December 3, 2004

Mr. T. Palmisano
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 SAFETY SYSTEM DESIGN AND PERFORMANCE CAPABILITY
INSPECTION 05000263/2004007(DRS)

Dear Mr. Palmisano:

On November 5, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Monticello Nuclear Generating Plant. The enclosed report documents the inspection findings which were discussed on November 5, 2004, with you and on November 22, 2004, with Mr. N. Haskell, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and to 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. Specifically, this inspection focused on the design and performance capability of the 250 Vdc and high pressure coolant injection systems.

Based on the results of this inspection, four NRC-identified findings of very low safety significance were identified, which involved violations of NRC requirements. However, because these violations were of very low safety significance and because they were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

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 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). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Julio Lara, Chief
Electrical Engineering Branch
Division of Reactor Safety

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

Enclosure: Inspection Report 05000263/2004007(DRS)

cc w/encl: J. Cowan, Executive Vice President
and Chief Nuclear Officer
Manager, Regulatory Affairs
J. Rogoff, Vice President, Counsel, and Secretary
Nuclear Asset Manager, Xcel Energy, Inc.
Commissioner, 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

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). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Julio Lara, Chief
Electrical Engineering Branch
Division of Reactor Safety

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

Enclosure: Inspection Report 05000263/2004007(DRS)

cc w/encl: J. Cowan, Executive Vice President
and Chief Nuclear Officer
Manager, Regulatory Affairs
J. Rogoff, Vice President, Counsel, and Secretary
Nuclear Asset Manager, Xcel Energy, Inc.
Commissioner, 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

DOCUMENT NAME: E:\Filenet\ML043380314.wpd
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII		RIII		RIII			
NAME	ADunlop:tr		BBurgess		JLara			
DATE	11/29/04		12/02/04		12/03/04			

OFFICIAL RECORD COPY

ADAMS Distribution:
WDR
DFT
LMP
RidsNrrDipmlipb
GEG
HBC
KGO
SXB3
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-263
License No:	DPR-22
Report No:	05000263/2004007(DRS)
Licensee:	Nuclear Management Company, LLC
Facility:	Monticello Nuclear Generating Plant
Location:	2807 West Highway 75 Monticello, MN 55362
Dates:	October 18, 2004, through November 5, 2004
Inspectors:	A. Dunlop, Senior Reactor Engineer, Lead Inspector Z. Falevits, Senior Reactor Engineer N. Valos, Operations Inspector S. Sheldon, Reactor Engineer R. Winter, Reactor Engineer C. Acosta, Reactor Engineer H. Anderson, Mechanical Contractor
Approved by:	J. Lara, Chief Electrical Engineering Branch Division of Reactor Safety (DRS)

Enclosure

SUMMARY OF FINDINGS

IR 05000263/2004007(DRS); 10/18/2004 - 11/05/2004; Monticello Nuclear Generating Plant; Safety System Design and Performance Capability.

The inspection was a three-week baseline inspection of the design and performance capability of the high pressure coolant injection and 250 Vdc systems. The inspection was conducted by regional engineering inspectors and a mechanical consultant. Four issues of very low safety significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 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 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” in that, the design requirement to ensure the high pressure coolant injection (HPCI) pump discharge piping was kept full to maintain system operability was not adequately translated into procedures. Specifically, the effect of a known void in the HPCI discharge piping was not evaluated for its impact with the HPCI pump aligned with suction from the torus in the standby mode. As such, adequate acceptance criteria was not provided to ensure the operability of the HPCI system during this mode of operation. The licensee’s corrective actions included, as an interim action, placing a Temporary Information Tag on the control room switch for the HPCI suction valve from the condensate storage tank that states if HPCI suction is swapped to the torus, to evaluate HPCI for operability.

  This finding was more than minor because it was associated with the attributes of configuration control and procedural quality, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the HPCI system to respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance based on the results of the SDP Phase 1 screening worksheet. (Section 1R21.2.b.1)

- Green. The inspectors identified a Non-Cited Violation of Technical Specification 6.5.A.2, “Procedures,” associated with an inadequate procedure to return the suction of the HPCI pump from the torus to the condensate storage tank during an anticipated transient without scram (ATWS) condition to ensure the self-cooled HPCI pump lube oil and control oil temperatures would remain within limits to prevent pump damage and ensure continued operation. The licensee’s corrective actions included a procedural change to allow continued operation of the HPCI system during an ATWS event.

  This finding was more than minor because it was associated with the attribute of procedure quality, which affected the mitigating systems cornerstone objective of

ensuring the availability and reliability of the HPCI system to respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance based on the results of the SDP Phase 1 screening worksheet. (Section 1R21.2.b.2)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," associated with not promptly identifying and evaluating a condition adverse to quality. Specifically, the licensee did not replace aging electrolytic capacitors in the six Division I and Division II, 250 Vdc battery chargers, in a timely manner, allowing them to go beyond the service life specified by the vendor and the plant's preventative maintenance (PM) program. In addition, routine PM activities for all six 250 Vdc battery chargers have not been performed since February 2000. The licensee's corrective actions included: performing an operability evaluation; placing a purchase order for the capacitors; and initiating plans to replace the capacitors on an accelerated schedule.

  The finding was more than minor because it was associated with the attribute of equipment performance, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the 250 Vdc system to respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance based on the results of the SDP Phase 1 screening worksheet. (Section 1R21.2.b.3)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," regarding the emergency diesel generators ability to operate following a design basis tornado as portions of the exhaust and intake air piping located on the emergency diesel generator building roof were not adequately supported to withstand tornado wind forces. As part of the licensee's corrective actions, the diesel exhaust piping was modified so that the piping design basis was met.

  This finding was more than minor because it was associated with the attribute of design control, which affected the mitigating systems cornerstone objective of ensuring the capability of the emergency diesel generators to respond to natural phenomena to prevent undesirable consequences. The finding was of very low safety significance based on the results of an SDP Phase 3 analysis. (Section 4OA5.1)

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Mitigating Systems and Barrier Integrity

1R21 Safety System Design and Performance Capability (71111.21)

Introduction: Inspection of safety system design and performance verifies the initial design and subsequent modifications and provides monitoring of the capability of the selected systems to perform design bases functions. As plants age, the design bases may be lost and important design features may be altered or disabled. The plant risk assessment model is based on the capability of the as-built safety system to perform the intended safety functions successfully. This inspectable area verifies aspects of the mitigating systems cornerstone for which there are no indicators to measure performance.

The objective of the safety system design and performance capability inspection is to assess the adequacy of calculations, analyses, other engineering documents, and operational and testing practices that were used to support the performance of the selected systems during normal, abnormal, and accident conditions.

The systems and components selected were the high pressure coolant injection (HPCI) and 250 Vdc systems (two samples). These systems were selected for review based upon:

- having high probabilistic risk analysis rankings;
- considered high safety significant maintenance rule systems;
- not having received recent NRC review; and
- being complementary systems.

The criteria used to determine the acceptability of the system's performance was found in documents such as:

- licensee technical specifications;
- applicable updated safety analysis report (USAR) sections; and
- the systems' design documents.

The following system and component attributes were reviewed in detail:

System Requirements

Process Medium - water;
Energy Source - electrical power, steam, air;
Control Systems - initiation, control, and shutdown actions;
Operator Actions - initiation, monitoring, control, and shutdown; and
Heat Removal - ventilation.

System Condition and Capability

Installed Configuration - elevation and flow path operation;
Operation - system alignments and operator actions;
Design - calculations and procedures; and
Testing - flow rate, pressure, temperature, voltage, and levels.

Component Level

Equipment Qualification - temperature and radiation; and
Equipment Protection - seismic and electrical.

.1 System Requirements

a. Inspection Scope

The inspectors reviewed the USAR, technical specifications, system design basis documents, lesson plans, drawings, and other available design basis information, as listed in the attached List of Documents, to determine the performance requirements of HPCI and 250 Vdc systems, and their associated support systems. The reviewed system attributes included process medium, energy sources, control systems, operator actions, and heat removal. The rationale for reviewing each of the attributes was:

Process Medium: This attribute required review to ensure that the HPCI system would supply the required amount of water to the reactor following normal transients and design basis events.

Energy Sources: This attribute needed to be reviewed to ensure that the HPCI system would start when called upon, and that appropriate valves would have sufficient power to change state when so required. This attribute also needed to be reviewed to ensure that the 250 Vdc system would provide sufficient power to the components it supplied.

Controls: This attribute required review to ensure that the automatic controls for the HPCI and 250 Vdc systems were properly established. Additionally, review of alarms and indicators was necessary to ensure that operator actions would be accomplished in accordance with the design.

Operations: This attribute was reviewed because the emergency operating procedures permitted the operators to manually control HPCI operation to maintain desired reactor water level. Therefore, operator actions played an important role in the ability of the HPCI system to achieve its functions.

Heat Removal: This attribute required review to ensure that the heat generated while the HPCI system was running can be effectively removed.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The inspectors reviewed design basis documents and plant drawings, abnormal and emergency operating procedures, requirements, and commitments identified in the USAR and technical specifications. The inspectors compared the information in these documents to applicable electrical, instrumentation and control, and mechanical calculations, setpoint changes, and plant modifications. The inspectors also reviewed operational procedures to verify that instructions to operators were consistent with design assumptions.

The inspectors reviewed information to verify that the actual system condition and tested capability were consistent with the identified design bases. Specifically, the inspectors reviewed the installed configuration, the system operation, the detailed design, and the system testing, as described below.

Installed Configuration: The inspectors confirmed that the installed configuration of the HPCI and 250 Vdc systems met the design basis by performing detailed system walkdowns. The walkdowns focused on the installation and configuration of piping, components, and instruments; the placement of protective barriers and systems; the susceptibility to flooding, fire, or other environmental concerns; physical separation; provisions for seismic and other pressure transient concerns; and the conformance of the currently installed configuration of the systems with the design and licensing bases.

Operation: The inspectors performed a procedure walk-through of selected manual operator actions to confirm that the operators had the knowledge and tools necessary to accomplish actions credited in the design basis.

Design: The inspectors reviewed the mechanical, electrical, and instrumentation design of the HPCI and 250 Vdc systems to verify that the systems and subsystems would function as required under design conditions. This included a review of the design basis, design changes, design assumptions, calculations, boundary conditions, and models as well as a review of selected modification packages. Instrumentation was reviewed to verify appropriateness of applications and setpoints based on the required equipment function. Additionally, the inspectors performed limited analyses in several areas to verify the appropriateness of the design values.

Testing: The inspectors reviewed records of selected periodic testing and calibration procedures and results to verify that the design requirements of calculations, drawings, and procedures were incorporated in the system and were adequately demonstrated by test results. Test results were also reviewed to ensure automatic initiations occurred within required times and that testing was consistent with design basis information.

b. Findings

.1 HPCI System Void In Piping Not Analyzed When Initially Aligned with Suction from the Torus

Introduction: The inspectors identified a finding involving a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance (Green) for failure to ensure the operability of the HPCI system when aligned with suction from the torus in the standby mode.

Description: Technical Specification (TS) Bases 3.5/4.5 stated that the HPCI pump discharge piping was to be maintained full to prevent water hammer damage and to provide cooling at the earliest moment. The licensee previously identified that a steam void of approximately one cubic foot has existed since 1998 in the HPCI discharge piping just upstream of HPCI injection isolation valve MO-2068. This issue was discussed in various licensee corrective action program documents (CAP016153 and CAP016628 and their associated apparent cause evaluations and corrective action descriptions). The licensee evaluated the steam void and found, in part, the following: (1) the void was caused by the fact that MO-2068 was at nearly feedwater temperature due to feedwater recirculation in the dead-end HPCI injection line to the feedwater system; (2) water hammers have occurred as a result of this void, but no adverse effects have been detected on piping, valves, or supports; (3) water hammer displacements were measured in mid-1998, and the displacements were used to perform piping analysis of the effect of the water hammer (the piping analysis results met American Society of Mechanical Engineers Code allowables); (4) void size was self-limited to its current size by heat transfer conditions and HPCI discharge static pressure; and (5) void size could only get larger if leakage were to occur past MO-2068 (the temperature of the piping on the HPCI side of MO-2068 was monitored for leakage on a weekly basis).

On October 21, 2004, the inspectors noted that the licensee's evaluation of the void addressed the normal system alignment when the HPCI pump suction was aligned from the condensate storage tank (CST). The inspectors questioned whether the size/effect of the steam void in the HPCI pump discharge would be impacted with the HPCI pump suction aligned in standby condition from the torus, since this alignment would result in a lower static pressure in the HPCI discharge line. The licensee stated that the size/effect of the steam void had not considered with HPCI aligned with suction from the torus.

The inspectors also questioned whether the acceptance criterion contained in Procedure 1047-03, "Operations Reactor Side Checklist Weekly Procedure," for the temperature used to monitor for the formation of steam voids in the HPCI discharge piping was low enough to alert operators of a potential change in void size when HPCI was aligned to the torus. The acceptance criterion used in Procedure 1047-03 was a maximum of 200 degrees Fahrenheit (^{o}F). However, with HPCI aligned to the torus, the pressure at the location of the HPCI discharge temperature measurement could be as low as 5.6 pounds per square inch absolute (psia). The saturation temperature of a steam void at 5.6 psia would be approximately 165 ^{o}F. Consequently, the void size could grow and yet not be detected by the current method with HPCI aligned to the torus.

The licensee reviewed electronic operator logs that have been in effect since January 1, 2003, to determine the dates and duration of HPCI alignment to the torus. HPCI was aligned with suction from the torus (for CST level switch surveillance testing) on February 10, 2003, for a duration of 3 hours and 5 minutes, on February 12, 2003, for a duration of 8 hours and 30 minutes, and on February 13, 2004, for a duration of 5 hours and 50 minutes with the HPCI system considered operable during those time periods. There was also a HPCI alignment with suction from the torus (for maintenance associated with the 12 CST) between August 13, 2001, and August 17, 2001, for about 97 hours with the HPCI system considered operable.

The licensee entered this issue into the corrective action program as CAP035380. As an interim action, the licensee issued a Temporary Information Tag on the control room switch for the HPCI suction valve from the CST, that stated "if HPCI suction is swapped to the torus to evaluate HPCI for operability and to see CAP035380." The licensee was evaluating a recommendation from CAP035380 to issue a temporary procedure change to Ops Man B.03.02-05, Section G.3, "Manual Switchover of HPCI Suction from Condensate Storage Tanks to the Torus," to require entry into the limiting condition for operation for an inoperable HPCI system when this procedure section was entered.

Analysis: The inspectors determined that the failure to ensure the operability of the HPCI system with a known void when aligned in standby mode with suction from the torus was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," because it was associated with the attributes of configuration control and procedure quality, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the HPCI system to respond to initiating events to prevent undesirable consequences. Inadequate acceptance criteria to ensure the operability of the HPCI system when initially aligned with suction from the torus could potentially render the HPCI system incapable of performing its required safety function.

The inspectors evaluated the finding using IMC 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per Generic Letter (GL) 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," required, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, procedures, and instructions.

Contrary to this requirement, on October 22, 2004, inspectors identified that the design requirement to ensure the HPCI pump discharge piping was maintained full was not correctly translated into specifications, procedures, and instructions. Specifically, the effect of a known void in the HPCI discharge piping was not evaluated for its impact on

the HPCI system with the HPCI pump aligned with suction from the torus in the standby mode. As a result, adequate acceptance criteria to ensure the operability of the HPCI system when aligned with suction from the torus in standby was not provided. In addition, at various times between August 13, 2001, through August 17, 2001, on February 10, 2003, on February 12, 2004, and on February 13, 2004, the HPCI system was aligned with suction from the torus with the HPCI system considered operable. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (CAP035380), this violation is being treated as a NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000263/2004007-01). As part of its corrective actions, the licensee issued a Temporary Information Tag to evaluate HPCI for operability prior to operating the HPCI suction valve from the CST.

.2 Inadequate Procedure to Ensure HPCI Function During Anticipated Transient Without Scram (ATWS) Event

Introduction: The inspectors identified a finding involving a NCV of TS 6.5.A.2, "Procedures," having very low safety significance (Green) for the failure to have an adequate procedure to ensure the continued operation of the HPCI system to maintain reactor pressure vessel (RPV) water level during an ATWS condition in accordance with analysis assumptions.

Description: On October 21, 2004, the inspectors identified that procedure Ops Man B.03.02-05, Section G.3, "Manual Switchover of HPCI Suction from the Torus to the Condensate Storage Tanks," which was used to support actions in ATWS emergency operating procedure (EOP) C.5-2007, "Failure to Scram," was inadequate in that the procedure did not ensure the continued operation of the HPCI system to maintain RPV water level during an ATWS condition in accordance with analysis assumptions. Specifically, the procedure would not adequately direct the operators to return the suction of the HPCI pump from the torus to the CST (if the HPCI pump suction had automatically swapped to the torus on high torus level during an ATWS event) to ensure the self-cooled HPCI pump lube oil temperatures would remain within limits to prevent pump damage and ensure continued operation.

During an ATWS event, of the torus water temperature will increase as high reactor pressure will cause the safety relief valves to lift discharging steam into the torus. In the limiting ATWS case, as identified in General Electric letter GLN-99-011, "Revised ATWS Evaluation for Monticello Extended Power Uprate Project," the torus water temperature was calculated to be as high as 190^{o}F based on the licensee's plant specific re-rate analysis. Monticello has a design feature that automatically swaps the HPCI pump suction from the CSTs to the torus on a high torus level of +2.0 inches. The licensee determined that during the limiting ATWS case, the high torus level transfer of HPCI suction to the torus could occur within a few minutes following event initiation. While C.5-2007 allowed the bypass of the HPCI high torus level suction transfer logic and stated that the CST was the preferred source for the HPCI pump, the licensee noted that due to the short time frame involved (a few minutes), it was likely that a transfer of the suction source for HPCI to the torus would occur during the limiting ATWS case. Ops Man C.5.1-2007 stated that if the HPCI automatic high torus level transfer occurred, the suction of the HPCI pump should be returned to the CST as soon as

practicable. Detail J of C.5-2007 contained a caution that stated, “Exceeding 180EF suction temperature may damage system,” which was based on the HPCI pump being self-cooled.

The transfer of HPCI suction from the torus back to the CSTs would be accomplished using procedure Ops Man B.03.02-05, Section G.3. However, Prerequisite 1 required torus level to be less than +2 inches. This prerequisite represented a conflict on the use of this procedure during an ATWS event if the automatic transfer of HPCI suction had already occurred on high torus level, since torus level would already be above +2 inches. Thus, the procedure to transfer HPCI suction back to the CSTs was inadequate for this condition. Since the torus water temperature was calculated in the licensee’s plant specific re-rate analysis to be as high as 190^{o}F, the caution in C.5-2007 would have required the HPCI pump to be shutdown when torus temperature exceeded 180^{o}F.

As a result of this issue, the licensee issued a temporary procedure change (Volume F Memo No. 2174, dated October 21, 2004) to Ops Man B.03.02-05, Section G.3, to change Prerequisite 1 to allow entry into the procedure if the HPCI high torus water level suction transfer was bypassed per the EOPs (even if torus water level is high). The HPCI high torus level suction transfer can be bypassed per procedure Ops Man C.5-3202, ”Bypass HPCI Signals.”

Analysis: The inspectors determined that the failure to provide an adequate procedure to ensure the continued operation of the HPCI system for maintaining RPV water level during an ATWS condition in accordance with analysis assumptions was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, “Issue Disposition Screening,” because it was associated with the attribute of procedure quality, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the HPCI system to respond to initiating events to prevent undesirable consequences.

The inspectors evaluated the finding using IMC 0609, Appendix A, “Significance Determination of Reactor Inspection Findings for At-Power Situations,” Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system’s safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Technical Specification 6.5.A.2, “Procedures,” required, in part, that written procedures be established, implemented, and maintained covering the EOPs required to implement the requirements of NUREG-0737, “Clarification of TMI Action Plan Requirements,” and NUREG-0737, Supplement 1. NUREG-0737, Item I.C.1, and NUREG-0737, Supplement 1, Section 7, required, in part, that the EOPs cover multiple failure events including an ATWS event.

Contrary to this requirement, on October 21, 2004, it was discovered that procedure Ops Man B.03.02-05, Section G.3, which was used to support actions in ATWS EOP C.5-2007, was inadequate to return the suction of the HPCI pump from the torus to the

CST to ensure the self-cooled HPCI pump lube oil and control oil temperatures would remain within limits to prevent pump damage and ensure continued operation. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (CAP035344), this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000263/2004007-02). As part of its corrective actions, the licensee issued a temporary procedure change to resolve this concern.

.3 Missed Preventive Maintenance (PM) Activities for the 250 Vdc Battery Chargers

Introduction: The inspectors identified a finding involving an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," having very low safety significance (Green) for the failure to identify a condition adverse to quality in that the licensee did not promptly evaluate and implement the vendor recommended and licensee specified periodic replacement of electrolytic filter capacitors and other required periodic PM activities for the six Division I and Division II, 250 Vdc battery chargers.

Description: The inspectors determined that the Division I (D52, D53, D54) and Division II (D70, D80, D90), 250 Vdc battery chargers' routine PM requirements specified in procedures 4525-PM, "No. 13 and 14 Battery Charger Preventive Maintenance," and EWI-10.01.01, "Electronic Component Aging Management Process Implementation," were not accomplished within the periodicity specified in the procedures. Specifically, Step 4 of the "Prerequisites" in Procedure 4525-PM stated that the replacement of battery charger capacitors was required on a 7 to 10 year interval. The inspectors noted that the licensee's PM schedule was revised in December 2002 to require replacement of battery charger printed circuit boards and filter capacitors every third cycle. The inspectors determined that the Division I electrolytic capacitors were last replaced in June 1993, and the Division II electrolytic capacitors were last replaced in July 1994, allowing them to go beyond the service life specified by the plant's PM program (6 years) and the vendor (7 to 10 years). No documented evaluation or assessment for deferral of this activity was available for review.

In addition, the inspectors determined that the routine PM activities required by Procedure 4525-PM, which included maintenance activities such as verification and adjustments of phase wave form, input and load currents, current limit setpoints, high voltage shutdown setpoint, and float and equalize voltage setpoints were not accomplished within the specified periodicity. The procedure specified that the PM activities be performed every cycle, however, the inspectors determined that the required PM was last performed in February 2000. No documented evaluation or assessment for deferral of this activity was available for review. Also, the vendor informed the licensee that routine checking of the charger ripple levels can be used to determine when the capacitors were reaching end of life.

The inspectors also noted that the C and D Batteries Division vendor manual NX-16647 stated that the capacitors' shelf life was limited and normally will not exceed 1 year without being recharged on an annual basis up to five years. The inspectors determined that this was not being accomplished for the spare battery chargers D53 and D80, which might be on standby for an extended period of time.

The inspectors determined that Work Orders 0200581, 0200582, 0200583, 0200585, 0200586, and 0200587 were written in January 2002, to perform the specified routine battery charger PM activity including replacement of selected battery components like the electrolytic capacitors. However, at the time of the inspection, no replacements had occurred and no capacitors have been ordered. The inspectors noted that 4 AWI-05.07.02, "Preventive Maintenance Program," stated in section 4.11.3 that all due date deviations and/or deferrals should be documented on Form 3488. Section 4.11.4 of the procedure stated that if a PM task will not be completed by the 25 percent plus grace period, a condition report to document the missed due date should be initiated. None of these requirements were accomplished. Since this issue was not entered into the corrective action program, an evaluation of the capacitor service life was not performed.

In response to questions from the inspectors regarding this issue, the licensee initiated CAP035589 on November 3, 2004, and performed an operability evaluation to assess battery charger operability. The determination concluded that the battery chargers were operable, based on no known failed components or equipment associated with this condition and that the battery condition was being monitored by another surveillance. The inspectors concluded that the licensee's operability evaluation was adequate, but had not been conducted until the inspectors questioned the operability of the battery chargers.

Analysis: The inspectors determined that the licensee had not followed the replacement frequency of its electrolytic capacitors and had not accomplished the required routine PM activities required for all six Division I and Division II, 250 Vdc battery chargers, which was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was associated with the attribute of equipment performance, which affected the mitigating systems cornerstone objective of ensuring the availability and reliability of the 250 Vdc system to respond to initiating events to prevent undesirable consequences.

The inspectors evaluated the finding using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Title 10 CFR Part 50, Appendix B, Criteria XVI, "Corrective Action," required, in part, that measures be established to assure that conditions adverse to quality, such as deficiencies and defective material and equipment, were promptly identified and corrected.

Contrary to the above, on November 3, 2004, the licensee operated the plant with battery chargers' electrolytic capacitors that were beyond their failure-based service life, and the specified routine PM activities on the battery chargers passed their due dates without a documented evaluation or assessment for deferral of this activity, a condition adverse to quality. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action

program (CAP035589), this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000263/2004007-04). As part of its corrective actions, the licensee ordered replacement capacitors and plans to install the capacitors on an accelerated schedule.

.3 Components

a. Inspection Scope

The inspectors examined the HPCI and 250 Vdc systems to ensure that component level attributes were satisfied. Specifically, the following attributes of the HPCI and 250 Vdc systems were reviewed:

Equipment/Environmental Qualification: This attribute verifies that the equipment is qualified to operate under the environment in which it is expected to be subjected to under normal and accident conditions. The inspectors reviewed design information, specifications, and documentation to ensure that the HPCI and 250 Vdc components were qualified to operate within the temperatures and radiation fields specified in the environmental qualification documentation.

Equipment Protection: This attribute verifies that the HPCI and 250 Vdc systems are adequately protected from natural phenomenon and other hazards, such as high energy line breaks, floods or missiles. The inspectors reviewed design information, specifications, and documentation to ensure that the HPCI and 250 Vdc systems were adequately protected from those hazards identified in the USAR which could impact their ability to perform their safety function.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

.1 Review of Condition Reports

a. Inspection Scope

The inspectors reviewed a sample of HPCI and 250 Vdc system problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design issues. In addition, condition reports written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action system. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the attachment to this report.

b. Findings

Section 1R21.2.b.3 described that vendor and licensee specified periodic replacement of electrolytic filter capacitors and other required periodic PM activities for the 250 Vdc battery chargers that were not performed and the licensee had not entered the issue into the corrective action program. Consequently, the concern was never fully evaluated.

4OA5 Other

The inspectors reviewed items discussed in previous inspection reports to determine if further regulatory action was required to be taken.

.1 (Closed) Unresolved Item 05000263/2003002-10: Inadequate Diesel Generator Exhaust Piping Protection Against Natural Phenomena (Tornadoes).

a. Inspection Scope

Unresolved Item 05000263/2003002-10 identified that the licensee was unable to provide documentation to confirm that combustion air intake and exhaust piping would not be adversely affected by design basis tornado wind loadings. Based on the absence of design calculations and the incomplete probabilistic risk analysis, the inspectors were unable to evaluate the effect on the emergency diesel generator operation. This item was left unresolved pending licensee preparation of a calculation to ensure the diesel generators could perform their safety function. In followup to the unresolved item, the inspectors reviewed the licensee's operability calculation and performed the risk analysis to evaluate the as-found condition.

b. Findings

Introduction: The inspectors identified a finding involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance (Green) for failure to adequately design the diesel generator exhaust silencers to withstand the design basis tornado wind loading. As part of resolving Unresolved Item 05000263/2003002-10, the licensee performed analyses and modified the diesel exhaust piping so that the design basis was met.

Description: During the 2003 safety system design and performance capability inspection, the NRC identified that the diesel generator exhaust piping did not appear to be protected against tornado winds. In addition, the inspectors reviewed a 1992 internal memorandum that noted portions of the exhaust and intake air piping located on the emergency diesel generator building roof were not adequately supported to withstand tornado wind forces. As of the 2003 inspection, the licensee had taken no action to rectify the deficient condition. Following this issue being identified by the NRC, the licensee performed an operability calculation (CA-03-030) and determined that extensive modifications were necessary to bring the exhaust piping back into design conformance.

Although the operability calculation concluded the exhaust piping was always operable, the inspectors identified a number of significant deficiencies within the calculation. Of greatest importance was that the licensee's model would not converge for a specific node. To resolve this problem, the licensee performed a hand calculation. The NRC determined that the model was inadequate and the licensee's hand calculation overly simplistic. The inspectors determined that during a design basis tornado, it was likely that the exhaust piping would bend or crimp, stalling both the diesel generators. As part of the licensee's corrective actions, the diesel exhaust piping was modified so that the design basis was met.

Analysis: Evaluation of this issue concluded that it was a performance deficiency resulting in a finding of very low safety significance (Green). The performance deficiency was that, by the inspectors' assessment, the diesel generators would not have been able to perform their safety-related function during a design basis tornado. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was associated with the attribute of design control, which affected the mitigating systems cornerstone objective of ensuring the capability of the diesel generators to respond to natural phenomena to prevent undesirable consequences. No other cornerstones were determined to be degraded as a result of this issue.

The inspectors evaluated the finding using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening and determined that the diesel generator exhaust piping not being designed to withstand a design basis tornado was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and did screen as potentially risk significant due to a severe weather initiating event.

Because the issue screened as potentially risk significant due to a severe weather initiating event, the inspectors contacted a senior reactor analyst to perform a Phase 3 analysis. The following information presents the results of that analysis.

Method of Analysis: Condition assessment and sensitivity analyses using the Idaho National Engineering and Environmental Laboratory (INEEL) Graphical Evaluation Module (GEM) software and the Standardized Plant Analysis Risk (SPAR) Revision 3i model for Monticello plant.

Assumptions: (a) Duration time = 0.5 hours of direct tornado impact; (b) Probability truncation = 1E-15; and (c) Diesel generators 11 and 12 become unavailable and no recovery of the diesel generators is assumed during the tornado impact. Additional assumptions regarding number of tornadoes and affected square mileage were obtained from the licensee.

Model Changes: (a) Initiating event frequency estimates for Loss of Offsite Power scenario were modified for the three cases of tornado event frequency estimates; and (b) All other initiating events and their probabilities were set to "FALSE" logic, and zero probabilities.

Results: The conditional core damage probability (CCDP) and conditional core damage frequency (CDF) estimates, assuming the plant is operating 85 percent of the time during the year, in the three case studies are summarized as follows:

A. 33 events of F4 winds for an impact area of 0.25 sq. mi., 54 years of data, 79,610 square miles;
F4 initiating frequency = (33 x 0.25)/(54 x 79,610) = 1.9E-6
CCDP = 3.8E-11 per hour; Conditional CDF = (3.8E-11x 0.85 x 8760) = 2.8E-7

B. 6 events of F5 winds for an impact area of 0.5 square miles, 54 years of data, 79,610 square miles;
F5 initiating frequency = (6 x 0.5)/(54 x 79,610) = 7.0E-7
CCDP = 1.4E-11 per hour; Conditional CDF = (1.4E-11x 0.85 x 8760) = 1.0E-7

C. 33 events of F4 winds for an impact area of 0.25 square miles and 6 events of F5 winds for an impact area of 0.5 square miles, 54 years of data, 79,610 square miles;
Combined F4 and F5 initiating frequency = (33 x 0.25)/(54 x 79,610) + (6 x 0.5)/(54 x 79,610) = 2.6E-6
CCDP = 5.2E-11 per hour; Conditional CDF = (5.2E-11x 0.85 x 8760) = 3.9E-7

The above results show GREEN, or very low, risk significance.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," required, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of March 7, 2003, the licensee failed to assure that the design basis for the emergency diesel generators was correctly translated into specifications, drawings, procedures, and instructions. Specifically, the diesel generator exhaust piping was not designed to withstand the 300 mile per hour wind loadings of a design basis tornado. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (condition report 03001909), the issue is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000263/2004007-04). As part of its corrective actions, the licensee modified the diesel exhaust piping to meet the design basis requirement.

The unresolved item is closed.

4OA6 Meetings, Including Exits

.1 Exit Meeting

The inspectors presented the inspection results to Mr. T. Palmisano and other members of licensee management at the conclusion of the inspection on November 5, 2004. A follow-up telephone exit was held on November 22, 2004, with Mr. N. Haskell. The inspectors determined that proprietary information was reviewed during the inspection and returned to the licensee at the close of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
T. Palmisano, Site Vice President
J. Purkis, Plant Manager
R. Baumer, Licensing
S. Brown, Engineering Programs Manager
J. Grubb, Business Support Manager
N. French, Plant Engineering Supervisor
S. Hammer, Principal Engineer, Operations
N. Haskell, Design Engineering Manager
B. MacKissock, Operations Manager
R. Neulk, System Engineer
D. Neve, Regulatory Affairs Manager
R. Olsen, General Supervisor Electrical and I&C Maintenance
D. Pennington, HPCI System Engineer
S. Porter, Engineering Supervisor
D. Seestrom, 250 Vdc System Engineer
S. Sharp, Director of Engineering
A. Stover, Nuclear Oversight Manager
A. Williams, Projects Manager
D. Zercher, Design Engineer

Nuclear Regulatory Commission
J. Lara, Chief, Electrical Engineering Branch, Division of Reactor Safety
S. Burton, Senior Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000263/2004007-01	NCV	Failure to Provide Adequate Guidance to Ensure the Operability of the HPCI System When Aligned with Suction from the Torus (Section 1R21.2.b.1)
05000263/2004007-02	NCV	Failure to Provide Adequate Procedural Guidance to Ensure the Continued Operation of the HPCI System During an ATWS (Section 1R21.2.b.2)
05000263/2004007-03	NCV	Failure to Evaluate and Implement the Replacement of Electrolytic Capacitors (Section 1R21.2.b.3)
05000263/2004007-04	NCV	Failure to Design Emergency Diesel Generator Exhaust Silencers for Tornado Wind Loading (Section 4OA5.1)

Closed

05000263/2003002-10	URI	Effect of Tornado Wind Loading on Emergency Diesel Generator Exhaust Silencers (Section 4OA5.1)
05000263/2004007-01	NCV	Failure to Provide Adequate Guidance to Ensure the Operability of the HPCI System When Aligned with Suction from the Torus (Section 1R21.2.b.1)
05000263/2004007-02	NCV	Failure to Provide Adequate Procedural Guidance to Ensure the Continued Operation of the HPCI System During an ATWS (Section 1R21.2.b.2)
05000263/2004007-03	NCV	Failure to Evaluate and Implement the Replacement of Electrolytic Capacitors (Section 1R21.2.b.3)
05000263/2004007-04	NCV	Failure to Design Emergency Diesel Generator Exhaust Silencers for Tornado Wind Loading (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

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

1R21 Safety System Design and Performance Capability

Calculations

Number	Title	Revision
CA-66-710	High Pressure Coolant Injection System Cond. from Suppression Pool to Pump	Revision 0
CA-67-059	NSP - Monticello, Unit 1 - HPCI Pump Head/System Resistance Data/Equivalent Length Sum	Revision 1
CA-84-391	HPCI Minimum Flow Line Flowrate Calculation	Revision 0
CA-86-639	Max D/P for Valves	Revision 0
CA-89-082	Condensate Inventory Requirements for SBO - HPCI	Revision 3
CA-89-085	Dominant Area of Concern	Revision 1
CA-89-087	HPCI Actuation During SBO	Revision 0
CA-89-098	HPCI Safe Shutdown Logic Diagram	Revision 1
CA-89-373	Condensate Inventory Requirement for SBO	Revision 1
CA-91-058	Valve Thrust Assessment Anchor Darling Double Disc Gate Valve MO-2071	Revision 0
CA-91-069	AC Load Study 1R XFMR, LOCA Load 2 Core Spray Pumps Starting	Revision 11
CA-92-065	HPCI System Motor-Operated Valve Functional Analysis	Revision 6
CA-92-300	Monticello Nuclear Generating Plant Plant Specific Technical Guidelines Calculation Input Data	Revision 0
CA-93-002	HPCI System MOV Performance Analysis	Revision 2
CA-93-084	Hydrogen Generation of #11 & #12 Batteries with C&D KCR-13 Cells	Revision 0
CA-94-052	Cable Tray Block Calculation	Revision 0

Calculations

Number	Title	Revision
CA-94-097	Torus Water Level Rate of Change in Inches Per Hour During HPCI Surveillance Testing (LER 94-018)	Revision 0
CA-94-106	Determination of Drywell High Pressure Instrument Setpoints (PS-10-101A, B, C & D)	Revision 0
CA-95-005	Low Low Water Level ECCS and RCIC Initiation	Revision 1
CA-95-011	HPCI/RCIC High Level Turbine Trip	Revision 1
CA-95-014	Determination of HPCI High Steam Flow Instrument Setpoints (dPIS-23-76 A/B)	Revision 2
CA-96-020	HPCI Room Transient Temperature	Revisions 0, 1, 4
CA-96-112	HPCI Minimum Flow Evaluation	Revision 1
CA-96-169	HPCI/RCIC NPSH Evaluation	Revisions 0, 1
CA-96-193	Evaluation of ECCS Suction Header	Revision 1
CA-97-168	Head Loss through ECCS Suction Strainer Assembly	Revision 1
CA-97-228	ECCS Strainer Head Loss Estimates	Revision 0
CA-97-231	CST Level Switch LS-23-74 & LS-23-75 Delay Time Evaluation	Revision 0
CA-97-232	CST Storage Tank Suction Line Submergence for Vortex Concern	Revision 1
CA-97-235	HPCI Suction Transfer From CST Setpoint Calc	Revision 0, 1
CS-99-06	MOV Performance Analysis	Revision 2
CA-99-07	MOV Environmental Temperatures	Revision 1
CA-99-071	Instrument Error Calculation TR-23-115	Revision 0
CA-99-157	Determination of Coolant Loss & Torus Drawdown Resulting from Recirc LOCA	Revision 0
CA-99-181	Change in the CST Level When Following the EOP Guidance for HPCI Operation	Revision 0
CA-00-078	HPCI Steam Supply Low Pressure Isolation	Revision 2
CA-01-036	Inservice Testing (IST) Pump & Valve Acceptance Criteria Rounding Evaluation for Associated Surveillance Procedures	Revision 10

Calculations

Number	Title	Revision
CA-01-054	Instrument Channel Error Calculation - HPCI Flow Indication	Revision 0
CA-01-078	AOV System Calculation, HPCI, CV-3503	Revision 0
CA-01-154	Allowable leakage Rate for the HPCI Minimum Flow Control Valve Accumulator System	Revision 1
CA-02-145	HPCI/RCIC NPSH Calculation for Use in the EOPs	Revision 0
CA-02-150	Evaluation of MO-2068 Using BWROG DC Motor Performance Method	Revision 0
CA-02-198	HPCI Minimum Flow Control Valve Switch Setpoint Change	Revision 1
CA-03-07	AOV Component Calculation, CV-2065 HPCI Minimum Flow Valve	Revision 1
CA-03-015	AOV System Calculation, HPCI, CV-2065	Revision 0
CA-03-030	Operability Evaluation of the Emergency Diesel Generator Exhaust Piping for a Tornado Event	Revision 0
CA-03-032	Determination of Instrument Calibration Parameters for Reactor Safeguards and ATWS Level Transmitters	Revision 0
CA-03-097	HPCI/RCIC Suction Head Height Diff. (CST vs. Torus)	Revision 0
CA-03-0103	Evaluation of Test Gauge Inaccuracies of Test Gauges Used in the Performance of IST Relief Valve Program Testing	Revision 1
CA-04-047	Monticello 250 Vdc DIV II Battery Calculation	Revision 0
CA-04-048	Monticello 250 Vdc Division I Battery Calculation	Revision 0
MN.9209.0174-01	Pacific Nuclear Calculation - HPCI Operational Vibration Fatigue Analysis	Revision 0

Condition Reports Generated Due to the Inspection

Number	Title	Date
CAP035303	HPCI/RCIC NPSH Calculations Not Include All Required Factors	10/18/2004
CAP035310	Foreign Material Located Within CST Basin	10/19/2004
CAP035315	Inconsistencies Between HPCI Ops Man Sections' Descriptions on CST Transfer	10/19/2004

Condition Reports Generated Due to the Inspection

Number	Title	Date
CAP035317	Snubber SS-707 on HPCI Line with Worn Mounting Hardware	10/19/2004
CAP035319	A Difference in HPCI Flow Values Are Used as Inputs to Two Separate Calculations	10/20/2004
CAP035320	No Formal Calculation Exists for HPCI NPSH from the CSTs	10/20/2004
CAP035321	C.6-003-A-24 Not Consistent with C.5-1200, Primary Control	10/20/2004
CAP035323	Reactor Building Daily Check Sheet, 2009, Contains Erroneous Caution	10/20/2004
CAP035326	Typographical Error Discovered in CA-97-235 Revisions 1 and 2	10/20/2004
CAP035332	Typographical Error in CA-96-169	10/20/2004
CAP035341	CRD Suction Pressure Recorded in Wrong Units on HPCI Test	10/21/2004
CAP035342	Identification of Second Stopwatch Not Identified on 0255-06-IA-1 Equipment Section	10/21/2004
CAP035343	"Work Orders(s) Issued Yes/No" Block on Bottom of 0255-06-1A-1 Not Filled in	10/21/2004
CAP035344	Potential Procedure Conflict with B.03.02-05.G3 if Used to Support EOP Actions	10/21/2004
CAP035352	HPCI P&ID Refers to the Wrong Drawing Number for Continuation to Feedwater	10/21/2004
CAP035356	Issues Noted in 4510-PM Not Captured in CAP Process	10/21/2004
CAP035357	Concerns on 4510-PM Not Dispositioned in a Timely Manner	10/21/2004
CAP035363	Items Located in and Around CST Basin Questioned by NRC	10/21/2004
CAP035364	Duct Tape and Tape Residue on CST Level Standpipes	10/21/2004
CAP035376	Discrepancies Exist for Load Titles of 250 Vdc MCC Buckets and Related Drawings	10/22/2004
CAP035380	Effects on Discharge Line Void with HPCI Suction from Torus When in Standby Not Addressed	10/22/2004
CAP035415	Lack of Documented Hydrogen Removal Calculation for 250V Battery Rooms	10/26/2004
CAP035423	CA 99-181 Invalidated by Revision 9 to B.08.09-05	10/26/2004
CAP035469	New Torus Suction Strainers May Not Be Accounted for in EOP Vortex Calculation	10/27/2004

Condition Reports Generated Due to the Inspection

Number	Title	Date
CAP035501	Flow Incorrectly Plotted in Figure 1 of 0255-06-IA-1 (03/15/04)	10/29/2004
CAP035540	Numerous Errors and Inconsistencies Noted in Calculations	11/1/2004
CAP035572	Surveillance 0108 Needs Conditional LCO Step Added Prior to Stroking MO-2063	11/2/2004
CAP035576	H2 - Low Ventilation Flow/Battery Rooms	11/2/2004
CAP035580	Error in Modification 80M007 Calculating Battery Room Time to Detonable Atmosphere	11/3/2004
CAP035581	HPCI Discharge Line Temperature Monitoring Limit May Not Be Conservative Enough	11/3/2004
CAP035584	Battery Terminal-To-Ground Voltage Taken Per 4510-PM Have No Acceptance Criteria	11/3/2004
CAP035589	250 Vdc Charger PMs Have Not Been Performed IAW Program	11/3/2004
CAP035609	MO-2071 Incorrectly Modeled in CA-04-047	11/4/2004
CAP035616	C.4-B-B.09.13.B, May Be Incomplete for Impacts Listed	11/4/2004
CAP035617	B.08.09-05, Not Revised When Tech Spec Table 3.2.8 Revised	11/4/2004
PCR023178	Procedure 0108 Incorrectly Specifies an LST for MO-2063 Open Stroke Time	11/2/2004
PCR023180	Procedure 0114 Incorrectly Specifies an LST for MO-2102 Open Stroke Time	11/2/2004
EWR023182	Update References to Superceded 250 Vdc Calculations	11/3/2004

Condition Reports Reviewed During the Inspection

Number	Title	Date
ACE001604	Keep Fill Capability of HPCI and RCIC Piping	1/18/2002
ACE002981	Possible Minor Water Hammer When Cycling MO-2068	5/18/1998
CR03001909	No Existing Analysis to Support Emergency Diesel Generator Exhaust Pipe Capability to Survive Tornado High Winds	2/20/2003
CAP003119	RCIC and HPCI Overspeed Trip Test Procedures Precondition the Equipment Prior to Testing	3/26/2001
CAP003437	Small Amount of Water and Oil Film on the Floor by the Cable Raceway in RCIC room	3/1/2001

Condition Reports Reviewed During the Inspection

Number	Title	Date
CAP005795	C Phase Conductor Was Found with Low Resistance to Ground	12/2/2001
CAP006947	Small Bore Lines Assumed to be Insulated in HPCI Room Heat Up Calculation Not Insulated	12/19/2001
CAP008427	Documentation of NRC Resident Question Regarding Application of Tech Spec Deviations in As-Found	2/5/2002
CAP008467	Tape on MCC 312 Spare Cubicle Door Challenges Eq Analysis	4/9/2002
CAP009549	Existing Apertures Within the Enclosure of MCC-312 Are Not Analyzed by EQ Calculation CA-98-022	6/24/2002
CAP011667	Out of Acceptance Band Close Time for CV-2065	11/11/2002
CAP013548	PS-23-84, HPCI Low Pump Suct Press Turb Trip, Not Able to Calibrate to Within As-left.	2/11/2003
CAP013549	During Calibration of LS-23-91A and LS-23-91B per Procedure 7130, Primary Containment was Breached for About 3 Minutes	2/10/2003
CAP013604	Failure of HPCI Flow Controller FIC-23-108 May Have Generic Implications Affecting Other Safety Related Systems	2/17/2003
CAP013623	MOV-2068 Stem Material Incorrectly Identified	3/24/2003
CAP013750	MOV-2068, MO-2071, MO-2106 Exceed Max Allowed Thrust Limits with Implementation of Revised Uncertainty Methodology	3/5/2003
CAP016153	Possible Void Formed Behind MO-2068	5/19/1998
CAP026054	HPCI Response Time May Be Biased By Not Controlling When Aux Oil Pump is Daily Run, No Correlation Exists at MNGP	3/10/2003
CAP026295	Discovered Questionable Electrical Coordination	3/24/2003
CR03001187	Level 1 Investigation Report - Multiple Isolators of 11 SJAE Suction Valve Resulted in Significant Operational Transients	3/4/2003
CAP026326	CST Level Setpoint Drawdown Calc HPCI Suction Valve Stroke Time Inputs Exceeded Under Degraded Voltage Conditions	3/31/2003
CAP026370	HPCI High Level Torus Transfer Switch Not Tested as TS 4.5.A.4 Implies	3/28/2003
CAP026490	HPCI Pump Curve Method for 4th Interval IST	4/16/2003
CAP026532	HPCI/RCIC Tech Spec Discharge Pressure Surveillance Test is Non-Conservative (Tested on CST vs. Torus)	4/4/2003

Condition Reports Reviewed During the Inspection

Number	Title	Date
CAP026804	One Millivolt Drop Reading on #16 Battery During 0197-02 Discharge Test was 3.4mV	5/9/2003
CAP027357	0137-07A Leak Rate Test Failures: HPCI, RCIC, and Main Steam Line Drain Containment Isolation Valves	4/30/2003
CAP027363	Adverse Trend for LLRT Failures for Flowserve Double Disc Gate valves (MO-2373/2075/2076/2035)	5/1/2003
CAP027506	Air Regulator On CV-2065 is Below Vendor Recommendation	5/14/2003
CAP027766	HPCI Overspeed Test Failed Multiple Times	5/26/2003
CAP027802	MO-271 Changed to Dual Indication After Successful Stroke Timing in the Closed Direction	5/25/2003
CAP028035	Found Fuse in C-03 Terminal Strip SS 12th From Top Not Fully Engaged in Fuse Holder	6/17/2003
CAP028110	AFI EQ-1-1 Age Related Failures Adversely Affect Performance of HPCI & Challenge Ops and Adversely Affect Generation	6/11/2003
CAP029038	No. 13 250 Vdc Battery Cells 57&102 Noted to Have Plate Material on the Bottom of the Battery Cell	8/14/2003
CAP029090	MO-2071 Limit Switch Compartment Cover Does Not Have T-drain	8/12/2003
CAP029382	HPCI Exhaust Check Valve HPCI-9 Without Insulated Bonnet	8/28/2003
CAP029658	Non-Conser Transmitter Scaling for HPCI/RCIC Hi Level Trips	9/19/2003
CAP029710	OE16927 - Multiple Tripping and Reset of HPCI Turbine	9/25/2003
CAP030101	Re-analysis of HPCI Room Heat Up Shows EQ Limit	10/15/2003
CAP030296	Timeliness of Corrective Actions May Not be Appropriate for HPCI Room Heat Up Calculations	10/27/2003
CAP030457	Calculation CA-98-037 Lists an Accident Environment That Conflicts with the EQ Environmental Specification	11/3/2003
CAP031044	Received Unexpected Annunciator C03-A-16, HPCI Pump HI Suction Pressure, During Quarterly Operability Test	12/16/2003
CAP031061	FI-23-108 HPCI Flow Controller Indicator Reads Less Than “0"	12/17/2003
CAP031584	Operability of HPCI with MO-2063 in Closed Position Has Not Been Analyzed But LCO Not Entered for Close Stroke Timing	1/19/2004

Condition Reports Reviewed During the Inspection

Number	Title	Date
CAP031733	Non-conservative Instrument Uncertainties Applied in HPCI/RCIC Suction Transfer from CST Setpoint - Low Level	1/21/2004
CAP032234	Standard Undervolt Alarm Reflash Units on 250 Vdc MCC's Do Not Have Appropriate Isolation from Safety Related Equip	2/18/2004
CAP032857	CST Suction Piping in HPCI and RHR Rooms Not Code Qualified	3/23/2004
CAP034442	RIS 2004-12 Pertaining to Use of Code Revisions	8/12/2004
CAP034836	Discrepancy Found Between Plant Drawing and F&B Study	9/15/2004
CAP034901	Relay Minimum Voltage Assumption Basis Requires Clarification	9/21/2004
CAP034902	Fan Starting Assumption Requires Further Documentation	9/21/2004
CAP034907	Lack of Documentation to Validate Ops Response Time Associated with C.4-B.09.02A	9/21/2004
CAP034916	Incorrect Battery Rating Cited on Drawing NE-36640-4-2	9/21/2004
CAP034921	Instrument Line Tap for PT-23-89 Incorrect on NX-13142-42	9/22/2004
CAP034923	MO-2036 Seat is Leaking By	9/22/2004
CAP034926	SSDI Question on HPCI Injection Line Temperature Unanswered	9/22/2004
CAP034932	Critical Input Assumption In Calculation Not Reflected in Plant Config Control	9/22/2004
CAP034937	Accident Room Temperature for 250 V Batteries and Chargers Not Determined	9/22/2004
CAP034938	Operation Manual Procedures Require Shift Checks That Are Not Being Completed	9/22/2004
CAP034961	Error Discovered in 0420-A Bases Section	9/22/2004
CAP034963	Transient Combustibles Identified in the HPCI Room	9/22/2004
CAP034965	As-Found Acceptance Criteria for Drywell High Press Stpt May Be Non-conserv.	9/22/2004
CAP034966	Less Conservative Change to a SR Setpoint Not Supported by a Calculation	9/22/2004
CAP034971	FSA SSDI - Possible Mis-Coordination for D312 250 Vdc MCC	9/23/2004
CAP034972	No Documentation for Sizing of 250V Div II Battery Charger	10/5/2004
CAP034975	PS-23-84 Tubing Configuration Has Water Column above Switch with No Correction	9/23/2004

Condition Reports Reviewed During the Inspection

Number	Title	Date
CAP034984	USAR Description of HPCI Maintenance Capability Not Accurate	9/27/2004
CAP034987	Lack of Documentation for Basis/Acceptance Criteria of MOV Voltage Rating	9/23/2004
CAP035139	Installed Plant Fuse Does Not Coordinate With Upstream Breaker	10/5/2004
CAP035247	HPCI Room MCC 312 Gasket Material Degraded	10/13/2004
CAP035427	Square Footage of Uninsulated HPCI Components Exceeds That Assumed in Calculation	10/26/2004

Design Bases Documents

Number	Title	Revision
DBD-B.03.02	High Pressure Coolant Injection System	Revision 3
DBD-B.9.9	250 Vdc System	Revision 3
DBD-T.8	Internal Flooding	Revision 2
DBD-T.17	Electrical Design Considerations	Revision C
DBD-T.21	Separation and Single Failure	Revision B

Drawings

Number	Title	Revision
ND-178628-4	HPCI Steam Line Break and Critical Crack Locations	Revision A
NE-36640	250V DC MCC Schedule D311, D312 and D313	Revision U
NE-36771	Schematic Diagram Y91 UPS and AC Distribution Panels Y94 & Y90	Revision A
NF-36298-1	Monticello Nuclear Generating Plant Electrical Load Flow One Line Diagram	Revision R
NF-36298-2	Monticello Nuclear Generating Plant DC Electrical Load Distribution One Line Diagram	Revision C
NF-178627-1	Torus Strainer Installation - Bay 3	Revision A
NF-178627-2	Penetration Screen Installation Details (Typical for Bays 3, 7, 11, 15)	Revision A
NGS-00Q005-36640-5	250V DC MCC Schedule D311 D312 and D313	Revision 2-R

Drawings

Number	Title	Revision
NGS-00Q235B5-8292-12-1	S/D HPCI System	Revision 0-Y
NGS-00Q235B5-8292-12-2	S/D HPCI System	Revision 0-T
NGS-00Q235B5-8292-12-3	S/D HPCI System	Revision 0-P
NGS-00Q235B5-8292-12-6	S/D HPCI System	Revision 0-W
NH-36039	P&ID Condensate & Demineralized Water Storage Systems	Revision BS
NH-36241	Nuclear Boiler System - Steam Supply P&ID	Revision BB
NH-36249	High Pressure Coolant Injection System (Steam Side) P&ID	Revision AN
NH-36249-1	HPCI Hydraulic Control and Lubrication System	Revision C
NH-36250	P&ID (Water Side) High Pressure Coolant Injection System	Revision AD
NH-36254	Reactor Water Cleanup System P&ID	Revision AW
NH-95932	20" Suction Header for Suppression Chamber - Support Locations	Revision B
NL-95927-1 thru 4	20" Suction Header - Supports SS-361 & SR-362	Revision A
NL-95931-1 thru 4	20" Suction Header - Supports SR-369A-F	Revision A
NL-99435-1	Pipe Support on Line PS18-8-ED / SR-708	Revision C
NL-99435-2	Pipe Support on Line PS18-8-ED / SR-708	Revision D
NL-99435-3	Pipe Support on Line PS18-8-ED / SR-708	Revision C
NX-8291-51	20" Diameter Header for Suppression Chamber	Revision D
NX-8291-52	Support Assembly for 20" Diameter Header	Revision A
NX-8291-79	Penetration Schedule and Orientation for Suppression Chamber	Revision C
NX-8291-99	Suppression Chamber Penetration Details	Revision B
NX-8292-12-1	S/D HPCI System	Revision Y
NX-8292-12-2	S/D HPCI System	Revision T
NX-8292-12-3	S/D HPCI System	Revision P
NX-8292-12-4	Elementary Diagram S/D HPCI System	Revision U

Drawings

Number	Title	Revision
NX-8292-12-5	Elementary Diagram HPCI System	Revision S
NX-8292-12-6	S/D HPCI System	Revision W
NX-8292-12-7	Elementary Diagram S/D HPCI System	Revision H
NX-13142-17	Torus Water	Revision F
NX-13142-40	HPCI - Torus Water	Revision E
NX-13142-53	Feedwater Pump Discharge	Revision J
NX-20007-2	125V/250 Vdc Dist Panel Div II Wiring Diagram	Revision B
NX-55883-1	HPCI Pump Head Curves	Revision A
NX-55883-2	HPCI Pump Head Curves	Revision A
NX-55883-3	HPCI Pump Head Curves	Revision A

Instrument Calibration Records

Number	Title
FS-23-78	HPCI Pump Min Flow Control Flow Switch
LIS-2-3-672A, B, C, D	HPCI Low Level Start
LS-2-3-672E, F	HPCI/RCIC High Level Turb Trip
LS-23-74, 75	HPCI Cond Storage Tank Intlk
LS-23-91A, B	HPCI Torus Suction Valve Intlk
LT-2-3-72A, B, C, D	LO LO Reactor Level ECCS Initiation
PS-10-101A, B, C, D	Drywell High Pressure ECCS Initiate
PS-23-84	HPCI Low Pump Suct Press Turb Trip

Letters

Number	Title	Date
BLM: 1839	Bechtel Power Corporation to Northern States Power - E79N745 Reactor Building Expansion, HPCI Battery Room	5/5/1983
GLN-95-034	Letter from GE to MNGP: ATWS Assumptions and Inputs for the Monticello Extended Power Rerate Project (Task 25)	9/19/1995

Letters

Number	Title	Date
GLN-95-058	Letter from GE to MNGP: Emergency Core Cooling Parameters for Use in Monticello SAFER/GESTR Power Rerate Analyses - Task 7.5	11/28/1995
GLN-96-067	General Electric Company (GE Nuclear Energy) to Northern States Power - HPCI System Operation at Elevated Suppression Pool Temperatures	8/7/1996
GLN-98-004	Letter from GE to MNGP: Errata Dated April 13, 1998 to Section 3.7 of GE Proprietary Document NEDC-32523P "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate," Class III, dated March 1996	4/21/1998
GLN-99-005	Letter from GE to MNGP: Revised Input Parameters for Monticello Rerate Containment Analysis (Task 6) - Final Resolved Values	3/15/1999
GLN-99-011	Letter from GE to MNGP: Revised ATWS Evaluation for Monticello Extended Power Uprate Project	10/8/1999
L-MT-03-0018	Nuclear Management Company to USNRC - Relief Request No. PR 06 for the Fourth 10-Year Inservice Testing Interval, High Pressure Coolant Injection Pump Testing	5/6/2003
	Terry Steam Turbine Company to General Electric Company APED - Bearing Lube Oil Temperature	10/24/1972
	BW/IP International, Inc. Pump Division to Northern States Power - Northern States Power Co. Purchase Order No. P00542MQ / NRC Bulletin 88-04 / High Pressure Coolant Injection Pumps, Minimum Flow Rates	9/8/1988
	Room Heat Up Calculations	12/30/1988
	BW/IP International, Inc. Pump Division to Northern States Power - HPCI Pumps, Minimum Flow Evaluation	6/9/1993
	Northern States Power to Byron Jackson Pump Division - Concurrence Letter for Operating HPCI Booster and Main Pumps with 300 / 600 GPM Minimum Flow Rates	4/20/1993
	Stevenson and Associates to Northern States Power - Final Report (Draft) for Resolution of Selected Seismic Concerns Raised by USNRC during Monticello's Electrical Distribution System Functional Inspection (EDSFI)	10/26/1990

Letters

Number	Title	Date
	License Amendment Request Condensate Storage Tank Low Level HPCI/RCIC Suction Transfer	11/25/1997
	Supplement 2 to License Amendment Request Condensate Storage Tank Low Level HPCI/RCIC Suction Transfer	11/11/1998

Licensee Event Reports (LERs)

Number	Title	Date
LER 83-0-00	HPCI High Flow Isolation Due to Injection Line Void	6/1/1983
LER 87-007-00	Group IV Isolation During HPCI Testing Due to Design Deficiency	3/27/1987
LER 87-020-00	Check Valve Disc Nut Tack Weld Failure Results in Potential HPCI Degradation	12/2/1987
LER 89-005-01	Auto Isolation of HPCI Steam line During Surveillance Test Due to Suspected Relay Malfunction	7/3/1989
LER 89-011-01	Excessive Check Valve leakage Constitutes Potential Degradation of High Pressure Coolant Injection System	12/15/1989
LER 92-009-00	High Pressure Coolant Injection Inoperable Because of Inadequate Condensate Storage Tank Inventory	8/27/1992
LER 94-017-00	HPCI Isolates on High Steam Flow During Test at Lower than Normal Pressure	11/22/1994
LER 94-018-00	Automatic Transfer of HPCI Suction from the Condensate Storage Tanks to the Torus on High Torus Level During Surveillance Testing	11/22/1994
LER 97-011-00	Error in Procedure Causes Failure to Transfer the HPCI and RCIC Suctions to the Suppression Pool After Making a Condensate Storage Tank Level Instrument Inoperable	10/16/1997
LER 97-012-00	Condensate Storage Tank Low Level Suction Transfer Setpoint Did Not Provide Sufficient Submergence as a Result of a Design Deficiency	10/27/1997
LER 97-017-00	Potential Vortex Formation in the CST to HPCI Suction	12/26/1997
LER 98-005-00	HPCI Removed from Service to Repair Steam Leak Drain Trap Bypass	10/21/1998
LER 99-001-00	HPCI High Steam Flow Isolation During Quarterly Surveillance Test	3/17/1999

Licensee Event Reports (LERs)

Number	Title	Date
LER 99-003-00	Emergency Service Water Pump Failure Causes HPCI Inoperability	5/12/1999
LER 99-006-00	During Quarterly Surveillance HPCI Declared Inoperable Due to Drain Pot Alarm	7/2/1999
LER 99-007-00	HPCI Test Return Valve Unable to Close Against Maximum Expected Differential Pressure	7/9/1999
LER 2001-002-01	Failure to Comply with Technical Specification and ASME Code Section XI Inservice Inspection Requirements	3/29/2001
LER 2001-007-00	Failure to Comply with Technical Specification and ASME Code Section XI Inservice Inspection Requirements	4/23/2001

Miscellaneous Documents

Number	Title	Revision or Date
09-0910-0108	Electrical Coordination Study	9/7/1988
22A2501	Separation Requirements for Reactor Safety and Engineering Safeguards Systems	Revision 0
5828-E-21	Specification for Insulated Wire and Cable	Revision 0
50.59 Screening	B.03.02-05, HPCI - System Operation	Revision 0
C39-D21/1	Cable and Raceway Information System Electrical Cable Schedule for Cable	10/19/2004
ESM-01.02	Engineering Standard Manual - Design Practices	Revision 7
Evaluation 04-004	Impact of Maintaining HPCI Outboard Injection Valve Closed during Plant Operation10CFR50.59	11/04/2004
FBS-D10001-1	Fuse Breaker Study	Revision 0
FBS-D31201-1	Fuse Breaker Study	Revision 0
Form OPL-4A	Containment Analysis Input Parameters	Revision 1
GE-NE-L12-00832-1	GE Engineering Evaluation Task 17.2: 10CFR50 Appendix R Compliance for Fuel Cladding, Reactor Vessel, and Containment Integrity	4/1996
LP# M-8107L-002	Initial Licensed Operator Training Lesson Plan - High Pressure Coolant Injection System	Revision 18

Miscellaneous Documents

Number	Title	Revision or Date
NEDC-32523P and Supplement 1	GE Licensing Topical Report: Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate	3/1996, 6/1996
NEDE-25020	GE Study: Studies of ATWS for Monticello Nuclear Power Station	9/1976
NUREG-0737 and Supplement 1	Clarification of TMI Action Plan Requirements	11/1980, 1/1983
NUREG-0927	Evaluation of the Water Hammer Occurrence in Nuclear Power Plants	Revision 1
NX-16647	C&D Station Battery Installation and Operating Instructions DMA35 BAT/DMA-35N Specific Gravity Test	Revision 7
NX-16848	Div II 250V DC Battery Charger	Revision 2
NX-8292-42	HPCI Pump Technical Manual	
NX-8292-54	HPCI Pump Drive	Revision 29
OE Assessment	MNGP Response to SIL No. 375: Power Supply for Discharge Line Fill Systems on BWR/4, 5, & 6 ECCS and RCIC Systems	2/1/1989
OE Assessment	MNGP Re-Assessment Response to SIL No.375: Power Supply for Discharge Line Fill Systems on BWR/4, 5, & 6 ECCS and RCIC Systems	11/8/1991
PO No. P502139	Purchase Order Electrolytic Capacitors	11/01/2004
Power Rerate Project	Station Blackout Engineering Evaluation - Task 26	Revision 1
Project 84074	Electrical and Fuse Breaker Coordination Study for Monticello Generating Station	3/20/1985
SA022740	High Pressure Coolant Injection System 250V DC Electrical System Design and Performance Capability Self Assessment	10/15/2004
SIL No. 375	Power Supply for Discharge Line Fill Systems on BWR/4, 5, & 6 ECCS and RCIC Systems	4/1982
SRI 87-027	Breaker Fuse Coordination Review	12/22/1987
SRI 94-021	ATWS Analysis Contained in Updated Safety Analysis Report	Revision 0

Miscellaneous Documents

Number	Title	Revision or Date
SRI 99-018	Defeating the HPCI High Torus Water Level Suction Transfer to Allow Continued HPCI Operation with Suction from the CSTs	Revision 0 Add 1
System Health Report	High Pressure Coolant Injection System	9/10/2004
System Health Report	250-Volt DC System	9/10/2004
Technical Position 05	Skid Mounted Components	6/25/2003
Technical Position 18	Partial Stroking of Disassembly and Examination (Inspection) Tested Valves	5/7/2004
Technical Position 20	Fast Acting Power Operated Valves	11/1/2004
Volume F Memo No. 2174	Temporary Procedure Change: Manual Switchover of HPCI Suction from Torus to CST	10/21/2004
	Shelf Life Control Boards & Electrolytic Capacitors	7/10/92
	Pump & Valve Inservice Testing Program Plan - Fourth Ten Year Interval	Revision 2
	Valve IST Basis Document (HPCI)	10/13/2004
	FW-94-2 and FW-97-2 - Appendix J - History	10/21/2004
	IST Trend Data for HPCI Pump	
	LISEGA Inc. Catalog - Product 3	

Modifications

Number	Title	Date
80M007	DCP- Battery Room Air Flow Monitors	9/12/1980
82M89	HPCI High Level Trip Seal-In Logic Circuit	7/10/1985
83M002	RCIC & HPCI Power Supply Resistor Change	6/13/1983
87M014	Replacement/Upgrade Div I 250 Vdc Battery	11/17/1987
89Z047	Div I and Div II 250V DC Ground Detection Panel Upgrade	7/31/1989
96Q170	ECCS Suppression Pool Strainer Modification	1996
00Q005	Improvements for MO-2032, MO-2071, MO-2075 & MO-2076	9/19/2001
00Q035	Modification of HPCI Group 4 Isolation	01/02/03

Modifications

Number	Title	Date
00Q180	V-EF-40A & B	5/12/2000
NSP-56-233	ECN-Support Assembly for 20" Diameter Header	1/28/1983
SCR 03-023	HPCI Low Pump Suction Pressure Turbine Trip	5/14/2003
SCR 00-030	HPCI Torus Suction Valve Interlock	12/1/2000
SCR 00-031	HPCI Torus Suction Valve Interlock	12/1/2000
SCR 97-045	Raise HPCI/RCIC CST Level Switch Setpoint	10/2/1997
SCR 96-504	CV-2065 (HPCI Min Flow) Control Flow Switch	10/22/1996

Procedures

Number	Title	Revision
C.5-1100	EOP Flowchart: RPV Control Failure to Scram	Revision 9
C.5-1200	EOP Flowchart: Primary Containment Control	Revision 13
C.5-1300	EOP Flowchart: Secondary Containment Control	Revision 9
C.5-2002	EOP Flowchart: Emergency RPV Depressurization	Revision 6
C.5-2006	EOP Flowchart: RPV Flooding	Revision 10
C.5-2007	EOP Flowchart: Failure to Scram	Revision 12
C.6-003-B-56	High Area Temperature Steam Leak	Revision 3
C.6-20-A-25	HPCI Room V-AC-8A Trouble	Revision 3
C.6-20-A-32	HPCI Room V-AC-8B Trouble	Revision 3
C.6-242-A-02	V-EF-40A Low Flow	Revision 2
C.6-242-A-09	V-EF-40B Low Flow	Revision 2
C.6-346-A-01	Battery Room 110 Low Flow	Revision 2
C.6-346-A-02	Battery Room 109 Low Flow	Revision 2
C.6-346-A-03	Battery Room 103 Low Flow	Revision 2
EWI-08.03.02	Logic System Testing Program	Revision 1
EWI-08.15.09	Margin Improvement FP-PE-MOV-02	Revision 0
EWI-08.19.01	Cable Condition Monitoring Program	Revision 0

Procedures

Number	Title	Revision
EWI-10.01.01	Electronic Component Aging Management Process Implementation	Revision 0
MPS-2061	Cable and Raceway Notes and Details	Revision 3
Ops Man B.03.02-01	HPCI - Function and General Description of System	Revision 5
Ops Man B.03.02-02	HPCI - Description of Equipment	Revision 4
Ops Man B.03.02-03	HPCI - Instrumentation and Controls	Revision 7
Ops Man B.03.02-04	HPCI - References	Revision 23
Ops Man B.03.02-05	HPCI - System Operation	Revision 24
Ops Man B.03.02-06	HPCI - Figures	Revision 3
Ops Man B.08.09-01	Condensate Storage System - Function and General Description of System	Revision 6
Ops Man B.08.09-02	Condensate Storage System - Description of Equipment	Revision 5
Ops Man B.08.09-03	Condensate Storage System - Instrumentation and Controls	Revision 4
Ops Man B.08.09-04	Condensate Storage System - References	Revision 10
Ops Man B.08.09-05	Condensate Storage System - System Operation	Revision 12
Ops Man B.09.09-01	250 Vdc System - Function and General Description of System	Revision 1
Ops Man B.09.09-02	250 Vdc System - Description of Equipment	Revision 2
Ops Man B.09.09-03	250 Vdc System - Instrumentation and Controls	Revision 5
Ops Man B.09.09-05	250 Vdc System - System Operation	Revision 6
Ops Man B.09.09-06	250 Vdc System - Figures	Revision 3
Ops Man C.4-B.09.02.A	Abnormal Procedures - Station Blackout	Revision 22
Ops Man C.4-B.09.09.A	Abnormal Procedures - Loss of a 250 Vdc Bus	Revision 5
Ops Man C.5.1-2007	Failure to Scram	Revision 11
Ops Man C.5-3202	Bypass HPCI Signals	Revision 2
Ops Man C.5-3302	Alternate Pressure Control	Revision 10
4 AWI-04.02.01	Housekeeping	Revision 11

Procedures

Number	Title	Revision
4 AWI-04.04.01	Equipment Isolation	Revision 29
4 AWI-05.07.02	Preventive Maintenance Program	Revision 1
0255-06-IA-7	AO-23-18 HPCI Injection Testable Check Valve Refueling Operability Test	Revision 4
0255-06-IA-7-OCD	AO-23-18 HPCI Injection Testable Check Valve Refueling Operability Test	Revision 0
0255-06-IA-8	HPCI Cold Shutdown Check Valve Test	Revision 19
0255-06-ID-3	HPCI CV-2065 Air Accumulator Check Valve (AI-611) Leak Rate Test	Revision 10
0000-A	Operations Daily Log Part A	Revision 82
0420-A	HPCI/RCIC Condensate Storage Tanks Level Instrumentation - Two Tank Operation	Revision 3
1047-02	Operations Control Room Checklist	Revision 86
1057	HPCI Turbine Overspeed Trip Test	Revision 11
1066-01	Heat Trace Checklist - Annual	Revision 15
1132	1482-02 Suppression Chamber Internal General Visual Examination	Revision 14
1204	Systems Leakage Check Procedure High Pressure Coolant Injection System	Revision 6
1401-01	Locked Valve Alignment	Revision 22
2009	Reactor Building Daily Check Sheet	Revision 51
2010	Turbine Building East	Revision 37
2014-02	Turbine Building Outside	Revision 4
2030	Control Room Log	Revision 66
2154-10	High Pressure Coolant Injection System Prestart Valve Checklist	Revision 26
4510-01-PM	Battery System Alarm Relay Annual Checks and Calibrations	Revision 2
4027-PM	Klockner-Moeller MCC-B34 and B44 Maintenance Procedure	Revision 13

Procedures

Number	Title	Revision
4510-PM	Maintenance of On-Site Batteries and Battery Chargers at Monticello Plant	Revision 16,17
4525-PM	No.13 & 16 Battery Charger Preventive Maintenance	Revision 3
4844-PM	GE Thermal Overload Relay Test Procedure	Revision 18
4846-PM	GE/W Molded Case Circuit Breaker Maintenance and Test Procedure	Revision 11
4848-PM	Klockner-Moeller Thermal Overload Relay Test Procedure	Revision 2
7130	HPCI System Instrument Maintenance	Revision 19
8285	Non-Identical Fuse Replacement	Revision 3

Surveillances (completed)

Number	Title	Date performed
0027	Reactor LO-LO Level ECCS Initiation & High Level RCIC/HPCI Turbine Trips Trip Unit Test and Calibration Procedure	10/3/2002, ½/2003, ½/2004, 4/2/2004, 7/2/2004
0036-02	ECCS Automatic Initiation Test, Including Loss of Auxiliary Power	5/20/2003
0056	HPCI High Steam Flow and Low Steam Pressure Sensor Test and Calibration Procedure	8/11/2003, 11/10/2003, 12/15/2003, 3/15/2004
0058	HPCI Steam Line High Area Temperature Test and Calibration Procedure	11/11/2003, 12/15/2003, 3/16/2004, 6/15/2004
0137-08-02	“B” Loop Feedwater Check Valves FW-94-2 and FW-97-2	5/2/2003
0155	HPCI Group IV Isolation Functional Test	2/13/2003
0193-01	No. 13 250 Vdc Battery Operability Check - Weekly Test (Division I)	4/27/2004; 4/20/2004; 4/13/2004; 5/4/2004
0193-02	NO. 16 250 Vdc Battery Operability Check Division II	11/5/2003, 3/16/2004, 3/23/2004, 4/13/2004
0195-01	No. 13 250 Vdc Battery Operability Check - Quarterly (Division I)	4/13/2004, 4/20/2004, 4/27/2004, 4/4/2004
0197-01	13 250 Vdc Battery Capacity Test	5/8/2003

Surveillances (completed)

Number	Title	Date performed
0197-02	16 250 Vdc Battery Capacity Test	5/9/2003
0255-06-IA-1	HPCI Quarterly Pump and Valve Tests	3/15/2004
0255-06-IA-4	HPCI-31 Torus Suction Check Valve Operability Test	11/26/2001
0255-06-IA-8	HPCI Cold Shutdown Check Valve Test	5/11/2003
0255-06-ID-3	HPCI CV-2065 Air Accumulator Check Valve Leak Rate Test	5/5/2003
0255-12-ID-1	CFW and RWCU Check Valves Closure Tests FW-91-1, FW-91-2, RC-6-1, RC-6-2	5/11/2003
0420-A	HPCI/RCIC Condensate Storage Tanks Level Instrumentation - Two Tank Operation	5/21/2003
1047-03	Operations Reactor Side Checklist Weekly Procedure	7/22/2004
1047-03	Operations Reactor Side Checklist Weekly Procedure	7/29/2004
1057	HPCI Turbine Overspeed Trip Test	12/13/2001, 5/25/2003
1069	HPCI Flow Control System Dynamic Test	2/20/2004
1204	Systems Leakage Check Procedure High Pressure Coolant Injection System	5/28/2003
1282-01	No. 13 250 Vdc Battery Operability Check - Monthly (Division I)	4/27/2004

Technical Specifications

Number	Title	Revision
3.2	Protective Instrumentation	Revision 135a
3.5	Core and Containment Spray/Cooling Systems	Revision 133a
3.9	Auxiliary Electrical Systems	Revision 129
6.5	Procedures	Revision 124

Updated Safety Analysis Report Sections

Number	Title	Revision
6.2	Emergency Core Cooling System (ECCS)	Revision 20
8.5.1	Essential 250 Vdc System	Revision 20
14.7	Loss-0f-Coolant-Accident	Revision 20
14.8	Anticipated Transients Without Scram (ATWS)	Revision 20
Table 14.7-7	High Pressure Coolant Injection System Parameters	Revision 20

Work Orders

Number	Title	Date
WO65	Work Request - Authorization No. 65 - Remove HPCI (Startup) Suction Strainer	7/24/1971
WO0000813	Battery Charger D53 High Voltage Shutdown Problem	3/26/2001
WO0005069	MO-2071 Replacement Actuator E-00Q005	11/28/2001
WO0105396	SR-708 / Visual Examination of Supports and Snubbers	11/16/2001
WO0107710	Megger Feeder Cables to MCC-111	11/2/2001
WO0107711	Megger Feeder Cables to MCC-132	12/3/2001
WO0110258	Replace Portion of MCC-132 Feeder Cable	12/11/2001
WO0200581	PM 4525 (D52 250 Vdc Chargers)	1/31/2002
WO0200587	PM 4525 (D90 250 Vdc Chargers)	1/31/2002
WO0203167	Reseal RCIC Conduit Penetrations as Required	5/13/2003
WO0203176	Seal Conduits to Stop Leakage into RCIC Room	5/12/2003
WO0203474	Perform Internal Inspection of AO-23-18	10/21/2003
WO0203896	Restore Door Gaskets for HPCI 250 Vdc MCC D312	8/14/2002
WO0306032	Electrical Problem in Breaker D313-010	2/6/2003
WO0307710	Improve Fuse Coordination at D33-05	5/15/2003
WO0311108	Take Vibration Readings from HPCI Steam Line	10/21/2004
WO0403535	Repair or Replace MCC 312 Gasket Material	10/21/2004
WO0403587	Remove Plywood from CST Area	10/21/2004
WO0403604	Remove Duct Tape from #13 Battery Room Ducts	10/20/2004

Work Orders

Number	Title	Date
WO9800590	Inspect MO-2068 Internals and Repair	5/1/1998

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
CAP	Corrective Action Program
CCDP	Conditional Core Damage Probability
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
DBD	Design Basis Document
DRS	Division of Reactor Safety
ECCS	Emergency Core Cooling System
EOP	Emergency Operating Procedure
EF	degrees Fahrenheit
GEM	Graphical Evaluation Module
GL	Generic Letter
gpm	Gallons Per Minute
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
INEEL	Idaho National Engineering and Environmental Laboratory
IST	Inservice Testing
LER	Licensee Event Report
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
P&ID	Piping and Instrumentation Diagram
PARS	Publicly Available Records
PCR	Procedure Change Request
PSIA	Pounds Per Square Inch Absolute
RCIC	Reactor Core Isolation Cooling
RPV	Reactor Pressure Vessel
SCR	Setpoint Change Request
SDP	Significance Determination Process
SIL	Service Information Letter
SPAR	Standardized Plant Analysis Risk
TMI	Three Mile Island
TS	Technical Specifications
URI	Unresolved Item
USAR	Updated Safety Analysis Report
Vdc	Volts Direct Current