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

November 14, 2008

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

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT NRC INTEGRATED INSPECTION REPORT 05000263/2008004

Dear Mr. O'Connor:

On September 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Monticello Nuclear Generating Plant. The enclosed report documents the inspection findings, which were discussed on October 7, 2008, 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, two self-revealed findings of very low safety significance were identified. One self-revealed finding involved a violation of NRC requirements. However, because of its very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as a non-cited violation (NCV) in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of the NCV, 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 accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report 05000263/2008004
w/Attachment: Supplemental Information

cc w/encl: D. Koehl, Chief Nuclear Officer
Manager, Nuclear Safety Assessment
P. Glass, Assistant General Counsel
Nuclear Asset Manager, Xcel Energy, Inc.
J. Stine, State Liaison Officer, Minnesota Department of Health
R. Nelson, President
Minnesota Environmental Control Citizens
Association (MECCA)
Commissioner, Minnesota Pollution Control Agency
R. Hiivala, Auditor/Treasurer,
Wright County Government Center
Commissioner, Minnesota Department of Commerce
Manager - Environmental Protection Division
Minnesota Attorney General's Office

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Letter to T. O'Connor from K. Riemer dated November 14, 2008

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT NRC INTEGRATED INSPECTION REPORT 05000263/2008004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-263
License No:	DPR-22
Report No:	05000263/2008004
Licensee:	Northern States Power Company, Minnesota
Facility:	Monticello Nuclear Generating Plant
Location:	Monticello, MN
Dates:	July 1 through September 30, 2008
Inspectors:	S. Thomas, Senior Resident Inspector L. Haeg, Resident Inspector T. Go, Radiation Specialist N. Shah, Project Engineer R. Winter, Reactor Inspector P. Zurawski, Prairie Island Resident Inspector J. Tapp, Reactor Engineer R. Orlikowski, Duane Arnold Senior Resident Inspector C. Zoia, Project Engineer J. McGhee, Quad Cities Senior Resident Inspector S. Burton, Kewaunee Senior Resident Inspector
Approved by:	Kenneth Riemer, Chief Branch 2 Division of Reactor Projects
Observers:	A. Scarbeary, Nuclear Safety Professional Development Program Participant

Enclosure

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SUMMARY OF FINDINGS

IR 05000263/2008004; 07/01/2008 – 09/30/2008; Monticello Nuclear Generating Plant; Maintenance Risk and Emergent Work, Identification and Resolution of Problems.

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

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. A finding of very low safety significance was self-revealed when plant operators attempted to install incorrect components (motor test devices instead of bus grounding trucks) into two 4160 volt breaker cubicles during the implementation of a clearance associated with planned maintenance on the 2R station auxiliary transformer. No violation of NRC requirements was identified. The licensee took immediate corrective actions and entered the issue into their corrective action program. The inspectors determined that the performance deficiency affected the cross-cutting area of Human Performance, having work practices components, and involving aspects associated with ensuring supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported. [H.4(c)]

  The finding was more than minor because it could reasonably be viewed as a precursor to a significant event. The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a finding of very low safety significance because the repeated attempts to install the wrong components (motor test devices instead of bus ground trucks) into 4160 volt breaker cubicles did not adversely impact the operation of electrical buses 12 and 13, nor did it result in a significant plant transient. Therefore, the finding was considered to be of very low safety significance. (Section 4OA2.3)

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was self-revealed for failing to appropriately correct a known condition adverse-to-quality associated with a low pressure coolant injection (LPCI) recirculation riser differential pressure instrument. Due to the lack of appropriate corrective action to replace the 'D' channel instrument microswitch prior to an anticipated failure, the instrument was found inoperable during a quarterly Technical Specification (TS) surveillance test. The licensee took immediate corrective actions and entered the issue into their corrective action program. The inspectors determined that the performance deficiency affected the cross-cutting area of Problem Identification and Resolution, having corrective action program components,

and involving aspects associated with taking appropriate corrective actions to address safety issues. [P.1(d)]

The inspectors determined that the finding was more than minor because it involved the equipment performance attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors applied IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings" to this finding. Under Column 2 of the Table 4a worksheet, the inspectors answered: "No" to Question 1 related to design or qualification deficiencies; “No” to Questions 2, 3 and 4 related to loss of train or system safety functions; and “No” to Question 5 related to seismic, flooding and severe weather. Therefore, the finding was considered to be of very low safety significance. (Section 1R13)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Monticello operated at full power for most of the assessment period except for brief downpower maneuvers to accomplish rod pattern adjustments and to conduct planned surveillance testing activities with the following exceptions:

- On September 7, 2008, reactor power was lowered to 40 percent to replace level transmitters associated with the 'C' moisture separator drain tank. Full reactor power was achieved on September 10, 2008.

- On September 11, 2008, a reactor scram occurred from full power. The licensee determined that the cause of the scram was a loss of normal offsite power to non-essential buses, causing a main turbine lockout, rapid closure of turbine control valves, and a direct control valve fast closure scram signal. All safety systems functioned as required subsequent to the scram, with the exception of the high pressure coolant injection system to reset on high reactor level. Following the implementation of required corrective actions to address the causes of the loss of normal offsite power, the reactor was restarted on September 27, 2008, and the main generator was connected to the electrical power grid on September 28, 2008. Full reactor power was achieved on October 1, 2008. This event is further discussed in Section 4OA3 of this report.

1. REACTOR SAFETY

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

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:

- No. 12 emergency diesel generator (EDG) auxiliary systems during planned testing of 11 EDG;
- No. 13 250 Vdc battery with swing charger D54 out-of-service to support replacement of No. 11 125 Vdc battery charger D10;
- security diesel generator with No. 13 non-essential diesel generator out-of-service for testing; and
- No. 12 EDG with 1R and 2R transformers out-of-service.

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, Updated Safety Analysis Report (USAR), TS requirements,

outstanding work orders (WOs), corrective action program (CAP) documents, 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 with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 22 (recombiner building);
- Fire Zone 3-A (recirculation motor generator (MG) set room);
- Fire Zone 12-A (lower 4kV bus area 11, 13, & 15); and
- Fire Zone 09 (control 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 had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights; their potential to impact equipment which could initiate or mitigate a plant transient; or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and those fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues

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

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

b. Findings

No findings of significance were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On September 10, 2008, the inspectors observed fire brigade activation for a fire in the turbine building addition. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief; and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; (10) drill objectives; and (11) communication and coordination with Monticello fire department that participated in the drill and responded onsite. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (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 abnormal operating procedures 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 other raw water systems. The inspectors also reviewed the licensee's CAP 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 area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- turbine building east 931' elevation.

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

b. Findings

No findings of significance were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of the No. 11 EDG jacket water heat exchanger to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria; the correlation of scheduled testing and the frequency of testing; and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions.

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On July 21, 2008, the inspectors observed a crew of licensed operators in the plant's simulator during a licensed operator requalification training scenario to verify that operator performance was adequate; evaluators were identifying and documenting crew performance issues; and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;

- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constitutes one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- 250 Vdc batteries and auxiliaries; and
- high pressure coolant injection (HPCI) 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 constitutes two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- unexpected offgas compressor trip during hydrogen water chemistry system restoration, bypassing of the storage system, and subsequent restoration of both systems;
- 14 residual heat removal (RHR) pump motor oil filtering, emergent high oil level, and manual shutdown of pump;
- replacement of failed 'D' channel low pressure coolant injection (LPCI) recirculation riser differential pressure instrument switch;
- replacement of 'C' moisture separator drain tank drain and dump valve level transmitters; and
- replacement of HPCI turbine trip solenoid.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstone. 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.

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

b. Findings

Introduction

A finding of very low safety significance and NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was self-revealed for failing to appropriately correct a known condition adverse-to-quality associated with a LPCI recirculation riser differential pressure instrument. Specifically, the licensee did not appropriately complete the

corrective action to replace the 'D' channel instrument switch prior to an anticipated failure. This resulted in the 'D' channel instrument being found inoperable during quarterly TS surveillance testing in August 2008.

Description

During quarterly functional testing of the LPCI recirculation riser differential pressure instruments in February 2007, the 'D' channel instrument failed to reset after being placed in a tripped condition. During troubleshooting, the licensee identified a microswitch within the instrument as the cause of the failure and elected to replace the switch. The cause was not determined because the licensee determined that the microswitch failure did not affect the LPCI recirculation loop selection logic function, and because the instrument would still have performed its safety function. The licensee did not address in the CAP the known repetitive cycling of the 'D' instrument due to low margin between the instrument setpoint and the inherent fluctuating differential pressures between the recirculation riser piping that the 'D' instrument was sensing. During the quarterly functional test of the instruments in August 2007, the 'D' channel switch again failed to reset after being placed in a tripped condition. The licensee determined that the failure was not preventable and an evaluation was not performed to determine the cause. The 'D' channel instrument (containing a new microswitch) was replaced. During the quarterly functional test of the instruments in February 2008, the 'D' channel instrument switch reset; however, would not stay reset and would revert to the tripped condition. The microswitch was replaced and testing was performed to return the instrument to service. The licensee performed an apparent cause evaluation (ACE) and determined that the repetitive cycling of the microswitch caused accelerated degradation and failure identified during the quarterly surveillance tests. Based on the observed failure frequency of the microswitch, the licensee determined that replacement of the microswitch every three months would correct the condition in the interim. Approval of setpoint changes for the instruments was pending to preclude the frequent cycling of the 'D' channel microswitch. The ACE was closed to a Preventive Maintenance Change Request (PMCR) to replace the 'D' channel microswitch at a three month interval.

During the quarterly functional test of the instruments in August 2008, the 'D' channel instrument again failed to reset after being placed in a tripped condition. The licensee declared the instrument inoperable and entered a TS action to restore the channel to an operable status within 24 hours. The microswitch was replaced within the 24 hour TS completion time to avoid entering a 72 hour shutdown TS action for LPCI. The licensee determined that because the ACE was closed to a PMCR following the February 2008 failure, the action to replace the microswitch every three months was not given the appropriate scheduling priority. This resulted in the PMCR not being implemented prior to the scheduled quarterly TS surveillance in May 2008.

Analysis

The inspectors determined that the failure to appropriately correct a known condition adverse-to-quality associated with the 'D' channel LPCI recirculation riser differential pressure instrument was a performance deficiency warranting significance evaluation in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The inspectors determined that the finding was more than minor because it involved the equipment performance attribute of the Mitigating Systems

Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Although the LPCI recirculation loop selection function was not lost due to the inoperable 'D' channel instrument, redundancy and reliability of the function was affected. Because the LPCI recirculation loop selection circuitry utilizes one-out-of-two-taken-twice logic, non-conservative failure of another channel with the 'D' channel inoperable, coincident with a design basis loss of coolant accident, may have resulted in LPCI injecting into the broken recirculation loop. Because the state (tripped or not tripped) of the LPCI recirculation riser differential pressure instruments are not readily available to the operators, a non-conservative trip condition of an instrument could occur without the operator's knowledge.

The licensee determined that the primary cause of the PMCR not being implemented prior to the failure of the 'D' channel instrument was due to not labeling the PMCR as a strict corrective action in the CAP. Labeling the PMCR as a corrective action would have required firm scheduling priority and specific timely resolution and replacement of the 'D' channel microswitch before the quarterly surveillance test in May 2008. Furthermore, a contributing cause of the performance deficiency was the failure to correct the inappropriate closure of the ACE to a PMCR without a specific corrective action during the grading of the ACE following the February 2008 failure. The inspectors determined that the performance deficiency affected the cross-cutting area of Problem Identification and Resolution, having CAP components, and involving aspects associated with taking appropriate corrective actions to address safety issues. [P.1(d)]

The inspectors applied IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings" to this finding. Under Column 2 of the Table 4a worksheet, the inspectors answered: "No" to Question 1 related to design or qualification deficiencies; "No" to Questions 2, 3 and 4 related to loss of train or system safety functions; and "No" to Question 5 related to seismic, flooding and severe weather. Therefore, the finding was considered to be of very low safety significance (Green).

Enforcement

Title 10 CFR 50, Appendix B, Criterion XVI requires, in part, that measures be established to assure that conditions adverse-to-quality be promptly identified and corrected. Contrary to this requirement, the licensee did not implement the corrective action to replace the 'D' channel LPCI recirculation riser differential pressure instrument switch at the required interval to prevent an anticipated failure. Only during the quarterly surveillance test was the lack of corrective action self-revealed to the licensee. This resulted in the TS-required LPCI recirculation loop selection function being degraded for a period of time. Because this violation was of very low safety significance and was entered into the licensee's CAP (AR 01147514), this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy.
(NCV 05000263/2008004-01)

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- cause determination and operability recommendation for 'A' control room ventilation air conditioning system;
- operational challenges and proposed licensee actions to mitigate the seasonal low water levels in the ultimate heat sink (Mississippi River);
- operational decision making issue evaluation associated with on-going leak located on the turbine bypass valve second stage leakoff piping; and
- evaluation of operability following unloaded running of the No. 12 EDG.

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 also reviewed a sampling of CAP 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 inspection constitutes four samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- alternate breaker for D100-07 associated with 250 Vdc charger D90.

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the USAR, and the TS, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had

been incorporated into the licensee's decision to implement the temporary modification. The inspectors performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; 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. Lastly, the inspectors discussed the temporary modification with operations and engineering personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance.

This inspection constitutes one temporary modification sample as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- testing of 'A' control room ventilation air conditioning system following compressor discharge pressure setpoint adjustment;
- testing of D4 24 Vdc batteries following PM and cell replacement;
- testing of Division II 250 Vdc D70 battery charger following PM;
- testing of Division II residual heat removal service water (RHRSW) following PM;
- testing of reactor core isolation cooling (RCIC) following PM;
- testing of Division I 125 Vdc D10 battery charger following replacement;
- testing of No. 11 control rod drive pump following outboard thrust bearing replacement;
- testing of No. 11 EDG turbo oil pump motor following replacement;
- testing of No. 13 emergency service water (ESW) following installation of flow measurement equipment;
- testing of Division I RHRSW following instrument PM;
- testing of 1R transformer 186/ST lockout relay following replacement; and
- testing of 2R transformer 186/AT lockout relay following replacement.

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

for test performance were properly removed after test completion), and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with PM tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes twelve samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Unplanned Outage (September 11 – September 28, 2008)

a. Inspection Scope

The inspectors evaluated outage activities for an unplanned outage that began on September 11, 2008, and continued through September 28, 2008. The inspectors reviewed outage activities to ensure that the licensee considered risk in developing, planning, and implementing the unplanned outage schedule.

The inspectors observed the reactor cooldown; outage equipment configuration and risk management; electrical lineups; selected clearances; control and monitoring of decay heat removal; control of containment activities; startup and heat-up activities (including criticality; feedwater pump startup and main generator synchronization), and the identification and resolution of problems associated with the outage. The following represents a partial list of the major outage activities the inspectors reviewed or observed:

- control room and outage control center turnover meetings and selected pre-job briefings;
- review of ready-backlog and operable but non-conforming/degraded items;
- maintenance/repair activities associated with 1R and 2R transformer auxiliaries, main generator transformer bushing, and the No. 12 reactor recirculation pump seal;
- review of the licensee's scram and root cause reports;
- drywell general condition and loose material inspection;
- reactor initial criticality and power ascension; and
- connection of the main generator to the electrical power grid.

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

b. Findings

No findings of significance were identified. Special Inspection Report 05000263/2008009 documents inspection findings identified as a result of this event.

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 functions and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- 0011-A; turbine control valve fast closure scram test and calibration (routine);
- 0054-B; main steam line low pressure Group 1 isolation instrument test and calibration (routine);
- 0255-05-IA-1-2; 'B' RHRSW quarterly pump and valve tests (in-service test);
- 0060; RCIC high steam flow and low steam pressure sensor test and calibration procedure (routine);
- 0379; RPS – electrical protection assembly (EPA) (routine); and
- 0391; RHR shutdown cooling supply isolation interlock instrument test (routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as-left setpoints were within required ranges; and the calibration frequency were 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 in-service testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (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 constitutes five routine surveillance testing samples and one inservice inspection sample as defined in IP 71111.22, Sections -02 and -05.

b. Unresolved Item (URI) Potential Preconditioning of Pressure Instruments/Switches

The inspectors identified an URI during observation and subsequent review of the 0054-B, "Main Steam Line Low Pressure Group 1 Isolation Instrument Test and Calibration." The surveillance procedure instructed technicians to first close the instrument line supply valve and then to vent the instrument line between this valve and the main steam line low pressure Group 1 pressure instrument (nominally at approximately 950 psig). This, in turn, exercised the instrument (Bourdon tube type pressure instrument) and actuated the isolation switch. The procedure then instructed the technicians to raise the pressure, using an external pressure source to reset the switch, and then slowly lower pressure to record as-found switch trip data.

The inspectors questioned whether exercising the pressure switch prior to obtaining "as-found" trip setpoint data constituted preconditioning of the TS-required pressure instruments and switches. The inspectors also questioned the extent of condition with respect to the procedural practice for other safety-related pressure instruments/switches.

Pending final resolution with the licensee, including review by the NRC, this issue will be treated as an Unresolved Item (URI-05000263/2008004-02).

No other issues or findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety, Public Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed the radiation work permits (RWPs) and work packages used to access the licensee's locked high radiation work areas in the 935' elevation of the steam chase and in the upper level of the condenser room to repair a steam leak. The review assessed the adequacy of the work control instructions and control barriers. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify that they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed.

The inspectors reviewed radiation surveys of these areas to verify that the prescribed RWPs, procedure, and engineering controls were in place; that licensee surveys and postings were complete and accurate; and that air samplers were properly located.

This inspection constituted two samples as defined in IP 71121.01-05.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Radioactive Waste System

a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system description in the USAR for information on the types and amounts of radioactive waste (radwaste) generated and disposed. The inspectors reviewed the scope of the licensee's audit program with regard to radioactive material processing and transportation programs to verify that it met the requirements of 10 CFR 20.1101(c).

This inspection constitutes one sample as defined in IP 71122.02-05.

b. Findings

No findings of significance were identified.

.2 Radioactive Waste System Walkdowns

a. Inspection Scope

The inspectors performed walkdowns of the liquid and solid radwaste processing systems to verify that the systems agreed with the descriptions in the USAR and the Process Control Program and to assess the material condition and operability of the systems. The inspectors reviewed the status of radioactive waste processing equipment that was not operational and/or was abandoned in place. The inspectors reviewed the licensee's administrative and physical controls to ensure that the equipment would not contribute to an unmonitored release path or be a source of unnecessary personnel exposure.

The inspectors reviewed changes to the waste processing system to verify the changes were reviewed and documented in accordance with 10 CFR 50.59 and to assess the impact of the changes on radiation dose to members of the public. The inspectors reviewed the current processes for transferring waste resin into shipping containers to determine if appropriate waste stream mixing and/or sampling procedures were utilized. The inspector also reviewed the methodologies for waste concentration averaging to determine if representative samples of the waste product were provided for the purposes of waste classification in 10 CFR 61.55.

This inspection constitutes one sample as defined in IP 71122.02-05.

b. Findings

No findings of significance were identified.

.3 Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the licensee's radiochemical sample analysis results for each of the licensee's waste streams, including dry active waste (DAW), spent resins and filters. The inspectors also reviewed the licensee's use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides). The reviews were conducted to verify that the licensee's program assured compliance with 10 CFR 61.55 and 10 CFR 61.56, as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed the licensee's waste characterization and classification program to ensure that the waste stream composition data accounted for changing operational parameters and thus remained valid between the annual sample analysis updates.

This inspection constitutes one sample as defined in IP 71122.02-05.

b. Findings

No findings of significance were identified.

.4 Shipment Preparation and Shipment Manifests

a. Inspection Scope

The inspectors reviewed the documentation of shipment packaging, radiation surveys, package labeling and marking, vehicle inspections and placarding, emergency instructions, determination of waste classification/isotopic identification, and licensee verification of shipment readiness for eight material and radwaste shipments made in 2008. The shipment documentation reviewed consisted of:

- Five LSA-II and one SCO-II shipments to waste processors; and
- Two type-B(U) packages to Barnwell (Chem-Nuclear).

For each shipment, the inspectors determined if the requirements of 10 CFR Parts 20 and 61 and those of the Department of Transportation (DOT) in 49 CFR Parts 170-189 were met. Specifically, records were reviewed and staff involved in shipment activities were interviewed to determine if packages were labeled and marked properly; if package and transport vehicle surveys were performed with appropriate instrumentation; if radiation survey results satisfied DOT requirements; and if the quantity and type of radionuclides in each shipment were determined accurately. The inspectors also determined whether shipment manifests were completed in accordance with DOT and NRC requirements; if they included the required emergency response information; if the recipient was authorized to receive the shipment; and if shipments were tracked as required by 10 CFR Part 20, Appendix G.

Selected staff involved in shipment activities were interviewed by the inspectors to determine if they had adequate skills to accomplish shipment related tasks and to determine if the shippers were knowledgeable of the applicable regulations to satisfy package preparation requirements for public transport with respect to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and

49 CFR Part 172 Subpart H. Also, lesson plans for safety training and function specific training for radiation protection technicians and for hazardous material (hazmat) Level Two employees were reviewed for compliance with the hazardous material training requirements of 49 CFR 172.704. Additionally, the hazmat training test and the test results for selected radiation protection staff were reviewed by the inspectors for adequacy.

This inspection constitutes two samples as defined in IP 71122.02-05.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed condition reports, audits and self assessments that addressed radioactive waste and radioactive materials shipping program deficiencies since the last inspection to verify that the licensee had effectively implemented the CAP and that problems were identified, characterized, prioritized and corrected. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

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

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes; identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk-significant operational experience feedback.

This inspection constitutes one sample as defined in IP 71122.02-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency Alternating Current Power (EAC) System performance indicator (PI) for the period of the Third Quarter 2007 through the Second Quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated Inspection Reports for the period including the Third Quarter 2007 through the Second Quarter 2008 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection and; if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one MSPI EAC power system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection (HPI) Systems PI for the period of the Third Quarter 2007 through the Second Quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period including the Third Quarter 2007 through the Second Quarter 2008 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection; and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified

with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one MSPI HPI system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index –Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI – Residual Heat Removal (RHR) System PI for the period of the Third Quarter 2007 through the Second Quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection Reports for the period including the Third Quarter 2007 through the Second Quarter 2008 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection; and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one MSPI RHR system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled the licensee's PI submittals for the periods listed below. The inspectors used PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5 to verify the accuracy of the PI data. The following PI was reviewed:

- reactor coolant system (RCS) specific activity.

The inspectors reviewed Chemistry Department records and selected isotopic analyses from January 2007 through July 2008 to determine if the greatest dose equivalent iodine (DEI) values obtained during those months corresponded with the values reported to the NRC. The inspectors also reviewed selected DEI calculations to verify that the appropriate conversion factors were used in the assessment. Additionally, the inspectors observed a chemistry technician obtain and analyze a reactor coolant sample

for DEI to determine if there was adherence with licensee procedures for the collection and analysis of reactor coolant system samples.

This inspection constitutes one RCS specific activity sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Scope

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

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

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Scope

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

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

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-Up Inspection: Operations Installed Motor Testing Carts into 4160 Volt Breaker Cubicles Instead of the Intended Bus Grounding Trucks

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item (CAP 01140145) documenting the installation of incorrect bus grounding trucks in 4160 volt switchgear cubicles. The inspectors performed a review of the issues which ultimately resulted in the installation of unapproved motor testing devices, instead of bus grounding trucks, during the conduct of a clearance order. The inspectors also reviewed the licensee's root cause evaluation report, corrective actions to prevent recurrence, and additional corrective actions associated with this issue.

The above constitutes completion of one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction

A finding of very low safety significance was self-revealed when plant operators attempted to install incorrect components (motor test devices instead of bus grounding trucks) into two 4160 volt breaker cubicles during the implementation of a clearance associated with planned maintenance on the 2R station auxiliary transformer. No violation of NRC requirements was identified.

Description

On June 5, 2008, the on-shift operators were tasked with executing a clearance order associated with planned maintenance on the 2R transformer, which installed bus grounding trucks in 4160 volt breaker cubicles located in both the upper and lower 4kV switchgear rooms. A brief chronological description of factors that contributed to the installation of the wrong equipment into breaker cubicles located in high voltage switchgear is as follows:

- A pre-job briefing guide was not used for the clearance action or switching aspect of the job, and all the operators involved with the bus grounding truck installation were not at the brief;
- The turbine building operator (TBO) tasked with installing the bus grounding trucks had never installed one before and was provided with no additional management oversight;
- Without independently verifying first, the lead reactor operator informed the TBO that the bus grounding trucks were set up for grounding;
- When confronted with a labeling question (the device outside the lower 4kV switchgear room was labeled "Upper 4kV," and the device outside the upper 4kV switchgear room was labeled "Lower 4kV"), and as a result of incomplete communication between the control room supervisor and the general

maintenance supervisor, inaccurate information was passed on to the TBO that either device could be used in either switchgear room.

The operators in the field, the control room operators, and operations shift management all believed that they were talking about the same components (bus grounding trucks). In actuality, instead of locating the required bus grounding trucks, the operators in the field found two devices that were similar in shape and size to the bus grounding trucks, but were actually used for motor testing and provided no grounding function. The motor testing devices were new equipment that was still undergoing the approval process to be used in the plant. At this point, despite several questions from the TBO, no direct management oversight had been provided to the operators in the field.

- Two attempts were made by the TBO to install the motor testing device into the correct breaker cubicle located in the lower 4kV switchgear room. After each attempt, the TBO contacted the control room and informed them that the jacking screw would not engage;
- Instead of stopping and determining why the jacking screw would not engage, the lead reactor operator directed the TBO to go to the upper 4kV switchgear room and install the second bus grounding truck;
- Again, instead of a bus grounding truck, the TBO attempted to install a motor testing device into the correct breaker cubicle. Although the jacking screw engaged, the cart tilted as it entered the cubicle. The TBO operator stopped and contacted the control room. The guidance provided by the control room was to remove the cart and try again to insert it. The second attempt to insert the motor test device yielded the same results. The TBO stopped and called the control room. The control room operator informed the TBO that a licensed operator would be sent to assist him;
- Upon arrival his arrival in the upper 4kV switchgear room, the licensed operator noted that the device being inserted into the breaker cubicle looked new and was unlike the bus grounding trucks he had seen before. Instead of appropriately stopping and questioning the differences, the TBO, with the aid of the licensed operator, successfully inserted the motor testing device into the breaker cubicle;
- The operators then proceeded back to the lower 4kV switchgear room, where the TBO made a third unsuccessful attempt to insert the motor test device into the breaker cubicle. On a fourth attempt, the licensed operator was successful in getting the jacking screw to engage. The motor test device partially inserted into the breaker cubicle, tilted, and then would not move;
- The control room supervisor arrived at the scene. After the operators searched the breaker storage cabinets and located the actual grounding trucks that were supposed to be used, they realized that they had inserted the wrong component into the breaker cubicle in the upper 4kV switchgear room and were attempting to insert the wrong component in the lower 4kV switchgear room.

Racking an unqualified motor testing device into a 4160 volt breaker cubicle could have caused an electrical fault, which may have resulted in severe injury or death. In addition to the danger to personnel safety, the same electrical fault could have the potential to start a fire in a safety-related switchgear room and/or initiate a large reactor plant transient or reactor plant scram. Although a thorough pre-job brief may have gone a long way in preventing the many performance errors associated with this event, the inspectors concluded that the behaviors demonstrated throughout this event, by multiple

senior licensed operators, highlighted weaknesses in the areas of conservative decision making and command and control.

The licensee entered this issue into their corrective action program as CAP 011401450. Specific corrective actions taken to address this event included:

- operators involved were counseled; use of human performance tools and participation in pre-job briefs was stressed;
- operations shift management was counseled; job preparation and maintaining appropriate oversight were stressed;
- the Plant Manager met with each operating crew to discuss the event;
- evaluation of the need for procedures and improved training associated with the use of grounding trucks was conducted; and
- communication of the contents of the apparent cause evaluation associated with CAP 01140145 to all operating crews, stressing the importance of pre-job briefs, field walkdowns, and shift manager and control room supervisor engagement in high risk/consequence activities was performed.

In addition to the specific corrective actions associated with CAP 01140150, licensee management prepared a video program that documented the event that specifically focused on the human performance barriers that broke down and allowed this event to occur. This video was presented to the Monticello plant staff at the July 2008 All Hands Meeting.

Analysis

The inspectors determined that not adequately controlling the installation of bus grounding trucks associated with planned maintenance on the station's 2R auxiliary transformer was a failure to meet the requirements of a licensee self-imposed standard. Specifically, Licensee Procedure FP-OP-COO-01, "Conduct of Operations," Attachment 5, Section 1, states, in part, that nuclear and industrial safety is maintained at the forefront of all decisions. Additionally, Section 2 of the same attachment, states, in part, that operators will take conservative actions when faced with a situation where clear procedural guidance does not exist. The inspectors determined that the licensee's failure to meet these self-imposed standards was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The finding was more than minor because it could reasonably be viewed as a precursor to a significant event. The inspectors determined that the performance deficiency affected the crosscutting area of Human Performance, having work practices components, and involving aspects associated with ensuring supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported. [H.4(c)]

The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and was determined to be a finding of very low safety significance because the repeated attempts to install the motor test devices instead of bus grounding trucks into the 4160 volt breaker cubicles did not adversely impact the operation of electrical buses 12 and 13, nor did it result in a significant plant transient.

Enforcement

The inspectors concluded that no violation of NRC requirements occurred. This is considered a finding of very low safety significance (FIN 05000263/2008004-03). The licensee entered this issue into their corrective action program (CAP 011401450) and took immediate actions to counsel applicable on-shift operators in the areas of human performance tool usage and participation in pre-job briefs and shift supervision in the areas of job preparation; maintaining awareness of ongoing work activities; and ensuring that work activities are stopped when appropriate. Additionally, senior plant management discussed the event with each operating crew. Longer term corrective actions included strengthening training, procedures, and processes associated with the use of bus grounding trucks.

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

.1 Planned Non-Routine Isolation of the Hydrogen Water Chemistry (HWC) System

a. Inspection Scope

The inspectors reviewed personnel performance during a planned non-routine isolation of the HWC system on July 9, 2008. This isolation was to facilitate several maintenance and modification activities, as well as inspections of the condenser room. The inspectors reviewed the overall conduct of licensee staff during pre-job briefings, planned maintenance work plans, and procedures for restoration of the HWC system. Documents reviewed in this inspection are listed in the Attachment.

This inspection constitutes one sample as defined in IP 71153-05.

b. Findings

No findings of significance were identified.

.2 Reactor Scram Due to 2R Transformer Lockout and Loss of Normal Offsite Power

a. Inspection Scope

On September 11, 2008, with the 1R transformer out of service for planned maintenance, normal offsite power (2R transformer) was lost resulting in a main turbine lockout, turbine control valve fast closure scram signal and an automatic reactor scram from 100 percent power. Due to the loss of power to the reactor protection system buses, Group isolations also occurred - most notably a Group I primary containment isolation of the main steam lines and loss of the main condenser as a heat removal source. Operators used safety relief valves and primarily RCIC in pressure control mode to maintain shutdown conditions and take the reactor to cold shutdown. The EDGs both started but did not load onto the essential electrical buses; the 1R transformer was restored shortly thereafter to provide non-essential electrical buses.

The inspectors observed operator response and performance following the scram and provided input to NRC management to determine the appropriate agency response. The inspectors also reviewed the licensee's notification classification and verified that the notifications were made in a timely manner.

Several complications ensued during the event response. Due to these complications, the NRC Region III office initiated a Special Inspection per NRC Management Directive (MD) 8.3, "NRC Incident Investigation Program," on September 16, 2008. Inspection Report (IR) 05000263/2008009 documents the Special Inspection objectives, including equipment issues and complications during the event and overall operator performance following the scram, and the results of the inspection that concluded on September 23, 2008.

This inspection constitutes one sample as defined in IP 71153-05.

b. Findings

Special Inspection Report 05000263/2008009 documents inspection findings identified as a result of this event.

.3 Loss of Normal Offsite Power and Loss of Shutdown Cooling Due to 1R Transformer Cable Fault Due to Boom Truck Platform Proximity

a. Inspection Scope

On September 17, 2008, with the plant in cold shutdown and the 1R transformer providing normal offsite power, a boom truck outside of the security checkpoint came into close proximity to a 1R transformer supply cable from the substation. This resulted in grounding of the cable phase, lockout of the 1R transformer, and a loss of normal offsite power. Both EDGs started but did not load onto their respective buses. With the 2R transformer out of service due to the September 11 event, essential loads were transferred to the 1AR transformer. Due to the electrical lineup, a Group II isolation occurred resulting in loss of RHR pumps supplying shutdown cooling and decay heat removal.

Per the licensee's emergency action level guidelines, a Notice of Unusual Event was declared due to management discretion based on the loss of normal offsite power without the ability to quickly restore redundancy of an additional, reliable offsite source, and the loss of shutdown cooling. The licensee conservatively activated their Technical Support Center (TSC) to monitor, assess, and manage the event. After the Group II isolation was reset by aligning the non-essential No. 13 diesel generator to the 'A' RPS bus, shutdown cooling was restored within approximately 2 hours following the initial loss of power. On September 21, 2008, the 1R transformer was restored and the Notice of Unusual Event was exited.

The inspectors observed operator response and performance in the control room following the loss of the 1R transformer and provided input to NRC management to determine the appropriate agency response. The inspectors also observed licensee response to the event in the TSC and the licensee's event and notification classification was also reviewed.

Based on the circumstances surrounding this event, additional review of licensee response was conducted by the Special Inspection team that was onsite at the time of the event.

This inspection constitutes one sample as defined in IP 71153-05.

b. Findings

Special Inspection Report 05000263/2008009 documents inspection findings identified as a result of this event.

.4 Loss of Shutdown Cooling Following No. 12 Control Rod Drive Pump Start

a. Inspection Scope

On September 20, 2008, with the reactor in cold shutdown, the 12 control rod drive pump was placed in service as part of reactor restart activities. Shortly after starting the pump, a reactor low water level trip of RPS occurred, resulting in an RPS scram, EDG actuation, Group isolations, and loss of shutdown cooling. Actual reactor water level remained at a nominal value throughout the event. Operators responded and reset the Group isolations to restore shutdown cooling within approximately 1.5 hours. The licensee later determined that the transient was caused by a pressure surge through the reference leg backfill system. A subsequent review of the plant shutdown checklist conducted following the September 11 scram revealed that particular steps of the procedure were not completed that would have isolated the reference leg system.

The inspectors observed operator response and performance following the event and provided input to NRC management to determine the appropriate agency response. The inspectors also reviewed the licensee's notification classification and verified that the notifications were made in a timely manner.

Based on the circumstances surrounding this event, additional review of licensee response was conducted by the Special Inspection team that was onsite at the time of the event.

This inspection constitutes one sample as defined in IP 71153-05.

b. Findings

Special Inspection Report 05000263/2008009 documents inspection findings identified as a result of this event.

.5 (Closed) LER 05000263/2008-004-00: Required Manual Isolation Time for High Energy Line Break Calculation Not In Procedure

On April 29, 2008, during a review of high energy line break (HELB) calculations, the licensee discovered that a procedure did not incorporate the required times to isolate fire sprinklers and service water to preclude postulated flooding of the Division I 4kV switchgear room. Due to a recently installed flood barrier located near the Division I 4kV switchgear room, current operability was not in question. The licensee determined that prior to the installation of the barrier, there was a potential for the inoperability of the Division I 4kV switchgear. The corrective actions associated with this event included a procedure revision to require timely isolation of systems contributing to flooding impact. The finding was more than minor because, during the time when the flood barrier was not in place, the issue impacted the Mitigating Systems Cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to preclude undesirable consequences. The inspectors evaluated the finding

using IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," and determined the finding to be of very low safety significance (Green). The licensee-identified finding involved a violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." The enforcement aspects of the violation are discussed in Section 4OA7. Documents reviewed as part of this inspection are listed in the Attachment. This LER is closed.

This inspection constitutes one sample as defined in IP 71153-05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 7, 2008, the inspectors presented the inspection results to Mr. T. O'Connor, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Radioactive Material Processing/Transportation, Performance Indicator RCS Specific Activity and Access Control to Radiologically Significant Areas with Mr. K. Jepson on July 11, 2008. No proprietary information was identified.

4OA7 Licensee-Identified Violations

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

- Title 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Contrary to this requirement, the licensee's calculation of record for a feedwater HELB break at the feedwater pumps was not correctly translated into procedures to mitigate flooding. The lack of timeliness requirements in flood mitigation procedures would have resulted in potentially rendering the Division I 4kV switchgear inoperable. This issue was documented in the licensee's corrective action program as CAP 01136111. The finding is of very low safety significance because the HELB frequency for the Monticello plant is significantly below the level required to result in a CDF increase of 1.00 E-06/year for the scenario of interest.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. O'Connor, Site Vice President
B. Sawatzke, Plant Manager
J. Grubb, Site Engineering Director
K. Jepson, Business Support Manager
S. Sharp, Operations Manager
W. Flaga, Acting Maintenance Manager
B. Cole, Radiation Protection/Chemistry Manager
T. Blake, Regulatory Affairs Manager
B. Brown, ISFSI Project Support
N. French, Operations Support Manager

Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000263/2008004-02	URI	Potential Pre-Conditioning of Pressure Instruments/Switches (1R22)

Opened and Closed

05000263/2008004-01	NCV	Inadequate Corrective Actions Following Repetitive Failure of LPCI Recirculation Riser Differential Pressure Instrument (Section 1R13)
05000263/2008004-03	FIN	Improper Installation of Grounding Trucks (Section 4OA2)

Closed

05000263/2008-004-00	LER	Required Manual Isolation Time for High Energy Line Break Calculation Not In Procedure (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment (71111.04)

- 2154-28; Diesel Generator Air Start System Prestart Valve Checklist; Revision 9
  2154-14; Fuel Oil System Prestart Valve Checklist; Revision 15
  2126-03; Plant Prestart Checklist 250 Vdc Batteries and DC Power System; Revision 16
  0193-01; No. 13 250 Vdc Battery Operability Check (Division I); Revision 23
  2124; Plant Prestart Checklist Diesel Generators and Fuel Oil System; Revision 7
  2154-22; EDG Emergency Service Water System Prestart Valve Checklist; Revision 22
  2206; Plant Prestart Checklist EDG – Emergency Service Water System; Revision 3

1R05 Fire Protection (71111.05)

- Fire Strategy A.3-22; Recombiner Building; Revision 4
  Fire Strategy A.3-03-A; Recirc MG Set Room; Revision 5
  Fire Strategy A.3-12-A; Lower 4kV Bus Area (11, 13 & 15); Revision 12
  Fire Brigade Joint Drill Guide; Turbine Building Addition Fire; Drill Guide M; Revision 0
  Fire Strategy A.3-39; Turbine Building Addition; Revision 2
  Fire Strategy A.3-09; Control Room; Revision 7

1R06 Flood Protection Measures (71111.06)

- C.4-I; Plant Flooding; Revision 4
  4 AWI-04.02.01; Housekeeping; Revision 16
  Calculation (CA) 07-029; Rx and Turbine Building & Intake Structure Water Height for Internal Flooding; Revision 0
  CA 03-112; Evaluation of Door No. 32 for Hydrostatic Loading Due to HELB; Revision 0
  CAP 01052180; Class II Fire Lines Do Not Meet Class I Design Criteria

1R07 Heat Sink Performance (71111.07)

- 1404-01; EDG ESW Heat Exchanger Performance Test; Revision 12
  EWI-08.22.01; Generic Letter 89-013; Revision 3

1R11 Licensed Operator Requalification Program (71111.11Q)

- Simulator Exercise Guide RQ-SS-61E

1R12 Maintenance Effectiveness (71111.12)

- Monticello Maintenance Rule Program System Basis Document 250 Vdc Battery System; Revision 3
  Maintenance Rule (a)(1) Action/Performance Improvement Plant for D10 and D54 Battery Chargers; July 1, 2008

CAP 01136070; Div. 1 250Vdc Charger Current Limit Setting Out of Spec
CAP 01136270; Charger D54 As Found Hi Voltage Shutdown Setpt Out of Spec
CAP 01136744; Battery Charger D52 Exhibits Oscillating Current
CAP 01137297; D10 Exhibits Erratic Voltage Output During Surveillance
CAP 01137627; While Transferring to Charger D-90, Supply Breaker Tripped
CAP 01138824; Battery Chargers Maintenance Rule Status Declining
CAP 01139307; Circuit Breaker D100-07 Instantaneous Trip Out of Spec Low
CAP 01139417; D54 250VDC Div I Batt Charger Unavailability Exceeds MR Goal
CAP 01140118; D90 250VDC Div II Batt Charger Unavailability Exceeds MR Goal
CAP 01146259; Transfer of D-90 to D-80 Unsuccessful Due to D-100 CKT8 Trip
CAP 01128442; Full Impact of AI-611 Failure on Performance Indicator not Considered
CAP 01109870; HPCI Insulation Deficiencies Identified by Procedure 1484
CAP 01130606; HPCI Failed 0255-06-IA-1 Surveillance
CAP 01110729; E/P-3503 HPCI Test Return Control Valve Out of AS FOUND
CAP 01090377; HPCI Valve MO-2036 PMT UNSAT
CAP 01119477; HPCI-33 Actuator Leaking Oil/Grease
CAP 01121343; Oil Leak on Flanged Drain Connection-HPCI Inboard Bearing
CAP 01120846; NRC UHS Inspections on Motor Cooler Coils May not be Effective
CAP 01127051; HPCI and RCIC Motor Heaters Powered by Same Circuit
CAP 01130561; EPU HPCI Steam Line Break in HPCI Room Exceeds EQ Spec Requirements
CAP 01130824; Re-isolation of HPCI Causes CDF Change Not Previously Anticipated
CAP 01138901; Create PM Circuit Board and Capacitor Replacement 4525-PM
CAP 01078846; RM-A14 HPCI Turbine Area (896) ARM Response Bad, Unit is OOT
CAP 01100345; Received Area Rad. Monitor A-14 HPCI Downscale
CAP 01107230; DPIS-2-129D Recirculation Loops DP-LPCI Selection Interlock Reset Problems
CAP 01130761; CV-1729 Not Controlling at 7000 gpm, Results in Unplanned LCO
CAP 01148193; RF023 IST Failure Not Evaluated for Aggregate System Impact
EWI-05.02.01; Monticello Maintenance Rule Program Document; Revision 10
4AWI-09.04.01; Inservice Testing Program; Revision 31
Operations Manual B.03.02-05; Reactor Vessel Pressure or Level Control; Revision 35
CAP 01151279; G-3B 12 Emergency Diesel Generator

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

- CAP 01143830; Offgas Compressor Trip while Restoring HWC
CAP 01143835; RBV and Stack WRGM Exceed Admin Limit Due to Bypassing Offgas
CAP 00660710; Converted Issue Number: 1005941. Parent Issue 0000285; Extended Impairment of HWC
CAP 01146621; 14 RHR Pump Manually Tripped During Motor Oil Flush
WO 355108; P-202D Filter Motor Lower Bearing Reservoir
CAP 01077469; DPIS-2-129D (Recirc Loop DP) Failed to Reset during Testing
CAP 01107230; DPIS-2-129D Recirc Loops DP-LPCI Sel Intlk Reset Problems
CAP 01127276; DPIS-2-129D Did not Stay Reset During Functional Test
CAP 01147514; DPIS-2-129D Failed to Reset During Functional Testing
CAP 01147583; Corrective Action from ACE Closed to PMCR Rather than CA
ISP-RHR-0552-01; Reactor Recirculation Loops DP, LPCI Select Interlock Channel Functional Test; Revision 0
FP-PA-ARP-01; CAP Action Request Process; Revision 20
FG-PA-ACE-01; Apparent Cause Evaluation Manual; Revision 11
Monticello Station Log; September 5 through September 7, 2008

Operations Memo 08-05; ODMI Evaluation for CV-1004; dated January 28, 2008
CAP 01149748; Loss of Level Indication 'C' MSDT Dump Controller LC-1003
WO 368418; HPCI Turbine Trip Solenoid

1R15 Operability Evaluations (71111.15)

- CAP 01143449; V-EAC-14A Compressor Tripped Due to High Condenser Pressure
WO 364572; Investigate/Repair Cause of Spurious Tripping of V-EAC-14A
CAP 01143690; Water Leaking From Insulated Pipe Above Turbine Bypass Valve
A.6; Acts of Nature; Revision 27
B.06.04-05; Circulating Water System; Revision 45
C.4-B.06.04.A; Decreased Circulating Water Flow; Revision 9
CAP 01151279; EDG: Document Operation for Extended Period at No Load Condition

1R18 Plant Modifications (71111.15)

- EC 12813; Alternate Breaker for D100-07 250 VDC Charger D90; Revision 0
WO 361553; D100-07 Circuit Tripped while Placing D90 in Service

1R19 Post-Maintenance Testing (71111.19)

- CAP 01143449; V-EAC-14A Compressor Tripped Due to High Condenser Pressure
CAP 01143609; V-EAC-14A Maintenance Activity Results
WO 355561; V-ERF-11, Replace Fan Bearings
WO 364461; V-EAC-14A, Compressor Tripped Due to High Condenser Pressure
WO 357994; Adjust V-EAC-14A Discharge Pressure to 250-256 psig
7303; V-EAC-14 A/B Compressor Instrument Calibration; Revision 11
EC 12096; Use of Temporary 24 Volt Batteries to Support Battery Replacement
CAP 01145874; No. 14 24V Battery Cell No. 3 Has a Deep Scratch on Jar
WO 348417; D4, Replace D4 No. 14 24 Vdc Battery
4510-PM; Maintenance of On-Site Batteries and Battery Chargers at Monticello Nuclear Plant; Revision 23
4525-PM; No. 13 & 16 Battery Charger Preventive Maintenance; Revision 8
ESP-ELE-0549-07; D70 250 Vdc Charger 24 Month Capacity Test; Revision 1
WO 334850; PM 4525 (D70 250 Vdc Chargers)
EC 12714; RHRSW to SW Cross-Tie; Revision 1
4946-PM; AC Induction 4kV/480V Motor Offline (MCE) Testing; Revision 4
WO 360350; Replace SV-4937D
WO 356917; Flush Service Water Line to 'B' RHRSW Motor Coolers
WO 353834; Perform PM for SW-21-2 12/14 RHRSW Motors
4900-01-PM; PM for Limitorque Motor Operated Valves; Revision 26
WO 333144; PM 4900-1 for MO-2100
WO 138559; Remove Abandoned UV Relay from MCC D311-08
WO 333143; PM 4847 (Supply to MO-2100)
4844-PM; GE Thermal Overload Relay Test Procedure; Revision 20
4847-PM; GE 7700 Line MCC Maintenance Procedure; Revision 18
EC 720; Replace Division I 125 Vdc Battery Charger D10
WO 363130; Replace Outboard Pump Bearing on P-201A [11 Control Rod Drive Pump]
CAP 01148266; P-201A had Minor Shaft Scoring Noted during Bearing Changeout
WO 367230; P-221, High Outboard Motor Bearing Vibration
CAP 01148383; P-221, 11 EDG Turbo Oil Pump Noisy

WO 354387; EC-12170, Install Flow Elements for Division I FSW
WO 355172; Perform I&C PM 7070 (A) on RSW-1 Instruments
7070; RHRSW System Instrument Maintenance Procedure; Revision 25
CAP 01150689; 186/AT relay failed to trip as expected step 50 4850-902-PM
4850-902-PM; 2R Transformer Protective Relay Maintenance; Revision 5
EC 13196; Replace Obsolete 186/ST Coil Fuses (152-202 NM)
WO 368854; 186/ST Relay, Replace/Test
WO 368759; Elec-186/AT Relay, Failed to Operate Properly
4850-903-PM; 1R Transformer Protective Relay Maintenance; Revision 5
4853-03-PM; 1R Cross-Trip Relay; Revision 2|
4853-02-PM; 2R Cross Trip Relaying; Revision 4

1R20 Outage Activities

- Operations Manual B.03.04-05; Residual Heat Removal System, System Operation; Revision 50
1371; Drywell Prestart Inspection; Revision 7
2150; Plant Prestart Checklist; Revision 35
Operations Manual C.1; Startup Procedure; Revision 59

1R22 Surveillance Testing (71111.22)

- 0054-B; Main Steam Line Low Pressure Group 1 Isolation Instrument Test and Calibration; Revision 12
0011-A; Turbine Control Valve Fast Closure Scram Test and Calibration; Revision 10
0255-05-IA-1-2; 'B' RHRSW Quarterly Pump and Valve Tests; Revision 64
0600; RCIC Hi Steam Flow and Low Steam Pressure Sensor Test and Calibration Procedure; Revision 35
0379; RPS – Electrical Protection Assembly (EPA); Revision 25
0391; RHR Shutdown Cooling Supply Isolation Interlock Instrument Test; Revision 18
FS-2-128A Card 8; Instrument Calibration Worksheet; No Revision/Date
FS-2-128B Card 8; Instrument Calibration Worksheet; No Revision/Date
XPI-9022 500 psig Heise Pressure Gauge Calibration Record; Revision 07/14/2008

2OS1 Access Control To Radiologically Significant Areas (71121.01)

- 00000593-03; RWP For Locked High Radiation Area up To 2200 Millirem Per Hour, Entry to Steam Chase Reactor Bldg- Elev 935; at 100 Percent Power During Hydrogen Water Chemistry Outage; dated July 10, 2008
00000826-01; RWP For Locked High Radiation Area To Repair Y Strainer (YS-2568) Inside Condenser Room; dated July 10, 2008
QF-1205; Rev 3 (FP-RP-JPP-01); Radiological Work Assessment Form for Repair Work on YS-2568 Inside the Condenser Room; dated July 10, 2008
QF-1207; Rev 1 (FP-RP-JPP-01); Radiological Work Assessment Form ALARA Review Checklist; WO 00364535; Repair of YS-2568 Steam Leak; dated July 10, 2008
Station ALARA Committee Agenda; Sub Committee on Discussion of ALARA Plans for Jobs Greater Than 500 mrem; dated July 10, 2008
CAP 01139840; Unable To Perform Flush of Chemistry Sample Line in Order to Lower Dose Rate Caused the Spread of Contamination to Spread in the Reactor Building 985
CAP 01139865; Unable to Perform Flush of Chemistry Sample Line

2PS1 Radioactive Material Processing and Transportation (71122.02)

- 5877; Radioactive LSA/SCO Shipment Exclusive Use Vehicles; Revision 5
5860; Master Radioactive Material Shipping Procedure; Revision 13
8045; Vehicle Inspection Records; Revision 3
5810; Package Loading Checklist; Revision 4
5878; Shipping Radioactive Waste Using the CNS 14-21 H Cask; Revision 9
5892; For Shipping Radioactive Waste to Barnwell; Revision 4
5862; Advance Notification for Nuclear Waste Shipment; Revision 4
5547; Receipt and Unpacking For Packages Containing Radioactive Material; Revision 12
Technical 1016; Energy Solutions, Handling the TN-RAM Shipping Cask Using the Pool Filling Method
Shipment No. 08-22; LSA II Shipment Solid/Metal Oxide; dated April 10, 2008
Shipment No. 08-34; Radioactive Material; Low Specific Activity (LSA-II); 7; UN3321; dated April 30, 2008
Shipment No. 08-42; Four Boxes of Sipping Equipment; Radioactive Material; Surface Contaminated Object (SCO-II); 7; UN 2913; Fissile Excepted; Fuel Sipping Equipment; dated June 18, 2008
Shipment No. 08-13; Resin Liner to Energy Solution in Utah; Radioactive Material; LSA-II; 7, UN 3321; Fissile Excepted; RQ- Radionuclide; Depleted Secondary Resin; dated March 10, 2008
Shipment No. 08-11; RAM, LSA-II; 7; UN 2916; Charcoal and Resin; Solid/Metal Oxides; dated May 30, 2008
Shipment No. 08-15; RAM LSA-II; 7; UN 3321; Fissile Excepted; RQ-Radionuclides; Depleted Resin; Condensate Resin Liners to Clive, UT; dated March 17, 2008
Shipment No. 08-31; RAM Type B(U) Package; 7; UN2916; Fissile Excepted; RQ; Radionuclides; Metal; Type-B Cask; Containing CRBs; Velocity Limiter and LPRM Containing Fission Chamber; Class C Shipping/RAM QC to Barnwell Disposal Facility; dated May 5, 2008
Shipment No. 08-18; RAM, Type-B(U), Package, 7, UN 2916, Fissile Excepted, RQ, Radionuclides, Containing Control Rod Blades (CRBs), LPRM, Velocity Limiter, Satellite Balls, to Barnwell, SC; dated April 16, 2008
South Carolina Department of Health and Environmental Control Letter; Transmitting a Letter Detailing an Infraction of DOT Requirements of 49 CFR 172.302(a)(1); dated May 5, 2008
CAP 01133744; Improper Marking on Radioactive Material Shipment No. 08-18 to Barnwell Site of Inadequate Number of Required Marking; dated April 8, 2008
Corrective Action Steps Letter; In Response to Improper Marking of Type 'B' Cask Identified by Barnwell Addressed to Brad Sawatzke, Plant Manager; dated April 9, 2008
QF-0428; Revision 1; Human Performance Event Investigation Tool (HUEIT); dated April 2008
2007 10 CFR Part 61 Database Updates; dated October 12, 2007
2008 10 CFR Part 61 Database Updates; dated July 3, 2008

4OA1 Performance Indicator Verification (71151)

- MSPI Basis Document; PRA-CALC-05-003; Revision 1
Unavailability Log for Division I and II DGN; July 2007 – June 2008
MSPI Unavailability Index Derivation Report for EAC Power System; July 2007 – June 2008
MSPI Unreliability Index Derivation Report for EAC Power System; July 2007 – June 2008
MSPI Performance Limit Exceeded Derivation Report for EAC Power System; July 2007 – June 2008
MSPI Unavailability Index Derivation Report for HPI Power System; July 2007 – June 2008
MSPI Unreliability Index Derivation Report for HPI Power System; July 2007 – June 2008

MSPI Performance Limit Exceeded Derivation Report for HPI Power System; July 2007 – June 2008
MSPI Unavailability Index Derivation Report for RHR System; July 2007 – June 2008
MSPI Unreliability Index Derivation Report for RHR System; July 2007 – June 2008
MSPI Performance Limit Exceeded Derivation Report for RHR System; July 2007 – June 2008

4OA2 Identification and Resolution of Problems (71152)

- CAP 01143647; Operability Questions During Maintenance on 'A' EFT/CRV
CAP 01143424; Preconditioning Question with Instrument Test/Cal Process
CAP 01140145; Incorrect Grounding Trucks Installed in 4KV Cubicles

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

- CAP 01143830; Offgas Compressor Trip while Restoring HWC
CAP 01143835; RBV & STACK WRGM Exceed Admin Limit Due to Bypassing Offgas
WO 356717; BH-561, Repair of Replace Leaking Steam Valve
EC-12129; Replace Turbine Performance Instrumentation
WO 349456; CV-1014, Open Limit Switch Adjustment
1181; Feedwater Heater Performance; Revision 12
4118-PM; Main Generator/Recirc Motor Generator Electrical Checks; Revision 23
WO 368890; Restore Plant Power to 2R or 1R Transformer
2165; Scram Report; Revision 24; completed September 13, 2008

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ALARA	As-Low-As-Is-Reasonably Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DAW	Dry Active Waste
DEI	Dose Equivalent Iodine
DOT	Department of Transportation
DRP	Division of Reactor Projects
EAC	Emergency Alternating Current
EDG	Emergency Diesel Generator
EPA	Electrical Protection Assembly
ESW	Emergency Service Water
FHA	Fire Hazard Analysis
FSAR	Final Safety Analysis Report
HELB	High Energy Line Break
HPCI	High Pressure Coolant Injection
HPI	High Pressure Injection
HWC	Hydrogen Water Chemistry
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
kV	Kilovolt
LER	Licensee Event Report
LPCI	Low Pressure Coolant Injection
MD	Management Directive
MG	Motor-Generator
MNGP	Monticello Nuclear Generating Plant
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PI	Performance Indicator
PM	Preventive Maintenance
PMCR	Preventive Maintenance Change Request
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RP	Radiation Protection
RPS	Radiation Protection Specialist
RPS	Reactor Protection System
RWP	Radiation Work Permit
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SRA	Senior Reactor Analyst
SSC	Structures, Systems, and Components
TBO	Turbine Building Operator

TS	Technical Specification
TSC	Technical Support Center
USAR	Updated Safety Analysis Report
URI	Unresolved Item
Vdc	Volts Direct Current
WO	Work Order