



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

November 10, 2008

Mr. David A. Christian
President and Chief Nuclear Officer
Dominion Energy Kewaunee, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

**SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT
05000305/2008004**

Dear Mr. Christian:

On September 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Kewaunee Power Station. The enclosed report documents the inspection findings, which were discussed on October 8, 2008, with Mr. S. Scace and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, one self-revealed finding and two NRC-identified findings of very low safety significance were identified. The findings involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Kewaunee Power Station.

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Sincerely,

/RA/

Michael A. Kunowski, Chief
Branch 5
Division of Reactor Projects

Docket No. 50-305
License No. DPR-43

Enclosure: Inspection Report 05000305/2008004
w/Attachment: Supplemental Information

cc w/encl: S. Scace, Site Vice President
M. Wilson, Director, Nuclear Safety and Licensing
C. Funderburk, Director, Nuclear Licensing and
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T. Breene, Manager, Nuclear Licensing
L. Cuoco, Senior Counsel
D. Zellner, Chairman, Town of Carlton
J. Kitsembel, Public Service Commission of Wisconsin
P. Schmidt, State Liaison Officer

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T. Breene, Manager, Nuclear Licensing
L. Cuoco, Senior Counsel
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P. Schmidt, State Liaison Officer

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SUBJECT: KEWAUNEE POWER STATION NRC INTEGRATED INSPECTION REPORT
05000305/2008004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-305
License No: DPR-43

Report No: 05000305/2008004

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: July 1, 2008, through September 30, 2008

Inspectors: S. Burton, Senior Resident Inspector
P. Higgins, Resident Inspector
K. Barclay, Reactor Engineer
J. Cassidy, Senior Health Physicist
D. Dodson, Reactor Engineer
J. Jandovitz, Project Engineer
R. Langstaff, Senior Reactor Inspector

Approved by: Michael A. Kunowski, Chief
Branch 5
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000305/2008004; 07/01/2008 – 09/30/2008; Kewaunee Power Station; Operability Evaluations; and Follow-Up of Events and Notices of Enforcement Discretion.

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

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors during a review of an operability evaluation for degraded concrete support pads under the discharge pressure gauge pedestals for safety-related service water pumps A1 and A2. Specifically, procedure OP-AA-102, "Operability Determination," required that "when a potential degraded or nonconforming condition is identified, action must be taken to discover the facts and confirm the condition of the systems, structures, and components." The licensee's operability evaluation failed to adequately evaluate the degraded condition and failed to confirm that the compensatory actions used as a basis for operability for the pumps were effective. Corrective actions included the engineering department providing a more thorough evaluation of the potential for damage to the gauge isolation valve and associated piping from a falling gauge support including field measurements and piping configuration information.

The finding is greater than minor because the failure to perform an adequate operability evaluation, if left uncorrected, would become a more significant failure to comply with the technical specifications or the licensing basis. The significance of the finding was determined to be of very low safety significance because the inspectors answered "no" to all of the questions for the Mitigation Systems Cornerstone column of Attachment 0609.04, of IMC 0609, "Significance Determination Process." Additionally, the inspectors attributed this issue to the cross-cutting area of problem identification, corrective action program, because the operability evaluation and associated problems were not thoroughly evaluated. [P.1(c)] (Section 1R15)

- Green. A finding of very low safety significance and an associated Severity Level IV, NCV of 10 CFR 50.59 was identified by the inspectors for a failure to perform a 50.59 screening for an alteration during maintenance that existed for more than 90 days. Specifically, the licensee failed to perform a 50.59 screening when spare breakers were removed from safety-related motor control centers (MCCs) and the cubicle were left in an altered state for more than 90 days. Proposed corrective actions include changes to the station housekeeping and work control/planning procedures to better evaluate job site and environmental conditions.

The finding is greater than minor because, if left uncorrected, the failure to perform a 10 CFR 50.59 screening on an alteration/change to the facility would become more significant. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 2 for the Mitigation Systems Cornerstone. Using information provided by the licensee relative to the affected MCCs, the inspectors answered "no" to all of the questions in this cornerstone column; therefore, the finding was determined to be of very low safety significance. Additionally, the inspectors determined that the finding has a cross-cutting aspect in the area of human performance, work control because the licensee failed to appropriately plan work activities by incorporating risk insights gained from operating experience and factor in environmental conditions during planning contingencies for systems, structures, and components anticipated to be in a maintenance condition for extensive periods of time. [H.3(a)] (Section 1R15)

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when control rods automatically stepped inward unexpectedly. Ultimately, it was determined that procedures for operation of the power range nuclear instrument were found to be inadequate for the circumstances. Specifically, procedures for bypassing nuclear instrument N-43 did not contain steps to place control rods in manual when placing a failed instrument in bypass. Corrective actions were taken to replace the inappropriately deleted steps from the associated procedures.

The finding is greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 20, 2007, because the finding affected the procedure quality attribute of the Barrier Integrity Cornerstone of Reactor Safety. Specifically, the failure to either leave the step for placing rods in manual in multiple alarm response procedures, or transferring the step to the common procedure OP-KW-AOP-MISC-001, resulted in a preventable condition which resulted in an unexpected reactivity transient. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 2 for the Barriers Cornerstone. The inspectors answered "no" to all of the questions in this cornerstone column; therefore, the finding was determined to be of very low safety significance. The inspectors concluded that the finding had a cross-cutting aspect in the area of human performance, decision-making, because interdisciplinary reviews performed by station personnel, including the on-site safety review committee, failed to make changes to the various procedures using a systematic process. Additionally, the inspectors reviewed the licensee evaluation of the cause of the issue and found that it agreed with their understanding of the issue. [H.1(a)] (Section 4OA3)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

Kewaunee operated at full power during the months of July, August, and September during the inspection period except for brief downpowers to conduct planned surveillance testing activities and for the following exception:

- The unit had a power reduction to 55 percent on August 2, 2008, for quarterly auxiliary feedwater (AFW) testing and feedwater pump work. The unit returned to full power on August 5, 2008.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- emergency diesel generator "B";
- control room air conditioning – Train "A"; and
- radiation monitoring system alignment following flushing of R-16 and R-20.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Final Safety Analysis Report (FSAR), Technical Specification (TS) requirements, condition reports, and the impact of ongoing work activities on redundant trains of equipment to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On September 3, 2008, the inspectors performed a complete system alignment inspection of the AFW system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line-ups, electrical power availability, system pressure and temperature indications, component labeling, component lubrication, component and equipment cooling, hangers and supports, and operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- turbine building mezzanine and basement;
- turbine building operations floor; and
- safeguards alley, screen house, and emergency diesel generators "A and B."

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

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

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On September 2, 2008, the inspectors observed a crew of licensed operators in the plant's simulator during a licensed operator requalification examination (LRC-08-DY401/A) to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- shield building ventilation, SBV-10A, exhaust servo board;
- residual heat removal; and
- service water (SW)—problem-oriented sample.

The inspectors reviewed events, such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems, and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- residual heat removal with dedicated operator;

- SW strainer maintenance not in risk model;
- traveling water screen B2 and breaker 1-402 added to daily risk;
- emergent risk – severe weather;
- volume control tank level indicator calibration added to daily risk; and
- risk management during AFW pump testing and diesel generator emergent work.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- cracked concrete on SW pump discharge pressure gauge;
- boric acid leakage in containment identified during quarterly walkdown; and
- safety-related breaker cabinets having temporary covers.

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and FSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

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

b. Findings

(i) Operability Evaluation for Degraded Gauge Pedestals Failed to Adequately Evaluate Degraded Conditions Per Procedures

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to adequately evaluate the degraded conditions on SW system support pads and to confirm that the compensatory actions used as a basis for operability for the pumps were effective, as required by procedure OP-AA-102, "Operability Determination".

Discussion: On July 17, 2008, during observation of a routine post-maintenance test on safety-related SW pumps A1 and A2, the inspectors noted that the concrete support pads under the discharge pressure gauge pedestals for these pumps were degraded and that the isolation valves for these pressure gauges were tagged closed. The inspectors also noted that although the isolation valve for discharge pressure gauge on the A1 pump was tagged closed, the discharge pressure gauge was reading approximately 100 pounds per square inch gauge (psig), the discharge pressure of the pump. The inspectors were concerned that these pedestals were no longer seismically qualified and could fall over during a seismic event and cause damage to the pumps or related components. The inspectors were also concerned that the discharge pressure gauge on the A1 pump was not isolated as was indicated by the gauge isolation valve tag. The inspectors reviewed condition report (CR) CR101170 and the associated operability evaluation related to these conditions.

The operability evaluation stated that "Structural Engineering investigated and determined that the support while degraded would not adversely impact safety-related equipment if it fell over, since the potential targets which would be affected are the SW pump casings which are robust enough that the support would not damage them." The inspectors determined that other credible targets existed which could be potentially impacted by the falling supports, including the gauge isolation valve. The inspectors were concerned that if a gauge supply line or the associated isolation valve was damaged by a falling support, the resulting water spray could impact a SW pump motor or other nearby safety-related equipment and render the affected component inoperable. This potential was not addressed in the operability evaluation.

The operability evaluation also stated, "The only damage that would be sustained would be a 3/8 inch line breaking and leaking to the area around the SW Pumps A1 and A2." The operability evaluation went on to state that any leakage through this line would be within the capacity of the screen house sump pumps. The operability evaluation then stated "Since the screen house sump pumps are not powered from a safety-related bus, the root valves for these pressure indicators were tagged closed to prevent leakage if the support fell over and the line broke." Thus, an underlying assumption of the operability evaluation was that the root valves were closed and that leakage would be prevented if the support fell over and the line broke. The inspectors were concerned that this assumption was not valid since the pressure gauge on the A1 pump was reading pump discharge pressure, the isolation could be ineffective, and a break in this line could

cause water spray on the pump motor and render the pump inoperable. These concerns were not addressed in the safety evaluation.

The inspectors brought these concerns to the attention of the Nuclear Oversight Manager and the Shift Technical Adviser. On July 17, 2008, the Nuclear Oversight Manager documented the NRC inspectors concerns in CR103888. On July 18, 2008, the engineering department provided a more thorough evaluation of the potential for damage to the gauge isolation valve and associated piping from a falling gauge support. This evaluation included measurements and piping configuration information and concluded that a falling gauge support would not damage these components. This evaluation was documented in CR103888. Also documented in CR103888 was an action by the maintenance department whereby, on July 18, 2008, the gauge lines downstream of the isolation valve had been vented and only minor leakage was noted past the isolation valve. The condition report therefore concluded that this leakage was not sufficient enough to challenge the operability of any safety-related components. These more extensive evaluations performed by the engineering and maintenance departments were considered adequate by the inspectors to demonstrate operability of the SW system. This information was not included in the initial operability evaluation performed in CR101170.

Assessment: The inspectors concluded that the licensee's inadequate evaluation of the degraded condition and the failure to confirm that the compensatory actions used as a basis for operability for the pumps were effective were contrary to procedure OP-AA-102, Step 3.1.2, and was a performance deficiency.

The inspectors determined that the issue was more than minor because the failure to perform an adequate operability evaluation, if left uncorrected, would lead to a more significant failure to comply with the TSs or the licensing basis. Specifically, procedure OP-AA-102, "Operability Determination," requires that "when a potential degraded or nonconforming condition is identified, action must be taken to discover the facts and confirm the condition of the SSC." Not performing these actions would affect the outcome of the operability determination. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone.

The inspectors determined the finding could be evaluated using the SDP Attachment 0609.04, of IMC 0609, "Significance Determination Process," dated January 20, 2008, and answered "no" to all of the questions for the Mitigation Systems Cornerstone; therefore, the finding was determined to be of very low safety significance (Green).

The finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because the operability evaluation and associated problems were not thoroughly evaluated. Specifically, the initial operability evaluation failed to identify safety-related equipment that could be rendered inoperable by a failure of the gauge supports. The evaluation also failed to verify that compensatory measures established to protect such equipment were adequate when indication existed that provided evidence that called the adequacy of the compensatory measure, isolation of the water as a spray source, into question (P.1(c)).

Enforcement: 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that, "Activities affecting quality, shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the

circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.”

Contrary to this, on July 17, 2008, the licensee failed to perform an operability evaluation in accordance with the requirements of CAP procedure OP-AA-102, “Operability Determination.” The licensee entered this item into its CAP as CR103888. Because this violation was of very low safety significance and was entered into the licensee’s CAP, this violation was being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000305/2008004-01).

(ii) Failure to Perform a 10 CFR Part 50.59 Screening For Alteration During Maintenance That Existed for More Than 90 Days

Introduction: The inspectors identified a finding and associated Severity Level IV NCV of 10 CFR 50.59 “Changes, Tests, and Experiments,” having very low safety significance (Green) because the licensee failed to perform a 50.59 screening when spare breakers were removed from safety-related MCCs and the cubicle was left in an altered state for more than 90 days.

Description: On August 20, 2008, the inspectors identified that several spare 480-volt alternating current MCC breakers had been removed from various safety-related MCCs. The openings in the door from the bucket being removed were covered with a plastic or paper barrier which was held on by duct tape using the station housekeeping procedure. The inspectors noted that the breakers had been removed for approximately 10 months according to the related work order documentation.

The inspectors inquired about any 50.59 evaluations that would have been performed in support of an alteration to the facility, conducted under maintenance, and that was left installed, or at the time of the onset of maintenance will be known to be in effect, for greater than 90 days. The licensee indicated that a 50.59 screening was not performed because they did not believe that the condition was an alteration to the facility.

The inspectors reviewed the licensee’s procedures for conducting 50.59 screenings and noted that GNP-04.04.01, “50.59 Applicability Review and Pre-Screening,” Revision 12, stated “maintenance activities are assumed to return the system, structure, or component (SSC) to its original/as-designed configuration.” Additionally, this procedure stated that, “All temporary modifications require a 50.59 screening unless the change is clearly associated with maintenance and will be in effect for less than 90 days at power conditions.” Licensee procedure DNAP-3004, “Dominion Program for 10 CFR 50.59 and 10 CFR 72.48 – Changes, Tests, and Experiments,” Revision 3, defines a change as “a modification or addition to, or removal from the facility or spent fuel storage cask design or procedures that affects a design function, method of performing or controlling a function, or an evaluation that demonstrates that the intended design function will be accomplished,” and this definition parallels the definition of a change provided in 10 CFR 50.59.

The definition of an alteration provided in NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Revision 3, further clarifies the above definition and states that “performance of maintenance may involve alteration to the facility or procedures for the duration of the maintenance activity. Examples of these alterations include jumpering terminals, lifting leads, placing

temporary lead shielding on pipes and equipment, removal of barriers, and use of temporary blocks, bypasses, scaffolding, and supports.”

The inspectors concluded that placing a temporary cover, using duct tape, over a breaker opening was an alteration similar in nature to removal of barriers or the use of temporary blocks. The inspectors also concluded that the licensee’s definition of maintenance which states that “maintenance activities are assumed to return the SSC to its original/as-designed configuration” further clarifies that a change in *form, fit, or function* “alters” the original/as-designed configuration.

Further, the inspectors noted that the licensee’s application of the definition of a change was limited and that the staff failed to consider other aspects of an alteration/modification during their prior planning and subsequent review of this issue, and that this resulted in a misapplication of the 10 CFR 50.59 process. This narrowly focused perspective and use of the definition of a change limited the licensee’s procedural application of “greater-than-90 day” screening to a subset of items requiring this type of review. Also, procedure WM-AA-100, “Work Management,” Revision 3, cautions that “work orders shall not contain instructions that alter plant/SSC design unless authorized by approved design documents/plant procedures.” Based upon review of these procedures, interviews with licensee management, reviews of related operating experience, and reviews of related industry guidance for maintenance rule and the 10 CFR 50.59 process, the inspectors concluded that the licensee failed to appropriately plan work activities. Specifically, risk insights gained from operating experience and potential consequences of environmental conditions were not factored into planning contingencies for SSCs anticipated to be in a maintenance condition for extensive periods of time and were not incorporated into the work plan.

During the inspectors’ review of industry operating experience, the inspectors identified a condition at the Monticello Nuclear Plant where an identical alteration resulted in an MCC losing its environmental qualification (EQ). The licensee’s review of this operating experience addressed the EQ aspects but did not address the aspect of the change being an alteration. The inspectors asked the licensee if the same exact change on an EQ MCC was an alteration, why was it not an alteration on a non-EQ MCC. The licensee indicated they believed that the issue did not apply because the related MCCs were not EQ and had been prior evaluated as non-EQ and if a screening were performed no 50.59 would be required. The inspectors were not able to reconcile the licensee’s difference in applications of the definition of an alteration. Additionally, the licensee was unable to provide any historical records where this type of temporary modification/alteration was generically evaluated and screened. The inspectors also concluded that over time, tape installed on breakers could degrade and introduce foreign material into the MCC, or unspecified barriers installed on MCC may result in the loss of seismic qualification for the MCC or adjacent equipment. For these reasons the inspectors concluded that alterations to the safety-related MCCs were not screened using the 50.59 process, regardless of the licensee’s perceived outcome of a screening had one been performed.

The industry guidance contained in Nuclear Energy Institute NEI 96-07, Revision 1, Section 4.1.2, states that “maintenance activities are activities that restore SSCs to their as-designed condition.” Further stated is that “maintenance activities include troubleshooting, calibration, refurbishment, maintenance related testing, identical replacements, housekeeping and similar activities that do not permanently alter the

design, performance, requirements, operation, or control of SSCs.” Additionally, with respect to maintenance procedures, the guidance makes the following statement, “. . . like the maintenance activities themselves, changes to procedures for performing maintenance do not permanently alter the design, performance, requirements, operation or control of SSCs.” This section also states that, “A temporary alteration in support of the maintenance is expected to be in effect during at-power operations for more than 90 days. In this case, 10 CFR 50.59 would be applied to the temporary alteration prior to implementation in the same manner as a permanent change.” The inspectors concluded that the intent of this last requirement was to assess de facto plant changes made under the auspices of maintenance, and that 90 days was the period at which the maintenance became a de facto change. Because, the foreign material exclusion barriers constituted maintenance under the above guidance; that the configuration altered the design of the MCC for the duration of the maintenance; that, if the altered configuration were to be made permanent it would constitute a modification/change; and that the configuration was in effect for greater than 90 days; the inspectors concluded that a 10 CFR 50.59 was warranted, and the above facts further supported their conclusion that a screening was required.

Analysis: The inspectors determined that the failure to provide an adequate evaluation to support alterations to the facility in accordance with 10 CFR 50.59 was a performance deficiency warranting a significance evaluation. The inspectors determined the performance deficiency was within the licensee’s ability to foresee and correct because the error could have been identified during the independent or operations’ review.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process. As described in Supplement I of the Enforcement Policy, to determine the severity of a 10 CFR 50.59 violation, the underlying technical issue was evaluated under the SDP. In this case, the underlying technical issue affected the Mitigating Systems Cornerstone. This finding was determined to be more than minor because, if left uncorrected, the failure to perform a 10 CFR 50.59 screening on alteration/change to the facility would become more significant.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” Table 2 for the Mitigation Systems Cornerstone. Using information provided by the licensee relative to the affected MCCs, the inspectors answered “no” to all of the questions in this cornerstone column; therefore, the finding was determined to be of very low safety significance (Green).

The inspectors also determined that the finding has a cross-cutting aspect in the area of human performance, work control (H.3(a)), because the licensee failed to appropriately plan work activities by incorporating risk insights gained from operating experience and factor in environmental conditions during planning contingencies for SSCs anticipated to be in a maintenance condition for extensive periods of time. Specifically, risk insights and contingency planning activities that could have been gained from similar operating experience and planning requirements suggested by procedures were not applied during the work planning process.

Enforcement: 10 CFR 50.59(d)(1) requires, in part, that the licensee maintain records of changes in the facility, of changes in procedures, and of tests and experiments. These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment.

Contrary to this, from October 2007 through August 20, 2008, the licensee failed to perform a written 10 CFR 50.59 evaluation which provided an acceptable bases for alterations made to multiple safety-related MCCs that were performed under maintenance and left in effect for greater than 90 days. The violation was determined to be of very low safety significance; therefore, this violation of 10 CFR 50.59 was classified as a Severity Level IV violation. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's corrective action program (CR115516), this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2008004-02).

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification:

- temporary shielding for sample sink planned for greater than 90 days.

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the FSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modification with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- replacement of the lube water regulator for SW pumps A1 and A2; and
- control room air conditioner train "A" fan belt replacement.

These activities were selected based upon the SSCs ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written, in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the FSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

This inspection constituted two post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- surveillance procedure on bus 5 loss of voltage relays;
- surveillance procedure on SW header "B" pressure switch;
- train "B" residual heat removal pump and valve test;

- surveillance testing of containment isolation valve RC423 reactor coolant hot leg sampling isolation; and
- reactor coolant system leak rate surveillance procedure.

The inspectors observed in plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as-left setpoints were within required ranges; calibration frequencies were in accordance with TSs, the FSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP. Documents reviewed are listed in the Attachment.

This inspection constituted two routine surveillance testing samples, one inservice testing sample, one reactor coolant system leak detection inspection sample, and one containment isolation valve sample as defined in IP 71111.22, sections -02 and -05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2PS3 Radiological Environmental Monitoring Program And Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the Radiological Environmental Monitoring Program (REMP) was implemented as required by TS and the Off-Site Dose Calculation Manual (ODCM). The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and analysis of data. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, licensee event reports, and interlaboratory comparison program results. The inspectors reviewed the FSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c).

This inspection constitutes one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down >30 percent of the air sampling stations and approximately 10 percent of the thermoluminescence dosimeter (TLD) monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition.

This inspection constitutes one sample as defined in IP 71122.03-5.

The inspectors observed the collection and preparation of a variety of environmental samples (e.g., ground and surface water, milk, vegetation, sediment, and soil) and verified that environmental sampling was representative of the release pathways, as specified in the ODCM, and that sampling techniques were in accordance with procedures.

This inspection constitutes one sample as defined in IP 71122.03-5.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the FSAR, NRC Safety

Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify if there were any line loss differences.

This inspection constitutes one sample as defined in IP 71122.03-5.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions. The inspectors also conducted a review of the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection (LLDs)). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material.

This inspection constitutes one sample as defined in IP 71122.03-5.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

This inspection constitutes one sample as defined in IP 71122.03-5.

The inspectors reviewed the calibration and maintenance records for five air samplers. The inspectors also reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to TS/ODCM were utilized for counting samples (i.e., the TS/ODCM required LLDs). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance.

The inspectors reviewed the results of the REMP sample vendor's quality control program, including the interlaboratory comparison program, to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations the licensee performed on the vendor's program. The inspectors reviewed audit results of the program to determine whether the licensee met the TS/ODCM requirements.

This inspection constitutes one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, licensee event reports, and special reports related to the REMP since the last inspection to determine if identified problems were entered into the CAP for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors reviewed corrective action reports concerning environmental monitoring, sample analysis, or meteorological monitoring instrumentation since the previous inspection, interviewed staff, and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

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

This inspection constitutes one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

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

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered Into the CAP

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root

causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment.

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

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-Up Inspection: Technical Support Center (TSC) Diesel Fuel Oil Failure

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting a fuel oil leak on the TSC diesel generator. Because the TSC diesel is designated as risk-significant the inspectors elected to assess the impact of the fuel oil failure identified on a Swagelok® brand fitting. The inspectors found that the failure was not associated with a performance deficiency because this specific equipment had been prior monitored and had demonstrated no leakage prior to the surveillance test in which it failed. The inspectors reviewed the proposed corrective actions, including a modification to stabilize the associated gauge, and the maintenance records and found the issue to be adequately addressed.

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

b. Findings

No findings of significance were identified.

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

.1 Response To Unplanned Or Non-Routine Events

a. Inspection Scope

The inspectors reviewed the plant's response to the following unplanned or non-routine events:

- SW leak in pipe from main generator coolers;
- downpower to repair "B" feedwater pump;
- unplanned refueling water storage tank high temperature;
- reactor coolant system pressure transient and generator load loss due to grid frequency fluctuation;
- CETNA inspection in containment for leakage following refueling outage;
- main auxiliary transformer low voltage to transformer auxiliaries;
- SW leak in containment fan coil unit "B";
- nuclear instrument N-43 failed downscale;
- water on floor in TSC;
- containment fan cooling unit two-phase flow discrepancies; and
- emergency diesel generator output breaker failed to close during surveillance procedure.

This event follow-up review constituted 11 samples as defined in IP 71153-05.

b. Findings

Inadequate Procedure Results In Unplanned Control Rod Motion

Introduction: A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when it was determined that procedures for operation of the power range nuclear instrument were found to be inadequate and the control rods automatically stepped inward unexpectedly. Specifically, procedures for bypassing nuclear instrument N-43 did not contain steps to place control rods in manual when placing a failed instrument in bypass.

Description: On September 25, 2008, during alignments, which were being performed for a failure of power range nuclear instrument, N-43, the operators placed the "power mismatch switch" to the "N-43 position" and control rods unexpectedly starting stepping inward automatically. The operators verified that there was no secondary transient in progress, and per procedure OP-KW-AOP-MISC-001, "Response to Instrument Failure," placed the control rod bank selector switch to manual to stop the transient.

The inspectors reviewed the cause of the transient and found that multiple procedural revisions performed in 2007 and 2008 resulted in the deletion of steps to place control rods in manual during a failed condition. The licensee concluded that the deletion of the

related steps was caused by a lack of understanding of the full intent of the procedure and related requirements.

Analysis: The inspectors determined that the inadvertent control rod motion because of an inadequate procedure was a performance deficiency. Specifically, procedure OP-KW-AOP-MISC-001 for bypassing nuclear instrument N-43 did not contain steps to place control rods in manual when bypassing a failed instrument.

The finding was determined to be greater than minor because the finding affected the procedure quality attribute of the Barrier Integrity Cornerstone of Reactor Safety. Specifically, the failure to either leave the step for placing rods in manual in multiple alarm response procedures, or transferring the step to the common procedure OP-KW-AOP-MISC-001, resulted in a preventable condition which resulted in an unexpected reactivity transient.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 2 for the Barriers Cornerstone. The inspectors answered no to all of the questions in this cornerstone column; therefore the finding was determined to be of very low safety significance (Green).

This finding had a cross-cutting aspect in the area of human performance, decision-making (H.1(a)), because interdisciplinary reviews performed by station personnel, including the on-site safety review committee, failed to make changes to the various procedures using a systematic process. Additionally, the inspectors reviewed the licensee evaluation of the cause of the issue and found that it agreed with their understanding of the issue.

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances.

Contrary to the above, during 2007 and 2008, the licensee failed to ensure procedures were of a type appropriate to the circumstances during procedural upgrades performed to multiple procedures. Specifically, the licensee deleted steps to place control rods in manual from multiple procedures which resulted in procedural inadequacies that ultimately resulted in an unplanned reactivity transient. Because this violation was of very low safety significance and it was entered into the licensee's CAP as CR 108304, "Rod Motion During OP-KW-AOP-MISC-001 Performance," this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2008-004-03).

40A6 Management Meetings

.1 Exit Meeting Summary

On October 8, 2008, the inspectors presented the inspection results to Mr. S. Scace, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Radioactive Environmental Monitoring Program with Site Vice-President, S. Scace, on July 18, 2008.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Scace, Site Vice-President
M. Crist, Plant Manager
R. Adams, Health Physicist
L. Armstrong, Site Engineering Director
P. Blasioli, Organizational Effectiveness Director
T. Breene, Nuclear Licensing Manager
J. Egdorf, Emergency Preparedness Supervisor
W. Henry, Maintenance Manager
M. Hovis, Radiation Protection Supervisor
J. Kreeger, System Engineer
B. Lembeck, Radiation Protection Supervisor
A. Maly, Health Physicist
J. Madden, Nuclear Oversight Manager
C. Olson, Radiation Protection Supervisor
K. Peveler, Manager Engineering Programs
J. Ruttar, Operations Manager
P. Serra, Emergency Preparedness Fleet Manager
D. Shannon, Health Physics Operations Supervisor
B. Steckler, Radiation Protection Supervisor
S. Wood, Emergency Preparedness Manager
D. Allen, Training

Nuclear Regulatory Commission

M. Kunowski, Chief, Division of Reactor Projects, Branch 5

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000305/2008004-01	NCV	Operability Evaluation for Degraded Pedestals Failed to Adequately Evaluate Degraded Conditions Per Procedures (Section 1R15)
05000305/2008004-02	NCV	Failure to Perform a 10 CFR 50.59 Screening For Alteration During Maintenance That Existed for More Than 90 Days (Section 1R15)
05000305/2008004-03	NCV	Inadequate Procedure Results In Unplanned Control Rod Motion (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment

- CR094193; KEWA – Establish Auxiliary Feedwater Pump Low Discharge Pressure Switch Reset Pressure Setpoint
- CR106482; KEWA – PS – 15537J Found Out of Tolerance
- N-ACC-25-CL; Control Room Air Conditioning System Prestartup Checklist; Revision 35
- N-FW-05B; Auxiliary Feedwater System; Revision 46
- N-FW-05B-CL; Auxiliary Feedwater System Prestartup Checklist; Revision 42
- N-RM-45; Radiation Monitoring System; Revision 52
- OP-KW-NCL-DGM-001B; Diesel Generator “B” Prestartup Checklist; Revision 1
- OPERM-588; Flow Diagram Air Conditioning Cooling Water Piping; Revision M
- OPERM-603; Flow Diagram Air Conditioning Administration Building and Control Room; Revision BC
- OPERM-606; Flow Diagram Air Conditioning Cooling Water Piping; Revision BU
- SBDB-KPS-AFW; System Design Basis Document for Auxiliary Feedwater System Kewaunee Power Station; Revision 2

1R05 Fire Protection

- Fire Zone SC-70A and SC-70B; Screen House and Tunnel Drawing; Revision B
- Fire Zone TU-90 and TU-91; 1A Diesel Generator and Diesel Generator Day Tank Rooms Drawing; Revision C
- Fire Zone TU-92 and TU-93; 1B Diesel Generator and Diesel Generator Day Tank Rooms Drawing; Revision C
- Fire Zone TU-95A; 480V Switchgear Bus 1-51 and 1-52 Room Drawing; Revision C
- Fire Zone Tu-95B and TU-95C; 480V Switchgear Bus 1-61 and 1-62 Room and Auxiliary Feedwater Pump Area Drawing; Revision D
- Fire Zone TU-22 and TU-96; Turbine Building Basement Drawing; Revision F
- Fire Zone TU-22; Turbine Building Mezzanine Drawing; Revision D
- Fire Zone TU-22; Turbine Building - Operating Floor Drawing; Revision D

1R11 Licensed Operator Requalification Program

- LRC-08-DY401; Licensed Operator Requalification Dynamic Simulator Exercise Evaluation; Revision A
- NTP-16; Licensed Operator Requalification Program Exams; Revision 2

1R12 Maintenance Rule Implementation

- ACE 511; Shield Building Ventilation (SBV) Train A Hydraulic Pack (Hydropac) Was Found Cycling Every 30 Seconds in June, 2007
- ACE 013827; Residual Heat Removal Out-of-Service Time When Defueled

- CAP022536; Residual Heat Removal Pump “B” Suction Pressure Indicator Has Suspect Indication
- CAP042412; Residual Heat Removal Pump “A” Vibration Reading in Alert Range
- CAP101932; Residual Heat Removal Maintenance Rule Performance Criteria
- CAP103337; Perform Maintenance Rule (a)(1) Evaluation on Residual Heat Removal Train “B”
- CR104265; Service Water Unavailability Error
- CR104398; NRC Concern About Adequacy of Probabilistic Risk Assessment Input to Maintenance Rule Availability
- CR106929; SBV Train “A” S/ CV 35109 Led Found On, When Normally Is Off When Fan Is Off
- CR107001; SBV Train “A” Controller 48081 Manual Output and High Limit Issues
- MRE000720; Primary System to Evaluate Regulator 3610013 Found Out of Calibration
- MRE006565; Primary Systems for Residual Heat Removal Pump Pit “A” Fan Coil Unit Leak
- MRE006840; Maintenance Rule Evaluation for SBV Train “A” S/ CV
- NF-AA-PRA-101-3060; Probabilistic Risk Assessment Procedures and Methods: Maintenance Rule Performance Criteria; Revision 0
- WO KW06-010465; Rebuild Snubber RHR-H12A
- WO KW06-010466; Rebuild Snubber RHR-H12B
- WO KW100375143; Wrong Rupture Disc Installed in RHR-32A-3
- eSOMS Station Narrative Logs; May, 2008
- eSOMS Station Narrative Logs; August 25 and 26, 2008
- Index of Residual Heat Removal Condition Reports; January 1, 2006 to April 16, 2008
- Kewaunee Power Station Work Order Overview Report – System 34; May 1, 2008
- Maintenance Rule Count Demand Starts; May 2008
- Maintenance Rule Scoping Questions; System 34 – Residual Heat Removal; May 1, 2008
- Maintenance Rule System Basis; Residual Heat Removal; Revision 6
- Residual Heat Removal System Health Reports 2006 and 2007
- Residual Heat Removal System Performance Criteria Sheet; Revision 3
- Residual Heat Removal System Report Data – April 2006 to March 2008

1R13 Maintenance Risk Assessments and Emergent Work Control

- CMP-02-06; Service Water Strainer Overhaul; Revision C
- CR103562; Unexpected Equipment Wear Found During Gear Box Replacement
- CR106059; Engine Start Relay Surge Suppressor Integrity Check Outside Normal Band
- CR106303; SW301A Service Water from Diesel Generator 1A Heat Exchanger, Open Stroke Time Increase
- CR106401; Regulator Supplying SW-301A Found Out of Specification High
- CR106429; SW-301A Torque Exceeding Acceptance Value in ICP-02-33 with Positive Margin
- CR108628; Emergency Core Cooling System Unavailability May Not Be Properly Counted During Containment Sump “B” Water Level Verification
- CR112049; LOR-TP Re-activation Procedure Is Not up to Fleet Standards
- ICP-02-33; SW-301A Service Water from Diesel Generator 1A Heat Exchanger Control Valve Test; Revision 5
- DCR 3507; Diesel Circuitry Surge Suppression; Revision 1
- KW05-010943; Replace the Gearbox on the 1A1 Service Water Strainer
- KW100417343; Replace Air Regulator SA-2010A
- N-SW-02; Service Water System; Revision 42
- OP-KW-ORT-SI-001A; Operations Routine Test; Revision 3
- OP-KW-OSP-DGE-003A; ESR Surge Suppressor Integrity; Revision 4
- SP-10-111-1-2; Diesel Generator “A” Data Sheet; Revision 8
- WO 04-005676-000; Test Circuit for Diesel Circuit Surge Suppression

- Condition Reports Pending Review Log; August 20, 2008
- Control Room Log; Night Shift; August 18, 2008
- Control Room Log; Night Shift; August 19, 2008
- Emergent Work Risk Evaluation; Severe Thunderstorm Watch; July 17, 2008
- Emergent Work Risk Evaluation; Added Breaker BRB104-21 to Scheduled Work Detail; July 21, 2008
- Emergent Work Risk Evaluation; Include Components of SP-35-041 in the Probable Risk Assessment Work Week Model as Unavailable from 7/29 to 7/31/08; July 26, 2008
- Engineering Log; August 19, 22008
- Engineering Log; June 25, 2008
- Engineering Log; June 26, 2008
- Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Data; July 14-21, 2008
- Work Order Logs; August 19-22, 2008

1R15 Operability Evaluations

- ACE013893; Lack of Rigor While Documenting Operability when System or Component Changes
- CA081432; Review NRC Resident Inspection Questions of Spare Starter Bucket Removed and Brief Resident Inspector
- CA085804; Review Recommendations and, If Necessary, Create Appropriate Correct Actions
- CAP015105; Instrument Stand Supporting SW 1B2 Discharge Pressure Gauge Missing Anchor Bolt and Remaining Anchor Bolts Corroding
- CR 099300; Standing Water and Instrument Stand Corrosion, SW-1B1 and SW-1B2
- CR101165; Concrete Support Pad Under Discharge Pressure Gauge for Service Water Pump A-1 Degraded
- CR101170; Concrete Support Pad Under Discharge Pressure Gauge for Service Water Pump A-2 Degraded
- CR101250; APC for Service Water Pump A1 and A2 Discharge Pressure Gauge Supports
- CR103888; NRC Questions Thoroughness of Operability Assessment of Isolated Service Water Discharge Performance Indicators
- CR106153; NRC Resident Inspector Questions Spare Starter Bucket Removed from MCC-62D for 90 Days
- CR106232; Containment Fan Cooling Unit "B" Service Water Leak
- CR112339; Guidance Needed for Evaluation of Excess Moisture Events
- DNAP-3004; Dominion Program for 10 CFR 50.59 and 10 CFR 72.48 – Changes, Tests, and Experiments
- GNP-04.04.01; 50.59 Applicability Review and Pre-Screening; Revision 12
- KW07-011111; CR019629 – Please Remove the GE FVNR1 Starters from the Following QA-1 MCC
- OE 14299; Preliminary Evaluation of an Environmentally Qualified Motor Control Center (MCC) Has Found the MCC To Be in an Unqualified Configuration
- Calculation No. C11542; Structural Qualification for Service Water 1B2 Pump Pressure Instrument Stand with Missing Anchor Bolt; Revision 0
- Control Room Log; July 21, 2008
- Engineering Log; July 18, 2008
- General Electric Instructions - Installation and Maintenance of 7700 Line Motor Control Center
- General Electric GEF-4629B 7700 Line Motor Control Center Renewal Parts Bulletin
- General Electric 7700 Line Motor Control Center Unit Parts Listing

1R18 Plant Modifications

- CR103605; Temporary Shielding Package 08-069 Requires 50.59 Pre-Screening
- GNP-01.23.04; ALARA Program Implementation; Revision 8
- Evaluation of Radiological Shielding Package 2008-069 Data; May 8, 2008

1R19 Post-Maintenance Testing

- KW100382477; Train "A" CRAC Fan Belt Loose. Replace Belt and Adjust Belt Tension
- OP-KW-NOP-ACC-001; Control Room Air Conditioning System; Revision 2
- OP-KW-ORT-SW-002A; Service Water Pump Train "A" Backup Bearing Lube Water Supply Check
- PMP-25-09; ACC – Control Room Air Conditioning Mechanical Inspection and Maintenance; Revision 4
- Last Measurement Report; Machine 1A CR A/C Fan Unit; July 30, 2008

1R22 Surveillance Testing

- CR104499; Pressure Switch 15524J Found Out of Tolerance Low
- MA-KW-ESP-EHV-002A; Bus 1-5 Loss of Voltage Relay Test; Revision 3
- MA-KW-ISP-SW-001B; Service Water Header "B" Pressure Switch Calibration; Revision 1
- OP-KW-OSP-RCS-001; Reactor Coolant System Leak Rate Check; Revision 1
- SP-34-099B; Train "B" Residual Heat Removal Pump and Valve Test – IST; Revision 14
- SP-55-167-5B; Miscellaneous Systems Valve Timing Tests – Train "B"; Revision 4

2PS3 Radiological Environmental Monitoring Program And Radioactive Material Control Program

- 2006 Annual Environmental Monitoring Report
- 2007 Annual Environmental Monitoring Report
- Radiac Calibration Worksheet; RAS-2; Serial No. AS-01; September 25, 2007
- Radiac Calibration Worksheet; RAS-2; Serial No. AS-02; September 12, 2007
- Radiac Calibration Worksheet; RAS-2; Serial No. AS-03; September 21, 2007
- Radiac Calibration Worksheet; RAS-2; Serial No. AS-04; September 13, 2007
- Radiac Calibration Worksheet; RAS-2; Serial No. AS-05; September 18, 2007
- RP-KW-007-063; Instrument Calibration Procedure – Air Sample Pumps: RAS1, RAS2, RAP-1, RAP1Q, and RAP3; Revision 0
- Radiological Environmental Monitoring Manual (REMM); Revision 12
- Radiological Environmental Monitoring Manual (REMM); Revision 13
- Offsite Dose Calculation Manual (ODCM); Revision 11
- Land Use Census Worksheet; dated September 5, 2007
- Audit 07-10: ODCM/REMP/EPP; dated February 4, 2008
- ICP-63-31; MET – Primary Tower Sensor Replacement RTD and Processor Calibrations
- ICP-63-30; MET – Backup Tower Sensor Replacement RTD and Processor Calibrations
- Work Order KW100404749; Loss of Both Primary and Backup Met Tower Data; July 12, 2008
- CR103894; Condition Report on Met Towers Not Screened Properly
- CR103883; ODCM/REMM Sample Locations
- CR103879; Annual Environmental Monitoring Report Reviewed with Less Than Adequate Rigor
- CR103864; Met Tower Equipment Failures Due to Thunderstorm
- CR103808; Excessive Plant Growth at Location K-7

4OA1 Performance Indicator Verification

- CR099666; HRS-2A2 Has Electrohydraulic Leak
- OP-KW-MOP-MS-003; Removal and Return to Service of Main Turbine Reheat and Intercept Stop Valves; Revision 0
- 50.59 Pre-Screening of OP-KW-MOP-MS-003; Removal and Return to Service of Main Turbine Reheat and Intercept Stop Valves; Revision 0
- Annunciator Number 47055-V; Electrohydraulic Fluid Level Abnormal
- CDE Occurrence Record; Power Change; August 26, 2008
- Control Room Log; May 24 – 26, 2008
- Engineering Log; May 22 – 23, 2008
- Licensee Performance Indicator Report Package and References, LERs, Corrective Actions, and Operator Logs
- eSOMS Station Narrative Logs; May 23 - 27, 2008
- Unplanned Power Changes per 7000 Critical Hours Quarterly Record Data

4OA2 Problem Identification and Resolution

- CR101137; Fuel Oil Leak Has Increased on TSC Diesel
- MRE006967; Leaking Swagelok® Union on TSC Diesel

4OA3 Follow-up of Events and Notices of Enforcement Discretion

- A-MI-87; Bistable Tripping for Failed Reactor Protection or Safeguards Instrumentation; Revision U
- A-NI-48; Abnormal Nuclear Instrumentation; Revisions 29 and AB
- ACE013976; Rod Motion During OP-KW-AOP-MISC-001 Performance
- CA077168; Update Drawings and Procedures to Include TC405XX Bank D Rod Withdrawal Limit Rod Stop Relay
- CA079674; Track Removal of Standing Order 08-27
- CR102166; Refueling Water Storage Tank Inleakage Higher than Desired
- CR104246; Service Water Leak in the Area of SW-2603
- CR105121; Unexpected Control Room Alarm 47043-C
- CR105385; Bottle Found in Containment During Walkdown
- CR105422; Packing Leak on RHR-1A
- CR105423; Packing Leak on SI-24036-1
- CR105424; Packing Leak on SW-901B
- CR105425; Packing Leak on RHR-11
- CR105426; Packing Leak on CC-609A
- CR106059; Engine Start Relay Surge Suppressor Integrity Check Outside Normal Band
- CR106141; Service Water Leak Identified on Containment Fan Coil Unit "B"
- CR106189; Provide Clarification on Application of TS 3.6.b.3.C
- CR 106232; Documentation of Events Related to the Containment Fan Coil Unit "B" Tube Leak
- CR107783; Increasing Grid Frequency Caused Plant Perturbation and Inward Rod Motion
- CR108733; Grid Perturbation Causes Plant Transient
- CR109694; TSC Sanitary Sump Level High Due to Stuck Float
- CR109979; Generic Letter 96-06 Containment Fan Coil Unit Two Phase Flow Issues
- CR110135; Breaker 1-603 Emergency Diesel Generator "B" to Bus 6 Failed Close
- CR110155; Train "B" Automatic Load Sequencer Test Timing Out of Specification
- DNAP-1909; Ground Fault Circuit Interrupter Program; Revision 9

- GNP-01.53.01; Electrical Safety; Revision 10
- ICP-47-03; RCP – Power Load Mismatch Loop Calibration; Revision P
- ODM000056; Evaluate Refueling Water Storage Tank Inleakage
- OP-AA-102; Operability Determination; Revision 0
- OP-KW-AOP-EG-001; Abnormal Grid Conditions; Revision 0
- OP-KW-AOP-EG-001; Abnormal Grid Conditions; Revision 1
- OP-KW-AOP-MISC-001; Response to Instrument Failure; Revisions 0,1, 2, 3, 4, 5, 6
- 50.59 Applicability Review of OP-KW-AOP-MISC-001; Response to Instrument Failure; Revision 0
- OP-KW-ARP-47031-M; Power Range High Flux; Revision 0
- OP-KW-ARP-47032-J; Power Range Negative Rate Channel Alert; Revision 0
- OP-KW-ARP-47032-K; Power Range Positive Rate Channel Alert; Revision 0
- OP-KW-ARP-47032-L; Upper Quadrant Power Tilt Ratio High; Revision 0
- OP-KW-ARP-47032-M; Lower Quadrant Power Tilt Ratio High; Revision 0
- OP-KW-ARP-47033-J; Power Range Detector Voltage Low; Revision 0
- OP-KW-ARP-47033-K; Power Range Channel Deviation; Revision 0
- OP-KW-OSP-RCS-001; Reactor Coolant System Leak Rate Check
- RAS030; Calculations for the Auxiliary Building Mezzanine Area, Including the Component Cooling Water “B” Pump Room, Were Found To Be Nonconservative and the “B” Mezzanine Fan Coil Unit had Low Airflow
- RTO-OP-003-R11; Communication and Mitigation Protocols for Nuclear Plant/Electric System Interfaces
- TMod 2008-04; Service Water Pipe Leak Repair
- 50.59 Applicability Review of TMod 2008-04; July 24, 2008
- TOP-20GN-000010B; Voltage/Reactive and AVR Control at Generation Interconnections
- Containment Inspection Checklist; August 6, 2008
- Control Room Log; September 15, 2008
- Control Room Log; September 18, 2008
- Cycle 29 Reactor Coolant System Leakrate Data
- Dominion Memorandum; “At Risk” Approval for Installation of TMod 2008-04; July 23, 2008
- Dominion Memorandum; Kewaunee Power Station; Generic Letter-96-06 Analysis and Power Uprate (CR109979); September 19, 2008
- Dominion Letter; Response to Generic Letter 2006-02; April 3, 2006
- Dominion Letter; Response to Request for Additional Information; Generic Letter 2006-02; January 30, 2007
- Drawing E-1038; Control Schematic 4160V Breaker 1-504; Revision AM
- Drawing GEI-44233; Figure 4; Typical External connections for Motor Protection Using Type IAC66K Relays
- Drawing GEI-44233; Figure 6; Cross Section of Drawout Case Showing Position of Auxiliary Brush
- Drawing XK100-552; Instrument Block Diagram, Temperature Diff – TAVC Rod Insert; Revision 1M
- Drawing XK-100-553; Instrument Block Diagram – Rod Control RR109 (RSC) Layout; Revision 1N
- eSOMS Station Narrative Logs; August 3, 2008
- eSOMS Station Narrative Logs; August 31, and September 1, 2008
- eSOMS Station Narrative Logs; September 9, 2008
- Generic Letter 96-06; Containment Fan Coil Unit Two Phase Flow
- NRC Generic Letter 2006-02; Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power; February 2, 2006
- NUREG-1022; Event Reporting Guidelines; 10 CFR 50.72 and 10 CFR 50.73; Revision 2

- PJM Information to Support Utilities Response to Generic Letter 2006-02; January 12, 2007
- TSC Water Intrusion Time Line; September 16, 2008
- Kewaunee Power Station Updated Safety Analysis Report 5.2-58; Table 5.2-3; Reactor Containment Vessel Penetrations; Revision 20
- Kewaunee Power Station Updated Safety Analysis Report 5.2-57; Table 5.2-3; Reactor Containment Vessel Penetrations; Revision 20
- National Institute for Occupational Safety and Health; Electrical Safety; Safety and Health for Electrical Trades
- Safety Policy #1910.301; Electrical Related Safe Work Practices
- Schematic Diagram 6055D88; Figure 11-9; Flux Deviation and Miscellaneous Control and Indication Drawer
- State of Wisconsin Sample Health and Safety Compliance Checklist
- U.S. Department of Labor; Occupational Safety and Health Administration; Controlling Electrical Hazards

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects
EQ	Environmental Qualification
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
LLDs	Lower Limits of Detection
MCC	Motor Control Center
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODCM	Off-Site Dose Calculation Manual
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post-Maintenance Testing
psig	Pounds Per Square Inch Gauge
REMP	Radiological Environmental Monitoring Program
SDP	Significance Determination Process
SSC	System, Structure, and Component
SW	Service Water
TLD	Thermoluminescent Dosimeter
TS	Technical Specification
TSC	Technical Support Center
WO	Work Order