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

May 10, 2011

EA-11-050

Mr. Timothy J. O'Connor
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company, Minnesota
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT NRC INTEGRATED AND POWER UPRATE REVIEW INSPECTION REPORT 05000263/2011002 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. O'Connor:

On March 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed integrated and power uprate inspections at your Monticello Nuclear Generating Plant. The enclosed report documents the inspection findings, which were discussed on April 5, 2011, with you 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, licensee-identified issues were discovered that involved violations of NRC requirements. These 10 CFR 50, Appendix R-related issues, discussed in Sections 1RO5.2 and 4OA3.4, were screened and determined to warrant enforcement discretion per Enforcement Guidance Memorandum (EGM) 09-002, "Enforcement Discretion for Fire Induced Circuit Failures." One additional licensee-identified violation is documented in Section 4OA7 of this report.

Based on the results of this inspection, one NRC-identified and one self-revealed finding of very low safety significance were identified. The findings each involved a violation of NRC requirements. However, because of their very low safety significance, and because the 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 Monticello Nuclear Generating 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 Monticello Nuclear Generating 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/***

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

Docket No. 50-263
License No. DPR-22

Enclosure: Inspection Report 05000263/2011002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

| | |
|---|---|
| Docket No: | 50-263 |
| License No: | DPR-22 |
| Report No: | 05000263/2011002 |
| Licensee: | Northern States Power Company, Minnesota |
| Facility: | Monticello Nuclear Generating Plant |
| Location: | Monticello, MN |
| Dates: | January 1 through March 31, 2011 |
| Inspectors: | S. Thomas, Senior Resident Inspector<br>P. Voss, Resident Inspector<br>P. Cardona-Morales, Resident Inspector, Acting<br>M. Phalen, Senior Health Physicist<br>C. Tilton, Senior Reactor Inspector<br>A. Dahbur, Senior Reactor Inspector<br>D. Jones, Reactor Inspector<br>N. Shah, Project Engineer |
| Approved by: | K. Riemer, Chief<br>Branch 2<br>Division of Reactor Projects |

Enclosure

**TABLE OF CONTENTS**

## SUMMARY OF FINDINGS

IR 05000263/2011002; 01/01/2011 – 03/31/2011; Monticello Nuclear Generating Plant, Refueling Outage Activities; Follow-Up of Events; and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings, one NRC-identified and one self-revealed, are documented in this report. These findings were considered non-cited violations (NCV) 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: Initiating Events

- Green. A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when the licensee failed to adequately implement the requirements of their fleet tagging procedure, a procedure affecting quality, during maintenance on the safety-related CST-88 'B' low pressure coolant injection (LPCI) fill line check valve. This failure resulted in an unintentional breach of the condensate service water (CSW) system and subjected workers to a potentially contaminated, pressurized water source. Additionally, at the time of the breach, the CSW system was one of the water sources being credited in support of the shutdown safety function of inventory control. The licensee entered this issue into the corrective ation program (CAPs 1275935 and 1275963) and took immediate corrective actions to restore the check valve to its installed configuration to terminate the water leakage. At the time of this report, the licensee had assembled a team to perform a root cause evaluation.

  The inspectors determined that the licensee's failure to adequately implement their tagging process to protect workers and equipment from the effects of breaching the pressurized CSW header during maintenance on a safety-related check valve was a performance deficiency because it was the result of the failure to meet a requirement, the cause was reasonably within the licensee's ability to foresee and correct, and should have been prevented. The inspectors screened the performance deficiency per IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because the performance deficiency could have reasonably been viewed as a precursor to a more significant event. In this instance, the performance deficiency resulted in an unintentional breach of the operating CSW system and subjected workers to a potentially contaminated, pressurized water source. Additionally, at the time of the breach, the CSW system was one of the water sources being credited in support of the shutdown safety function of inventory control. As a result, this finding was evaluated under the Initiating Events Cornerstone.
  The inspectors applied NRC IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination," Attachment 1, to this finding. The finding was determined to have very low safety significance because it did not adversely affect core heat removal, inventory control, power availability, containment

control, or reactivity guidelines. This finding has a cross-cutting aspect in the area of Human Performance, work control, because the licensee failed to appropriately plan work activities by incorporating job site conditions impacting plant systems and components (H.3(a)). (Section 1R20)

**Cornerstone: Barrier Integrity**

- Green. A finding of very low safety significance and associated NCV of Technical Specification 5.4, "Procedures," was identified by the inspectors when the licensee failed to implement the requirements of their foreign material exclusion (FME) and control procedure during new fuel receipt activities. Specifically, the inspectors observed two operators exiting and re-entering a Level 1 FME area, without the knowledge of the FME monitor, at a point that was not being controlled by the FME monitor. When informed of the issue, the licensee took corrective actions to address the issue.

  The inspectors determined that the licensee's failure to adequately implement the requirements of their FME control procedure during new fuel receipt activities to prevent the unmonitored access of two operators into a Level 1 FME area was a performance deficiency because it was the result of the failure to meet a requirement or a standard, the cause was reasonably within the licensee's ability to foresee and correct, and should have been prevented. The inspectors screened the performance deficiency per IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because it impacted the human performance attribute of the Barrier Integrity Cornerstone's objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors applied IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," to this finding. The inspectors utilized Column 3 of the Table 4a worksheet to screen the finding. Since the finding only had the potential to impact the fuel barrier, it screened to be of very low safety significance. This finding has a cross-cutting aspect in the area of Human Performance, Work Practices because the licensee did not define and effectively communicate expectations regarding procedural compliance and perosnnel following procedures (H.4(b)). (Section 4OA3)

## 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

During the first nine weeks of the inspection period, the plant operated at approximately 100 percent power except for minor power adjustments to facilitate rod pattern adjustments and routine planned surveillance testing activities. On March 4, 2011, the licensee began a planned downpower, and on March 5, 2011, at 00:18, the main generator breakers were opened and the licensee began their refueling outage. The licensee remained 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 – Extreme Cold Conditions

a. Inspection Scope

Since extreme cold conditions were forecast in the vicinity of the facility for January 21, 2011, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On January 20, 2011, the inspectors walked down the emergency diesel generator (EDG) building and heating boiler system because their safety-related functions could be affected or required as a result of the extreme cold conditions forecast for the facility. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. The inspectors reviewed licensee procedures and discussed potential compensatory measures with control room personnel. The inspectors focused on plant management's actions for implementing the station's procedures for ensuring adequate personnel for safe plant operation and emergency response would be available. 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.

.2 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Safety Analysis Report (USAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining and determined that barriers required to mitigate the flood were in place and

operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure (AOP) for mitigating the design basis flood to ensure it could be implemented as written.

This inspection constituted one external flooding sample as defined in 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:

- 12 EDG fuel oil and air start systems while in 11 EDG maintenance window;
- 11 standby liquid control (SBLC) alignment while 12 SBLC was inoperable due to maintenance; and
- 11 core spray (CS) system while 12 CS was inoperable for maintenance.

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; USAR; 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 that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP) 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:

- Fire Zone 9 (control room);
- Fire Zones 7-A, B, and C (Division I 125V and 250V battery rooms and Division II 125V battery room);
- Fire Zone 23-A (intake structure pump room);
- Fire Zone 6 (refuel floor); and
- Fire Zones 19-A, B, and C (makeup demin area, essential motor control center area, and feedwater pipe chase).

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 to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

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

b. Findings

No findings were identified.

.2 Circuit Analyses (71111.05T)

Background

Title 10 CFR Part 50, Appendix R, Section III.G.2, identified three acceptable methods to meet the requirement for maintaining one of the redundant trains in the same fire area, outside of primary containment, free of fire damage. The three methods included a combination of physical barriers, spatial separation, and fire detection and automatic suppression systems.

In October 2009, the NRC issued guidance in Regulatory Guide (RG) 1.189, "Fire Protection for Nuclear Power Plant," Revision 2, to identify acceptable methods for resolving issues related to circuits required for post-fire safe shutdown and circuits important to post-fire safe shutdown. Equipment required for post-fire safe shutdown (credited train) must use one of the three methods identified in Section III.G.2 to protect the circuits located within the same fire area from damage, including single and multiple spurious operations (MSOs). For important to post-fire safe shutdown circuits, the licensee may use operator manual actions if the licensee demonstrates they can be shown to be feasible and reliable or resolve issues using other analysis methods including fire modeling.

In May 2009, the NRC issued Enforcement Guidance Memorandum (EGM) 09-002, "Enforcement Discretion for Fire Induced Circuit Faults," which described the conditions limiting enforcement discretion during the resolution of the fire protection concerns involving MSOs. The EGM limited the enforcement discretion to three years from the date of issuance of RG 1.189, Revision 2: (1) six months following the issuance of RG 1.189, Revision 2, for licensees to identify noncompliances related to multiple fire induced circuit faults, place the noncompliances into their CAP and implement compensatory measures for the noncompliances, and (2) three years following the issuance of RG 1.189, Revision 2, for licensees to complete the corrective actions associated with noncompliant multiple fire induced circuit faults. The enforcement discretion would not be granted to identified noncompliances that are found to be willful or findings that the Reactor Oversight Process (ROP) SDP would evaluate as red or categorize at Severity Level I.

By a letter dated November 30, 2005, Nuclear Management Company (NMC) notified the NRC of Monticello Nuclear Generating Plant's (MNGP) intention to adopt NFP 805 in accordance with 10 CFR 50.48(c), National Fire Protection Association (NFPA) Standard 805. Xcel Energy, the current Monticello licensee holding company, later notified the NRC by a letter dated July 16, 2010, of the notice of withdrawal of their letter of intent to transition to 10 CFR 50.48(c) for Monticello.

a. Inspection Scope

The inspectors conducted a one-week long inspection, during the week of February 7, 2011, as part of the triennial fire protection inspection. As a result of the licensee's decision to withdraw their intention to comply with 10 CFR 50.48(c), this inspection was completed prior to the actual date of the triennial fire protection inspection, scheduled to be completed this year. During the inspection, the inspectors reviewed a representative sampling of single and multiple spurious issues throughout the plant to verify:

- The licensee successfully addressed single and multiple spurious issues in a way that met regulations;
- The licensee properly classified equipment required for safe shutdown and equipment important for safe shutdown;
- The adequacy of the licensee's evaluation of multiple spurious actuations, in accordance with RG 1.189 and Nuclear Energy Institute (NEI) 00-01, Revision 2; and
- The adequacy of the licensee's compensatory actions taken for identified noncompliances.

During this inspection, the inspectors reviewed the licensee's post-fire safe shutdown analysis to verify that the licensee had identified both required and important circuits that could impact safe shutdown. The inspectors reviewed the expert panel results for the potential fire induced operations of components supporting safe shutdown at MNGP. The expert panel performed this review in accordance with RG 1.189 and Guidance of NEI 00-01, Revision 2. The purpose of the expert panel was to review the applicable industry-developed Generic Owner's Group List of MSOs for applicability to MNGP. The expert panel was also tasked with considering plant-specific MSOs similar to those in the Generic List, but not specifically listed. The expert panel identified several MSOs, as applicable to MNGP, and provided recommendations to resolve these issues. The following is a list of some MSO scenarios reviewed by the inspectors that the expert panel recommended modifications to because of apparent violations of 10 CFR Part 50, Appendix R, Section III.G:

- MSO 2.ab – Spurious operation (open) of both reactor core isolation cooling (RCIC) test return to condensate storage tank (CST) valves with suction on the suppression pool which may route the RCIC inventory to the CST;
- MSO 2.o – Spurious opening of residual heat removal (RHR) loop cross-tie valve. Multiple fire induced spurious operation of MO-2033 and other valve(s) on the opposite train;
- MSO 2.r – Spurious operation that creates Core Spray (CS) pump flow diversion for injection to the reactor pressure vessel (RPV). Multiple fire induced faults on MO-1750 circuit that may result in bypassing the torque limit switch; and
- MSO 4.k – Dedicated CS system, spurious closure of normally open RPV injection valve. Multiple fire induced faults on MO-1752 or MO1754 circuits that may result in bypassing the torque limit switch for each valve.

The licensee entered all identified MSO scenarios into their CAP and initiated alternate compensatory measures, in the form of documented operator rounds, as justified per the Fire Protection Engineering Evaluation (FPEE 2010-001, Alternate Compensatory Measures for MSOs Identified Non-Conformances). In addition, the licensee will perform additional circuit analysis and evaluations for the non-conformances to determine the appropriate resolutions prior to the end of the enforcement discretion per EGM 09-002. The licensee evaluated the aforementioned identified MSOs and determined that these types of issues would not significantly affect the plant margin of safety since they have low risk of occurrence and low safety consequences.

The inspectors verified that selected safe shutdown cables had either been adequately protected from the potentially adverse effects of fire damage or mitigated with approved manual operator actions, or analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown. In order to accomplish this, the inspectors reviewed electrical schematics associated with each of the selected safe shutdown components. In addition, the inspectors evaluated the adequacy of the electrical circuits' protective coordination for the safe shutdown systems' electrical power and instrumentation busses.

Based upon the inspector's review, it was determined that the aforementioned identified noncompliances associated with MSOs were violations of 10 CFR Part 50, Appendix R, Section III.G. Because the violations were associated with multiple fire induced circuit faults and identified during the discretion period as described in EGM 09-002, the NRC is exercising enforcement discretion in accordance with EGM 09-002.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and AOPs to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- lower 4kV switchgear room following stator cooling water leakage.

This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07A)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of the 12 Residual Heat Removal (RHR) systems' heat exchanger efficiency test to verify that 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 that 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 that 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 report.

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

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08G)

From March 14 through March 24, 2011, 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 1R08.5 below constituted one inspection sample as defined in IP 71111.08 05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors observed and/or reviewed 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.

- ultrasonic examination (UT) of the reactor water cleanup (RWCU) pipe-pipe weld, 25, Report No. 2011UT033;
- UT of the reactor head meriodonal weld 49/50, Report No. 2011UT035;
- radiographic examination (RT) of the RCIC steam supply line PS-17-3," Field Welds 1 and 2;
- in-vessel visual inspection of jet pump riser support pad welds 7/8; and
- magnetic particle (MT) examination of the residual heat removal service water (RHRSW) piping, weld 10, Report No. BOP- MT-11-057.

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 IX.

- UT of nozzle to vessel weld; weld N-3C; Report No. 2009UT024.

The inspectors reviewed the following pressure boundary weld completed for a risk-significant system since the beginning of the last refueling outage (RFO) to determine if the licensee applied the pre-service 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.

- RCIC steam supply line PS-17-3" removal and reinstallation; WO 00380817.

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;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience (OE) 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 January 21, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

This inspection constituted one quarterly licensed operator requalification program 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:

- 12 EDG fuel oil level switch replacement;
- CS system; and
- non-essential diesel generator (DG-13).

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 (SSCs)/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 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 that the appropriate risk assessments were performed prior to removing equipment for work:

- repair of leak on RWCU piping near regenerative heat exchangers;
- evaluation of potential water intrusion into pre-amp enclosures for the Division I source range monitors (SRMs) and intermediate-range monitors (IRMs);
- plant in yellow risk and shutdown limiting condition for operation (LCO) longer than scheduled while replacing 12 EDG level switches;
- RFO risk assessment and risk management following shutdown;
- risk management of suspended fuel assembly during refuel bridge issues; and
- 1N6 lockout during 1AR power transfer from 10 bank transformer.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that 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 that 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. Documents reviewed are listed in the Attachment to this report.

These maintenance risk assessments and emergent work control activities constituted six 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:

- battery room ventilation issues involving V-EF-40B;
- primary containment isolation system; and
- operations with the potential to drain the vessel classifications.

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 that 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 USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

These operability inspections constituted three samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Permanent Plant Modifications

a. Inspection Scope

The following engineering design package was reviewed and selected aspects were discussed with engineering personnel:

- Engineering Change (EC) 14638 (change main steam isolation valve (MSIV) disc and seat rings hard face material from Stellite 6 to Stellite 21).

This document 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 that installation was consistent with the design control documents. During the current RFO, EC 14638 was used to modify the disc and seating surface for three of the four outboard MSIVs.
The modification will change the MSIV disc and seat hard-faced material from Stellite 6 to Stellite 21.

This inspection constituted one permanent 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 (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- ventilation unit V-AH-4A secondary containment (SCT) isolation dampers;
- reactor building railroad doors 45 and 46;
- 14 RHR pump; and
- 1B low vacuum scram pressure switch (PS-5-11C).

These activities were selected based upon the SSCs 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 TS, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that 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.

These inspections constituted four PM 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 Refueling Outage (RFO), which began on March 5, 2011, and continued through the end of the inspection period, to confirm that 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 that TS and OSP requirements were met, and controls over switchyard activities;
- Monitoring of decay heat removal processes, systems, and components;
- Controls to ensure that 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 SCT as required by TS;
- Refueling activities, including fuel handling and sipping to detect fuel assembly leakage;
- Startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left, which could block emergency core cooling system suction strainers, and reactor physics testing;
- 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

Introduction

A finding of very low safety significance and non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed when the licensee failed to adequately implement the requirements of their fleet tagging procedure, a procedure affecting quality, during maintenance on the safety-related CST-88 ‘B’ low pressure coolant injection (LPCI) fill line check valve. This failure resulted in an unintentional breach of the condensate service water (CSW) system and subjected workers to a potentially contaminated, pressurized water source. Additionally, at the time of the breach, the CSW system was one of the water sources being credited in support of the shutdown safety function of inventory control.

Description

On March 18, 2011, workers commenced the disassembly and inspection of CST-88, the ‘B’ LPCI Fill Line check valve. The workers had been briefed to expect that upon disassembly of the valve they would experience a small amount of water drainage and hence had installed a large-sized drainage device to accommodate the leakage.

However, when they began to disassemble the valve, upon loosening the bonnet bolts, the workers were met with pressurized water. The workers determined that this amount of water leakage was unexpectedly large and quickly retightened the bolts to restore the valve back to its assembled condition, terminating the leakage.

The licensee's investigation into this incident revealed that the check valve the workers were disassembling had not been properly isolated. The clearance order referenced for this maintenance activity had only isolated the valve (CST-91) immediately downstream of the CST-88 check valve (among other valves associated with separate work activities). The valve (CST-184) located immediately upstream of CST-88 was not closed, leaving the check valve un-isolated from the pressurized CSW system. This inadequate isolation left workers unprotected from the pressurized CSW header, and led to a temporary breach of the CSW system, a system which was being credited in support of the shutdown safety function of inventory control.

A review of the WO and clearance development activities for this task revealed that on January 10, 2010, Clearance Order (CO) 37264 was created to support draining and isolating portions of the RHR 'B' system. While the CO was still in the planning stages, other WOs were added to it including the WO for the CST-88 check valve maintenance (WO 394266). In total, 20 additional WOs were added to CO 37264 prior to its approval and two additional activities were added following its approval. While CO 37264 was originally generated to support work on the RHR 'B' system, the licensee's tagging procedure allows them to place multiple WOs under one clearance. However, the procedure also requires that the CO be appropriately developed and reviewed to ensure that safe boundaries are established for all maintenance activities associated with the clearance.

During the planning and approval processes for CO 37264 when WO 394266 was added to its scope, the following errors occurred:

- during the planning stages, the CO preparer failed to use available references or perform a walkdown to develop a CO that included appropriate boundaries for all work associated with the CO 37264;
- when the CO containing this work was routed for approval, the craft approver (Supervisor/Lead Clearance Order Holder in the approval chain) failed to verify that a safe boundary was prepared for all the work contained in CO 37264 by using available references or walkdowns; and
- during the approval process, the approving Senior Reactor Operator (SRO) (Operations Approver) failed to adequately verify that a safe work boundary was established for work associated with CO 37264.

After CO 37264 was approved, the following additional errors occurred during execution of the clearance and WO 394266:

- prior to allowing maintenance to commence work on the procedure, the Operations Shift Supervision authorized the maintenance group to begin work on WO 394266, but failed to appropriately authorize the commencement of work on the procedure being performed under the WO, and failed to complete the prerequisites specified in the procedure;

- prior to initiating the work activity, the work supervisor (Supervisor/Lead Clearance Order Holder for the work group) failed to ensure that the tagging boundary was appropriate for the work being performed; assessment of the boundary included a craft walkdown, which compared the CO only to the tags hung on the isolated valves, rather than comparing the CO to plant diagrams or using insights from the physical valve location in the system to verify appropriate boundaries; and
- prior to commencing the work, the supervisor failed to adequately brief the workers on the tagging boundaries for the work.

"Fleet Tagging Procedure," FP-OP-TAG-01, Revision 10, Sections 5.3 and 5.4, specify the requirements for development and approval of CO checklists for WOs. These sections state, in part:

- the Clearance Order/Clearance Order Checklist Preparer SHALL prepare a Clearance Order and Clearance Order Checklist using available references and/or walkdowns. Controlled documents SHALL be used, when available (Sec. 5.3);
- the Clearance Order/Clearance Order Checklist Preparer SHALL complete the information field for clearance order steps - to establish a safe work boundary, as required (Sec. 5.3);
- the Operations Approver SHALL verify a safe boundary has been established (Sec. 5.4); and
- the Supervisor/Lead Clearance Order Holder review SHALL verify that a safe work boundary has been prepared, using available references and/or walkdowns (Sec. 5.4).

Section 5.6 of Procedure FP-OP-TAG-01 specifies requirements of supervisors when commencing a work activity:

- the Supervisor/Lead Clearance Order Holder review SHALL ensure the tagging boundary is adequate for the work to be performed; and
- the Supervisor/Lead Clearance Order Holder review SHALL brief clearance order holders (worker) on tagging boundaries, potential hazards/stored energy sources, and field activities.

Additionally, when the time came to perform the work, the Operations Shift Supervision signed the work order task "Authorization to start work." However, the individual did not sign the "Approval to Commence" for the procedure being implemented in the WO. This procedure, 0255-22-IA-1, "CST-88 'B' LPCI Fill Line Check Valve Test," contained two prerequisites to be performed prior to beginning work on the procedure steps. One of those prerequisites required verification that "CST-88 is isolated as required." Neither prerequisite was completed before the procedure steps were begun.

The CO development, approval, and execution activities associated with WO 394266 failed to identify the need to close the inlet isolation valve for the check valve that was being disassembled and inspected, in order to isolate the check valve from the CSW header. Therefore, these activities failed to ensure that the tagging boundary was adequate for the work being performed, as required by the procedure.

The licensee entered this issue into their corrective action program (CAPs 1275935 and 1275963). Immediate corrective actions taken by the licensee included restoring the CST-88 check valve to its installed configuration to terminate the water leakage and revising the clearance boundary for the work to include the appropriate isolation valve. The site performed a review of all other WOs associated with CO 37264 to validate that safe work boundaries existed for all associated work activities and reviewed the other COs prepared and approved by personnel associated with the event. Additionally, to highlight the significance of the event, the licensee reset their site event clock, communicated lessons learned from the event to the site, and assembled a team to perform a root cause evaluation (RCE).

Analysis

The inspectors determined that the licensee's failure to adequately implement their tagging process to protect workers and equipment from the effects of breaching the pressurized CSW header during maintenance on a safety-related check valve was a performance deficiency because it was the result of the failure to meet a requirement, the cause was reasonably within the licensee's ability to foresee and correct, and should have been prevented. The inspectors determined that the contributing cause that provided the most insight into the performance deficiency was associated with the cross-cutting area of Human Performance, having work control components, and involving aspects associated with appropriately planning work activities by incorporating job site conditions impacting plant systems and components [H.3(a)].

The inspectors screened the performance deficiency per IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because the performance deficiency could have reasonably been viewed as a precursor to a more significant event. In this instance, the performance deficiency resulted in an unintentional breach of the operating CSW system and subjected workers to a potentially contaminated, pressurized water source. Additionally, at the time of the breach, the CSW system was one of the water sources being credited in support of the shutdown safety function of inventory control. The inspectors applied IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination," Attachment 1, to this finding. The finding was determined to have very low safety significance because it did not adversely affect core heat removal, inventory control, power availability, containment control, or reactivity guidelines (Green).

Enforcement

Title 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented procedures, of a type appropriate to the circumstances, and shall be accomplished in accordance with these procedures. Contrary to this requirement, the licensee failed to adequately implement the requirements of Procedure FP-OP-TAG-01, "Fleet Tagging," a procedure affecting quality, during maintenance on the safety-related CST-88 'B' LPCI Fill Line check valve. This failure resulted in a breach of the CSW system, led to workers being unprotected from a potentially contaminated, pressurized water source, and introduced the potential to impact a system being credited in support of a shutdown safety function. Because the violation was of very low safety significance and was entered into the licensee's corrective action program (CAPs 1275935 and 1275963), this violation is being treated as an NCV, consistent with Section 2.3.2 of the

NRC Enforcement Policy. (NCV 05000263/2011002-01; Inadequate System Isolation during Check Valve Maintenance)

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:

- surveillance procedure 0192, diesel fuel quality check (routine);
- surveillance procedure 0007-A, condenser low vacuum scram instruments test and calibration (routine);
- surveillance procedure 0021-01, reactor low level scram and low-low level isolation transmitter calibration procedure (routine);
- surveillance procedure 0278, anticipated transient without scram (ATWS) recirc pump trip with reactor feed pump and turbine trip testing (routine);
- procedure 0255-03-IA-2A, CS - shutdown valve operability test (inservice test (IST)); and
- local leak rate test (LLRT) procedure137-07A, reactor steam supply valves leak rate testing (containment isolation valve (CIV) LLRT).

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 IST 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 four routine surveillance testing samples, one IST sample, and one CIV sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on February 9, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the control room simulator and emergency offsite facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

## 2. RADIATION SAFETY

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 Final Safety Analysis Report (FSAR) 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 in-service 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 FSAR.

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

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 ODCM 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/ODCM. 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 ODCM and station procedures.

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

b. Findings

No findings were identified.

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 that 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.

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's 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.

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.

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 that 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.

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.

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.

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.

.4 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 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: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness, Public and Occupational Radiation Safety**

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours Performance Indicator (PI) for the period from the 1st Quarter 2010 to the 4th Quarter 2010. To determine the accuracy of the PI data reported during this period, 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 that period 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.

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

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for the period from the 1st Quarter 2010 to 4th 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 applicable licensee operator narrative logs, issue reports, event reports, and NRC Integrated Inspection Reports for that period 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.

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

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for the period from the 1st Quarter of 2010 to the 4th Quarter of 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, maintenance rule records, event reports, and NRC Integrated Inspection Reports for that period 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.

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

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences PI for the period from the 2nd Quarter 2010 through January 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, was used. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff, the scope, and breadth of its data review, and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

This inspection constituted one occupational radiological occurrences sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent TS (RETS)/ ODCM Radiological Effluent Occurrences PI for the period of June 2010 through January 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

4OA2 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 that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that 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 that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the 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 Selected Issue Follow-Up Inspection: Several CAPs Regarding Fatigue Rule Work Hour Violations

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting multiple violations of NRC requirements associated with the fatigue rule. In addition, the inspectors noted that there were multiple CAPs documenting human performance errors that may result in violations of NRC fatigue rule requirements, and a few other CAPs documenting other instances of individual work hour violations. The inspectors reviewed the licensee's actions to address the violations and examined the site's threshold for determining whether an adverse trend exists in this area. In addition, the inspectors reviewed all fatigue rule related CAPs generated over the previous year and the causal analyses that were performed when trends were identified. This review focused on determining whether the licensee was adequately evaluating these issues, whether the corrective actions developed by the licensee were appropriate given the results of causal evaluations, and whether the actions the site has taken to address these issues had been effective.

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

b. Findings

During this inspection, the inspectors identified a concern regarding the licensee's implementation of fatigue rule requirements. Specifically, the inspectors reviewed an

apparent cause evaluation (ACE) that the licensee had performed after identifying several violations of NRC fatigue rule requirements. The inspectors noted that one of the corrective actions developed and implemented in October 2010, as a result of this evaluation, involved tripling the period of planned shift turnover time on the front end of schedules of individuals in one department, to account for the turnover period on the back end of the shift. As a result of this action, the scheduled turnover period for personnel in this department was not consistent with NRC guidance on reasonable amounts of time for these activities. In addition, the inspectors noted that this turnover time period was applied to the front end of the schedules of all personnel in this department regardless of the amount of time spent performing actual turnover activities. This may potentially be in conflict with NRC regulations, specifically with respect to 10 CFR 26.205(b)(1), regarding calculation of work hours, 10 CFR 26.205(d) regarding work hour controls, and 10 CFR 26.203(b)(2) regarding implementation of fatigue rule procedures to ensure compliance with 10 CFR 26.205.

The NRC inspectors plan to review actual turnover activities and associated records for the site as a whole to examine how the corrective action of concern has been put into practice. Pending NRC review of additional licensee information regarding site-wide practices for exclusion of shift turnover activities, as well as information on how the application of a fixed and potentially artificially long turnover period has affected actual work hours reported for individuals at the site, this issue will be treated as an Unresolved Item (URI) (URI) 5000263/2011002-02; Calculation of Work Hours during Fatigue Rule Implementation).

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

.1 Observations During Plant Downpower to Approximately 50 Percent Power

a. Inspection Scope

On March 4, 2011, the inspectors observed control room operators during power reductions from approximately full power to 50 percent power. The inspectors' focus was on overall command and control, procedure usage, and conservative practices while maneuvering the plant.

b. Findings

No findings were identified.

This event follow-up review of a non-routine evolution constituted one sample as defined in IP 71153-05.

.2 Observation of New Fuel Receipt Inspections Conducted on the Refueling Floor

a. Inspection Scope

The inspectors performed several observations of licensee activities associated with receipt of new fuel. These activities included unpackaging, inspecting, channeling, and placement of new fuel in the spent fuel pool. Documents reviewed in this inspection are listed in the Attachment to this report.

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

b. Findings

Introduction

A finding of very low safety significance and NCV of Technical Specification 5.4, "Procedures," was identified by the inspectors when the licensee failed to implement the requirements of their foreign material exclusion (FME) and control procedure during new fuel receipt activities. Specifically, the inspectors observed two operators exiting and re-entering a Level 1 FME area, without knowledge of the FME monitor, at a point that was not being controlled by the FME monitor.

Description

Over a time period of approximately one week, the inspectors observed the licensee perform several activities associated with the receipt of new fuel. These activities included unpackaging new fuel, inspection of the fuel assemblies, installation of fuel assembly channels, and placing the new fuel in the spent fuel pool. A majority of these activities were performed within the boundaries of a Level 1 FME area. On January 24, 2011, during one of these observations, the inspectors noted that two operators, who were participating in the fuel receipt inspection activities, entered the FME area, without the FME monitor's knowledge, at a point that was not established as the FME area access point.

The licensee utilizes Procedure FP-MA-FME-01, "Foreign Material Exclusion and Control," to implement its processes for controlling and accounting for material, tools, and parts to preclude their uncontrolled introduction into an open system or component during maintenance, modification, or inspection activities. The inspectors reviewed this procedure and discovered the following requirements which were applicable to the new fuel receipt inspection activities.

- Workers were responsible for adhering to and maintaining FME requirements (Step 3.2.2);
- FME monitors were responsible for monitoring work activities for proper FME work practices and inspecting personnel, tools, and materials entering and leaving the FME area (Steps 3.4.7 and 3.4.8);
- Loss of FME control may exist when the FME monitor is required but not attentive or present (Step 4.11, in part);
- Level 1 FME area is highest level of FME control imposed on an area or system and is required where new fuel is inspected (Step 5.1.1, in part); and
- Formal FME control plan is required for large projects with FME Level 1 activities and prepared utilizing form QF 1812, "Foreign Material Exclusion Control Plan," (Step 5.2.1).

The inspectors reviewed the QF 1812 associated with new fuel receipt activity. The inspectors noted that the following requirements were included as part of that plan.

- The FME monitor will ensure personnel entering the FME Level 1 Zone are appropriately prepared to enter the area by securing all personal items and by logging all items carried into the area. The FME monitor is one of the last barriers to the prevention of foreign material entering the FME Level 1 Zone and as such, the FME monitor must be vigilant with respect to their assigned duties.

The inspectors reviewed the training material (MT-SHE-GEN-001L) used in the qualification of the FME monitors. This material specifically covers the duties of an FME monitor to include: controlling the FME area when material or personnel control is established; stopping any entry that is not within the guidelines of the procedure; monitoring work activities for proper FME work practices; and inspecting personnel entering and leaving an FME area.

- All personnel that are required to enter the FME Level 1 Zone shall have read and/or been briefed on the FME plan;
- All personnel entering the FME Level 1 Zone will be required to be FME qualified.

The inspectors reviewed the training material (M-7730F-012) used in FME training. With respect to FME boundaries, the training material specifically states "If you see a FME boundary, don't cross it without approval by the supervisor /FME Monitor."

Subsequent to observing the operators enter the FME area at an unmonitored point; the inspectors brought this to the attention of the FME monitor. When questioned by the inspectors, the FME monitor informed the inspectors that he was not aware that the operators had entered the FME area. The inspectors also brought this issue to the attention of the SRO that was overseeing the new fuel receipt activities.
Corrective actions taken to address this issue included stopping the work, re-briefing the workers on FME controls, and verifying no additional material was introduced to the FME area by the operators. The licensee entered this issue into their corrective action program as CAP 0126760.

Analysis

The inspectors determined that the licensee's failure to adequately implement the requirements of their FME and control procedure during new fuel receipt activities to prevent the unmonitored access of two operators into a Level 1 FME area was a performance deficiency because it was the result of the failure to meet a requirement or a standard, the cause was reasonably within the licensee's ability to foresee and correct, and should have been prevented. The inspectors determined that the contributing cause that provided the most insight into the performance deficiency was associated with the cross-cutting area of Human Performance, having Work Practices components, and involving aspects associated with the licensee defining and effectively communicating expectations regarding procedural compliance and personnel following procedures [H.4(b)].

The inspectors screened the performance deficiency per IMC 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because it impacted the human performance attribute of the Barrier Integrity Cornerstone's objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors applied IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," to this finding. The inspectors utilized Column 3 of the Table 4a worksheet to screen the finding. Since the finding only had the potential to impact the fuel barrier, the finding was screened to be of very low safety significance (Green).

Enforcement

Monticello Nuclear Generating Plant TS, Section 5.4.1.a, requires that written procedures shall be established, implemented, and maintained covering applicable procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Contrary to this requirement on January 24, 2011, the licensee failed to successfully implement Procedure FP-MA-FME-01, "Foreign Material Exclusion and Control," a maintenance procedure, during new fuel receipt and channeling activities. Specifically, two operators exited and reentered a Level 1 FME area, without the knowledge of the FME monitor, at a point not controlled by the FME monitor. Because the violation was of very low safety significance and was entered into the licensee's corrective action program (AR 126760), this violation is being treated as NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000263/2011002-03; Failure to Control a Level 1 FME Area during New Fuel Receipt Activities)

.3 (Closed) Licensee Event Report (LER) 05000263/2010-006-00: Mode Change Made with Primary Containment Isolation Valves Inoperable

On November 22, 2010, the plant was in Mode 4 with preparations for startup in progress. The duty crew transferred the reactor vent path to the path through main steam line drain valves MO-2373 (main steam line drain - inboard), MO-2374 (main steam line drain - outboard), and MO-2565 (steam line drain orifice bypass). The valves were opened and their associated breakers were tagged open. At 16:47, the change from Mode 4 to Mode 2 was completed. At 17:00, a page announcement was made that reactor startup was commencing. The on-coming operations work control manager recalled helping tag open MO-2373 and MO-2374, which are primary containment isolation valves (PCIVs), on the previous night shift. He called the control room to verify the valves had been restored prior to the mode change. He immediately notified the duty crew and operations management of the TS violation when he was informed they had not been restored. Startup activities were halted pending investigation and resolution of the issue. Primary containment isolation valves operability was subsequently restored. Startup activities were recommenced later in the shift after prerequisites had been verified as completed and a stand-down was conducted.

The licensee entered this issue in to their corrective action program as CAP 1259879 and conducted a Root Cause Evaluation (RCE). The licensee determined that individuals in key roles and oversight positions did not employ sufficient barriers to ensure error free results, during preparation for and execution of, a complex evolution (reactor startup) which relied heavily upon knowledge and experience. In addition to this, the licensee identified two contributing causes. The licensee identified that some procedure quality issues existed with procedures and checklists necessary for startup. Secondly, they identified organizational weakness, in that the operability of TS required equipment was not assessed, evaluated, or rigorously tracked when not in the mode of applicability for the LCO.

This licensee-identified finding involved a violation of TS 3.0.4. The enforcement aspects of this violation are discussed in Section 4OA7 of this report. Documents reviewed as part of this inspection are listed in the Attachment to this report. This LER is closed.

.4 (Closed) Licensee Event Report (LER) 05000263/2009-001-02: Containment Overpressure Not Ensured in the Appendix R Analysis

The licensee issued Licensee Event Reports (LER 05000263-2009-001-00 and LER 05000263-2009-001-01) regarding the licensee's failure to consider the spurious opening and venting of the primary containment, via purge and vent valves, in the event of a fire in the main control room or cable spreading room. Both LER revisions were closed in Inspection Report 05000263/2009004 and documented as a violation of NRC requirements. Because the licensee was transitioning to NFPA 805 and the violation met the criteria established by the NRC Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR Part 50.48(c)) for licensee in NFPA 805 transition, the NRC exercised enforcement discretion to not cite the violation in accordance with the NRC's Enforcement Policy. On December 22, 2010, the licensee provided an update to LER 05000263-2009-001-02 to reflect their withdrawal of the letter of intent to voluntarily implement 10 CFR 50.48(c) at the MNGP.

On May 14, 2009, the NRC issued EGM 09-002, "Enforcement Discretion for Fire Induced Circuit Faults," dated May 14, 2009, which authorized enforcement discretion for non-compliance issues associated with fire induced multiple circuit cable faults, providing that the licensee identified the non-compliances, entered them into their CAPs, and instituted appropriated compensatory measures until the issues were corrected, within the six month period following a planned revision to RG 1.189, "Fire Protection for Nuclear Power Plants." Regulatory Guide 1.189, Revision 2, issued in October 2009, provided a method acceptable to the NRC to evaluate and resolve multiple fire induced circuit faults. After the six month period designated for the identification of non-compliances, the EGM further authorized enforcement discretion for an additional 30 month period, for licensees to resolve the identified multiple fire-induced circuit fault issues.

The inspectors screened this violation and determined that because the violation was associated with multiple fire induced circuit faults and was identified during the discretion period as described in EGM 09-002, the NRC is exercising enforcement discretion for this violation in accordance with EGM 09-002. This LER is closed.

.5 (Closed) Licensee Event Report (LER) 05000263/2011-002-00: ESF [Engineered Safety Feature] Actuation Due to a Failed Power Supply

On December 20, 2010, the plant was in Mode 1 operating at 100 percent reactor power when the 'A' Division of the fuel pool/reactor building exhaust plenum primary power supply failed. The failure resulted in upscale trips on both the fuel pool and reactor building ventilation plenum radiation monitors. This condition resulted in closure of the Group II PCIVs, isolation of SCT, initiation of the standby gas treatment system (SBGT), and a transfer of the control room ventilation (CRV) and control room emergency filtration (CREF) systems to the high radiation mode. The licensee entered the appropriate TSs and verified that radiation levels were normal in the affected areas. The isolation signals were reset and the SCT and CRV/filtration systems were restored to a normal lineup. All systems functioned properly and there were no human performance errors associated with this event.

A subsequent investigation identified that the 24 V DC module of the power supply had failed due to a failure of the C20 Tantalum capacitor on the output of the module. The capacitor failure was attributed to a manufacturing defect occurring approximately

six days after installation. The power supply was subsequently replaced and the affected components were returned to service.

A similar power supply was installed in the 'B' Division fuel pool/reactor building exhaust plenum radiation monitor; however, its capacitors were from a different lot. Additionally, the 'B' Division power supply had not shown any issues since it was installed on December 2, 2010, or during extensive bench testing occurring prior to installation.

The licensee entered this issue into its corrective action program as CAP 01263610.

The inspectors' evaluation did not identify any concerns with the licensee's response to this issue. Since the cause of the event was due to equipment failure and not a licensee performance deficiency, there is no violation or finding associated with this event. This LER is closed.

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

.6 (Closed) Licensee Event Report (LER) 05000263/2010-004-00: Secondary Containment Briefly Inoperable Due to Simultaneous Opening of Airlock Doors

On November 4, 2010, at approximately 11:25 with the plant operating in Mode 1 at 93 percent power, both doors for airlock 124 (main access to reactor building) were inadvertently opened simultaneously, breaching the Secondary Containment (SCT) boundary. Upon recognition that both airlock doors were open, plant personnel took prompt actions to ensure that at least one of the airlock doors was closed and the control room was informed that SCT had been breached for approximately 5 seconds. The control room staff determined, for the time that both airlock doors were open, that SCT was inoperable and that the event was reportable under 10 CFR 50.72 (b)(3)(v)(C and D) - events or conditions that could have prevented a safety function of structures or systems that are needed to control the release of radioactive material or mitigate the consequences of an accident.

Evaluation of the issue by the licensee determined that the cause of the airlock 124 breach was an intermittent failure of the magnetic bond sensor on the door due to a lack of periodic maintenance. Corrective actions taken by the licensee to address the cause of this event included generating WOs to replace the magnets and switches for the airlock interlock and to develop a periodic interlock component maintenance items list for inclusion in their preventive maintenance program.

The inspectors did not identify any significant issues during the review of this LER. This LER is closed.

4OA5 Other Activities

.1 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment conducted during the weeks of November 30, 2009 and December 7, 2009. The inspectors reviewed the report to ensure that issues identified were consistent with the

NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings were identified.

.2 (Closed) Unresolved Item (URI) 05000263/2010008-01: Potential Concern with the One-time Inspection Program Related to Butt Welds

During the post-approval license renewal inspection, the inspectors identified an URI due to concerns of the one-time inspection program. This URI, documented in Inspection Report 05000263/2010008, was related to changes the licensee made to their original license renewal application. Specifically, in the March 25, 2006, license renewal annual update (ML060800360), the licensee provided details of changes made to the original license renewal application. With respect to Class 1 small bore piping, the licensee determined that all piping in this inspection group is of actual diameter two inches and less and that only socket weld connections are used in such applications. Therefore, the licensee committed to perform inspections of this piping for the One-Time Inspection (OTI) Program that will consist of visual testing VT-2 examinations during pressure testing for system leaks upon return to service from outages and destructive examinations of any socket welds removed from service prior to the period of extended operation.

However, in a letter (ML101370259), dated May 14, 2010, the licensee notified the NRC of the existence of a limited number of small-bore stainless-steel butt weld connections (less than four inches in diameter), which was contrary to what was identified before. As a result, the licensee changed the OTI requirements and committed to perform augmented ISI volumetric examinations of ASME Class I stainless steel small bore piping butt welds with a two-inch nominal pipe size through less than four-inch nominal pipe size in accordance with the ISI aging management program. The inspectors questioned whether the identification of stainless-steel butt welds constituted a newly identified component or whether the commitment change was appropriate and opened an URI pending further discussions with the Nuclear Reactor Regulation (NRR) program office.

During this inspection period, NRR reviewed the licensee's Fourth Ten-Year ISI Examination Plan, revised in a letter (ML101670584), dated June 10, 2010. The 10-year ISI interval covers May 1, 2003, to May 31, 2012. The revised plan includes a section for Class 1 small-bore piping and states that, "As required by license renewal to manage aging effects, examination of small-bore piping has been added as an augmented program to the ISI Plan." It further states that, "Augmented volumetric examinations of welds are performed on Class 1 stainless steel small-bore piping butt welds > NPS 2 to < NPS 4. The examinations are performed in support of license renewal and SHALL be performed through the renewed license period of extended operation. The base scope of approximately 10 percent of the population will be examined during each ISI interval." The NRR staff and inspectors determined the licensee's inspection sampling of 10 percent of the weld population is consistent with the current staff sampling guidance. In addition, the 10-year ISI plan provided a detailed weld selection methodology to ensure inspection of the most susceptible and risk-significant welds.

The inspectors, with the assistance from NRR, concluded that Monticello's proposed supplement adequately addresses one-time inspection of small bore piping full penetration welds.

No finding of significance was identified. This URI is closed.

.3 Flow-Accelerated-Corrosion Inspection In Support of Extended Power Uprate (71004)

a. Inspection Scope

The inspectors performed a review to determine whether licensee programs and procedures relative to flow-accelerated-corrosion (FAC) monitoring and maintenance were adequately addressing plant changes resulting from extended power uprate (EPU) in accordance with 10 CFR 50.65, the Maintenance Rule and licensee commitments to implement Generic Letter 89-08, "Erosion/Corrosion Induced Pipe Wall Thinning." The inspectors reviewed the FAC Program to determine whether Monticello has taken required action to detect adverse effects (wall thinning) on systems and components as a result of operating changes related to EPU, such as increased flow in primary or secondary systems, including their interfacing systems.

The inspectors reviewed procedures and administrative controls to determine whether those procedures and controls ensure the structural integrity of high energy (single phase and two-phase) carbon steel systems. The inspectors reviewed the Monticello FAC program to determine whether the degradation of piping and components is described in the procedures and, the examination activities are managed, maintained, and documented. In particular, the inspectors reviewed those steps taken to identify specific locations that were most likely to be adversely affected by a change (increase) in operating variables (temperature, flow, etc.) as a result of increased power levels. Also, the inspectors reviewed the licensee FAC activity to determine status and effective utilization of the industry sponsored predictive program (CHECWORKS) to verify the selection of the most susceptible locations for inspection and additional locations based on unique operating conditions and industry experience. Also, the inspectors reviewed how inspection data is trended to determine FAC wear rates and identify the future inspection locations.

The inspectors selected portions of the feedwater system, a risk significant system affected by EPU, for review of the licensee's FAC monitoring activities and effectiveness. The inspectors verified that the as built configuration for portions of the selected system (piping and components) matches the plant specific FAC program isometrics. The inspectors verified that design changes are reviewed for impact on the FAC program and incorporated into the FAC database. The inspectors also reviewed selected locations in this system that had been identified as susceptible to a projected increase in FAC wear rates using the higher EPU operational variables with the CHECWORKS model. The inspectors determined that the increase in wear rates was recognized and being incorporated into the licensee's program database for future inspection sample selection.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 5, 2011, the inspectors presented the inspection results to Mr. T. O'Connor, 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 results of the one-week Fire Protection Inspection related to single and multiple spurious circuit analysis with Mr. T. O'Connor, and other members of the licensee staff, on February 10, 2011. These results were also discussed with Mr. S. Speight from the licensee on March 17, 2011;
- The results of the Inservice Inspection with Plant Manager, J. Grubb, on March 24, 2011; and
- Radiation Monitoring Instrumentation, Occupational and Public Radiation Safety Performance Indicator Verifications with Mr. T. O'Connor, the Site-Vice President, on February 4, 2011.

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 violation of very low significance (Green) or Severity Level IV was identified by the licensee and is a violation of NRC requirements, which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Technical Specification LCO 3.0.4 states, in part, that when an LCO is not met, entry into a MODE in the applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the applicability for an unlimited period of time. Technical Specification LCO 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," states, in part, that each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE in MODES 1, 2, and 3, when associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation. Technical Specification LCO 3.3.6.1 states, in part, that the primary containment isolation instrumentation for Function 1, Main Steam Line Isolation, shall be OPERABLE for the Reactor Vessel Water Level – Low Low, Main Steam Line Flow – High, and Main Steam Line Tunnel Temperature – High functions in MODES 1, 2, and 3. Contrary to the requirement of TS LCO 3.0.4, on November 22, 2010, the inboard and outboard main steam line PCIVs were not operable (unable to automatically close on a primary containment isolation signal due to an electrical isolation) prior to entering Mode 2, and the associated actions to be entered did not permit continued operation in Mode 2 for an unlimited period of time. Once identified,

the licensee restored electrical power to the PCIVs and entered the issue into the corrective action program as CAP 01259879.

The inspectors applied IMC 0609, Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings,” to this finding. Using the Table 4a worksheet, the inspectors answered “Yes” to Question 3 and applied IMC 0609, Appendix H, “Containment Integrity Significance Determination Process.” Per IMC 0609, Appendix H, the finding was considered a “Type B” finding; that is, a finding that has potentially important implications for integrity of containment without affecting the likelihood of core damage. Table 6.2, “Phase 2 Risk Significance – Type B Findings at Full Power,” provided the risk significance for this finding.
For BWR Mark I reactor types, the significance of Type B findings for less than three days duration is Green.

ATTACHMENT: SUPPLEMENTAL INFORMATION

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee

T. O'Connor, Site Vice President
J. Grubb, Plant Manager
W. Paulhardt, Assistant Plant Manager
N. Haskell, Site Engineering Director
K. Jepson, Business Support Manager
S. Radebaugh, Maintenance Manager
M. Holmes, Radiation Protection/Chemistry Manager
D. Neve, Regulatory Affairs Manager
S. Speight, Regulatory Affairs
S. Hafen, Nuclear Oversight Manager
M. Hutin, Program Engineering Director
M. Hippe, Engineering Fire Protection
S. Kibler, Program Engineering
G. Sherwood, Program Engineering Manger
V. Bhardwaj, Design Engineering Director
M. Kelly, Fleet Program Engineering Supervisor
D. Potter, Fleet Engineering Supervisor
T. Jones, NDE Level III
P. Sauerissig, FAC Engineer
S. Oswald, Regulatory Affairs

Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
A. M. Stone, Chief, Engineering Branch 2
B. C. Dickson, Chief, Plant Support Team

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

| | | |
|---|---|---|
| 5000263/2011002-02 | URI | Calculation of Work Hours during Fatigue Rule Implementation (Section 4OA2.3) |

Opened and Closed

| | | |
|---|---|---|
| 05000263/2011002-01 | NCV | Inadequate System Isolation during Check Valve Maintenance (Section 1R20) |
| 05000263/2011002-03 | NCV | Failure to Control a Level 1 FME Area during New Fuel Receipt Activities (Section 4OA3.2) |

Closed

| | | |
|---|---|---|
| 05000263/2010-006-00 | LER | Mode Change Made with PCIVs Inoperable (Section 4OA3.3) |
| 05000263/2009-001-02 | LER | Containment Overpressure Not Ensured in the Appendix R Analysis (Section 4OA3.4) |
| 05000263/2011-002-00 | LER | ESF Actuation Due to a Failed Power Supply (Section 4OA3.5) |
| 05000263/2010-004-00 | LER | Secondary Containment Briefly Inoperable Due to Simultaneous Opening of Airlock Doors (Section 4OA3.6) |
| 5000263/2010008-01 | URI | Potential Concern with the One-Time Inspection Program Related to Butt Welds (Section 4OA5.1) |

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.

Section 1R01

1151; Winter Checklist; Revision 65
C.4-B.08.03.A; Loss of Heating Boiler; Revision 6
B.08.07-05; Extreme Cold Weather Procedure; Revision 24
8136; SCT Penetrations; Revision 17
CAP 00743426; Reactor Head Vent Found Frozen in Place
CAP 01166397; B.08.07-05 Extreme Cold Weather Procedure; Revision 20
CAP 01209511; E-100A 11 CT Riser Valves Frozen Shut - Near Miss
Emergency Plan for External Flooding Event Reaching Elevation 918'; Revision 2
1478; Annual Flood Surveillance; Revision 3

Section 1R04

2154-28; Diesel Generator Air Start System Prestart Valve Checklist; Revision 9
2124; Plant Prestart Checklist Diesel Generators and Fuel Oil System; Revision 8
2154-14; Fuel Oil System Prestart Checklist; Revision 16
NH-36051; P&ID Diesel Fuel Oil System; Revision 77
B.09.08; EDG System; Revision D
CAP 01266032; FO-16 (Fire Pump Supply) Found Out of Position
2154-07; SBLC System Prestart Valve Checklist; Revision 11
2113; Plant Prestart Checklist SBLC System; Revision 13
NH-36253; P&ID SBLC System; Revision 77
B.03.05; SBLC System; Revision 10
CAP 01254014; Received Spurious Alarm C05-B-15 (Standby Liquid Hi/Lo Temp)
00041885; Clearance Order Checklist; FINI-11-67B, Replacement of Lamp Assembly
2154-11; CS System Prestart Valve Checklist; Revision 18
NH-36248; P&ID CS System; Revision 79
B.03.01; CS Cooling System; Revision 3

Section 1R05

4 AWI-08.01.00; Fire Protection Program Plan; Revision 12
Fire Strategy A.3-09; Control Room (9); Revision 7
CAP 01266328; A.3-09; Revision 7
CAP 01266330; A.3-10; Revision 13
CAP 01266331; Discrepancies Noted in A.3 Procedures
Fire Strategy A.3-07-A; 125V Division I Battery Room; Revision 5
Fire Strategy A.3-07-B; 250V Division I Battery Room; Revision 8
Fire Strategy A.3-07-C; 125V Division II Battery Room; Revision 6
CAP 01270371; Questions Raised on 250 VDC and 125 VDC Battery Condition
Fire Strategy A.3-23-A; Intake Structure Pump Room; Revision 11
Fire Strategy A.3-06; Refuel Floor; Revision 6
Fire Strategy A.3-19A; Make-Up Demin Area; Revision 9

Fire Strategy A.3-19B; Essential Motor Control Center Area (NO. 142 & 143 931' ELEVATION); Revision 11
Fire Strategy A.3-19C; F.W. Pipe Chase; Revision 5
AR 01270032; Configuration Error Found; February 9, 2011
AR 01270498; No Switch Development for Switch 14A-S3B; February 11, 2011
FPEE 2010-01; Alternate Compensatory Measures for Multiple Spurious Operations Identified Nonconformances; Revision 0
NX-7833-21-4; Elementary Diagram – CS System; Revision 76
NE-36404-5A; CS Pump P-208B ACB 152-605 Control; Revision S
NE-36394-18A; Emergency Service Water Pump P-111B and Scheme B4319; Revision F
NX-7833-21-4A; Elementary Diagram - CS System; Revision 77
NX-7905-46-1; Elementary Diagram – RHR System; Revision 77
NF-100335-3; Alternate Shutdown System Schematic; Revision 78

Section 1RO6

PRA-CALC-04-004; Flood Initiating Event Frequencies; Revision 0
PRA-CALC-04-003; Flood Source Identification; Revision 0
CAP 1274344; Water Leaking into Lower 4kv Room from Stator Cooling Valves
PRA-CALC-04-001; Flood Areas; Revision 0
PRA-CALC-04-005; Equipment Vulnerabilities to Flooding; Revision 0
CAP 1274346; Water Leaks by SW-250 on C/O 37330
PRA-CALC-04-006; Flood Scenarios and Effects; Revision 0
CAP 1275079; Evidence of Water Pooling in Lower Cubicles of LC-109

Section 1RO7

1136; RHR Heat Exchanger Efficiency Test; Revision 30
CA-97-113; RHR Heat Exchanger Performance Analysis
CA-97-023; RHR Heat Exchanger K Values with Two RHR and Two RHRSW Pumps in Suppression Cooling Mode
CAP 01028386; RHR Heat Exchanger Modeled Flow Incorrectly in Several Calcs
CAP 01172846; RHR 'B' Heat Exchanger Issue Resolution
B.03.04; RHR System; Revision 5
CAP 01271131; Question about USAR Interpretation and Accuracy
USAR 7.6.3; Primary Containment Isolation System; Revision 27
B.03.04-4 RHR System, References; Revision 40
B.03.04-6 RHR System; Revision 5
1136; RHR Heat Exchanger Efficiency Test; Revision 30
CAP 01172846; RHR 'B' Heat Exchanger Issue Resolution
CAP 01028386; RHR Heat Exchanger Modeled Flow Incorrect in Several Calcs
12 RHR Heat Exchanger Test Data; February 15, 2011
WO 0000229; Plug No. 12 RHR Heat Exchanger Tubes; January 15, 2000

Section 1R08

PEI-02.02.01; Dry Powder Magnetic Particle Examination; Revision 1
FP-PE-NDE-03; Written Practice for Qualification and Certification of NDE Personnel; Revision 6
FP-PE-NDE-401; UT of Ferritic Pipe Weld-Supplement 3; Revision 3
FP-PE-NDE-406; UT of Reactor Pressure Vessel Welds; Revision 1

FP-PE-FAC-02; Layout and Marking of Piping and Components for Flow Accelerated Corrosion Program; Revision 1
ISI Examination Plan, Fourth Interval; Revision 4
AR 01241927; Station OE Evaluation of NRC IN 2010-2; July 19, 2010
AR 01276343; During a QC MT Exam a Linear Indication was Found; March 19, 2011
AR 01177677; Indications Discovered In Shroud Support Legs; April 10, 2009
AR 01174890; ISI Exam Revealed Non-Rotating Bearing on Snubber; March 25, 2009
AR 01176895; Drywell/Torus Surface Inspection Results; April 5, 2009
MNGP-RFO-25-INF-11-03; Indication Notification; March 16, 2011
FP-PE-B31-PIP1-GTSM-001; Groove Welds and Fillet Welds, P1-P1, GTAW/SMAW, without PWHT; Revision 3
Welding Procedure Specification; FP-PE-B31-P1P1-GTSM-001; Revision 2
SM-1-1; Welding Procedure Qualification Record; Revision 1
Work Order 00380817; Re-Install RCIC Steam Line and Supports; March 30, 2009

Section 1R11

SEG RQ-SS-103

Section 1R12

90-023; Minimum Allowable Fuel Oil Storage Tank Level; Revision 2
50.59 Screening 10-0319; Replace Fuel Oil Transfer Level Switch LS-7211; Revision 0
Equivalency Evaluation Equivalent/Alternate Change 12303; Replace Fuel Oil Transfer Level LS-721 Switch; Revision 0
B.09.08; Diesel Generators; Revision 10
B.08.11; Diesel Oil System; Revision 7
1052-04; 12 Diesel Generator Auxiliary Systems Test; Revision 15
CAP 01268419; LS-7211 Replacement Switch Failed during Testing
CAP 01267884; 12 EDG Base Tank Level Switches are not Functioning
CAP 01267658; CSP System Health Color Turned YELLOW
System Health Report; CSP, CS; January 24, 2011
CAP 01261935; A CSP Pump Motor Upper Oil Reservoir Cooling Coil HX Leaking
CAP 01265872; Adequacy of Equipment EOC Questioned
CAP 01242119; P-208A Motor Cooling Coil Found with Damage during Disassembly
CAP 01246421; 12 CSP Upper Motor Bearing High Oil Level

Section 1R13

CAP 01265569; WO 420235 Results Require Extent of Condition Evaluation
CAP 01265233; Steam/Water Leak from Piping on RWCU Regenerative Heat Exchangers
CAP 01265544; Potential Adverse Impact from RWCU on SRM/IRM
CAP 01265389; Water Leaking onto SRM and IRM Amplifier Cabinet
CAP 01238597; P225A FO Transfer Pump Leaking Bearing Grease
TS Bases 3.8.1; AC Sources- Operating; Revision 7
B.09.08; Diesel Generators; Revision 10
B.08.11; Diesel Oil System; Revision 7
1052-04; 12 Diesel Generator Auxiliary Systems Test; Revision 15
USAR 08.04; Plant Standby Diesel Generator Systems; Revision 24
NX-9216-5-4A; Physical Schematic and Field Connection- Model 999 No. 12 EDG; Revision 76
NH-36051; P&ID Diesel Fuel Oil System; Revision 77

CAP 01267884; 12 EDG Base Tank Level Switches are not Functioning
CAP 01268038; Condition of Removed Fuel Oil Level Switches from No. 12 EDG
CAP 01268207; New LS-7211 EDG Level Switch did not Function as Expected
CAP 01268425; Original Level Switch, LS-7211, for No. 12 EDG was Reused
CAP 01268199; Exceeded 50 Percent of LCO Required Action Time for 12 EDG Window
CAP 01268234; 12 EDG LS-7211 Wires were Rolled
WO 00421339; 12 EDG Base Tank Level Switches are not Functioning; January 28, 2011
4 AWI-08.15.03; Risk Management for Outages; Revision 6
SWI-14.01; Risk Management for Outages and On-line Activities; Revision 5
9210; Master RPV Disassembly Procedure; Revision 11
FP-OP-ROM-02; Shutdown Safety Management Program; Revision 0
FP-OP-PEQ-01; Protected Equipment Program; Revision 0
OWI-03.08; Protected Equipment Program; Revision 4
9040; Temporary Vessel Level Instrumentation Installation and Restoration; Revision 10
Operations Manual C.3; Shutdown Procedure; Revision 63
WO 394791; Title 9224 – Dryer Removal High Risk Plan; March 9, 2011
2270; Critical Safety System Checklist - week of March 7, 2011
RF-25 Defense in Depth Variance to the Rev 0 Sched - Critical Safety Functions; March 8, 2011
Outage Risk Plan for RFO 25; week of February 28, 2011
NX7955-119-1; Refueling Platform One-line Diagram; Revision 2
WO 412387; Contingency Troubleshoot/Repair Refuel Bridge; March 17, 2011
CAP 01275823; Refuel Bridge Issues during RFO-25
CAP 01276444; Latest Replacement 8-58 Bridge Hoist Joystick not Adjustable
CAP 01276451; Refuel Bridge Controller Lead Position does not Match Print
CAP 01276919; 1N6 Lockout Occurred on 1AR Power Transfer from 10 Bank
CAP 01227229; 1AR XFMR Lockout Caused by 1N6 Ground Fault

Section 1R15

CAP 01156561; Apparent Degrading Flow Trend - V-EF-40B
WO 371712; V-EF-40B Inspect Ductwork
CAP 1270531; PMT Failure for V-EF-40B, Div II 250VDC Battery Room Vent
CAP 1233587; No Documented Required Flow for RM-9021A/B
B.05.11-05; Process Radiation Monitoring—System Operation; Revision 29
C.6-242-A-09; Annunciator Response Procedure - V-EF-40B Low Flow; Revision 5
Operations Manual B.08.13-05; Main Control Room Heating, Ventilation, and Emergency Filtration Train—System Operation; Revision 18
Operations Manual B.08.13-01; Main Control Room Heating, Ventilation, and Emergency Filtration Train—Function and General Description of System; Revision 10
Operations Manual B.08.07-01; Heating and Ventilation—Function and General Description of System; Revision 6
C.6-242-A-09
USAR Section 7; Plant Instrumentation and Control Systems; Revision 27
USAR Appendix J; Fire Protection Program; Revision 22
ESM-01.02; Design Practices; Revision 12
CAP 01271131; Question about USAR Interpretation and Accuracy; February 17, 2011
MPS-0274; G.E. Design Specification 22A1126; Primary and SCT System
MPS-0277; G.E. Design Specification 22A1132; Containment Isolation Systems
MPS-0346; G.E. Design Specification 22A2501; Engineered Safeguards Sub Systems and Primary Containment Isolation Systems Separation
NX-7834-67-1; Reactor Protection System; Revision 76

NX-7823-4-1; Elementary Diagram Primary Containment Isolation System; Revision J
NX-7834-58-1; Interconnect Scheme Reactor Protection System; Revision J
OWI-03.03; Operation with the Potential to Drain the Reactor; Revision 3
WO 314216-14; CRD-104 for HCU 34-39 Body-to-Bonnet Leak
CO 41006; Hang C/L No. 1: CRD-104/34-39 Repair Bonnet Leak
8167-01; Freeze Sealing Using Freeze Master; Revision 9
WO 381642-06; Investigate Repair Leaking CRD-113, Scram Vlv on CRD 22-23
CO 40413; Hang CL No. 1: CRD-113/22-23, Repair/Replace Leaking Valve
WO 368061-08; Investigate and Repair Leak on CRD-104/02-23
CO 41610; Hang C/L No. 1: CRD-104/02-23 Repair Bonnet Leak
NH-36245; P&ID Control Rod Hydraulic System; Revision 77
NH-36244; Control Rod Hydraulic System P&ID; Revision 80
OPDRV Screening Chart

Section 1R18

EC 14638; Change MSIV and Seat Ring Hard-Faced Material from Stellite 6 to Stellite 21
CAP 01278168; Internal Damage to Outboard MSIVs

Section 1R19

CAP 01270939; Reactor Building Doors not Tested per Work Plan after Maintenance
1297-01; SCT Door Interlock Check; Revision 14
WO 419439; Door is Presenting Interferences for Bringing in the New Steam Dryer
4048-PM; SCT Isolation Damper Maintenance; Revision 24
CAP 01270429; V-D-61 Damper Actuator Arm Bent, Prevent Opening
CAP 01270014; Suspected Coil Leak on V-AH-4A
WO 422190; MECH – V-D-61 Damper Motor Linkage Bent
4048-PM; SCT Isolation Damper Maintenance; Revision 24
WO 378941; 186-603 Replace Lockout Relay
WO 388993; RV-1993 14 RHR Pump Suction Relief Valve Replacement
4850-603-PM; 152-603 14 RHR Pump Relay Maintenance, Calibration and Test Tripping; Revision 6
0007-A; Condenser Low Vacuum Scram Instruments Test and Calibration Procedure
WO 406610; Replace PS-5-11C

Section 1R20

Operations Manual C.3; Shutdown Procedure; Revision 63
C.4-A; Reactor Scram; Revision 34
2300 Reactivity Adjustment; Revision 4
4 AWI-08.15.03; Risk Management for Outages; Revision 6
SWI-14.01; Risk Management for Outages and On-line Activities; Revision 5
9210; Master RPV Disassembly Procedure; Revision 11
FP-OP-ROM-02; Shutdown Safety Management Program; Revision 0
Duty Shift Manager Notes for PORC Meeting 3/1/11
9001; Reactor Well & Dryer-Separator Storage Pool Filling Procedure; Revision 23
8048; Bypass of RWM during Plant Shutdown Using Improved BPWS Control Rod Insertion Process; Revision 4
EOC25 Shutdown Reactivity Management Plan Overview; March 1, 2011
Reactivity Maneuvering Steps; March 4, 2011

Operations/Maintenance Site Clock Reset – Red Sheet; March 18, 2011
CAP 1275963; Clearance Order did not Provide Boundary for CST-88 Repair
CAP 1275935; Found Pressurized Water when Dis-Assembling CST-88
Human Performance Event Review Committee for AR 1275935 Notes; March 18, 2011
CAP 1276336; Adverse Trend in Outage Tagging
2270; Critical Safety System Checklist; Revision 3
FP-OP-TAG-01; Fleet Tagging; Revision 10
0255-22-IA-1; CST-88 'B' LPCI Fill Line Check Valve Test; Revision 9
NH-85509; P&ID Service Condensate System—Radwaste Building; Revision 77
NH-36039; P&ID Service Condensate System; Revision 75
NH-36247; P&ID RHR System; Revision 79
B.08.09-02; Condensate Storage System; Revision 5
4045-OCD; RHR Loop 'B' Leak Rate Tests; Revision 15
WO 394266; 0255-22-IA-1 CST-88 'B' Loop LPCI Fill Line CKV Oper
OWI-02.07; Operations Work Control; Revision 34
4263; Maintenance and Construction Pre-Job Briefing Checklist; Revision 23
4 AWI-04.05.07; Procedure Use and Adherence (FP-G-DOC-03); Revision 27

Section 1R22

CAP 01265605; TS Surveillance was Missed for Diesel Fuel Oil
0192; Diesel Fuel Quality Checks; Revision 29
8096; Fuel Oil Transfer from the Diesel Oil Receiving Tank to the Diesel Oil Storage Tank; Revision 12
OSP-DOL-0543; Fuel Oil Receiving Quality Check; Revision 7
PRA-MEMO-11-002; Risk Assessment of Diesel Fuel Oil Missed Surveillance; January 10, 2011
Lab Number V5002355; T-83A New Diesel Fuel Oil Shipment Analysis; November 1, 2010
Lab Number V5002989; Diesel Oil Storage Tank T-44 Monthly Particulate Sample; January 12, 2011
0007-A; Condenser Low Vacuum Scram Instruments Test and Calibration Procedure; Revision 24
B.06.03; Main Condenser; Revision 14
0021-01; Reactor Low Level Scram and Low-Low Level Isolation Transmitter Calibration Procedure; Revision 14
USAR 7.6; Plant Protection System; Revision 27
B.05.06; Design Basis Document: Plant Protection; Revision C
0278-B; ATWS-Recirc Trip for Reactor Pressure and Level Trip Unit Test and Calibration; Revision 20
CAP; NRC Questions Whether ATWS Trip Cal Causes Preconditioning
0255-03-IA-2A; CS – Shutdown Valve Operability Test; Revision 21
NH-36248; MNGP P&ID CS System; Revision 79
9001; Reactor Well & Dryer Separator Storage Pool Filling Procedure; Revision 23
Ops Manual B.03.01; CS Cooling System; Revision 3
0137-07A; Reactor Steam Supply Valves Leak Rate Testing; Revision 26
EWI-08.06.01; MNGP Primary Containment Leakage Rate Testing Program; Revision 10
0137; Master Local Leak Rate Test; Revision 34
0137-A; LLRT-LRM-Makeup Flow Method; Revision 1
0137-B; LLRT Pressure Decay Method; Revision 0
0137-07A-02-OCD; Reactor Steam Supply Valve Leak Rate Testing by Pressurizing the Main Steam Lines; Revision 15
CAP 01275312; Unexpected Configuration Found after Turnover for 0137-07A

CAP 01275315; Delay in MSIV testing due to Procedure Conflicts
NH-36241; Nuclear Boiler System—Steam Supply P&ID; Revision 82
CAP 01275532; MO-2075 and MO-2076 Failed App J Admin Limit
B.09.15; Nonessential Diesel Generator
18615.01-E031B; Specification for Standby Diesel Generator; March 18, 1989
Monticello Maintenance Rule Program; System Basis Document; Non-Essential Diesel Generator; Revision 3
EWI-05.02.01; Monticello Maintenance Rule Program Document; Revision 16
USAR 8.4.2; Non Safeguards Diesel Generator; Revision 27
NDG Non-Essential Diesel Generator System Health Report; February 7, 2011
Unavailability Hours for 13 NDG; January 2011
Operator Rounds; January 23, 2010
Station Logs; January 13, 2011
ACE for CAP 01266100
Maintenance Rule Evaluation for CAP 01266100
Equipment Reliability Clock Evaluation for CAP 01266100
CAP 01266100; 13 Diesel Generator would not Manually Synch to LC-107
CAP 01267418; 13 D. Generator No. 2 Water Jacket Heater not Working; January 22, 2011
CAP 01215001; 13 DG B Side Engine Heater not Working Properly; January 23, 2010
CAP 01270472; No. 13 NDG MR Changed Color to Yellow; February 11, 2011
CAP 01266954; 13 DG Freq Relay Impacts Manual and Auto Breaker Close; January 19, 2011
CAP 01266099; PRA Associated with 13DG not Reflected on Schedule; January 13, 2011
CAP 01262539; 13 D. Generator Jacket Temperature Less than 90 degrees F; December 2, 2010

Section 1EP6

MNGP Emergency Planning Drill Package; February 9, 2011

Section 2RS5

AR 01238399; Adverse Trend Identified for PRM Equipment; June 26, 2010
Efficiency Calibration Data Files for HPGe Detectors; Selected Dates
Gamma Reports for Liquid and Gaseous Samples; Selected Dates
General Atomic Company; Certificate of Radioactivity Standard; Source Type 0360-0593-01; July 1981
Nuclear Oversight 1st Quarter 2010 Assessment Report; May 14, 2010
Nuclear Oversight 2nd Quarter 2010 Assessment Report; August 18, 2010
Nuclear Oversight 3rd Quarter 2010 Assessment Report; December 1, 2010
ODCM; Selected Revisions
Process Radiation Monitor Alarm and Trip Points; January 2010
Radioactive Source Transaction Forms; Selected Dates
Snapshot Self-Assessment; 01251738-15; Radiation Protection Instrumentation; January 2011
Title 10 CFR Part 61 Updates Documentation; Selected Dates
USAR; Section 7.5; Plant Radiation Monitoring Systems; Revision 25
0163; Stack Wide Range Gas Monitor Calibration; December 2010
0226; Semiannual Source Inventory and Smear Test; November 2009
0248; Reactor Building Vent Wide Range Gas Monitor Calibration; April 2010
5504; Whole Body Counter Calibration Checklist; Various dates 2009 and 2010
5849; PM-7 Calibration; January 2011
5854; SAM-11/LAM Calibration; Various dates 2010 and 2011

5871; ARGOS Calibration; Various dates 2010 and 2011
5879; GE ARM Box Calibration Source Verification; March 2010
5598-01; Semiannual Smear Counter Functional Checks; Various dates
5728-02; Semiannual ABACUS Smear Counter Functional Checks; Various dates

Section 4OA1

AR 01211188; Number of HRA and LHRA Entries Challenges Access Control; December 2009
AR 01212497; Dose Alarm Received while Performing Survey in RWCU Room; February 2010
AR 01212747; ED Dose Rate Alarm not Heard during HRA Entry; February 2010
AR 01238088; SJAE Room HELB Barrier Locked with Personnel Working Inside; August 2010
AR 01238171; Unexpected Dose Rates Encountered during RWCU Filter Backwash; June 21, 2010
AR 01263347; Torus to RCIC Door Lock Not Operating Correctly; December 2010
Electronic Dosimeter Dose and Dose Rate Alarm Log - January 2010 to January 2011; February 3, 2011
RPGP-01.14; Self-Assessment Program; Revision 14
FP-PA-PI-02; NRC/INPO/WANO PI Reporting; Revision 6

Section 4OA2

CAP 01265921; Hardhats not Worn as Required
CAP 01265922; Door Checks not Being Completed as Required
CAP 01267295; NRC Observations Shared with Plant Manager Staff
CAP 01267450; Surface Oxidation/Corrosion on CRD HCU Riser Valves
CAP 01269945; Toolboxes were not Secured in the TIP Drive Room
CAP 01269953; Oil Leaking from Sight Glasses on RCIC System
CAP 01269976; V-HC-11 Leaking Outside the Catch Funnel onto the Floor
CAP 01272068; Corrosion on Mounting Bolt for Div1 250 Vdc Battery Stand
CAP 01272074; Electrical Department Toolbox not Chalked
CAP 01272253; NRC Question Regarding Fire Watch
CAP 01275597; NRC Question Regarding FME Buffer Zone Requirements
FP-S-WHL-01; 10 CFR 26 Scope of Work Hour Limits; Revision 2
FP-S-FMP-01; 10 CFR 26 Fatigue Management Fleet Procedure; Revision 2
FP-S-CWH-01; 10 CFR 26 Calculating Work Hours; Revision 1
FP-S-FAP-01; 10 CFR 26 Fatigue Assessment Procedure; Revision 1
CAPs generated between March 19, 2010 and March 19, 2011 regarding Work Hour Controls
CAP 1234747; Potential Adverse Trend Work Hour Procedure Adherence
CAP 1219126; Multiple Security Officers Exceeded 10 CFR 26 Rule
CAP 1234413; Work Hours Exceeded on May 23, 2010
CAP 1239945; Adverse Trend in Maint Grp Work Hour Procedure Adherence
CAP 1218230; Supervisor Exceeded MDO requirement of 10 CFR 26
CAP 1253396; Subyard Work Possibly not in Compliance with Work Hour Rules
CAP 1270962; Excess Work Hours for Two Covered Workers
CAP 1276434; Seven DZ Employees Violated 10 CFR 26 Work Hours
CAP 1241474; Violation of Work Hours Rules under 10CFR26
CAP 1254318; WorkForce Security Schedule Change Request
Work Schedules for Select Individuals within the Maintenance, Operations, Fire Brigade, and Security Departments

Section 4OA3

FME Control Plan for 1027' Refuel Floor; January 1, 2011 to May 2011
General Employee Training M-7730F-012; On-Line FME; Revision 1
General Employee Training MT-SHE-GEN-001L; FME Monitor Training; Revision 1
9015; Procedure for Inspection of New Fuel; Revision 32
CAP 01267670; FME Control Point Protocol not Followed
FP-MA-FME-01; Foreign Material Exclusion and Control; Revision 2
CAP 1259879; Mode Change with Inoperable PCIVs
RCE CAP 1259879; Mode Change with Inoperable PCIVs
4 AWI-04.05.07; Procedure Use and Adherence; Revision 27
4 AWI-09.02.01; Quality Control Inspections; Revision 15
PRA-MEMO-10-008; Risk Assessment of LER 2010-06; December 2, 2010
FP-G-DOC-03; Procedure Use and Adherence; Revision 9
CAP 1263610; Received Unexpected Alarm ANN-5-A-2, Reactor Bldg Vent & F P
CAP 1263610; ACE; January 19, 2011
PRA-MEMO-11-003; Risk Assessment of LER 2011-02; January 17, 2011
NJ53562; Dual Trip Circuit Drawing; Revision C
Part 21 Evaluation Power Supply Model No. 112C2235G012/ST, S/N 100927-2
Monticello Station Log Entries for December 20, 2020
CAP 1232366-01; ACE; June 9, 2010
CAP 1232366; Failure of ES-17-451B, Causes REAC BLG Vent & FP RAD CH B LO
CAP 1232366-01; ACE; July 23, 2010
CAP 1236790; FP & Plenum PRM Power Supply Refurbishment and Replacement
SC/CNT 00022414; 115349-Refurbish Safety-Related ARM Power Supplies; July 29, 2009

Section 4OA5

FAC Program MNGP 1R24 Outage Summary Report
FAC Program MNGP RFO 23 Outage Summary Report
CD 5.17; Flow Accelerated Corrosion and Service Water Inspection Program Standard; Revision 5
II.01; Strategic Chemistry Plan; Revision 14
FP-E-MOD-04; Design Inputs; Revision 7
FP-PE-FAC-01, FAC Program; Revision 9
AR 01219342; Update FAC Master Plan; February 22, 2010
2009-04-001; NOS Observation Report – FAC Program; November 2, 2009
PBD/AMP-002, Aging Management Program Basis Document, Flow – Accelerated Corrosion (FAC) Program; Revision 4

## LIST OF ACRONYMS USED

| | |
|---|---|
| ACE | Apparent Cause Evaluation |
| ADAMS | Agencywide Document Access Management System |
| AOP | Abnormal Operating Procedures |
| ASME | American Society of Mechanical Engineers |
| ATWS | Anticipated Transient without Scram |
| CAP | Corrective Action Program |
| CFR | Code of Federal Regulations |
| CIV | Containment Isolation Valve |
| CO | Clearance Order |
| CREF | Control Room Emergency Filtration |
| CRV | Control Room Ventilation |
| CS | Core Spray |
| CST | Condensate Storage Tank |
| CSW | Condensate Service Water |
| DRP | Division of Reactor Projects |
| EC | Engineering Change |
| EDG | Emergency Diesel Generator |
| EGM | Enforcement Guidance Memorandum |
| EPU | Extended Power Uprate |
| FAC | Flow Accelerated Corrosion |
| FME | Foreign Material Exclusion |
| FPEE | Fire Protection Engineering Evaluation |
| FSAR | Final Safety Analysis Report |
| IMC | Inspection Manual Chapter |
| INPO | Institute of Nuclear Power Operations |
| IP | Inspection Procedure |
| IRM | Intermediate-Range Monitor |
| ISI | Inservice Inspection |
| IST | Inservice Test |
| kV | Kilovolt |
| LCO | Limiting Condition for Operation |
| LER | Licensee Event Report |
| LLRT | Local Leak Rate Test |
| LPCI | Low Pressure Coolant Injection |
| MNGP | Monticello Nuclear Generating Plant |
| MOV | Motor-Operated Valve |
| MSIV | Main Steam Isolation Valve |
| MSO | Multiple Spurious Operations |
| MSPI | Mitigating Systems Performance Index |
| MT | Magnetic Particle Examination |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NFPA | National Fire Protection Association |
| NMC | Nuclear Management Company |
| NOS | Nuclear Oversight |
| NRC | U.S. Nuclear Regulatory Commission |
| NRR | Nuclear Reactor Regulation |
| ODCM | Offsite Dose Calculation Manual |
| OE | Operating Experience |

| | |
|---|---|
| OSP | Outage Safety Plan |
| OTI | One-Time Inspection |
| PARS | Publicly Available Records System |
| PCIV | Primary Containment Isolation Valves |
| PI | Performance Indicator |
| PM | Post-Maintenance |
| RCE | Root Cause Evaluation |
| RCIC | Reactor Core Isolation Cooling |
| RETS | Radiological Effluent Technical Specification |
| RFO | Refueling Outage |
| RG | Regulatory Guide |
| RHR | Residual Heat Removal |
| RHRSW | Residual Heat Removal Service Water |
| ROP | Reactor Oversight Process |
| RPV | Reactor Pressure Vessel |
| RT | Radiographic Examination |
| RWCU | Reactor Water Cleanup |
| SBGT | Standby Gas Treatment |
| SBLC | Standby Liquid Control |
| SCT | Secondary Containment |
| SDP | Significance Determination Process |
| SRM | Source Range Monitor |
| SRO | Senior Reactor Operator |
| SSC | Structure, System, and Component |
| TS | Technical Specification |
| URI | Unresolved Item |
| USAR | Updated Safety Analysis Report |
| UT | Ultrasonic Examination |
| Vdc | Volts Direct Current |
| WO | Work Order |

U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Monticello Nuclear Generating 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 Monticello Nuclear Generating 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/***

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

Docket No. 50-263
License No. DPR-22

Enclosure: Inspection Report 05000263/2011002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

DISTRIBUTION:
See next page

DOCUMENT NAME: G:\DRPIII\1-Secy\1-Work In Progress\MON 2011 002.docx
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive
**To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy**

| OFFICE | RIII | N | RIII | | RIII | E | RIII | |
|---|---|---|---|---|---|---|---|---|
| NAME | AScarbeary | | JHeck for SOrth* | | KRiemer:cs | | | |
| DATE | 05/02/11 | | 05/03/11 | | 05/10/11 | | | |

***OFFICIAL RECORD COPY***

*Sections 1RO5.2, 4OA3.4, and Cover Letter

Letter to T. O'Connor from K. Riemer dated May 10, 2011

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT NRC INTEGRATED AND POWER UPRATE REVIEW INSPECTION REPORT 05000263/2011002 AND EXERCISE OF ENFORCEMENT DISCRETION

DISTRIBUTION:
Daniel Merzke
RidsNrrDorlLpl3-1 Resource
RidsNrrPMMonticello
RidsNrrDirsIrib Resource
Cynthia Pederson
Steven Orth
Jared Heck
Allan Barker
Carole Ariano
Linda Linn
DRPIII
DRSIII
Patricia Buckley
Tammy Tomczak
ROPreports Resource