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

May 13, 2013

Mr. Mark Schimmel
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 05000263/2013002

Dear Mr. Schimmel:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Monticello Nuclear Generating Plant. The enclosed report documents the inspection results, which were discussed on April 10, 2013, 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, one NRC-identified and one self-revealed finding of very low safety significance were identified.

The findings involved violations 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 and 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 Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site 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 05000263/2013002
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-263
License No:	DPR-22
Report No:	05000263/2013002
Licensee:	Northern States Power Company, Minnesota
Facility:	Monticello Nuclear Generating Plant
Location:	Monticello, MN
Dates:	January 1 through March 31, 2013
Inspectors:	S. Thomas, Senior Resident Inspector P. Voss, Resident Inspector S. Bell, Health Physicist J. Neurauter, Senior Reactor Inspector I. Hafeez, Reactor Inspector T. Bilik, Senior Reactor Inspector
Approved by:	K. Riemer, Chief Branch 2 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000263/2013002; 01/01/2013 – 03/31/2013; Monticello Nuclear Generating Plant. Maintenance Risk Assessments and Emergent Work Control; Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of NRC regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using IMC 0609, "Significance Determination Process" dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. 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: Mitigating Systems

- Green. A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when the licensee failed to provide adequate work instructions for work on the 12 core spray (CS) pump, to ensure that the correct power cable was cut during cable removal activities. Specifically, the work package did not contain plant drawings or steps requiring use of positive cable identification tools, and contained cable routing information which did not accurately reflect configuration of the 12 CS motor electrical power cable. This resulted in the field workers relying on informal labeling and the incorrect cable routing information to identify and cut the cable. As a direct result, the work group incorrectly cut the 14 RHR pump power cable, which unintentionally disabled a pump being credited as available in the licensee's shutdown safety risk assessment at the time of the error. Once identified, the licensee took prompt action to stop work on this job and all activities associated with the demolition of cabling 480V and higher. Before resuming work, the licensee developed a list of positive identification tools for cutting cable, and incorporated the use of these tools as requirements into all work packages associated with cutting 480V and higher voltage cables. The licensee also assembled a root cause evaluation team, reset the site human performance clock, and provided site wide communication of the details of the event. This event was entered into the licensee's corrective action program (CAP 01374981).

  The inspectors determined that the licensee's failure to adequately identify and cut the correct cable during the 12 CS pump cable removal activity was a performance deficiency, because it was the result of the failure to meet the requirements of 10 CFR 50, Appendix B, Criterion V; 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 Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, and determined that the issue was more than minor because it impacted the equipment and human performance attributes of the Mitigating Systems Cornerstone and affected the cornerstone's objective to

ensure the availability reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). In this instance, the performance deficiency resulted in the unintentional unavailability of the 14 RHR pump and subjected workers to a potentially energized 4160V power source. At the time of the error, 14 RHR was one of the pumps being credited in support of the shutdown safety functions of core heat removal and inventory control. As a result, this finding was evaluated under the Mitigating Systems Cornerstone. Since the plant was shut down and defueled, the inspectors applied NRC IMC 0609, “Significance Determination Process,” Appendix G, "Shutdown Operations Significance Determination," Attachment 1, to this finding. The inspectors determined that the finding had very low safety significance because it did not adversely affect core heat removal; inventory control; power availability; containment control; or reactivity guidelines. 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 resources components, and involving aspects associated with having complete, accurate and up-to-date design documentation, procedures, and work packages, and correct labeling of components to assure nuclear safety. [H.2(c)] (Section 1R13)

Cornerstone: Public Radiation Safety

Green. The inspectors identified a finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR 71.5 for the failure to correctly complete radioactive waste shipping documents for radioactive shipments containing condensate resins. The shipment documentation failed to include the radionuclide Am-241, which was present within the shipment. This issue was entered into the licensee’s corrective action program (CAP) as AR 01369367. The licensee is improving the supervisory approval mechanism for radioactive shipment documentation to ensure shipping papers are adequately completed.

The performance deficiency was determined to be of more than minor safety significance in accordance with Inspection Manual chapter (IMC) 0612, Appendix B, “Issue Screening,” because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, incorrect shipment documentation could lead to incorrect Department of Transportation (DOT) and NRC transport classifications or incorrect waste classifications in accordance with 10 CFR 61. The inspectors also reviewed the guidance in IMC 0612, Appendix E, “Examples of Minor Issues,” and did not find any similar examples. In accordance with IMC 0609, Appendix D, “Public Radiation Safety Significance Determination Process,” the inspectors determined that the finding had very low safety significance (Green) because the finding did not involve: (1) radiation levels exceeded, (2) a breach of package during transit, (3) a certificate of compliance issue, (4) a low-level burial ground nonconformance, (5) or the failure to make notifications or provide emergency information. The primary cause of this finding was related to the cross-cutting aspect of human performance with the component of work practices. The licensee ensures supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported. [H.4(c)] (Section 2RS8.6)

B. Licensee-Identified Violations

No violations were identified.

REPORT DETAILS

Summary of Plant Status

Monticello operated at full power for a majority of the inspection period, with the exceptions of minor power changes to support planned testing or control rod adjustments and one significant power decrease, to approximately 30 percent power (January 12-13, 2013), to support maintenance on several secondary plant control valves. On March 2, Monticello performed a planned plant shutdown for a refueling outage (RFO). The plant remained shutdown for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood (PMF). 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 PMF event or allow water ingress past a barrier. The inspectors walked down the intake structure areas to inspect flood barriers and review the necessary flood preparation activities for those areas. The inspectors also reviewed the abnormal operating procedure (AOP) for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 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 several days during the week of January 20, 2013, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On January 22, 2013, the inspectors walked down a majority of the areas in the power block, focusing specifically on emergency diesel generators (EDGs); raw water systems; and station batteries;

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 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:

- electric and motor driven fire pumps;
- standby liquid control (SBLC) system; and
- EDG fuel oil supply system during T-44 inspection.

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 2C; west hydraulic control unit area;
- Fire Zone 23-B; intake structure corridor;
- Fire Zone 13A; lube oil storage tank;
- Fire Zones 31A and B; emergency filtration train (EFT) 1st Floor Division I and Division II; and
- Fire Zone 12E; steam jet air ejector (SJAE) room.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.
The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event.
Using the documents listed in the Attachment 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 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On February 9, 2013, the inspectors observed a fire brigade activation due to the report of a (simulated) fire in the chemistry lab. Based on this observation, the inspectors

evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief; and took appropriate corrective actions. Documents reviewed are listed in the Attachment to this report. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate fire fighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

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

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, verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- turbine building; 911' elevation (spaces adjacent to lower 4kV switchgear room).

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

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08)

From March 20 through 25, 2013, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the reactor coolant system, emergency feedwater systems, risk significant piping and components and containment systems.

The inspections described in Sections 1R08.1 and 1R08.5 below count as one inspection sample as defined in IP 71111.08.

.1 Piping Systems ISI

a. Inspection Scope

The inspectors observed the following nondestructive examinations (NDE) required by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code, Section XI, applicable ASME Code Cases 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 28" recirculation 'A' safe end-to-pipe weld W-2 LSD; and
- UT of the 28" recirculation 'A' pipe-to-elbow weld W-3 LS U&D.

In addition, the inspectors reviewed the following NDE examination records:

- UT of the 18" main steam 'C' pipe-to-pipe weld W-24;
- UT of the 18" main steam 'C' pipe-to-elbow weld W-25;
- visual examination (VT-3) of the recirculation 'B' hanger H-3;
- VT-3 of the recirculation 'B' restraint H-4; and
- VT-3 of the recirculation 'A' support H-6.

The inspectors reviewed the following examination record with relevant/recordable conditions/indications identified by the licensee to determine whether acceptance of these indications for continued service was in accordance with the ASME Code Section XI or an NRC-approved alternative:

- Report No. 2011UT075, residual heat removal (RHR) return loop 'A' weld W-2 (RHCJ-32) indication.

The inspectors reviewed records of the following pressure boundary welds completed for a risk-significant system to determine if the licensee followed an ASME Code Section IX qualified welding procedure, maintained control of foreign material, and to determine whether the welder used qualified weld filler material and base material. The inspectors also reviewed post-weld NDE records, to determine if the welds met the ASME Code Sections III and XI:

- field welds Nos. 1 and 2 fabricated during the reorientation of valve MO-2373, a Class 1 main steam line valve as recorded in WO 00383535-04;

- field welds Nos. 1 and 2 fabricated during the reorientation of valve MO-2374, a Class 1 main steam line valve as recorded in WO 00383536-05; and
- field welds Nos. 1 and 2 fabricated during the re-routing of ESW line ESW1-3-HBD, a Class 3 line as recorded in WO 00433818 10.

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 whether:

- 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 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 of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On February 28, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training 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 licensee was performing just in time training (JITT) activities to prepare for their upcoming plant shutdown for a RFO. 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;
- quality of training activities; 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 simulator sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On March 1 and 2, 2013, the inspectors observed the control room operators conduct a reactor plant shutdown. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- control rod drive (CRD)/ reactor manual control system.

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 one 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:

- 12 recirculation pump motor low lube oil level;
- temporary loss of shutdown cooling;
- 12 core spray (CS) pump motor feeder cable replacement;
- yellow risk for Division II EDG-emergency service water (ESW) work window;
- T-25 waste collector demineralizer cleaning/secondary containment controls; and
- reactor pressure vessel (RPV) refuel cavity flood up activities.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified 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.

Specific documents reviewed during this inspection 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

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 provide adequate work instructions for work on the 12 CS pump, to ensure that the correct power cable was cut during cable removal activities. Specifically, the work package did not contain plant drawings or steps requiring use of positive cable identification tools, and contained cable routing information which did not accurately reflect configuration of the 12 CS pump motor power cable. This resulted in the field workers relying on informal labeling and the incorrect cable routing information to identify and cut the cable. As a direct result, the work group incorrectly cut the 14 RHR pump power cable, which was not isolated and was being credited as available in the licensee’s shutdown safety risk assessment at the time of the error.

Description

On March 16, 2013, contract maintenance personnel were working on cable replacement activities for the 12 CS pump. While performing work associated with removal of the 12 CS motor power cable, the workers prepared to make several cuts to the power cable per the work instructions contained in WO 416771-05.

The inspectors noted that the WO did not contain detailed instructions on cable identification methods for this portion of the task. Specifically, WO 416771-05, Step 8.30 stated, “in the RHR-B room, HPCI [high pressure coolant injection] Tank room, and 931’ upper 4KV room, remove and discard existing cable A605-M605/1 in its entirety. This will include removal from C203, J202, A214, J203, F203, J204, and G244.

The existing cable will not be reused. Cut as necessary to facilitate removal. If cable is unable to be removed from either raceway A214 or F203, contact Responsible Engineer for resolution." The procedure also contained a step which stated, "CAUTION craft personnel SHALL check modification circuits are properly identified, drawings/installation instructions are adequate and circuits de-energized prior to commencing work." The inspectors noted that embedded conduit design drawings were not provided in the work package to facilitate positive identification of the 12 CS pump motor power cable. Instead, the work package contained cable routing information from the plant's Conduit and Raceway Information System (CARIS). The work instructions were developed using CARIS to identify cable and conduit routing locations.

Prior to making any cable cuts, the workers performed a job walkdown and verified that the clearance order associated with the work was in place. They also performed a continuity check of the power cable to verify that it had been properly de-terminated at both the pump motor end and the switchgear end of the cable. At the cable junction boxes, the workers relied on the work instructions and informal, uncontrolled sharpie marker labels made directly on the concrete walls near each of the conduits. Once work began, the workers made cuts in two of the junction boxes, J204 and J205, located in the B-RHR room and the HPCI tank room, respectively. Following the cutting activities, the workers attempted to pull the cable from the B-RHR room to the HPCI tank room junction box location. During the pull, the power cable moved 1-2 feet, but was unable to be pulled further. The workers believed the power cable was getting stuck, and attempted a few times to try to remove the cable.

The next day, when attempting to determine the issue with the stuck cable, the workers identified that the wrong motor power cable had been cut at the HPCI tank room junction box, J205. Upon further investigation, workers discovered that the 12 CS pump and one of the RHR pump motor cables were crossed and swapped in a junction box upstream of the cable cut. This junction box, J202, was located in the upper 4kV switchgear room. Because these cables were swapped, the 12 CS pump motor power cable was routed away from the conduit identified in CARIS as the conduit containing the 12 CS pump cable. Instead, it was routed into a conduit that was identified in CARIS as containing the 14 RHR pump motor power cable, and the 14 RHR pump cable was routed into the conduit CARIS designated as the 12 CS pump motor power cable conduit. In addition, the conduits were labeled with sharpie markers directly on the concrete next to each cable run. These informal, uncontrolled labels were consistent with CARIS and the work instructions, but inconsistent with actual plant configuration. Due to the swapping of the power cables in J202, the work package and informal plant labels did not accurately reflect configuration of the power cables in J205. Because the workers did not take action to positively identify the correct power cable at J205, the incorrect cable was cut at this location.

Upon identification of the error, site personnel were uncertain of which Division II RHR pump motor power cable had been inadvertently cut. As a result, electrical power was isolated to both the 12 and 14 RHR pump motors, making both pumps inoperable and unavailable. Subsequently, the site identified that 14 RHR was the pump that was impacted by the cable cutting error, and operators restored power to the 12 RHR pump motor. As an immediate action, the site initiated a stop WO, to halt all activities involving the cutting of power cables 480V and larger, until interim actions could be taken to prevent future incorrect cable cutting. Interim corrective actions included integrating positive cable identification method requirements into all work

packages for cutting of cables 480V and larger; reviewing the event with station personnel and contractors; conducting a stand down with the associated craft workers to discuss the importance of positive cable identification; and briefing work planners on new expectations to include positive identification steps in cable cutting WOs. Positive identification steps incorporated into the cable cutting WOs included:

- verify clearance is in place and workers are signed on;
- use CARIS and any drawings available to identify the design routing;
- walk the cable down to the extent practical to understand the field run. If there are any discrepancies between the design and the field, stop and notify supervision;
- lift the cable at both ends;
- verify continuity of the cable;
- utilize a tone generator at proposed cut location to validate that it is the correct cable;
- use flagging to mark the cable to be cut; and
- obtain an independent verification from an Xcel person prior to cutting.

Upon further investigation, the licensee determined that a 1985 design modification had run new RHR and CS cables through the plant. The licensee noted that during this modification, the cable positions were likely swapped to preserve cable bend radius. The licensee also noted that these swapped positions were not appropriately documented and transmitted to the CARIS cable routing database. While the origin of the informal, black marker labeling was uncertain at the time of the inspection, the inspectors noted that regardless of their origin, they were not controlled labels and should not have been relied upon for cable identification.

After the event was understood and interim corrective actions had been taken, the site initiated a work activity planned to occur later in the outage to replace the 14 RHR power cable. The site classified this event as a Level 1 tagging event, because although the 14 RHR pump motor power cable that was cut was not energized at the time of the error, the workers were not protected from a high energy electrical power source when they made the erroneous cut. The licensee reset the site human performance clock, and initiated a root cause evaluation (RCE) as a result of the event. At the time of the event, the reactor was defueled, with all fuel assemblies unloaded in the spent fuel pool. Although the 14 RHR pump was being credited in support of shutdown safety functions, due to the plant's defueled condition it was not required to be operable at the time of the error. Because the licensee had several other pumps available and being credited toward the decay heat removal and inventory control risk categories, the site risk level remained Green during this event. This issue was entered into the licensee's corrective action program as CAP 1374981.

Analysis

The inspectors determined that the licensee's failure to adequately identify and cut the correct cable during 12 CS pump motor power cable replacement activities was a performance deficiency, because it was the result of the failure to meet the requirements of 10 CFR 50, Appendix B, Criterion V; 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 resources components, and involving aspects associated with having complete, accurate and up-to-date design documentation, procedures, and work packages, and correct labeling of components to assure nuclear safety. [H.2(c)].

The inspectors screened the performance deficiency per Inspection Manual Chapter (IMC) 0612, “Power Reactor Inspection Reports,” Appendix B, and determined that the issue was more than minor because it impacted the equipment and human performance attributes of the Mitigating Systems Cornerstone and affected the cornerstone’s objective to ensure the availability reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). In this instance, the performance deficiency resulted in an unintentional unavailability of the 14 RHR pump and subjected workers to a potentially energized 4160V power source. At the time of the error, 14 RHR was one of the pumps being credited in support of the shutdown safety functions of core heat removal and inventory control. As a result, this finding was evaluated under the Mitigating Systems Cornerstone. Since the plant was shut down and defueled, the inspectors applied NRC IMC 0609, “Significance Determination Process,” Appendix G, "Shutdown Operations Significance Determination," Attachment 1, to this finding. The inspectors determined that the finding had 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 instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.” Contrary to this requirement, on March 16, 2013, the licensee failed to provide adequate work instructions for work on the 12 CS pump to ensure that the correct power cable was cut during cable replacement activities. Specifically, the work package did not contain plant drawings or steps requiring use of positive cable identification tools, and contained cable routing information which did not accurately reflect configuration of the 12 CS pump motor power cable. This resulted in the field workers relying on informal labeling and the incorrect cable routing information to identify and cut the cable. As a direct result, the work group incorrectly cut the 14 RHR pump motor power cable, which was not isolated and was being credited as available in the licensee’s shutdown safety risk assessment at the time of the error. Because the violation was of very low safety significance and was entered into the licensee’s corrective action program (CAP 01374981), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (**NCV 05000263/2013002-01;14 RHR Power Cable Inadvertently Cut**)

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- 15 battery functionality with low specific gravity;
- ODMI 13-02; recirculation pump motor 'B' low oil alarm received;
- 12 battery high interconnector resistance;
- 13 ESW piping ultrasonic test results; and
- T-234 block wall high energy line break concerns.

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.

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modifications:

- EC 21009 (alternate spent fuel pool cooling); and
- EC 11444 (1R transformer replacement).

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

impact overall plant performance. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted one temporary modification sample and 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:

- replacement of ESW piping ESW1-3" – HBD;
- MO-2021 and MO-2023 drywell (DW) spray isolation valve work;
- 1R transformer protective device testing;
- replacement of SV-2065 air supply for HPCI min flow control valve; and
- alternate spent fuel pool cooling modification.

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 TSs, 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.

This inspection constituted five 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 RFO 26, which began on March 2, 2013, 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:

- 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 secondary containment as required by TS;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- 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 (DW) (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.

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- scram discharge volume high level scram test and calibration (routine);
- No. 16 250 Vdc battery operability check quarterly—Division II (routine);
- 0086 SBLC refueling tests (routine);
- drywell-torus monthly vacuum breaker check (routine);
- reactor steam supply valves leak rate testing (containment isolation valve (CIV) local leak-rate test (LLRT)); and
- 11 EDG and EDG-ESW quarterly pump and valve tests (inservice test (IST)).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and 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.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted one complete sample as defined in IP 71124.01 05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators (PIs) for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of Radiation Protection Program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

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

The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

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

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

- outage DW undervessel activities;
- outage refueling floor activities; and
- feedwater pump replacement activities.

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

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

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

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904,

"Labeling Containers," or met the requirements of 10 CFR 20.1905(g), "Exemptions To Labeling Requirements."

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

- 1446-01; radiation work permit; drywell snubber inspection and change-out;
- 1709-01; radiation work permit; drywell shielding and associated activities;
- 718-01; radiation work permit; drywell insulation activities; and
- 892-02; radiation work permit; perform undervessel work.

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

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

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

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicates the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee

has established a de facto “release limit” by altering the instrument’s typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

The inspectors selected several sealed sources from the licensee’s inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

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

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

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

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

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

- 1446-01; radiation work permit; drywell snubber inspection and change-out;
- 1709-01; radiation work permit; drywell shielding and associated activities;
- 718-01; radiation work permit; drywell insulation activities; and
- 892-02; radiation work permit; perform undervessel work.

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

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

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

b. Findings

No findings were identified.

.6 Risk-Significant High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk high radiation areas and very high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that have the potential to become very high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very high radiation areas and areas with the potential to become very high radiation areas to ensure that an individual was not able to gain unauthorized access to the very high radiation area.

b. Findings

No findings were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

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

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

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

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

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

These inspection activities supplement those documented in NRC Inspection Reports 05000263/2012004 and 05000263/2012005, and constitute a partial sample as defined in IP 71124.02-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures and source term measurements.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures as-low-as-is-reasonably-achievable (ALARA), which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

This inspection constituted one complete sample as defined in IP 71124.08-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the Final Safety Analysis Report, the process control program, and the recent radiological effluent release report for information on the types, amounts, and processing of radioactive waste disposed.

The inspectors reviewed the scope of any quality assurance audits in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

b. Findings

No findings were identified.

.2 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements," as appropriate.

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for

Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage," as appropriate.

The inspectors evaluated whether the licensee established a process for monitoring the impact of long term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

b. Findings

No findings were identified.

.3 Radioactive Waste System Walkdown (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in the Final Safety Analysis Report, Offsite Dose Calculation Manual, and process control program.

The inspectors reviewed administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to assess whether the equipment which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments".

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the Final Safety Analysis Report were reviewed and documented in accordance with 10 CFR 50.59, as appropriate and to assess the impact on radiation doses to members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers and assessed whether the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the process control program, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors evaluated whether the tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's process control program correctly described the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

b. Findings

No findings were identified.

.4 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors selected the following radioactive waste streams for review:

- 10 CFR 61 analysis, primary resins, November, 2011; and
- 10 CFR 61 analysis, secondary resins, October, 2011.

For the waste streams listed above, the inspectors assessed whether the licensee's radiochemical sample analysis results (i.e., "10 CFR Part 61" analysis) were sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors evaluated whether the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR Part 61 analysis for the selected radioactive waste streams.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR Part 61 for the waste streams selected above.

The inspectors evaluated whether the licensee had established and maintained an adequate quality assurance program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

b. Findings

No findings were identified.

.5 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable transport cask certificate of compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for cask loading and closure procedures were consistent with the vendor's current approved procedures.

The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. The inspectors assessed whether the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to:

- the licensee's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979; and
- Title 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training."

Due to limited opportunities for direct observation, the inspectors reviewed the technical instructions presented to workers during routine training. The inspectors assessed whether the licensee's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

b. Findings

No findings were identified.

.6 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- radioactive waste shipment 11-151; dry active waste; November 2011;
- radioactive waste shipment 11-172; primary resins; December 2011;
- radioactive waste shipment 12-38; condensate resins; October 2012;
- radioactive waste shipment 12-46; condensate resins; October 2012; and
- radioactive waste shipment 12-53; old steam dryer; November 2012.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

b. Findings

Introduction

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 71.5 for the failure to correctly complete radioactive waste shipping documentation. The documentation was for a radioactive shipments containing condensate resins shipped for disposal. The shipment documentation failed to include the radionuclide Am-241, which was present within the shipment.

Description

The licensee or its contractors periodically determine the alpha emitting radionuclide content in its applicable radioactive waste streams. In October 2011, the licensee's contractor analyzed the condensate resin. The licensee subsequently reviewed this report and entered it into the radioactive waste shipment database. The licensee later reviewed the data and incorrectly concluded that Am-241 was not present in this waste stream. The licensee then executed a series (three total) of condensate resin shipments which did not include Am-241 in the calculations used to determine the appropriate radionuclide content, transport classification, and disposal classification. This omission was identified by the inspectors and the licensee entered this into their corrective action program as CAP 0136937. The licensee re-executed the condensate resin shipment documentation with the inclusion of Am-241. The inspectors reviewed this new documentation and concluded that neither the transport classification nor disposal classification had changed as the result of this omission. However, Am-241 was required to have been listed on the radioactive shipment documentation. The licensee is improving the supervisory approval mechanism for radioactive shipment documentation to ensure radioactive shipment documentation is adequately completed.

Analysis

The inspectors determined that not correctly preparing shipping documentation was a performance deficiency, the cause of which was reasonably within the licensee's ability to foresee and correct, and should have been prevented. This finding was not subject to traditional enforcement since the incident did not result in a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

The performance deficiency was determined to be of more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, incorrect shipping documentation could lead to incorrect Department of Transportation (DOT) and NRC transport classifications or incorrect waste classifications in accordance with 10 CFR Part 61. The inspectors also reviewed the guidance in IMC 0612, Appendix E, "Examples of Minor Issues," and did not find any similar examples. In accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding did not involve: (1) radiation levels exceeded, (2) a breach of package during transit, (3) a certificate of compliance issue, (4) a low-level burial ground nonconformance, (5) or the failure to make notifications or provide emergency information.

The primary cause of this finding was related to the cross-cutting aspect of Human Performance with the component of work practices. The licensee ensures supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported. Licensee supervision did not ensure changes made to its radioactive waste analysis database were correctly reviewed and entered into the software. (H.4(c))

Enforcement

Title 10 CFR 71.5 requires in part that the applicable requirements of the DOT regulations in 49 CFR Parts 107, 171 through 180, be followed. Title 49 CFR 172.203(d)(1) specifies the requirement for which radionuclides must be listed on a shipping documents. Americium (Am-241) met this requirement to be listed. Contrary to the above, in December 2011 through October 11, 2012, three condensate radioactive waste shipments (11-168, 11-169, and 12-46) were made without Am-241 entered on the shipping documents. Since the violation of 10 CFR 71.5 was of very low safety significance and has been entered into the licensee's CAP (CAP 0136937), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000263/2013002-02; Failure to Enter Radionuclide on Radioactive Waste Shipment Documentation)**

.7 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the licensee CAP. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

The inspectors reviewed results of selected audits performed since the last inspection of this program and evaluated the adequacy of the licensee's corrective actions for issues identified during those audits.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours PI for the period from the 1st Quarter of 2012 through the 4th Quarter of 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for this time 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 of 2012 through the 4th Quarter of 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for this 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 2012 through the 4th Quarter 2012. 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 this 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. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

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 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 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of October 2012 through March 2013, although some examples expanded beyond those dates where the scope of the trend warranted.

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

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

b. Findings

No findings were identified.

.4 Selected Issue Follow-Up Inspection: Shield Plug Lifting Lugs

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting a shield plug lifting lug safety factor review.

The inspectors reviewed the resolution of the licensee-identified concern that the design factor of safety for reactor well upper shield block lifting lugs was non-conforming to Monticello Nuclear Generating Plant's (MNGP) heavy load licensing basis, Section 5.1.6(3) of NUREG-0162, "Control of Heavy Loads at Nuclear Power Plants," dated July 1980, for single failure proof interfacing lift points. In addition, the licensee's extent of condition evaluation further identified that the dryer/storage pool shield block lifting lugs and the steam separator lifting lugs were non-conforming to the MNGP heavy loads licensing submittal dated October 11, 1982. The inspectors reviewed the licensee's associated condition report (CAP 01369764), lifting lug functionality assessments, calculations that determined design factor of safety for the lifting lugs, and the rated capacity of rigging components used for the reactor cavity shield block lifts. The inspectors noted that the licensee used a lower factor of safety for slings and shackles than that for the shield block lifting lugs. To assure that the affected

components would be safely lifted, the inspectors verified that design factors of safety for lifting lugs and rigging components exceeded the requirements of Section 5.1.1(4) of NUREG-0612 for special lifting device components not single failure proof. The inspectors further verified that licensee CAP 01369764 had corrective actions in place to resolve the identified lifting lug non-conformances and to evaluate heavy load licensing requirements in relation to appropriate safety factors for slings used for reactor cavity shield block lifts.

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report (LER) 05000263/2012-003-01: Automatic Reactor Scram During Maintenance on 4160V 12-Bus; Revision 1

This event, which occurred on September 25, 2012, involved a reactor scram which was initiated by maintenance activities associated with a 4160V 12-bus ammeter. During maintenance on a 4160V bus 12 ammeter, a bus 12 lockout occurred. At the time of the lockout, the station electrical loads were being powered from the 1R reserve transformer to establish the necessary electric plant conditions to support work activities on the 2R auxiliary transformer. When bus 12 de-energized due to the bus lockout, power was lost to 12 reactor feed pump and 12 reactor recirculation pump. The subsequent plant transient resulted in a main turbine tripped (on high reactor water level) and the reactor scram.

The licensee performed two RCEs as a result of the event. One RCE was focused on the cause of the bus lockout. This RCE was discussed in the initial event LER submittal. Licensee Event Report 05000263/2012-003, Revision 1, was submitted in order to include the results of the second RCE, which was focused on the plant response to the transient, and the fact that the operators did not expect the plant to scram as a result of the loss of the 12 bus.

The licensee determined that the root cause of the unexpected plant response was that the digital feedwater control system in its current configuration is unable to control the RPV level below the high RPV water level turbine trip setpoint, when a 12 bus lockout occurs with the plant operating at 100 percent power. The licensee concluded that a bus 12 lockout was not an analyzed operational occurrence and, as a result, the digital feedwater control system (DFCS) wasn't designed to maintain the plant online during that event. The licensee noted that training, procedures, and simulator response dictated that the DFCS would automatically control reactor water level below the turbine trip setpoint. As a result of this investigation, the licensee concluded that the plant procedures and simulator incorrectly described and modeled plant response. This explained why the plant response to the transient was not expected by the operators.

The inspectors reviewed the licensee's conclusions and corrective actions associated with the event. No findings were identified in this report. One finding was documented

in NRC Inspection Report 05000263/2012004, for the lack of appropriate procedural guidance associated with the maintenance activity. In addition, the inspectors' review of Revision 0 of this LER was documented in NRC Inspection Report 05000263/2012005 with no additional findings. Documents reviewed as part of this inspection are listed in the Attachment to this report. This LER is closed.

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

.2 (Closed) Licensee Event Report (LER) 05000263/2012-004-00: High Pressure Coolant Injection Inoperable When Inverter is Out of Service

During the time period of March 19, 2012, through May 30, 2012, the Agency conducted a Component Design Basis Inspection (CDBI) for MNGP. One of the issues identified by the team during this inspection was associated with how the licensee controlled the power sources associated with their instrument power buses, Y70 and Y80. At the time of the inspection, the licensee's operating procedures allowed for aligning both of the instrument power bus's uninterruptible power supplies to their alternate power sources for seven days, or longer with management approval. The issue identified by the team was that in this configuration, the instrument buses were susceptible to an interruption in power if offsite power was lost. In the case of a loss of offsite power (LOOP)/ loss-of-coolant accident (LOCA) or station blackout (SBO) event, power would not be restored unless off-site or on-site power became available. Specifically, during a LOOP/LOCA, power would be interrupted to buses Y70 and Y80 for at least 10 seconds until the EDGs become available, and during a SBO, the power to these vital buses could be interrupted up to four hours. At the time the inspection concluded, the licensee had not identified an occurrence where both uninterruptible power supply buses had been simultaneously aligned to their alternate source, and had put in place procedural guidance to restrict this alignment in the future.

On October 1, 2012, as part of their extent of condition evaluation of the issue identified by the CDBI team, the licensee identified a vulnerability associated with operating the Division II instrument power bus from its backup power source. The licensee discovered that, "when the Division II inverter is removed from service, the HPCI flow controller becomes dependent upon the EDGs for power. In this configuration, the flow controller does not receive power until approximately 10 seconds after the EDG start signal is received during a LOCA. Due to the 10 second delay, the ramp generator controller (RGSC) will either time out, or reach a maximum output condition which would defeat the function of the RGCS, resulting in a rapid increase in turbine speed to meet demand. A turbine overspeed trip may occur resulting in HPCI being unable to initiate in the credited 45 seconds." As determined by a past operability review, the licensee identified that the system had been in this configuration on one occasion, for approximately 52 hours (October 20, 2009, at 03:16 to October 22, 2009, at 17:33), during the last three years. The licensee concluded that during this time, HPCI was inoperable, and low pressure coolant injection (LPCI) was inoperable but available for approximately one hour due to venting the system. The inoperability time did not exceed the TS limiting condition for operation (LCO) time for HPCI.

The inspectors which performed the CDBI (NRC Inspection Report 05000263/2012007) documented a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to ensure single failure criterion is not violated by the procedure for

simultaneously aligning both Divisions of 120 Vac uninterruptible instrument power to their alternate, non-battery backed power sources and the use of the procedure could result in temporary and prolonged loss of all safety related uninterruptable instrument power during LOOP and SBO events, respectively. Corrective actions performed by the licensee to address this issue included procedure changes to control the use of the maintenance bypass switch to power Y70 and Y80 and to address the specific vulnerability associated with operating the Division II instrument power bus from its backup power source. This LER is closed.

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

.3 (Closed) Licensee Event Report (LER) 05000263/2012-005-00: Old Steam Dryer Removal Results in Partial Group II Isolation

During the 2011 RFO, the licensee replaced the original steam dryer (OSD), which was then stored in the dryer separator pit on the refueling floor until November 12, 2012, when the OSD was removed from the reactor building for shipment offsite.

On November 12, 2012, the licensee performed an evolution to move the OSD from its temporary storage location (dryer separator pit), out of the reactor building, to a transport vehicle for removal from the site. The load path which the OSD followed during the removal from the refueling floor caused the OSD to pass within close proximity of the 'A' refuel floor radiation monitor. As the OSD approached the radiation monitor, indicated radiation levels increased as expected. When radiation levels exceeded 50 mR/hr, the move was stopped in accordance with guidance contained in the work plan. Shortly after the move was stopped, at approximately 15:51 hours, 'A' refuel floor radiation monitor indication exceeded the instrument's trip point. This resulted in the isolation of drywell containment air monitor and the oxygen analyzer primary CIVs. This signal also resulted in a reactor building isolation, initiation of the 'A' standby gas treatment system, and the transfer of the control room ventilation system to the high radiation mode. Since the licensee understood that the cause of the radiation monitor's trip signal was the proximity of the OSD to the radiation monitor, the decision was made to proceed with the OSD move. Once the OSD was moved down the reactor building equipment hatch, radiation level decreased below the 'A' refuel floor radiation monitor's setpoint. At approximately 16:10 hours, the Group II isolation was reset.

The license entered the issue into their corrective action program (CAP 01358890). The licensee's evaluation of the event identified performance deficiencies associated with the integration of their infrequently performed test or evolution process and their risk management process. Specific corrective actions taken by the licensee to address this issue included updating their infrequently performed test of evolutions process to institutionalize the review of high risk plans and mitigation action, including the validation of critical parameters prior to the conduct of risk sensitive evolutions.

This event was reviewed by both resident inspectors and region based radiation protection inspectors and no findings of significance were identified. This LER is closed.

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

4OA5 Other Activities

.1 Unit 1 Power Uprate-Related Inspection Activities (71004)

The inspectors reviewed Engineering Change 11444 for the replacement of the 1R transformer. This transformer was being replaced, in part, to allow for future operation at higher power levels following NRC approval of the power uprate license amendment. The replacement was reviewed as one of the Plant Modification and Post-Maintenance Testing baseline inspection samples discussed in Sections 1R18 and 1R19, respectively, of this report.

This inspection documents the completion of one power uprate inspection sample. No concerns were identified.

.2 (Closed) NRC Temporary Instruction (TI) 2515/187: Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

Inspectors verified that the following licensee walkdown packages contained the elements as specified in NEI 12-07," Walkdown Guidance," document:

- Item 020; RB-896-I torus;
- Item 033; IS-919-A intake structure pump room; and
- Item 032; diesel generator room.

The inspectors accompanied the licensee on their walkdown of the intake structure pump room, circulating water bay, and intake structure corridor, and verified that the licensee confirmed the following flood protection features:

- visual inspection of the flood protection feature was performed if the flood protection feature was relevant;
- external visual inspection for indications of degradation that would prevent its credited function from being performed was performed;
- reasonable simulation was performed, as applicable;
- available physical margin, where applicable, was determined; and
- flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspector also reviewed the licensee's flooding actions associated with the A.6, "Acts of Nature," procedure to determine if:

- reasonable simulation was performed, as applicable.

The inspectors independently performed their walkdown and review and verified that the following flood protection feature was in place or adequate:

- ring levee construction; and
- river level monitoring instrumentation.

The inspectors verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's CAP. In addition, issues identified in response to Item 2.g, that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

Findings or violations associated with the flooding walkdowns, will be documented in NRC Inspection Report 05000263/2013008.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 10, 2013, the inspectors presented the inspection results to Mr. Mark Schimmel 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 initial inspection results for the area of Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation, with J. Grubb, Plant Manager, on February 8, 2013. A subsequent exit was conducted on February 28, 2013, via teleconference with J. Grubb, Plant Manager;
- The inspection results for the areas of Radiological Hazard Assessment and Exposure Controls, and Occupational ALARA Planning and Controls with J. Grubb, Plant Manager, on March 8, 2013; and
- Inservice Inspection results with Mr. Gary Sherwood and other members of the licensee's staff on March 25, 2013.

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

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Schimmel, Site Vice President
J. Grubb, Plant Manager
W. Paulhardt, Operations Manager
N. Haskell, Site Engineering Director
K. Jepson, Assistant Plant Manager
S. Mattson, Maintenance Manager
A. Zelie, Radiation Protection Manager
P. Kissinger, Regulatory Affairs Manager
R. Latham, Radiation Protection General Supervisor
G. Sherwood, Programs Engineering Manager
R. Deopere, ISI Program Owner
S. O'Connor, Regulatory Affairs Analyst
D. Potter, Fleet Supervisor

Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000263/2013002-01	NCV	14 RHR Power Cable Inadvertently Cut (Section 1R13)
05000263/2013002-02	NCV	Failure to Enter Radionuclide on Radioactive Waste Shipment Documentation (Section 2RS8.6)

Closed

05000263/2013002-01	NCV	14 RHR Power Cable Inadvertently Cut (Section 1R13)
05000263/2013002-0	NCV	Failure to Enter Radionuclide on Radioactive Waste Shipment Documentation (Section 2RS8.6)
05000263/2012-003-01	LER	Automatic Reactor Scram During Maintenance on 4160V 12-Bus (Section 4OA3.1)
05000263/2012-004-00	LER	High Pressure Coolant Injection Inoperable When Inverter is Out of Service (Section 4OA3.2)
05000263/2012-005-00	LER	Old Steam Dryer Removal in Partial Group II Isolation (Section 4OA3.3)
2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (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

A.6; Acts of Nature; Revisions 43, 45, and 46
EC-19415; MNGP External Flooding Plan Update: Alternative Analysis and Final Design Report

Section 1R04

B.08.05-01; Fire Protection - Function and General Description of System; Revision 10
B.08.05-02; Fire Protection - Description of Equipment; Revision 12
B.08.05-05; Fire Protection – System Operation; Revision 57
CAP 01375026; T-Mod 3" Diesel Fuel Hose Found Disconnected and Unattended
Operations Memo 13-08; Temporary Revision to B.08.11-05 for T-44 Maintenance; March15, 2013
EC 19929; T-Mod for T-44 Diesel Fuel Oil Tank Cleaning and Inspection
WO 453355-15; Install Temporary Modification EC 19929; February 18, 2013
NH-36051; Diesel Oil System—Sheet 1 of 2; Revision 77
NH-36051-1; Diesel Oil System—Sheet 2 of 2; Revision 77
B.08.11-05; Diesel Oil System—System Operation; Revision 25
2113; Plant Prestart Checklist SBLC; Revision 3
NH-36253; SBLC System; Revision 78
2154-07; SBLC System Prestart Valve Checklist; Revision 12
Operations Manual B.03.05-03; SBLC System—Instrumentation and Controls; Revision 5
Operations Manual B.03.05-05; SBLC System—System Operation; Revision 16
Operations Manual B.03.05-01; SBLC System—Function and General Description of System; Revision 5
Operations Manual B.03.05-02; SBLC System—Description of Equipment; Revision 8

Section 1R05

Fire Strategy A.3-02-C; West Hydraulic Control Unit Area; Revision 9
Fire Brigade Drill Guide 10.1; Chemistry Lab Fire
Fire Strategy A.3-10; Admin Building; Revision 14
Fire Strategy A.3-23-B; Intake Structure Corridor; Revision 7
Fire Strategy A.3-12-E; SJAE Room; Revision 1
Fire Strategy A.3-13-A; Lube Oil Storage Tank Room; Revision 5
Fire Strategy A.3-31-A; EFT Building 1st Floor (Div I); Revision 8
Fire Strategy A.3-31-B; EFT Building 1st Floor (Div II); Revision 12
CAP 01367606; Poor Housekeeping in Tag Cutting Room of 1st Floor EFT

Section 1R06

PRA-CALC-04-001; Flood Areas
PRA-CALC-04-003; Flood Source Identification
PRA-CALC-04-004; Flood Initiating Event Frequencies
PRA-CALC-04-005; Equipment Vulnerabilities
PRA-CALC-04-006; Flood Scenarios and Effects

Section 1R08

AR 01279876; ISI INDICATION Found with UT Exam; April 9, 2011
AR 01281533; Indication Noted on MS Pipe by NDE Examination; April 20, 2011
AR 01290273; V-AC-5 Cooling Coil Leak; June 12, 2011
AR 01318597; V-AC-4, SW Coil Leak; January 25, 2011
AR 01347956; RHR S/D Cooling Piping Flange Leak; August 12, 2012
AR 01354406; Leak from V-AC-8A; October 8, 2012
AR 01370541; 13 ESW Pipe Has Pit below Minimum Wall; February 15, 2013
AR 01371305; RHRSW Piping Near T-min Found During SW-MIC Examinations; February 21, 2013
AR 01371309; Thin RHRSW Pipe Elbow Found During SW-MIC Examinations; February 21, 2013
AR 01280284; Legacy FME Discovered During IVVI Activities; April 12, 2011
AR 01299348; WO-393046-13, Work Performed Differently Than Planned; August 15, 2011
AR 01281724; ASME Section XI R/R Plan was not Revised for Defect Removal; April 20, 2011
AR 01376027; RFO26 ISI Measurement Error Affects UT Examination Coverage; March 24, 2013
AR 01375619; Analytical Evaluation Required to be Submitted to NRC; March 21, 2013
Procedure FP-PE-NDE-401; UT of Ferritic Pipe Welds-Supplement 3; Revision 5
Procedure FP-PE-NDE-402; UT of Austenitic Pipe Welds-Supplement 2; Revision 4
Procedure PEI-02.02.02; Dry Powder Magnetic Particle Examination; Revision 3
Procedure Qualification Record; PBNP-WP-6; January 21, 1985
Procedure Qualification Record; KNPP-GMP 102-311-GS-PQR; July 24, 1987
Procedure Qualification Record; PAL-SM-1-1(1); January 2, 1978
Report No. 2011UT075; UT Calibration/Examination, RHR Return A, W-2, Pipe-to-pipe; April 7, 2011
Report No. 2103LN008; Ultrasonic Linearity Check for Panametrics Epoch 4; March 8, 2013
Report No. 2013VT013; VT-3 of Recirculation B H-4; March 11, 2013
Report No. 2013VT013; VT-3 of Recirculation B H-3; March 11, 2013
Report No. 2013VT012; VT-3 of Recirculation A H-6; March 13, 2013
Report No. 2013UT021; UT of Main Steam C, W-24; March 20, 2013
Report No. 2013UT021; UT of Main Steam C, W-25; March 20, 2013
Weld Procedure Specification FP-PE-B31-P1P1-GTSM-001; Revision 3
WO 00383535; Re-Orient MO-2373 with Flow Over Seat; February 14, 2011
WO 00383536; Re-Orient MO-2374 with Flow Over Seat; February 14, 2011
WO 00449256; Perform Inspection of Fuel Oil Piping; March 22, 2013

Section 1R11

MT-LOR-JIT-009S; RFO26 Shutdown JITT; Revision 0
C.3; Reactor Shutdown; Revision 72
C.4-A; Abnormal Procedure—Reactor Scram; Revision 37
Operations Manual B.05.07-05; Reactor Feedwater System—System Operation; Revision 17

Section 1R12

System Basis Document; Reactor Manual Control; Revision 3
System Basis Document; CRD System; Revision 2
CAP 01306770; Single Rod Scram While Performing 0010
01306770 MRFFE; Maintenance Rule Functional Failure Evaluation; October 31, 2012
01306770 MP/PCE; Maintenance Preventable/Performance Criteria Evaluation; October 31, 2012
ODMI-1306770; CRD 30-19 Single Rod Scram; October 4, 2011
CAP 01351664; RMCS Failure during CRD Exercise Test 0074
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LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
AOP	Abnormal Operating Procedure
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CARIS	Conduit and Raceway Information System
CDBI	Component Design Basis Inspection
CFR	Code of Federal Regulations
CIV	Containment Isolation Valve
CRD	Control Rod Drive
CS	Core Spray
DFCS	Digital Feedwater Control System
DOT	Department of Transportation
DRP	Division of Reactor Projects
DW	Drywell
EDG	Emergency Diesel Generator
EFT	Emergency Filtration Train
ESW	Emergency Service Water
HPCI	High Pressure Coolant Injection
IEEE	Institute of Electrical & Electronic Engineers
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPE	Individual Plant Examination
IR	Inspection Report
ISI	Inservice Inspection
IST	Inservice Test
JITT	Just in Time Training
kV	Kilovolt
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LLRT	Local Leak Rate Testing
LOCA	Loss of Coolant Accident
LOOP	Loss of Off-site Power
LPCI	Low Pressure Coolant Injection
MNGP	Monticello Nuclear Generating Plant
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
OSD	Original Steam Dryer
OSP	Outage Safety Plan
PARS	Publicly Available Records System
PI	Performance Indicator
PM	Post Maintenance
PMF	Probable Maximum Flood
RCE	Root Cause Evaluation
RFO	Refueling Outage

RGSC	Ramp Generator Controller
RHR	Residual Heat Removal
RPV	Reactor Pressure Vessel
SBLC	Standby Liquid Control
SBO	Station Blackout
SDP	Significance Determination Process
SJAE	Steam Jet Air Ejector
SSC	Systems, Structures, and Components
TI	Temporary Instruction
TS	Technical Specification
USAR	Updated Safety Analysis Report
UT	Ultrasonic Examination
Vdc	Volts Direct Current
VT	Visual Examination
WO	Work Order

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Sincerely,

/RA/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

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Letter to M. Schimmel from K. Riemer dated May 13, 2013

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