2012; 01/18/2012
- Design Calculation Number DC-5804; DGSW Design Basis Requirements Calculation; Volume Number 1, Revision E, 08/31/2006
- Heat Exchanger Inspection Report; EDG 11 Air Coolant HX; 01/17/2012
- Heat Exchanger Inspection Report; EDG 11 Jacket Coolant HX; 01/17/2012
- Heat Exchanger Inspection Report; EDG 11 Lube Oil HX; 01/17/2012

1R11 – Licensed Operator Requalification Program

- Evaluation Scenario SS-OP-904-1201, Revision 2; 01/18/2012

1R12 – Maintenance Effectiveness

- CARD 10-29052; Review P7900 for maintenance rule scoping; 10/11/2010
- CARD 12-20244; Leak coming from west RBCCW HX; 01/10/2012
- Drawing 6M721-5358; Reactor building closed cooling water; Revision AE
- EDP-36240; On-Line Noble Chemistry Injection Skid Implementation Related Plant Changes; Revision A, 10/14/2010
- EDP-36241; On-Line Noble Chemistry Mitigation Monitoring System; Revision O, 06/30/2010
- FSD P42-00-SD; Functional System Description for Reactor Building Closed Cooling Water System; Revision 2, 03/1985
- Get-Well Plan SSC: N3021 – Turbine Valve Unitized Actuators; 09/19/2011
- Maintenance Rule Functional Failure Evaluation; P4200; Version 1, 01/24/2012
- Maintenance Rule Scope Determination for SSCs; SSC PIS No. P7900; On-Line Noble Metal Injection; 12/14/2011

1R13 – Maintenance Risk Assessments and Emergent Work Control

- Drop/Add List for Week of 02/27/2012
- Fermi 2 Plan of the Day; 01/09-13/2012; 01/17-20/2012, 02/10/2012, 02/13-17/2012

- Scheduled Risk Profile Summary; Week of 01/09/2012
- Scheduler's Evaluation for Fermi 2; 1/17-20/2012, 02/13-17/2012

1R15 – Operability Evaluations

- CARD 11-29253; 2B MUT transformer pump #1 tripping breaker; 10/11/2011
- CARD 11-30831; Fire seals T2225X1051(V-252) and T2225X1052(V-253) failed 28.507.05; 12/08/2011
- CARD 12-20138; NRC Concern – Combustible loading evaluation of interim installation condition for EDG cable replacement in EDP 35607; 01/05/2012
- CARD 12-20207; NRC Concern – Transport scaffold material thru a control center pressure boundary door; 01/09/2012
- CARD 12-21134; Evaluate OE35219 (Preliminary-Automatic reactor trip and loss of offsite power due to failed switchyard insulator) for applicability to Fermi; 2/10/2012
- CARD 12-21428; Division 1 H2/O2 T50 gas sample pump found not properly tubed; 02/22/2012
- Fire Protection Engineering Evaluation FPPE-11-0007; Evaluation of Penetrations V-252 and V-253 and the Acceptability of the Fire Dampers T4100F088 and T4100F089 in the Cable Spreading Room; 12/15/2011
- Functional Failure DOC 1359883; During performance of surveillance 28.507.05 fire seals T2225X1051 and T2205X1052 failed visual inspection criteria; 12/20/2011
- Functional Failure Evaluation Checklist 111208-01; CARD 11-30831-01
- ISI/NDE-IST Program Evaluation Sheet; Log No. 12-002; Leakage Evaluation of Division 1 of Primary Containment Monitoring System (Sample Pump T5000C002A); 02/23/2012
- Maintenance Rule Functional Failure Evaluation; Number 1359883; Evaluation for CARD #11-30831; 12/20/2011
- Procedure MOP05; Control of Equipment; Revision 40
- Procedure ODE-2; Operations Conduct; Revision 27
- Procedure ODE-11; CARD Operability/Reportability Determination Expectations; Revision 9
- TS Task Force TSTF-287-A; Improved Standard Technical Specifications Change Traveler; Revision 5
- WO 31520016; Replace T5000C002A Pump Required by NE-6.6-EQMS,005; 07/16/2010

1R18 – Plant Modifications

- Temporary Modification 12-0001; Supply Temporary Power to Distribution Cabinet 72K-2D and Diesel Fire Pump Control Panel H21P458 to Maintain Functionality of the Diesel Fire Pump and Provide GSW Lighting; Revision 0, 02/03/2012

1R19 – Post-Maintenance Testing

- CARD 11-30405; Two AFC spec sheets in CECO for N30N216A, N30N216B, N30N218A, N30N218B; 11/21/2011
- CARD 12-00292; EDG 11 lube oil return temperature indicator has cracked glass; 01/21/2012
- CARD 12-20405; Foreign material: bolt thread in EDG 11 exhaust manifold; 01/17/2012
- CARD 12-20453; Failure of the calibration of HQS-1 0-50" H2O differential module (PG-852-M), on work completed by work group #4, mechanical maintenance; 01/19/2012
- CARD 12-20521; NRC concern – CARD 12-20453 reviewed without attached supporting documents; 01/22/2012
- CARD 12-20566; Two fuel leaks identified during the governor venting run; 01/23/2012
- CARD 12-20567; Jacket coolant leaks; 01/23/2012

- CARD 12-20740; CCHVAC emergency make-up air filter flow switches set to wrong setpoint; 01/27/2012
- CARD 12-20754; As-built posting not used during instrument calibrations of flow switch R30N569A; 01/29/2012
- CARD 12-20822; Technical requirements for PM R276 not met; 01/31/2012
- CARD 12-21091; Failure of new Rosemount master trip unit; 02/09/2012
- CARD 12-21410; EDG procedure enhancement recommendation; 02/22/2012
- CARD 12-21411; Voltage not able to be adjusted on EDG-11; 02/22/2012
- CARD 12-21682; During 44.020.030 NS4 main steam line pressure, trip system B, CH D Cal/Func. MTU B21N676D failed the input resistor check on table 2; 03/02/2012
- Drawing 6M721-5734; Emergency Diesel Generator System Functional Operating Sketch; Revision BC
- Procedure 23.307; Emergency Diesel Generator System; Revision 116
- Procedure 24.307.45; Emergency Diesel Generator 11 – Fast Start Followed by Load Reject; Revision 15
- Procedure 35.307.004; Removal, Installation, and Setup of the Emergency Diesel Engine Governor and Governor Booster; Revision 43
- Record Search, N30N216A/B; 01/26/2012
- System Health Report; R30 System; Emergency Diesel Generator 11; 3rd Quarter 2011
- Technical Service Request TSR-29996; Evaluate Rosemount model 710DU as a replacement for model 510DU; Revision 0
- Temporary Change Notice T12218; 34.307.001; Emergency Diesel Generators – Inspection and Preventive Maintenance; Revision 75
- Temporary Change Notice T12225; 35.307.008; Emergency Diesel Generator – Engine General Maintenance; Revision 41
- WO 24230708; Replacement of Tin Whisker susceptible Rosemount 710DU MTUs; 04/17/07
- WO 31172657; Perform Jacket Coolant Hydro Test; 01/17/2012
- WO 32700518; Replace Compressed Air Pressure Controller Regulator P50F457; 01/10/2012
- WO 32786762; Install Replacements for Condenser Pressure Switches; 01/23/2012
- WO 34118863; MTU B21N676D Failed the Input Resistor Check during Performance of 44.020.030; 03/02/2012
- WR 34052647; Replace Jacket Coolant Exhaust Belt Bypass Fittings (Jumpers on OCS between Cylinders 9 and 10, and 10 and 11); 02/20/2012

IR20 – Outage

- CARD 12-21787; RFO 15 nuclear safety review schedule comments for operations; 03/06/2012
- CARD 12-21788; RFO15 nuclear safety review schedule comments for PSA; 03/06/2012
- CARD 12-21789; RFO 15 Outage Nuclear Safety Review Schedule Comments for Outage Management; 03/06/2012
- CARD 12-21790; RFO 15 nuclear safety review comments for performance engineering; 03/06/2012
- CARD 12-21791; RFO 15 nuclear safety review MWC 13 comments for outage management; 03-06-2012
- CARD 12-21792; RFO 15 nuclear safety review MWC 13 comments for reactor services; 03/06/2012
- CARD 12-22246; Steam leak on N22F411A; 03/26/2012
- CARD 12-22296; RFO 15 nuclear safety – reactivity management orange condition; 03/26/2012

- CARD 12-22356; NRC concern: Non-use of refuel bridge to guide heavy load path transit on RB5; 03/28/2012
- Comment Input Form Final; Wednesday, February 29, 2012
- Comment Input Form, Not Reviewed; Thursday, March 01, 2012
- Drawing 6C721-2802; Reactor Building 5th Floor Heavy Load Analysis Travel Pathway; Revision A
- Procedure 35.710.025, Section 4.15; Preparation to Remove Reactor Vessel Head; Revision 16
- WO 31842329; Perform 57.000.10, LPRM Operational Status (Remove from Service); 03/26/2012
- WO 33189511; Perform 44.010.100 Channel A SRM Functional Test with Rod Blocks; 03/25/2012

1R22 – Surveillance Testing

- CARD 11-30357; HCU 10-35; 11/18/2011
- CARD 12-21329; Expansion tank level rise on EDG-11; 02/17/2012
- Procedure 24.307.30; EDG 11 Start from the Control Room; Revision 37
- Procedure 24.307.32; Emergency Diesel Generator No. 13 – 24-Hour Run Followed by Hot Fast Restart; Revision 38
- Procedure 24.307.36; DGSW, DFOT and Starting Air Operability Test – EDG 13; Revision 49
- Procedure 24.321.07; Operability of 480v Swing Bus 72CF Automatic Throwover Scheme; Revision 10
- Procedure 44.010.072; RPS – Scram Discharge Volume High Water Level, Trip System B, Channel Functional Test; Revision 34
- WO 31038049; Perform 24.307.30 EDG 11 24-Hour Run Followed by Hot Fast Restart; 02/17/2012
- WO 31091746; Perform 24.307.32 EDG No. 13 24 Hour Run Followed By Hot Fast Restart; 02/02/2012
- WO 31417126; Perform 24.203.02 Sec-5.2 Division 1 CSS Simulated Automatic Actuation Test; 12/20/2011
- WO 31444126; Perform 44.010.072 RPS SDV High Water Level Trip System B Channel Functional Test; 01/06/2012
- WO 31579205; Perform 24.307.36 DGSW, DFOT and Starting Air Operability Test-EDG 13; 02/01/2012
- WO 31785615; Perform 24.321.07, 480v Swing Bus 72CF Automatic Throwover Scheme Operability; 03/14/2012
- WO 34044603; Perform 27.106.03 CRD Withdrawal Stall Flow for 10-35; 03/29/2012
- WO 34044688; Perform 27.106.03 CRD Insert Stall Flow Measurement for 10-35; 03/29/2012
- WO 34045380; Perform 57.000.14 Control Rod Friction Testing for 10-35; 03/29/2012

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

- Annual Re-evaluation of Femi 2 Alpha Source Term and Trends in Fermi 2 Nuclide Mixes; 09/12/2011
- Audit Report 10-0108; Quality Assurance Audit of the Radiological Effluents, Radiological Environmental Monitoring, and the Radioactive Material Transportation and Disposal Programs; 08/06/2010
- CARD 01-11089; Stack Flow Rates Not Subject to Regular Surveillance testing; 01/12/2001
- CARD 09-21093; Trend Turbine Building SPING Noble Gas Activity; 02/19/2009
- CARD 09-21666; Trend SPING Particulate Filter Activity for Possible cerium 141; 03/18/2009

- CARD 09-27429; Trend Increase in Activation Products in Reactor Building SPING Samples; 09/24/2009
- CARD 10-20621; Turbine Building HVAC Exhaust Radiation Monitoring Sample Points; 01/25/2010
- CARD 10-21461; F and J Specialty Products Iodine Sample Cartridges Contain Low Level Cobalt 60 Contamination
- CARD 10-21927; Turbine Building Single Fan HVAC System and Site Boundary Dose Impact; 03/04/2010
- CARD 10-24613; Turbine Building Roof Damaged; 06/06/2010
- CARD 10-24778; Elevated Iodine on Reactor Building SPING; 06/10/2010
- CARD 10-26544; Revise Annual Effluents Report to Include Precipitation Data; 07/30/2010
- CARD 10-26979; Increased Reactor Building Gaseous effluent Activity; 08/11/2010
- CARD 11-20542; Monthly Tritium Sample of Radwaste Building Ventilation Not Taken; 01/18/2011
- CARD 12-21296; NRC Identified Discrepancy with Annual Radioactive Effluent Release Report; 02/16/2012
- CARD 12-21299; Annual Effluent Report for 2010 Did Not Identify Hard to Detect Nuclides in December 1, 2010 Release; 02/16/2010
- CARD 12-21663, Evaluate Off Site Dose Calculation Manual Revision; 03/01/2012
- Fermi 2 – 2010 Annual Radioactive Effluent Release Report; 05/01/2011
- Fermi 2 Process Radiation Monitoring System 4th Quarter 2011 Health Report, Get Well Plan and Common Cause Analysis; 10/07/2011
- LCR 10-016-ODM; Licensing Change Request for Offsite Dose Calculation Manual; 12/20/2010
- NPRP 12-0012; Scaling Factor Report; 11/10/2011
- NUPIC Audit No. 22873, November 14 through 18, 2011, Duke/NUPIC Audit of GEL Laboratories; 12/02/2011
- Offsite Dose Evaluation for December 1, 2010; Abnormal Liquid Radioactive Release from Fermi 2; 01/06/2011
- Procedure 43.404.002; Standby Gas Treatment Filter Performance Test Division 2; Revision 39
- Procedure 67.000.502; Eberline SPING Radiation Monitors General Sampling; Revision 18
- SPC-13511; Set-point Calculation for Reactor Building SPING; 09/25/1992
- Update to Fermi 2 Special Decommission Document List; 11/02/2011

2RS7 Radiological Environmental Monitoring Program

- 2010 Annual Quality Assurance Report for the Radiological Environmental Monitoring Program (REMP), 02/15/2011
- Off-Site Dose Calculation Manual; Revision 20
- Procedure 62.000.201; Airborne Particulate and Iodine Sampling Using RADeCO Model AVS-28A Air Sampler; Revision 1
- Procedure 62.000.210; Aquatic Monitoring Sample Collection; Revision 4

4OA1 – Performance Indicator Verification

- PI: IE01 Unplanned Scrams per 7,000 Critical Hours; by month and by quarter 01/2010 – 12/2011
- PI: IE03 Unplanned Power Changes per 7,000 Critical Hours; by month and by quarter 01/2010 – 12/2011
- PI: IE04 Unplanned Scrams with Complications; by month and by quarter 01/2010 – 12/2011

4OA5 – Temporary Instruction (TI) 2515/182

- MES71, Fermi 2 Engineering Support Conduct Manual; Buried Pipe Inspection Program; Revision 1
- PIR 2011040, Conceptual Scope Document; Buried Pipe Inspections 2012 and 2013; 02/02/2012
- Report No. 1000128.402; Enrico Fermi Nuclear Generation Station Inspection Plan; Revision 2
- Report No. 1000128.403; APEC Survey – Fermi 2 Nuclear Generating Station, Inspection Date: August 1 to 12, 2011; Revision 0
- Report No. 1000128.404; Fermi 2 Nuclear Generating Station Buried Piping Risk Analysis Final Report; Revision 0
- Report for Fermi 2 - Year 2010 Annual Cathodic Protection System Evaluation; 09/30/2010
- TMIS 10-0106; Completion of NEI 09-014 Milestone 2 – Risk Ranking; 12/08/2010
- TMIS 11-0064; Buried Piping Program Self-Assessment; Revision 1

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ASME	American Society of Mechanical Engineers
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
HCU	Hydraulic Control Unit
HPCI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
MOV	Motor-Operated Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODMI	Operational Decision Making Issues
OSP	Outage Safety Plan
PARS	Publicly Available Records System
PI&R	Problem Identification and Resolution
PM	Preventative Maintenance
PMT	Post-Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RFO	Refueling Outage
RHR	Residual Heat Removal
scfh	standard cubic feet per hour
SSC	Systems, Structures, and Components
SSO	Safety System Outage
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

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Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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