

October 30, 2007

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

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT  
NRC INTEGRATED INSPECTION REPORT 05000263/2007004

Dear Mr. O'Connor:

On September 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Monticello Nuclear Generating Plant. The enclosed integrated inspection report documents the inspection findings which were discussed on October 4, 2007, 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, there was one NRC-identified and two self-revealed findings of very low safety significance, of which two involved a violation of NRC requirements. However, because the violations were of very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these findings as non-cited violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, two licensee-identified violations are listed in Section 4OA7 of this report.

If you contest the subject or severity of a non-cited violation, 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

T. O'Connor

-2-

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

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 05000263/2007004  
w/Attachment: Supplemental Information

cc w/encl: M. Sellman, President and Chief Executive Officer  
D. Cooper, Senior Vice President and Chief  
Nuclear Officer  
Manager, Nuclear Safety Assessment  
J. Rogoff, Vice President, Counsel, and Secretary  
Nuclear Asset Manager, Xcel Energy, Inc.  
State Liaison Officer, Minnesota Department of Health  
R. Nelson, President  
Minnesota Environmental Control Citizens  
Association (MECCA)  
Commissioner, Minnesota Pollution Control Agency  
D. Gruber, 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 October 30, 2007

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT  
NRC INTEGRATED INSPECTION REPORT 05000263/2007004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000263/2007004

Licensee: Nuclear Management Company, LLC

Facility: Monticello Nuclear Generating Plant

Location: Monticello, Minnesota

Dates: July 1 through September 30, 2007

Inspectors: S. Thomas, Senior Resident Inspector  
L. Haeg, Resident Inspector  
N. Shah, Project Engineer  
S. Sheldon, Senior Reactor Engineer  
T. Go, Radiation Protection Specialist  
J. Jandovitz, Reactor Inspector  
M. Holmberg, Reactor Inspector

Observers: L. Jones, Reactor Inspector-in-Training

Approved by: K. Riemer, Chief  
Branch 2  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

Inspection Report 05000263/2007004; 07/01/2007 - 09/30/2007; Monticello Nuclear Generating Plant. Inservice Inspection Activities, Maintenance Risk Assessments and Emergent Work Control, Event Follow-up.

This report covers a three-month period of baseline resident inspection and announced baseline inspections of radiation protection and inservice inspection. The inspections were conducted by Region III reactor inspectors, a regional health physics inspector and the resident inspectors. 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 the 12B low pressure feedwater heater drain valve unexpectedly closed, causing a feedwater temperature perturbation. Specifically, the drain valve closed when technicians attached calibration equipment to the instrument air supply line to the control valve, causing air pressure to decrease to the control valve actuator. The inspectors determined that the performance deficiency affected the cross-cutting area of Human Performance, having resources components, and involving aspects associated with the failure to correctly label plant components. [H.2(c)]

This finding was more than minor because the performance deficiency affected the procedure quality attribute of the Initiating Events cornerstone's objective of limiting the likelihood of events that upset plant stability. The inspectors determined that the finding was of very low safety significance because it was not: (1) associated with the likelihood of initiating a loss of coolant accident; (2) did not contribute to both the likelihood of a scram and unavailability of Mitigating Systems; and (3) was not associated with a fire or flood. No violation of NRC requirements was identified. (Section 1R13)

#### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance was identified by the inspectors for a violation of 10 CFR 50, Appendix B, Criterion IX, "Control of Special Processes," associated with the licensee's failure to use a nondestructive examination (NDE) procedure qualified in accordance with Codes and Standards for detection of pitting in safety-related service water systems. Specifically, the ultrasonic (UT) examinations were conducted by the licensee in accordance with UT Procedure PEI-02.03.12 "Ultrasonic Detection of Pitting," which was not qualified for detection of discontinuities in accordance with ASME Section V, "Nondestructive Examination." As a result, the licensee entered the issue into their corrective action program. The inspectors

determined that the performance deficiency affected the cross-cutting area of Human Performance, having resources components and involving aspects associated with maintaining long-term plant safety by the maintenance of design margins and the minimization of long-standing equipment issues. [H.2(a)]

The finding was more than minor because the performance deficiency affected the procedure quality 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 the Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for the At-Power Situations" to this finding. Under Column 2 of the Phase 1 worksheet "Mitigating Systems Cornerstone," 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 1R08)

- Green. A finding of very low safety significance was self-revealed for a violation of 10 CFR 50, Appendix B, Criterion V, when licensed operators failed to perform Procedure OSP-RHR-0545-02, "RHR Containment Spray/Cooling Logic Test - Division II," in accordance with the written instructions of the procedure. Specifically, the licensed operators landed a test jumper in the wrong electrical cabinet during the conduct of the test. Additionally, after identifying the error, the operators took actions to remove the incorrectly landed test jumper, install the test jumper at the correct location, and proceed with the test, without first notifying management. These actions were not allowed by the test procedure, nor were they in accordance with operations department standards and expectations. The inspectors determined that the performance deficiency affected the cross-cutting area of Human Performance, having decision-making components and involving aspects associated with making safety-significant or risk-significant decisions using a systematic process, especially when faced with uncertain plant conditions, to ensure safety is maintained. [H.1(a)]

The finding was more than minor because it affected the configuration control 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 determined that the finding was of very low safety significance because it was not associated with a design or qualification deficiency, did not result in the loss of a train or safety system function, and was not related to a seismic, flooding, or severe weather event. (Section 4OA3.4)

## **B. Licensee-Identified Violations**

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned 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 the entire assessment period except for brief down-power maneuvers to accomplish rod pattern adjustments and to conduct planned surveillance testing activities.

#### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather (71111.01)

##### a. Inspection Scope

The inspectors performed a detailed review of the licensee's procedures and preparations for operating the facility during an extended period of time when ambient outside temperature was high and the ultimate heat sink (Mississippi River) was experiencing elevated temperatures, decreased flow rates, and below average levels. The inspectors focused on plant specific design features and implementation of the procedures for responding to or mitigating the effects of these conditions on the operation of the facility's service water systems. Inspection activities included a review of the licensee's adverse weather procedures, daily monitoring of the off-normal environmental conditions, and that operator actions specified by plant specific procedures were appropriate to ensure operability of the facility's service water systems.

The inspectors evaluated readiness for seasonal susceptibilities of the following systems for a total of one sample:

- service water systems.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walkdown

##### a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant Mitigating Systems equipment. The inspectors reviewed equipment alignment to identify any discrepancies that could impact the function of the system and potentially increase risk. Identified equipment alignment problems were verified by the inspectors to be properly resolved. The inspectors selected redundant or backup



systems for inspection during times when equipment was of increased importance due to unavailability of the redundant train or other related equipment. Inspection activities included a review of the licensee's procedures, verification of equipment alignment, and an observation of material condition, including operating parameters of equipment in-service.

The inspectors selected the following equipment trains to assess operability and proper equipment line-up for a total of four samples:

- 11 emergency diesel generator (EDG) air start system during planned maintenance of the 12 EDG;
- Division I electrical equipment alignment with 'B' standby gas treatment (SBGT) system out-of-service for planned maintenance;
- 14 emergency service water (ESW) system during 13 ESW flow test; and
- 12 core spray system with 11 core spray system out-of-service for planned maintenance.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete walkdown of equipment for one system that is important to safety. The inspectors walked down the system to review mechanical and electrical equipment line-ups, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program (CAP) database to ensure that any system equipment alignment problems were being identified and appropriately resolved.

The inspectors selected the following system to assess operability and proper equipment line-up for a total of one sample:

- alternate nitrogen system.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Zone Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors walked down risk significant fire areas to assess fire protection requirements. 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. 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, or the potential to impact equipment which could initiate or mitigate a plant transient. The inspection activities included the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, compensatory measures, and barriers to fire propagation.

The inspectors selected the following areas for review for a total of seven samples:

- Fire Zone 14-A, upper 4 kV bus area (12, 14, and 16);
- Fire Zone 15-A, No. 12 diesel generator room;
- Fire Zone 15-B, No. 11 diesel generator room and day tank rooms;
- Fire Zone 5-C, fuel pool skimmer tank room;
- Fire Zone 21-D, radwaste building;
- Fire Zone 27, off-gas storage building; and
- Fire Zone 37, transformers.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors performed an annual review of flood protection barriers and procedures for coping with internal flooding. The inspection focused on evaluating the licensee's preparations to mitigate flooding in the turbine building 911' and 931' elevations. The inspection activities included a review and/or walkdown of accessible areas of the turbine building.

The inspectors selected the following equipment for a total of one sample:

- 4160 Vac essential switchgear rooms.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08)

Piping Systems ISI

a. Inspection Scope

In the apparent cause evaluation (ACE) for CAP 01088981, the licensee evaluated the reasons why an ultrasonic test (UT) performed on a section of safety-related service water piping failed to detect a piping defect. The inspectors reviewed the ACE documented for CAP 01088981, which reviewed actions taken in response to a through-wall leak discovered on April 19, 2007, on a four inch diameter section of safety-related ASME Code Class 3 carbon steel pipe.

This inspection activity did not constitute an inspection sample.

b. Findings

Use of Unqualified Procedures for Detection of Pitting

Introduction: The inspectors identified a non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion IX for the licensee's failure to use a nondestructive examination (NDE) procedure qualified in accordance with Codes and Standards for detection of pitting in safety-related service water systems. Specifically, the UTs were conducted by the licensee in accordance with UT Procedure PEI-02.03.12 "Ultrasonic Detection of Pitting" which was not qualified for detection of discontinuities in accordance with ASME Section V, "Nondestructive Examination."

Description: On August 22, 2007, the inspectors determined that the licensee failed to use a qualified procedure to detect pitting in safety-related service water systems.

The ACE for CAP 01088981 evaluated the reasons why an UT performed on a section of safety-related service water piping failed to detect a through-wall piping defect. On April 19, 2007, the licensee performed informational UT of pipe segment E7 downstream of the 13 ESW pump in accordance with Procedure PEI-02.03.12 "Ultrasonic Detection of Pitting." On April 22, 2007, during post-replacement pressure testing, a through-wall leak was discovered on piping segment E7. Upon reinspection of the leaking area, the licensee determined that this flaw was "virtually undetectable using traditional UT methods." Specifically, the licensee concluded that "traditional UT examination techniques used to measure thickness were unable to identify the degraded condition related to the second leak" and that "a high gain method was required to adequately characterize the degradation."

On August 22, 2007, the inspectors identified that the licensee had failed to use a qualified UT procedure for detection of pitting. The expected degradation mechanism of the ESW piping and in particular the leaking section was microbiological influenced

corrosion (MIC). Because MIC degradation initiates at the inner surface of the pipe and typically is cone shaped with the base larger at the inner surface and progresses to a point as it corrodes through the pipe wall, the UT procedure must be designed to detect this pitting type of degradation.

During review of Procedure PEI-02.03.12, the inspectors identified that the procedure was developed and based on ASTM E-797, "Standard Practice for Thickness Measurement by Manual Contact Ultrasonic Method." This method provides the guidelines for determining the thicknesses of materials. Because the calibration techniques established in Step 10.2 of PEI-02.03.12 were set up to meet this standard, they were not consistent with applicable Code methods used to detect pitting. Specifically, the ASME Code, Section V, Article 23, SE-213 "Standard Practice for Ultrasonic Inspection of Metal Pipe and Tubing," states that the purpose of this practice is to outline a procedure for detecting and locating significant discontinuities such as pits, voids, inclusions, or cracks. This standard identified calibration based on reference notches and establishment of a rejection level based on these notches. The inspectors concluded that the licensee failed to incorporate appropriate Code UT standards for detection of pitting into PEI-02.03.12, which made this procedure ineffective for detection of MIC corrosion.

On August 28, 2007, the licensee entered this issue into their corrective action program (CAP 01109115).

Analysis: The inspectors determined that the failure of the licensee to use an adequate NDE procedure for detection and sizing of pitting (MIC) in safety-related service water systems was a performance deficiency that warranted a significance evaluation. Absent NRC intervention, the licensee's continued use and reliance on an unqualified UT procedure could place the ESW at increased risk for through-wall leakage and/or pipe failure. Therefore, this finding was of more than minor significance because it was associated with the Mitigating System cornerstone attribute of procedure quality and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems (e.g. ESW) that respond to initiating events. The inspectors determined that, in part, the cause of the performance deficiency affected the cross-cutting area of Human Performance, had resources components, and involved aspects associated with maintaining long-term plant safety by the maintenance of design margins and the minimization of long-standing equipment issues. [H.2(a)]

The inspectors applied the Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" to this finding. Under Column 2 of the Phase 1 worksheet "Mitigating Systems Cornerstone," 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.

Enforcement: Title 10 CFR 50 Appendix B, Criterion IX "Control of Special Processes," required, in part, that nondestructive testing be controlled and accomplished using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

The ASME Code, Section V, Article 23, SE-213 “Standard Practice for Ultrasonic Inspection of Metal Pipe and Tubing,” states that the purpose of this practice is to outline a procedure for detecting and locating significant discontinuities such as pits, voids, inclusions, cracks, splits by the ultrasonic pulse-reflection method.

Section 8.2 of SE-213 states, in part, that longitudinal (axial) reference notches shall be introduced on the outer and inner surfaces of the standard.

Section 9 of SE-213 states, in part, that using the calibration standard specified in Section 8, adjust the equipment to produce clearly identifiable indications from both the inner and outer notches.

Section 11.1 of SE-213 states, in part, that all indications that are equal to or greater than the rejection level established during calibration as described in Section 9 shall be considered as representative of defects and may be cause for rejection of the pipe or tube.

Contrary to the above, as of August 22, 2007, the licensee had not established an NDE procedure qualified for detection of pitting in accordance with applicable Codes and Standards. Specifically, Procedure PEI-02.03.12 “Ultrasonic Detection of Pitting,” used for detection of pitting in the ESW piping system did not specify a calibration standard with axial reference notches, did not adjust equipment to produce identifiable indications from these notches, and did not establish a rejection level based on these notches as specified by SE-213. Failure to use a qualified NDE procedure appropriate to the circumstance is a violation of 10 CFR 50 Appendix B, Criterion IX. Because of the very low safety significance of this finding and because the issue was entered into the licensee’s corrective action program, it is being treated as a NCV, consistent with Section VI.A.1 of the Enforcement Policy. (NCV 05000263/2007004-01)

1R11 Licensed Operator Regualification Program (71111.11)

a. Inspection Scope

The inspectors performed a quarterly review of licensed operator requalification training. The inspection assessed the licensee’s effectiveness in implementing the requalification program; whether licensed individuals could demonstrate operation of the facility safely and within the conditions of their license; and licensed operator performance of high-risk operator actions.

The inspectors observed the following requalification activity for a total of one sample:

- a training crew during an evaluated simulator scenario that included a loss of all high pressure injection and a recirculation line break. This resulted in entry into emergency operating procedures, reduced reactor level control and reactor pressure blow-down.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed systems to assess maintenance effectiveness, including maintenance rule activities, work practices, and common cause issues. Inspection activities included the licensee's categorization of specific issues including evaluation of performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed implementation of the Maintenance Rule (10 CFR 50.65) requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with reviewed CAP documents, and current equipment performance status.

The inspectors performed the following maintenance effectiveness reviews for a total of two samples:

- a function-oriented review of the residual heat removal service water (RHRSW) system motor cooler line check valves; and
- an issue/problem-oriented review of the 13 and 14 ESW systems due to various flow margin issues identified over the past six months.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed maintenance activities to review risk assessments (RAs) and emergent work control. The inspectors verified the performance and adequacy of RAs, management of resultant risk, entry into the appropriate licensee-established risk bands, and the effective planning and control of emergent work activities. The inspection activities included a verification that licensee RA procedures were followed and performed appropriately for routine and emergent maintenance, that RAs for the scope of work performed were accurate and complete, that necessary actions were taken to minimize the probability of initiating events, and that activities to ensure that the functionality of Mitigating Systems and barriers were performed. Reviews also assessed the licensee's evaluation of plant risk, risk management, scheduling, configuration control, and coordination with other scheduled risk significant work for these activities. Additionally, the assessment included an evaluation of external factors, the licensee's control of work activities, and appropriate consideration of baseline and cumulative risk.

The inspectors observed maintenance or planning for the following activities or risk significant systems undergoing scheduled or emergent maintenance for a total of five samples:

- initial corrective actions taken to address low ESW flow to the 'A' residual heat removal (RHR) room which resulted in 11 core spray pump and 13 RHR pump to be inoperable and Technical Specification (TS) 3.0.3 being entered;
- emergent work to resolve extended low ESW flow to 13 RHR pump motor cooler;
- troubleshooting and evaluation of flow blockage in EDG fire system deluge;
- investigation and corrective actions following a stuck-closed drain valve on the 12 low pressure feedwater heater; and
- work management following an increase in overall plant risk during orange grid risk conditions on September 18, 2007.

b. Findings

Introduction: A finding of very low safety significance was self-revealed when the 12B low pressure feedwater heater drain valve unexpectedly closed causing a feedwater temperature perturbation. No violation of NRC requirements was identified.

Description: On August 22, 2007, after performing a pre-job brief, instrument maintenance technicians commenced WO 0157987, "Perform major PM on CV-2207." This work, associated with the 'B' condensate demineralizer, involved rebuilding the valve actuator and calibrating the positioner using plant instrument air. The technicians attached their equipment to an unlabeled instrument air quick disconnect on a local instrument rack containing several feedwater heater dump and drain valve controllers. The particular disconnect used was located between the electric-to-pneumatic controller and valve positioner for the 12B low pressure feedwater heater drain valve (CV-1052). Once air flow was issued by the technicians, local air pressure in the system reduced to a point where CV-1052 fully closed - with the overall result of reactor thermal power reducing by approximately one megawatt.

A few moments after the feedwater perturbation occurred, the cause was quickly determined and WO 0157987 was halted. Troubleshooting then commenced to re-establish the appropriate air pressure and control to CV-2207.

Analysis: The inspectors determined that the failure to appropriately label plant equipment that, if used could initiate a plant transient, was a performance deficiency warranting a significance evaluation in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening." The inspectors determined that the finding was more than minor because it involved the configuration control attribute of the Initiating Events cornerstone objective of limiting the likelihood of events that upset plant stability during power operations.

The licensee determined that the primary contributing cause of the event was the lack of labeling of the instrument air connection points. Although WO 0157987 did not contain specific information for the correct instrument air disconnect(s) to use, or caution the individuals to ensure that an instrument air header tap was used, the technicians should

have realized the impact of attaching the test equipment. However, the licensee determined that the lack of labeling of the connection points was a basic hardened barrier to prevent human error that should have been in place to preclude use of the disconnect. The inspectors determined that the performance deficiency affected the cross-cutting area of Human Performance, having resource components, and involving aspects associated with the failure to correctly label plant components. [H.2(c)]

The inspectors evaluated the finding using IMC 0609, Appendix A, Attachment 1, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Using the Phase 1 worksheet for the Initiating Events cornerstone, the inspectors determined that the finding was of very low safety significance (Green) because it was not: (1) associated with the likelihood of initiating a loss of coolant accident; (2) did not contribute to both the likelihood of a scram and unavailability of Mitigating Systems; and (3) was not associated with a fire or flood.

Enforcement: The inspectors concluded that no violation of NRC requirements occurred. The licensee entered this finding into their corrective action program (CAP 01108192) and took immediate actions, such as implementing additional requirements for further instrument air use in the plant and a longer term action to label all available instrument air connection points at the facility. (Finding (FIN) 05000263/2007004-02).

#### 1R15 Operability Evaluations (71111.15)

##### a. Inspection Scope

The inspectors reviewed operability evaluations which affected Mitigating Systems or barrier integrity to ensure that operability was properly justified and that the component or system remained available. The inspection activities included a review of the technical adequacy of the operability evaluations to determine the impact on TS, the significance of the evaluations to ensure that adequate justifications were documented, and that risk was appropriately assessed.

The inspectors reviewed the following operability evaluations for a total of five samples:

- CAP 01099800; rag sucked into duct during performance of 4048 post-maintenance (PM);
- CAP 01100115; low 'A' RHR room ESW flow;
- CAP 01101934; ESW flow for 13 RHR pump lower than required;
- CAP 01093320; unable to locate document on control room ventilation heat load effect ESW system; and
- CAP 01106816; charcoal filter iodine calculations non-conservative.

##### b. Findings

No findings of significance were identified.



## 1R19 Post-Maintenance Testing (71111.19)

### a. Inspection Scope

The inspectors verified that the PM test procedures and activities were adequate to ensure system operability and functional capability. Activities were selected based upon the structure, system, or component's ability to impact risk. The inspection activities included witnessing or reviewing the integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, system restoration, and evaluation of test data. Also, the inspectors verified that maintenance and PM testing activities adequately ensured that the equipment met the licensing basis, TS, and USAR design requirements.

The inspectors selected the following PM activities for review for a total of six samples:

- standby liquid control (SBLC) system test following the replacement of XP-12-1 [RV-11-39A drain to drain tank] and XP-12-2 [RV-11-39B drain to drain tank];
- 12 reactor water cleanup (RWCU) system valve testing and restoration following replacement of filter/demineralizer isolation valves RC-41-2 and RC-88-2;
- 11/12 EDG fire system testing following replacement of deluge system batteries;
- 'B' SBGT system testing following planned maintenance;
- 'A' RHRSW quarterly pump and valve test following planned maintenance; and
- 11 core spray torus suction valve MO-1741 testing following electrical and mechanical maintenance.

### b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors reviewed surveillance testing activities to assess operational readiness and to ensure that risk-significant structures, systems, and components were capable of performing their intended safety function. Activities were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that a system, structure, or component could impose on the unit if the condition was left unresolved. The inspection activities included a review for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, impact of testing relative to performance indicator (PI) reporting, and evaluation of test data.

The inspectors selected the following surveillance testing activities for review for a total of five samples:

- 13 ESW quarterly pump tests (routine);
- Reactor recirculation loop differential pressure interlock functional test (routine);
- 14 ESW comprehensive pump and valve tests (inservice test);
- 11 core spray quarterly pump and valve test (routine); and
- Average power range monitor flow referenced scram functional test (routine).

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed a temporary modification associated with alarm circuitry for the high pressure core injection (HPCI) exhaust drain pot high level instrument. The modification was performed to reduce distractions to the operators until the root cause could be corrected during the next HPCI maintenance outage. The inspectors assessed the impact of the modification on the safety function of the associated system and reviewed design documents, safety screening documents, USAR, and applicable TS. These reviews allowed the inspectors to determine whether the temporary modification was consistent with modification documents, drawings and procedures. The inspectors also reviewed the post-installation test results to confirm that tests were satisfactory and the actual impact of the temporary modification on the permanent system and interfacing systems were adequately verified.

This temporary modification review constituted one inspection sample.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the Monticello Nuclear Generating Plant USAR to identify applicable radiation monitors associated with measuring transient high and very high radiation areas including those used in remote emergency assessment. The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, including instruments used for fixed area radiation monitors used to provide radiological information in various plant areas, and continuous air monitors used to assess airborne radiological conditions and work areas with the

potential for workers to receive a 50 millirem or greater committed effective dose equivalent (CEDE). In addition, the inspectors verified contamination monitors, whole body counters, and those radiation detection instruments utilized for the release of personnel and equipment from the radiologically controlled area.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Walkdowns of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors conducted walkdowns of selected area radiation monitors (ARMs) in the radiologically controlled area to verify that they were located as described in the USAR and were adequately positioned relative to the potential source(s) of radiation they were intended to monitor. Walkdowns were also conducted of those areas where portable survey instruments were calibrated/repared and maintained for radiation protection (RP) staff use to determine if those instruments designated "ready for use" were sufficient in number to support the RP program, had current calibration stickers, were operable, and were in adequate physical condition. Additionally, the inspectors observed the licensee's instrument calibration units and the radiation sources used for instrument checks to assess their material condition and discussed their use with RP staff to determine if they were used appropriately. Licensee personnel demonstrated the methods for performing source checks of portable survey instruments and for source checking personnel contamination and portal monitors used at the egress from the radiologically controlled area.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

Portable survey instrument calibrations were performed at the facility by RP personnel. The inspectors interviewed involved RP personnel to determine if the methods for calibration and source checks of portable survey instruments were consistent with procedures. The inspectors observed personnel performing source checks of selected survey instruments, personnel contamination monitors, and the Fastscan whole body counting system to assess its adequacy. The inspectors reviewed records of calibration, operability, and alarm set points of selected process radiation monitors and personnel monitoring devices. This review included, but was not limited to the following:

- fuel pool radiation monitors;
- spent fuel pool and reactor building exhaust plenum monitor calibration records;
- certificate of calibration for small article monitors;
- certificate of calibration for Eberline radiation detection device model RM-14s;
- Fastscan whole body counter calibration;
- main steam line radiation monitor test and calibration;
- off-gas pretreatment monitor calibration; and
- control room air intake monitor calibration.

The inspectors evaluated those actions that would be taken when, during calibration or source checks, an instrument was found to be out of calibration by more than 50 percent. Those actions included an investigation of the instrument's previous usages and the possible consequences of that usage since the last calibration or source check. The inspectors also reviewed the licensee's 10 CFR Part 61 source term analyses to determine if the calibration sources used were representative of the plant source term.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and corrective action documents that involved personnel contamination monitor alarms due to personnel internal exposures to determine if identified problems were entered into the CAP for resolution. There were no internal exposure occurrences greater than 50 millirem CEDE that were evaluated during the inspection. However, the licensee's process for investigating this type of occurrence was reviewed to determine if the affected personnel would be properly monitored utilizing the appropriate equipment and if the data would be analyzed and internal exposures properly assessed in accordance with licensee procedures.

The inspectors reviewed CAP reports related to exposure of workers or to significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area. Staff members were interviewed and corrective action documents were reviewed to determine if follow-up activities were being conducted in an effective and timely manner commensurate with its importance to safety and risk-based on the following:

- 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.

The inspectors evaluated the licensee's self-assessment activities to determine if they would identify and address repetitive deficiencies or significant individual deficiencies observed in problem identification and resolution.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 RP Technician Instrument Use

a. Inspection Scope

The inspectors determined if the calibration expiration and source response check data records on radiation detection instruments staged for use were current and observed RP technicians for appropriate instrument selection and self-verification of instrument operability prior to use.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.6 Self-Contained Breathing Apparatus (SCBA) Maintenance/Inspection and User Training

a. Inspection Scope

The inspectors reviewed the status, maintenance and surveillance records of selected SCBAs staged and ready for use in the plant and assessed the licensee's capability for refilling and transporting SCBA air bottles to and from the control room during emergency conditions. The inspectors determined whether control room operators and other emergency response and RP personnel were trained and qualified in the use of SCBA, including personal bottle change-out. The inspectors also reviewed the training and qualification records for selected individuals on each control room shift crew and selected individuals from each designated department that were currently assigned emergency duties, including on-site search and rescue, to determine if an adequate number of personnel were qualified for emergency response activities.

The inspectors reviewed the SCBA manufacturer's maintenance training certifications for licensee personnel qualified to perform SCBA maintenance on vital components (regulator and low pressure alarm). The inspectors reviewed maintenance records for several SCBAs designated as "ready for service." The inspectors verified that

maintenance was performed by qualified personnel over the past five years. The inspectors also determined if the required periodic air cylinder hydrostatic testing was current and documented. The inspectors also evaluated if the licensee's maintenance procedures were consistent with the SCBA manufacturer's maintenance manuals.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

**Cornerstones: Mitigating Systems, and Barrier Integrity**

.1 Reactor Safety Strategic Area

a. Inspection Scope

**Cornerstone: Mitigating Systems**

The inspectors' review of PIs used guidance and definitions contained in Nuclear Energy Institute (NEI) Document 99-02, Revision 5, "Regulatory Assessment Performance Indicator Guideline," to assess the accuracy of the PI data. The inspectors reviewed licensee event reports (LERs), data within operator logs, Mitigating Systems Performance Index (MSPI) derivation reports, and CAP documents for each PI.

The following PIs were reviewed for a total of three samples:

- MSPI for Emergency Alternating Current Power System, for the period of July 2006 through June 2007;
- MSPI for High Pressure Injection System, for the period of July 2006 through June 2007; and
- MSPI for Heat Removal System, for the period of July 2006 through June 2007.

b. Findings

No findings of significance were identified.

## **Cornerstone: Barrier Integrity**

### 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 Revision 5 of NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the PI data. The following PI was reviewed:

- Reactor Coolant System Specific Activity.

The inspectors reviewed chemistry department records and selected isotopic analyses from January 2006 through June 2007 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 review represented one inspection sample.

### b. Findings

No findings of significance were identified.

## 4OA2 Identification and Resolution of Problems (71152)

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

#### .1 Routine Review of Identification and Resolution of Problems

##### a. Inspection Scope

As part of the routine inspections documented above, the inspectors verified that the licensee entered the problems identified during the inspection into their CAP. Additionally, the inspectors verified that the licensee was identifying issues at an appropriate threshold and entering them in the CAP, and verified that problems included in the licensee's CAP were properly addressed for resolution. Attributes reviewed included: 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 occurrence reviews were proper and adequate; and that the classification, prioritization and focus were commensurate with safety and sufficient to prevent recurrence of the issue.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily CAP summary reports and attending corrective action review board meetings.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Reports 50-263/2007-003-00 and 50-263/2007-003-01: "Failure to Enter a Required Technical Specification Action During Control Rod Drive Exercising"

On April 20, 2007, with the plant in Mode 4, the licensee performed control rod exercising. While exercising Control Rod 26-31, the operators realized that they did not get the same back light indication for the control rod that they had received for the previously tested rod (26-35). The incorrect back light indication meant that the one rod out interlock for Control Rod 26-35 was inoperable. The one rod out interlock for Control Rod 26-35 should have been declared inoperable and the appropriate TS actions should have been taken prior to commencing testing on Control Rod 26-31. The licensee determined that the cause of this event was incorrect acceptance criteria in the procedure being used to perform the testing, and that lack of operator proficiency and misdiagnosis of the indications were contributing causes. Corrective actions taken by the licensee to address this issue included: replacing the defective control rod position indication probe; improving the testing procedure; and providing additional training to their operating crews.

During their review of the original submittal of this LER, the inspectors challenged the licensee's report in two areas. The first area was the licensee's conclusion that the failure of control rod position indicator probe for Control Rod 26-35, and subsequent inoperability of the refuel position one-rod-out interlock, was not a safety system functional failure. The second area that the inspectors challenged was the quality of the evaluations documented in the LER's safety significance section. Specifically, the narrative in this section discussed, in part, that the one-rod-out interlock is designed to ensure that movement of more than one control rod is restricted to prevent the reactor from becoming critical during refueling operations. Additionally, the narrative stated that at no time were Control Rods 26-35 and 26-31 both fully withdrawn at the same time, that at no time did the reactor become critical during the control rod exercising, and that



no fuel damage would have occurred even if both rods had been fully withdrawn. The inspectors noted that the licensee's safety significance evaluation did not discuss whether or not reactor criticality was possible if Control Rods 26-35 and 26-31 had both been fully withdrawn and what other barriers, minus the one-rod-out interlock, were in place that would have mitigated or prevented an inadvertent shutdown criticality event.

In response to the inspectors' questions, the licensee submitted Revision 1 to LER 50-263/2007-003. After further evaluation of the issue, the licensee determined that failure of control rod position indicator probe for Control Rod 26-35, and subsequent inoperability of the refuel position one-rod-out interlock, was a safety system functional failure. Additionally, the licensee enhanced their safety significance evaluation to discuss the potential impact of a shutdown criticality event associated with this issue and the additional barriers that were in place that prevented its occurrence.

The performance deficiency associated with the failure to enter a TS during control rod testing was previously evaluated and determined to be a licensee-identified finding of very low safety significance and is documented in Section 4OA7 of Inspection Report (IR) 05000263/2007003. The inspectors concluded that the licensee's failure to identify the safety system functional failure associated with the failure of control rod position indicator probe for Control Rod 26-35, and subsequent inoperability of the refuel position one-rod-out interlock, was a finding of minor significance because it would not have caused the licensee to challenge the White Safety System Functional Failure Performance Indicator threshold for the second quarter of 2007. This original LER, and subsequent Revision 1 are closed.

.2 (Closed) Licensee Event Report 50-263/2007-004-00: "Degradation of Emergency Service Water Flow to Emergency Core Cooling System Room Cooler"

On July 2, 2007, the licensee notified the NRC via LER 50-263/2007-004-00 that a low flow condition for the 'A' RHR room components existed during a 13 ESW quarterly pump and valve test. Technical Specification 3.5.1 Conditions 'A,' 'B,' and 'M' were entered, resulting in immediate entry into TS 3.0.3 - a one-hour shutdown statement. The 'A' RHR room ESW piping was immediately flushed and TS 3.5.1 Conditions 'B' and 'M,' and TS 3.0.3 were exited before power reduction commenced. The 13 RHR pump remained inoperable via TS 3.5.1 condition 'A,' a 30-day action statement, due to not having direct flow rate measurement to the motor cooler. The licensee later determined the causes of the low flow condition were attributed to throttling of the 'A' RHR room cooler ESW outlet valve during the recent refueling outage resulting in silt accumulation at the valve and inadequate testing methodology and acceptance criteria. The licensee determined that ESW flow had fallen below required values on or about May 25, 2007. Corrective actions included performance of a calculation to determine and clarify appropriate acceptance criteria, and initiation of a long term improvement project to resolve flow margin issues. The inspectors determined that a performance deficiency existed in that the licensee did not adequately evaluate and control the change in configuration to the system when the room cooler outlet valve was throttled. This finding is more than minor because it affected 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. Specifically, continued operation of all Division I low pressure emergency core cooling systems (ECCSs) would have been challenged during a real event with reduced cooling flow. The finding was considered to have very low safety significance (Green) because the licensee demonstrated the ability to flush the system in accordance with station procedures in an expedited manner; loss of cooling water was assumed to not have an impact on the operation of the pumps for at least 24 hours; and redundant systems were available throughout the period of the low flow conditions. Although both trains of the decay heat removal and containment cooling safety functions were considered inoperable for a few hours during RHRSW pump replacement between the dates of May 25 and July 2, 2007, the exposure time was minimal. The licensee-identified finding involved a violation of TS 3.5.1, ECCS - Operating. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

- .3 (Closed) Licensee Event Report 50-263/2007-005-00: "Discovery of Appendix R - Non-Compliant Manual Actions during Review of NFPA 805"

On July 12, 2007, the licensee notified the NRC via LER 50-263/2007-005-00 that certain manual operator actions to achieve and maintain 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Facilities Operating Prior to January 1, 1979," hot shutdown were non-compliant. This issue is discussed in detail in Section 4OA7. This LER is closed.

- .4 (Closed) Unresolved Item (URI) 05000263/2007002-04: "Operator Performance During Division II RHR Logic Testing on February 7, 2007"

Introduction: A finding of very low safety significance was self-revealed for a violation of 10 CFR 50, Appendix B, Criterion V, when licensed operators failed to perform Procedure OSP-RHR-0545-02, "RHR Containment Spray/Cooling Logic Test-Division II," in accordance with the written instructions of the procedure. Specifically, the licensed operators landed a test jumper in the wrong electrical cabinet during the conduct of the test. Additionally, after identifying the error, the operators took actions to remove the incorrectly landed test jumper, install the test jumper at the correct location, and proceed with the test, without first notifying management. These actions were not allowed by the test procedure, nor were they in accordance with operations department standards and expectations.

Description: A complete description of the event was documented in Integrated IR 05000263/2007002. During the time since IR 05000263/2007002 was completed, the NRC further evaluated the licensed operator performance associated with this issue and did not identify any additional findings beyond the performance deficiency documented in this section of this report.

Analysis: The inspectors determined that the failure to perform testing on safety-related equipment in accordance with approved procedures was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issues Disposition Screening," issued on June 22, 2006. The finding was

more than minor because it affected the configuration control attribute of Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the performance deficiency affected the cross-cutting area of Human Performance, having decision making components and involving aspects associated with making safety-significant or risk-significant decisions using a systematic process, especially when faced with uncertain plant conditions, to ensure safety is maintained. [H.1(a)]

Utilizing the Phase 1 Screening Worksheet, per IMC 0609, "Significance Determination Process," the inspectors determined that the finding was of very low safety significance because it was not associated with a design or qualification deficiency, did not result in the loss of a train or safety system function, and was not related to seismic, flooding, or severe weather event.

Enforcement: Title 10 CFR 50, Appendix B, Criterion V requires, in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. Contrary to this requirement, the licensee failed to perform Procedure OSP-RHR-0545-02, "RHR Containment Spray/Cooling Logic Test - Division II," in accordance with the written instructions of the procedure. Because the event was of very low safety significance and because the issue was entered into the licensee's corrective action program (CAPs 01075924 and 01075923), this violation is being treated as an NCV, consistent with Section VI.A.1 of Enforcement Policy (NCV 05000263/2007004-03).

.5 Monticello Nuclear Generating Plant Technical Support Center (TSC) Planned Relocation Activities

On July 16, 2007, the licensee made a 50.72(b)(3) eight hour non-emergency notification associated with the planned relocation of their existing TSC to a newly constructed facility also located within the protected area. The inspectors ensured that adequate compensatory measures were being implemented by the licensee to ensure that TSC functions were being maintained during the transition. The new TSC was declared fully functional at 14:00 on July 19, 2007.

.6 Unanalyzed Condition Impacting Both Divisions of Essential Switchgear

On July 26, 2007, at 09:02, the licensee made a 50.72 non-emergency notification associated with an unanalyzed condition which had the potential to impact both divisions of their essential switchgear. The issue, as stated in the notification, was identified when an operator noticed that a normally open fire door had closed due to the failure of a fusible link. The impact of the door being closed was that the pathway for a potential flood due to a high energy line break was blocked; therefore, closing off a drain path for the water. This unanalyzed condition had the potential to impact both divisions of essential switchgear, and as a result, both divisions of essential switchgear were declared inoperable and TS 3.0.3 was entered. At 09:55, the fire door was returned to its required open state and TS 3.0.3 was exited.

The inspectors evaluated the licensee's initial response to the event and no findings of significance were identified. This event will be further evaluated by the inspectors once the LER is completed by the licensee.

.7 Licensee Response to Anticipated Degrading River Flow Conditions

On August 7, 2007, the licensee observed a significant reduction in upstream river flow. Based on minimum flow procedure requirements, plant equipment river level requirements, and flow appropriation limits with the State of Minnesota, the licensee began preparations to reduce reactor power. The inspectors observed the licensee's activities associated with troubleshooting the cause of the reduced flow conditions, discussions between licensee staff to support the potential power reduction, and operations activities in monitoring river conditions.

Although a power reduction was ultimately not required, the licensee demonstrated an overall conservative approach to maintaining margin between river operating conditions and level requirements to maintain operability of plant equipment. No findings of significance were identified.

40A6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. O'Connor and other members of licensee management on October 4, 2007. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Radiation monitoring instrumentation and protective equipment and barrier integrity performance indicator with Mr. John Sabados, General Supervisor of Chemistry on July 13, 2007.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- Technical Specification 3.5.1 requires, in part, that each ECCS injection/spray subsystem shall be operable. Contrary to this, on July 2, 2007, multiple Division I low pressure ECCS (11 and 13 RHR, 11 core spray) were not operable. Because of this condition, TS 3.5.1 Condition M would have required immediate entry into TS 3.0.3, requiring a plant shutdown to commence within

one hour. This was not done due to the unanalyzed condition discovered by the licensee during the 13 ESW quarterly pump and valve test. This was identified in the licensee's corrective action program as CAP 01100115. This finding is of very low safety significance because the low flow condition could be corrected in an expedited manner and no impact on the safety function would occur.

- Title 10 CFR 50, Appendix R required, in part, that one of three specified means of ensuring that one of the redundant trains was free of fire damage to achieve and maintain hot shutdown. Contrary to this requirement, the licensee failed to ensure that manual operator actions in place were in compliance with one of the three specified means of 10 CFR 50, Appendix R, Section III.G.2. The licensee reported this event to the NRC on August 30, 2007, pursuant to 10 CFR 50.73(a)(2)(ii)(B) via LER 50-263/2007-005-00.

The licensee's discovery occurred during review of National Fire Protection Association (NFPA) 805, "Transition Project Task SUP-1," and Regulatory Issue Summary (RIS) 2006-10, "Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions." Based on the criteria for allowable manual actions specified in RIS 2006-10, actions credited to limit fire damage for the fire areas housing vital 4kV electrical components were not allowed by Section III.G.2 of 10 CFR 50, Appendix R.

Prior to the issuance of RIS 2006-10, the licensee considered the manual operator actions to be acceptable based on current industry guidance. The inspectors determined that the failure to have in place compliant operator manual actions to ensure that one redundant train of systems were protected to maintain hot shutdown conditions was a performance deficiency warranting 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 involved the attribute of protection against external factors and could have affected the Mitigating Systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The licensee documented the unanalyzed condition in CAP 01101494, and upon discovery, performed an evaluation to determine that the effect of not performing the manual operator actions would have had a minimal effect on plant safety. The inspectors reviewed the licensee's evaluation and concluded it was appropriate. Corrective actions included future evaluation of the non-compliant manual operator actions to either accept as-is or to conduct plant modifications. The procedure-controlled operator manual actions would remain intact as compensatory measures.

Because the licensee-identified violation was not associated with a finding of high safety significance, the inspectors evaluated the violation in accordance with the four criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48) for a licensee in NFPA 805 transition. The inspectors determined that for this violation: (1) the licensee identified the violation during

the scheduled transition to 10 CFR 50.48(c); (2) the licensee had in place adequate compensatory measures and would correct the violation as a result of completing the NFPA 805 transition; (3) the violation was not likely to have been previously identified by routine licensee efforts; and (4) the violation was not willful. As a result, the inspectors concluded that the violation met all four criteria established by Section A and the NRC was exercising enforcement discretion to not cite this violation in accordance with the NRC's Enforcement Policy.

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  
W. Guldemon, Nuclear Safety Assurance Manager  
S. Sharp, Operations Manager  
S. Radebaugh, Maintenance Manager  
K. Jepson, Radiation Protection/Chemistry Manager  
R. Baumer, Compliance Engineering Analyst  
J. Sabados, General Supervisor of Chemistry  
P. Vitalis, Radiation Protection, Health Physicist  
B. Weller, Radiation Protection Supervisor  
K. Pederson, Chemistry  
R. Nuelk, System Engineer Radiation/Process Monitors

#### Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened and Closed

05000263/2007004-01	NCV	Unqualified Procedure for Detection of Pitting (Section 1R08)
05000263/2007004-02	FIN	Feedwater Perturbation due to Instrument Air Pressure Reduction to Feedwater Heater Drain Valve Positioner (Section 1R13)
05000263/2007004-03	NCV	Operators Failed to Perform Test Procedure In Accordance With Procedure (Section 4OA3.4)

#### Closed

50-263/2007-003-00	LER	Failure to Enter a required Technical Specification Action During Control Rod Drive Exercising (Section 4OA3.1)
50-263/2007-003-01	LER	Failure to Enter a required Technical Specification Action During Control Rod Drive Exercising (Section 4OA3.1)
50-263/2007-004-00	LER	Degradation of Emergency Service Water Flow to Emergency Core Cooling System Room Cooler (Section 4OA3.2)

50-263/2007-005-00	LER	Discovery of Appendix R - Non-Compliant Manual Actions during Review of NFPA 805 (Section 4OA3.3)
50-263/2007002-04	URI	Operator Performance During Division II RHR Logic Testing on February 7, 2007 (Section 4OA3.4)

Discussed

None.



## LIST OF DOCUMENTS REVIEWED

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

### **1R01 Adverse Weather**

Operations Memo 07-29; Degrading River Conditions; effective date July 16 to October 16, 2007.

A.6; Acts of Nature; Revision 26

### **1R04 Equipment Alignment**

B.08.04.03-01; Alternate Nitrogen System Function and General Description of System; Revision 2

2154-45; Alternate Nitrogen System Prestart Valve Checklist; Revision 7

NG-36049-10; Alternate Nitrogen Supply System Piping and Instrumentation Diagram; Revision P

2154-28; Diesel Generator Air Start System Prestart Valve Checklist; Revision 9

CAP 01072811; Breaker Found Tripped for Both Air Dryers for No. 12 EDG

B.09.08-02; EDGs - Description of Equipment; Revision 9

2112; Plant Prestart Checklist SGBT System; Revision 11

1339; ECCS Pump Motor Cooler Flush; Revision 21

2154-11; Core Spray System Prestart Valve Checklist; Revision 18

2119; Plant Prestart Checklist Core Spray System; Revision 8

### **1R05 Fire Protection**

Strategy A.3-14-A; Fire Zone 14-A, Upper 4 kV Bus Area (12, 14, & 16); Revision 13

Strategy A.3-15-A; Fire Zone 15-A, No. 12 Diesel Generator Room; Revision 7

Strategy A.3-15-B; Fire Zone 15-B, No. 11 Diesel Generator Room and Day Tank Rooms; Revision 9

Strategy A.3-05-C; Fire Zone 5-C, Fuel Pool Skimmer Tank Room; Revision 3

Strategy A.3-21-D; Fire Zone 21-D, Radwaste Building; Revision 4

Strategy A.3-27; Fire Zone 27, Off-Gas Storage Building; Revision 3

Strategy A.3-37; Fire Zone 37, Transformers; Revision 5

### **1R06 Flood Protection Measures**

CAP 01103584; Door 18 Found Closed; July 26, 2007

CA-07-021; Reactor Building, Turbine Building & Intake Structure Water Height - Internal Flooding; Revision 0

DBD T.08; Design Basis Document for Internal Flooding; Revision 3

Ops Man C.4-I; Plant Flooding; Revision 3

### **1R08 Inservice Inspection**

PEI-02.03.12; UT Detection of Pitting; Revision 0.  
CAP 01088981; Adverse Trend: Monitoring Fails to Pre-Identify Pipe Wall Failures  
CAP 01109115; NRC Potential Green NCV on PEI-02.03.12 Inadequate

### **1R11 Licensed Operator Regualification Program**

Simulator Exercise Guide RQ-SS-02; Loss of All High Pressure Injection with a Recirc Break  
Inside the Drywell; Revision 22

### **1R12 Maintenance Effectiveness**

Monticello Maintenance Rule Program System Basis Document; ESW System; Revision 1  
4058-01-PM; RHR Pump 11, 13 and Core Spray Pump 11 Motor Cooler Chemical Cleaning;  
Revision 13  
'A' RHR Room Air Cooling Unit V-AC-5 Internal Cleaning, External Cleaning and Visual  
Inspection; Revision 10  
1339; ECCS Pump Motor Cooler Flush; Revision 19, 20  
3107; Inservice Test Deviation From Criteria Control Room Supervisor's Immediate Action;  
Revision 26 for CAP 01100139  
3108; Pump/Valve/Instrument Record of Corrective Action; Revision 13 for CAP 01100139  
0255-11-III-3; 13 ESW Quarterly Pump and Valve Tests; Revision 38  
OWI-02.07; Operations Work Control; Revision 19  
Monticello Station Logs for July 2-3, 2007  
WO 321749; FSW-I, Measure Flow to 'A' RHR Room; April 11, 2007  
3749-02; Monticello Impact Statement; Revision 1 for WO 321749  
CAP 01108564; NRC Questions on SW-21-1, SW-21-2, SW-22-1, and SW-22-2  
CAP 01106225; CAP and 3107 Was Not Initiated for WO 0294120 (Valve SW-22-2)  
Monticello Maintenance Rule Program System Basis Document; RHRSW System; Revision 1  
CAP 00841827; Plug on Check Valves SW-21-2 & SW-22-2 Were Found Frozen in Closed  
Position  
CAP 01106154; SW-22-2 Check Valve Found Stuck in the Open Position  
CAP 01013966; Change Frequency of SW-21-1, SW-22-1, SW-21-2, SW-22-2  
4 AWI-09.04.01; Inservice Testing Program; Revision 29  
WO 294120; Perform Post-Maintenance for SW-22-2  
CAP 01108192; Drain Valve Closed Unexpectedly Due to I&C Calibration  
WO 157987-01; Rebuild Actuator and Calibrate Positioner  
WO 157987-03; Restore 12B Heater Level Control to LC-1052  
3749; Monticello Impact Statement for WO 157987  
4263; Maintenance and Construction Pre-Job Briefing Checklist; Revision 17

### **1R13 Maintenance Risk Assessments and Emergent Work Control**

0255-11-III-3; 13 ESW Quarterly Pump and Valve Tests; Revision 38; dated July 7, 2007  
3107; Inservice Test Deviation From Criteria, Control Room Supervisor's Immediate Action;  
13 ESW Reference Flow Below 141-145 gpm Flow

1339; ECCS Pump Motor Cooler Flush; Revision 20; dated July 2, 2007  
CAP 01100115; Low 'A' RHR Room ESW Flow  
CAP 01100139; ESW Header Flow Low During 0255-11-III-3 Testing  
CA-07-045; RHR Pump Model 5K511DT5410 Cooling Coil Minimum Flow Evaluation  
Monitoring Plan for ESW Flow Within the Reactor Building  
8039; RHR Motor Replacement, EC 11169; Revision 0  
EC 11171; RHR Motor Cooler Flow Instrumentation  
CAP 01106280; FME: EDG Deluge Seat Missing Rubber  
CAP 01106463; Found Sprinkler Piping Plugged During Flush of EDG Deluge  
WO 341476-07; Flush/Inspect 11 Diesel Generator Room and Day Tank Rooms Deluge  
Systems  
0324; Fire Protection System - Sprinkler System Tests; Revision 34

### **1R15 Operability Evaluations**

CAP 01093320; Unable to Locate Document on Control Room Ventilation Heat Load Effect  
ESW System  
OSP-EFT-0557; Control Room Ventilation Heat Load Removal Test; Revision 0  
0255-11-III-7; 13 ESW Comprehensive Pump and Valve Test; Revision 10  
C.6-274A-A-06; Low Condenser Water Flow; Revision 4  
C.6-242-A-01; V-EAC-14A Low Flow; Revision 3  
CAP 01099800; FME - Rag Sucked Into Duct During Performance of 4048 PM  
CAP 01100115; Low 'A' RHR Room ESW Flow  
CAP 01101934; ESW Flow for 13 RHR Pump Lower than Required  
CAP 01106816; Charcoal Filter Iodine Loading Calculations Non-Conservative

### **1R19 Post-Maintenance Testing**

0255-02-III; SBLC Quarterly Pump and Valve Test; Revision 43; dated June 28, 2007 and  
July 10, 2007  
CAP 01099726; 0255-02-III (SBLC QTR) Not Completed Due to Valve Problem  
WO 00323258; XP-12-2, Replace Valve  
WO 333073; RC-41-2, Remove Old Valve and Weld in a New Valve  
WO 333074; RC-88-2, Remove Old Valve and Weld in a New Valve  
3069; Post-Maintenance Testing Activities Control Cover Sheet; Revision 13 for WOs 333073  
and 333074  
B.02.02-05; RWCU - System Operation; Revision 31  
CAP 01103797; Unexpected Rise in T-36B During Venting of RWCU  
CAP 01105540; Actuation of Fire System During Battery Replacement of C-371  
CAP 01105603; Electric Fire Pump Did Not Start When Alarm 20-A-36 Received  
WO 305391; PM C-371 Replace Batteries  
CAP 01106280; FME: EDG Deluge Seat Missing Rubber  
CAP 01106463; Found Sprinkler Piping Plugged During Flush of EDG Deluge  
0253-02; SBGT 'B' Train Testing; Revision 34  
0147-02; 'B' Train Standby Gas Treatment System Filter Tests; Revision 32  
CAP 01110281; VC-1728, Valve fails to meet IST Requirements  
WO 141760; CV-1728, Repack Valve and Perform Diagnostic Testing  
0255-05-IA-1-1; 'A' RHRSW Quarterly Pump and Valve Test; Revision 60

3108; Pump/Valve/Instrument Record of Corrective Action for WO 317232  
3107; Inservice Test Deviation From Criteria Control Room Supervisor's Immediate Action for  
CAP 01110281  
WO 320590; MO-1741, 4900-02-PM  
4900-02-PM; Rotork Motor Operated Valves - Inspection and Maintenance; Revision 19  
4901-04-PM; Torque Switch Adjustment Procedure for Rotork Valve Operators; Revision 7

### **1R22 Surveillance Testing**

0255-11-III-3; ESW Quarterly Pump Tests  
CAP 01107230; DPIS-2-129D Recirc Loops DP-Low Pressure Coolant Injection Sel Intlk Reset  
Problems  
ISP-RHR-0522-01; Reactor Recirculation Loops DP Low Pressure Coolant Injection Select  
Interlock Channel Functional Test; Revision 0  
0012; Average Power Range Monitor/Rod Block Scram Surveillance Check; Revision 41  
CAP 01077469; DPIS-2-129D (RECIRC LOOP DP) Failed to Reset During Testing  
0255-11-III-8; 14 ESW Comprehensive Pump and Valve Tests; Revision 13  
0255-03-IA-1-1; Core Spray Loop 'A' Quarterly Pump and Valve Tests; Revision 46  
CAP 1111832; Unable to Perform IST Step in Quarterly Core Spray Test

### **1R23 Temporary Plant Modifications**

Engineering Change 10943 and 50.59 Screening 07-0318; Modified Alarm for  
ANN-3-B-2 High Pressure Coolant Injection Exhaust Drain Pot High Level; Revision 0

### **2PS2 Radiation Monitoring Instrumentation and Protective Equipment**

USAR; Revision 23  
AR 01088619; Service Water Radiation Monitor Spiked When Operations Performed Routine  
Weekly Flush; dated April 19, 2007  
CAP 01045399 - RCE 01045399-01; Recurring Inadvertent Trip of 'B' Fuel Pool Radiation  
Monitor Results In Repeated Partial Group II Isolation, ESP Actuation and Reportable Event  
2007-002-5-007; Nuclear Oversight Observation Report - Periodic Reviews of Count Room and  
Laboratory Equipment Response Data from February 2007; dated June 12, 2007  
2007-002-5-017; Nuclear Oversight Observation Report- Radiological Protection; dated  
June 2, 2007  
SCBA Inspection and Functional Check; Revision 19  
F550-4-995-12-2005; Calibration of Electrometer Model No. 500; and Electrometer S/N 328; by  
Fluke Biomedical; dated August 16, 2005  
MSA SCBA Functional Check (740L); Hydrostatic Test Records; dated July 13, 2007  
1024; Area Radiation Monitor Calibration; 1025-B Area Radiation Monitor Test; Revision 29;  
dated February 23, 2007  
0461; Control Room Air Intake Monitor Calibration, Revision 13; 0461 Control Room Air Intake  
Radiation Monitor Calibration; and 0460-B Control Room Air Intake Radiation Monitor Monthly  
Test; dated March 17, 2007  
0372-02; Stack Wide Range Process and Sample Flow Instrument Calibration Procedure  
(Channel B); Revision 4, 0372-02 Stack Wide-Range Gas Monitor Process; and Sample Flow  
Calibration; dated June 4, 2007

0071; Off-Gas Pretreatment Monitor Calibration, Revision 30; 0071 Off-Gas Pretreatment Monitor Calibration and 0070-B Off-Gas Pretreatment Monitor Functional Test; dated March 25, 2007

0068; Spent Fuel Pool and Reactor Building Exhaust Plenum Monitor Calibration, Revision 29  
0068 Spent Fuel Pool Monitor Calibration; 0067-B Spent Fuel Pool Monitor Functional Test  
0439-B Reactor Building Exhaust Plenum Monitor Functional Test; 0440 Reactor Building Exhaust Plenum Monitor Calibration Test; dated June 4, 2007

0372-01; Stack Wide Range Gas Monitors Process and Sample Flow Instrument Calibration Procedure (Channel A); Revision 4; dated June 4, 2007

1414; Main Steam Line Radiation Monitor Test and Calibration; Revision 7; dated February 6, 2007

5504; Whole Body Counter Calibration; Revision 4; dated January 29, 2007

Technical Basis Document No. 04-002; Evaluation of the Canberra Argos Zeus-4G Personnel Contamination Monitor

R.09.07; RO-2/RO-2A/RO20 Checks; Revision 19

R.09.22; Frisker Calibration and Functional Check; Revision 21; dated July 11, 2007

R.09.65; DMC-2000 Electronic Dosimeter Calibration; Revision 0

Technical Basis Document No. 04-001; Revision 0; Justification For Use of the Tool Monitor in Lieu of Frisk and Smear Surveys to Free Release Eligible Items

#### **40A1 Performance Indicator Verification**

Dose Equivalent Iodine -131 from November 19, 2005 to July 11, 2007

0122; Reactor Coolant I-131 Dose Equivalent Activity; Revision 25; dated July 11, 2007

I.03.39; MCA Operation/Gamma Isotopic Analysis; Revision 7

PRA-CALC-05-003; MSPI Basis Document; Revision 1

Emergency Alternating Current Power System MSPI Derivation Reports: Unavailability Index, Unreliability Index, and Performance Limit Exceeded; July 2006 through June 2007

High Pressure Injection System MSPI Derivation Reports: Unavailability Index, Unreliability Index, and Performance Limit Exceeded; July 2006 through June 2007

Heat Removal System MSPI Derivation Reports: Unavailability Index, Unreliability Index, and Performance Limit Exceeded; July 2006 through June 2007

Monticello Station Logs; July 1, 2006 through June 30, 2007

MSPI Unavailability Entry Comments for Emergency AC Power, HPCI, and Heat Removal Systems; July 2006 through June 2007

#### **40A2 Identification and Resolution of Problems**

CAP 01104540; NRC Identified Problems with LER 2007-03 Following Review

CAP 01104401; Possible Non-Factual Information in NRC Submittal

#### **40A3 Event Follow-up**

Root Cause Evaluation (RCE) 01100115-02; Emergency Service Water (FSW)

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
DEI	Dose Equivalent Iodine
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ESW	Emergency Service Water
FIN	Finding
HPCI	High Pressure Core Injection
IMC	Inspection Manual Chapter
IR	Inspection Report
ISI	Inservice Inspection
kV	Kilovolt
LER	Licensee Event Report
MIC	Microbiological Influenced Corrosion
MNGP	Monticello Nuclear Generating Plant
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NFPA	National Fire Protection Association
NEI	Nuclear Energy Institute
NMC	Nuclear Management Company
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
PM	Planned, Preventative or Post-Maintenance
RA	Risk Assessment
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RIS	Regulatory Issue Summary
RP	Radiation Protection
RWCU	Reactor Water Cleanup
SBGT	Standby Gas Treatment
SBLC	Standby Liquid Control
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
TS	Technical Specification
TSC	Technical Support Center
URI	Unresolved Item
USAR	Updated Safety Analysis Report
UT	Ultrasonic or Ultrasonic Test
Vac	Volts Alternating Current
WO	Work Order