

August 11, 2005

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

SUBJECT: KEWAUNEE POWER STATION  
NRC INTEGRATED INSPECTION REPORT 05000305/2005008

Dear Mr. Christian:

On June 30, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Power Station. The enclosed integrated inspection report documents the inspection findings which were discussed on July 11, 2005, with Mr. Gaffney 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, three NRC-identified findings of very low safety significance, two of which involved violations of NRC requirements were identified. However, because these violations were of very low safety significance and because the issues were entered into the licensee's corrective action program, the NRC is treating these findings as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

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

D. Christian

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

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

Sincerely,

*/RA/*

Thomas Kozak  
Team Leader - TSS  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000305/2005008  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-305

License No: DPR-43

Report No: 05000305/2005008

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: N 490 Highway 42  
Kewaunee, WI 54216

Dates: April 1 through June 30, 2005

Inspectors: S. Burton, Senior Resident Inspector  
S. Ray, Senior Resident Inspector (acting)  
P. Higgins, Resident Inspector  
L. Haeg, Resident Inspector (acting)  
J. Giessner, Reactor Engineer  
W. Slawinski, Regional Senior Radiation Specialist

Observers: None

Approved by: T. Kozak  
Team Leader - TSS  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000305/2005008; 04/01/2005 - 06/30/2005; Kewanee Nuclear Power Plant. Routine Integrated Report. Adverse Weather Protection, Fire Protection, and Maintenance Risk Assessments and Emergent Work Control.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections of radiation protection. The inspections were conducted by Region III reactor inspectors, a regional senior radiation specialist, and the resident inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. Inspector-Identified and Self-Revealed Findings

#### Cornerstone: Initiating Events

- Green. A finding of very low safety significance was identified by the inspectors for failure to control loose materials in the protected area and substation. No violation of NRC requirements occurred. Once identified, the licensee initiated a condition report (CAP) to develop a surveillance procedure to remove loose materials before summer months when potential adverse weather was possible.

The issue was more than minor because, if left uncontrolled, the loose items in the protected area and substation would become a more significant safety concern. The issue was of very low safety significance because the finding did not contribute to the likelihood of a primary or secondary system loss of coolant accident initiator; the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and the finding did not increase the likelihood of a fire or internal or external flooding. The issue was not considered a violation of regulatory requirements because it did not affect safety-related structures, systems, or components. (Section 1R01)

- Green. A finding of very low safety significance was identified by the inspectors for a Non-Cited Violation (NCV) of Title 10 CFR Part 50.65(a)(4). The licensee failed to adequately assess shutdown risk during degraded grid conditions. Once identified, the licensee initiated a CAP to modify shutdown safety assessment and operating procedures to include grid conditions in risk assessments.

The finding was more than minor because the licensee's risk assessment had incorrect assumptions that had the potential to change the outcome of the assessment. The inspectors determined that the finding could not be evaluated using the Significance Determination Process because the finding was associated with an inadequate qualitative risk assessment. The inspectors determined that this issue was of very low safety significance which was verified by the regional branch chief. (Section 1R13)

### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance was identified by the inspectors for a NCV of Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." The licensee failed to consider the impact on plant fire protection when ineffective resolution of waste gas system issues repeatedly led to explosive mixtures in the Waste Gas Decay Tanks. The licensee entered these issues into their corrective action program. The primary cause of this violation was related to the cross-cutting area of Problem Identification and Resolution. The licensee repeatedly encountered explosive gas levels in the WGDTs and were aware of plant conditions that resulted in these levels but failed to take adequate corrective actions to prevent explosive gas mixtures from developing in the WGDTs.

The issue is more than minor because uncontrolled explosive mixtures in the WGDTs could have led to a more significant safety concern. The issue was of very low safety significance because explosive mixtures were only present during plant shutdown conditions; an explosion would not have affected safe shutdown equipment (i.e. Residual Heat Removal System); the explosive mixture conditions were only present for short periods of time (<12 hours); and the tanks were isolated and vented per procedure when discovered. (Section 4OA2)

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

None.

## REPORT DETAILS

### Summary of Plant Status

Kewaunee remained in cold shutdown for the entire assessment period.

#### 1. REACTOR SAFETY

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

1R01 Adverse Weather (71111.01)

.1 Tornado, High Wind, and Hot Weather Preparation

a. Inspection Scope

The inspectors performed a detailed review of the licensee's procedures and a walkdown of two systems to observe the licensee's preparations for adverse weather, including conditions that could result from tornados, high winds or hot temperatures. The inspectors focused on plant specific design features for the systems and implementation of the procedures for responding to or mitigating the effects of adverse weather. Inspection activities included, but were not limited to, a review of the licensee's adverse weather procedures, preparations for the summer season, and a review of analysis and requirements identified in the Updated Safety Analysis Report (USAR). The inspectors also verified that operator actions specified by plant specific procedures were appropriate. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- Kewaunee substation, and exterior portions of the protected area;
- turbine building and greenhouse ventilation system.

b. Findings

##### Introduction

The inspectors identified a Green finding for the licensee's failure to control materials in the protected area and substation. Specifically, the inspectors identified loose material adjacent to the reserve auxiliary transformer (RAT), tertiary auxiliary transformer (TAT), technical support center (TSC) diesel generator building, and substation control house. No violation of regulatory requirements occurred.

## Description

On May 27, 2005, the inspectors conducted a walkdown of the risk significant portions of the auxiliary power system and the substation to assess the licensee's preparations to preclude or minimize potential damage from high velocity winds associated with severe thunderstorms or tornados. During the walkdown of the auxiliary transformers, the inspectors noted the storage of a significant quantity of disassembled metal scaffolding, gang boxes, three portable toilets, several wood pallets, empty water cooler bottles, and other material adjacent to the RAT. Additionally, several large plastic cord covers were observed stacked near the TAT. The TAT and the RAT are the normal sources of power to safety-related 4.16 Kilovolt Busses 5 and 6 respectively, and are located in the protected area of the plant. The inspectors concluded that high velocity winds combined with the close proximity of the reserve and tertiary auxiliary transformers to the large quantity of stored materials increased the potential to damage the transformers or related electrical equipment. This issue was entered into the licensee's corrective action program as CAP027447.

The inspectors accompanied a member of the licensee's staff on a routine visit to the substation. The Kewaunee substation contains 345, 138, and 13.8 Kilovolt system equipment. All of these systems have been determined to be risk significant with respect to the maintenance rule and provide power to the auxiliary transformers included in Technical Specification (TS) 3.7.1. During this walkdown, several cable reels were identified adjacent to the substation control house. The licensee considered these reels as potential missile hazards per CAP027631 and removed them from the substation. The licensee identified an informal procedure for inspecting electrical components in the substation; however, the document did not contain requirements to control loose material in the substation. The licensee does have a reactive procedure for severe weather warnings which directs plant personnel to protect plant equipment, including securing loose gear and equipment around power distribution equipment. However, the licensee determined in CAP027447 that these actions may not be timely based on the procedure's entry conditions.

The inspectors did not identify any procedures to prepare for adverse weather conditions with respect to tornado and high wind conditions, nor did the inspectors identify any preparatory procedures to control loose materials in the protected area or substation. The inspectors found no specified actions or pro-active elements that required the licensee to minimize the number of missile hazards prior to seasonable susceptibilities. Additionally, the inspectors determined that the licensee did not effectively implement industry experience with regard to this issue.

Licensee Procedure GNP-01.31.01, "Plant Cleanliness and Storage," contained requirements for cleanliness and storage practices at Kewaunee Nuclear Power Plant (KNPP) facilities where seismic interaction with loose equipment was of concern. The procedure did not address out-plant cleanliness and storage when adverse weather was a concern. Licensee Procedure E-0-05, "Response to Natural Events," discussed securing loose gear and material; however, this procedure would only be used if the plant was notified of a tornado warning or severe weather. Procedure E-0-05 did not establish criteria for what constituted loose gear or material. The licensee also acknowledged in CAP027447 that waiting for a severe weather warning may be too late

for compensatory actions. Additionally, the licensee's Operational Quality Assurance Plan commits the licensee to American National Standards Institute (ANSI) N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants" during the plant operational phase, and this standard requires scheduled inspections of work areas and construction practices to ensure protection of installed equipment from weather-related movement of stored items.

### Analysis

The inspectors reviewed this finding using the guidance contained in Appendix B, "Issue Disposition Screening," of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports." The inspectors determined that the failure of operations personnel to control material near risk significant equipment or to appropriately apply the standards contained within ANSI N45.2.3-1973 was a performance deficiency which affected the Initiating Events cornerstone. The inspectors determined that the finding was more than minor because, if left uncontrolled, the loose items adjacent to the auxiliary transformers and in the substation would become a more significant safety concern. The inspectors determined that the finding warranted evaluation using the Significance Determination Process because the finding was associated with an increase in the likelihood of an initiating event.

The inspectors evaluated the finding using IMC 0609, Appendix A, Attachment 1, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Using the Phase 1 Significance Determination Process (SDP) worksheet for the initiating event cornerstone, transient initiator contributor. The inspectors determined that the finding did not contribute to the likelihood of a primary or secondary system loss of coolant accident initiator; the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available; and the finding did not increase the likelihood of a fire or internal or external flooding. Therefore, the finding was determined to be of very low safety significance (Green).

### Enforcement

The inspectors concluded that procedures were inadequate relative to applying housekeeping standards to risk significant equipment. Because, no 10 CFR 50, Appendix B, components were impacted by the finding (FIN 05000305/2005008-01), no violation of regulatory requirements occurred. The licensee included this finding in their corrective action program as CAP027447. Proposed corrective actions included development of a routine surveillance procedure for a site tornado hazard inspection as well as identifying areas of concern and items that could be classified as missiles.

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walkdown

###### a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment. The inspectors reviewed equipment

alignment to identify any discrepancies that could impact the function of the system and potentially increase risk. Identified equipment alignment problems were verified by the inspectors to be properly resolved. The inspectors selected redundant or backup systems for inspection during times when equipment was of increased importance due to unavailability of the redundant train or other related equipment. Inspection activities included, but were not limited to, a review of the licensee's procedures, verification of equipment alignment, and an observation of material condition, including operating parameters of in-service equipment. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- low temperature over-pressure protection lineup on residual heat removal (RHR) suction;
- RHR system heat exchanger;
- Bus 1-6 and protected equipment with 1A Emergency Diesel Generator (EDG) out-of-service.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Zone Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors walked down risk significant fire areas to assess fire protection requirements. The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems or features. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events, or the potential to impact equipment which could initiate or mitigate a plant transient. The inspection activities included, but were not limited to, the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, compensatory measures, and barriers to fire propagation. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- 125 volt battery room 1A;
- 125 volt battery room 1B;

- condensate storage tank / heating boiler area;
- gas bottle storage area;
- control rod drive / reactor trip cabinet area;
- cable spreading area;
- Auxiliary Building 586 foot elevation general area;
- general plant walkdown; and
- spent fuel pool, waste handling, and main steam relief valve areas.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Review (71111.05A)

a. Inspection Scope

The inspectors reviewed fire drill activities to evaluate the licensee's ability to control combustibles and ignition sources, the use of fire fighting equipment, and their ability to mitigate the event. The inspection activities included, but were not limited to, the fire brigade's use of fire fighting equipment, effectiveness in extinguishing the simulated fire, effectiveness of communications amongst fire brigade members and the control room, command and control of the fire commander, and observation of the post-drill critique. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

The inspectors observed the following fire drill for a total of one sample:

- the licensee's fire brigade response to an announced fire drill in the 1B Auxiliary Feedwater (AFW) pump room.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors performed an semi-annual review of flood protection barriers and procedures for coping with internal flooding. The inspection focused on determining whether flood mitigation plans and equipment were consistent with design requirements and risk analysis assumptions. The inspection activities included, but were not limited to, a review and/or walkdown to assess design measures, seals, drain systems, contingency equipment condition and availability of temporary equipment and barriers, performance and surveillance tests, procedural adequacy, and compensatory measures. The inspectors utilized the documents listed in the attachment to accomplish the objectives of the inspection procedure.

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

- RHR pumps and pit sump pumps

b. Findings

Introduction

An issue was identified associated with potential common-mode failure of both trains of RHR during a randomly or seismically-induced flood. This is an unresolved item (URI) pending completion of assessment by the NRC.

Description

During review of a flooding analysis in the Auxiliary Building, the inspectors noted several scenarios where the potential flooding sources, including non-seismically mounted service water (SW) and condensate piping, would result in both RHR pump pits being filled with over 8 feet of water. This could occur as a result of both randomly and seismically induced piping failures in the area, which would cause both RHR pump motors to fail. This common mode failure mechanism resulted from the RHR pumps being located in pits where neither the pit nor the related cover block were sealed to protect the internal equipment from water intrusion.

Upon questioning, the licensee noted that these assertions were credible, but the condition was acceptable because the plant was only required, per the licensing basis, to achieve and maintain hot shutdown. The RHR system was not credited for reaching and maintaining hot shutdown. The licensee stipulated that a loss of coolant accident was not assumed to occur before, after, or coincident with a seismic event, and that the RHR pumps were not required to perform a function in any seismic scenario where flooding occurs during all plant conditions (from shutdown to 100 percent power). The licensee's position was based on responses to Unresolved Safety Issue A-46 for seismic issues and on Generic Letter 87-02 which indicate that RHR was not required for reaching and maintaining hot shutdown in a seismic event.

It appeared to the inspectors that the licensee's interpretation of the RHR licensing basis conflicted with TS requirements. Technical Specifications require that, with both RHR pumps inoperable, the plant is required to be in "Cold Shutdown" (< 200°F Reactor Coolant System temperature) within 36 hours due to low pressure injection not being available. If while at 100 percent power, both RHR pumps were to fail as a result of a seismic or randomly induced flooding event, the RHR pumps would be declared inoperable. It was not clear to the inspectors how this TS requirement could be met given that plant cooldown could only be accomplished using feed and bleed of the steam generators in this scenario, which, in all likelihood, would take longer than 36 hours to get to "Cold Shutdown".

Additionally, TSs require both RHR pumps to be operable during cold shutdown operations and that no single failure can cause a loss of decay heat removal. The inspectors were concerned that a randomly or seismically induced flooding event (i.e., a single failure) could cause a loss of the RHR pumps. In certain plant conditions

(e.g., reduced inventory), the RHR system is the only system available for shutdown cooling. In other plant conditions, decay heat can be removed by natural circulation in the steam generators and inventory makeup by the safety injection system. However, this may require a mode change above 200°F to achieve the necessary driving head for heat removal, and would not necessarily be assumed or required for shutdown risk management. It was not clear to the inspectors that it was appropriate for the licensee to assume that information relative to Unresolved Safety Issue A-46 applied to the RHR system during cold shutdown conditions. In addition, it did not appear to the inspectors that the licensee met TS requirements regarding RHR operability in cold shutdown conditions.

This issue will be treated as an Unresolved Item (URI 05000305/2005008-03) pending further review by the NRC.

1R11 Licensed Operator Requalification Program (71111.11Q)

a. Inspection Scope

The inspectors performed a quarterly review of the licensed operator requalification training. The inspection assessed the licensee's effectiveness in evaluating the requalification program, ensuring that licensed individuals operate the facility safely and within the conditions of their license, and evaluated licensed operator mastery of high-risk operator actions. The inspection activities included, but were not limited to, a review of high risk activities, emergency plan performance, incorporation of lessons learned, clarity and formality of communications, task prioritization, timeliness of actions, alarm response actions, control board operations, procedural adequacy and implementation, supervisory oversight, group dynamics, interpretations of TSs, simulator fidelity, and licensee critique of performance. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- a training crew during a simulator scenario that supported procedures and modifications to the AFW system.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors reviewed systems to assess maintenance effectiveness, including maintenance rule activities, work practices, and common cause issues. Inspection activities included, but were not limited to, the licensee's categorization of specific issues including evaluation of performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed implementation of the Maintenance Rule (10 CFR 50.65)

requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with reviewed corrective action program documents, and current equipment performance status. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- C a function-oriented review of the emergency alternating current system because it was designated as risk significant under the Maintenance Rule; and
- C an issue/problem-oriented review of the TSC diesel generator system because it was designated as risk significant under the Maintenance Rule and the system experienced recent starting problems.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed risk assessments (RAs) and emergent work control for maintenance activities. The inspectors verified the performance and adequacy of RAs, management of resultant risk, entry into the appropriate licensee-established risk bands, and the effective planning and control of emergent work activities. The inspection activities included, but were not limited to, a verification that licensee RA procedures were followed and performed appropriately for routine and emergent maintenance, that RAs for the scope of work performed were accurate and complete, that necessary actions were taken to minimize the probability of initiating events, and that activities to ensure that the functionality of mitigating systems and barriers were performed. Reviews also assessed the licensee's evaluation of plant risk, risk management, scheduling, configuration control, and coordination with other scheduled risk significant work for these activities. Additionally, the assessment included an evaluation of external factors, the licensee's control of work activities, and appropriate consideration of baseline and cumulative risk. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- RAT with "Red" grid;
- "A" & "B" Diesel Generators with "Red" grid;
- substation with "Red" grid; and
- "A" Diesel Generator maintenance.

b. Findings

Introduction

The inspectors identified a finding of very low safety significance (Green) and an associated NCV during reviews of the licensee's assessment of shutdown risk for various maintenance activities performed while the plant was shutdown and experiencing unstable electrical grid conditions. The inspectors determined that the licensee failed to recognize and sufficiently assess shutdown risk while performing maintenance activities on systems that could cause an initiating event, and while testing electrical mitigating equipment. Examples included: RAT maintenance on April 26, 2005; "B" and "A" EDG operational testing and out-of-service on May 3, and May 5, 2005, respectively; and substation work on May 10, 2005. This failure to effectively assess maintenance activity risk was determined by the inspectors to be contrary to the requirements of 10 CFR 50.65(a)(4).

Description

On April 22, 2005, Kewaunee was in a forced outage and in the Refueling Shutdown mode. The station was notified by energy supply and control that the electrical grid status was "Red." The licensee did not know if the bases for this notification was an economic concern or a grid stability concern. The inspectors received a copy of the definition for a "Red" grid use by energy supply and control which indicated that a "Red" grid was defined as unstable.

The licensee indicated that Operating Procedure A-EG-43, "Grid Stability and Energy Supply Conditions," was used and the inspectors noted that it included verifying that no at-risk work was in progress or work in sensitive areas was occurring. On April 25, 2005, the station established back-feed power to the main auxiliary transformer to prepare for maintenance on the RAT, the risk-significant normal power source to safeguards Bus 6. After establishing back-feed, the licensee shifted Buses 1 through 4 and Bus 6 power supplies from the RAT to the main auxiliary transformer. On April 26, 2005, the licensee isolated the RAT from offsite west and east busses to perform general maintenance. Procedure A-EG-43 guided the licensee to evaluate in-progress and emergent work activities; however, the licensee did not consider the RAT maintenance impact on the qualitative shutdown safety assessment (SSA) in conjunction with the impact of grid instability on power availability.

On May 2 and May 5, 2005, during plant shutdown, the licensee performed operational testing of the "B" and "A" EDGs respectively. During this testing, the EDG was considered inoperable for approximately 7 hours. During both periods of inoperability, the grid conditions were unstable. Although Procedure A-EG-43 was being implemented, grid instability effects on the SSA were not considered in conjunction with EDG testing. Additionally, this testing paralleled the EDG to the grid and could have further upset grid stability.

Additionally, on May 10, 2005, during plant shutdown, the licensee performed work in the substation. This work included removal from service capacitor banks 1-4 from the 138 Kilovolt west bus. The west bus is one of two sources of offsite power to the RAT.

Again, these evolutions were performed during unstable electrical grid conditions and while implementing A-EG-43 without consideration of the concurrent activities in the risk profile.

### Analysis

The inspectors determined that the failure to conduct an adequate risk assessment pursuant to 10 CFR 50.65(a)(4) for maintenance on equipment and the testing of electrical mitigating equipment during potentially unstable grid conditions were performance deficiencies which affected the Initiating Events cornerstone. The inspectors determined that the finding was more than minor because the licensee's risk assessment had incorrect assumptions that had the potential to change the outcome of the assessment. The inspectors determined that the finding could not be evaluated using the Significance Determination Process because the finding was associated with an inadequate qualitative risk assessment.

The inspectors determined that this issue was of very low safety significance (Green). The inspectors discussed this finding with the regional branch chief who verified that it was appropriately characterized as Green.

### Enforcement

As described in the licensee's Maintenance Rule Program, the RAT, EDGs, and substation provide highly risk-significant functions. Section (a)(4) of 10 CFR 50.65 states that before performing maintenance activities, including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to this requirement, the licensee failed to properly assess the increase in risk when grid conditions were defined as unstable. The licensee entered these issues into their corrective action program as CAP027160 and CAP026732. Proposed corrective actions included modifying procedures to direct plant staff to restore all shutdown safety categories to "Green" when the transmission grid has become unstable, and directing plant staff to evaluate the power availability category of the SSA upon notification of an abnormal grid condition. Because the licensee has entered these issues into their corrective action program and the finding is of very low safety significance (Green), this violation of Title 10 CFR Part 50.65(a)(4) is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. (NCV 05000305/2005008-04)

## 1R14 Personnel Performance During Non-Routine Plant Evolutions and Events (71111.14)

### a. Inspection Scope

The inspectors reviewed personnel performance during planned non-routine evolutions to review operator performance and the potential for operator contribution to the evolution. The inspectors observed or reviewed records of operator performance during the evolution. Reviews included, but were not limited to, operator logs, pre-job briefings, instrument recorder data, and procedures. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- performance of Special Operating Procedure (SOP) AFW-05B-25, "AFW-3A and AFW-3B Local Position," Revision A.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed operability evaluations which affected mitigating systems or barrier integrity to ensure that operability was properly justified and that the component or system remained available. The inspection activities included, but were not limited to, a review of the technical adequacy of the operability evaluations to determine the impact on TS, the significance of the evaluations to ensure that adequate justifications were documented, and that risk was appropriately assessed. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- SW emergency supply line from discharge canal blocked;
- Pressurizer Liquid Space Sample Isolation Valve RC-403, as-found condition;
- SW supply check valves to turbine-driven AFW pump found chattering; and
- SW bearing supply line fouling.

b. Findings

NRC inspectors identified that the service water (SW) system pumps may be susceptible to a common mode failure due to the potential clogging of pump bearing and flushing water supply filters. This issue is an unresolved item pending further evaluation of the SW system operability by the inspectors.

The SW system consists of four pumps; each SW pump takes suction from the ultimate heat sink; each pump discharge passes through a discharge strainer; the discharge strainer can rotate automatically; and each discharge strainer has a backwash valve which can backwash debris from the strainer based on a predetermined setpoint. The backwash function ensures that the strainer can keep material greater than 1/8" from entering the system and that the material can be removed from the system so the strainer does not inhibit flow. Each SW pump also has a bearing cooling and flushing line. This line is normally supplied by non-safety related plant treatment water. The safety related water supply is lake water taken from the pump discharge. The safety related water supply comes from a 1/2-inch line located off the discharge of the respective pump which travels through 1/8-inch mesh discharge strainers; passes through a 10 micron set of CUNO filters, one standby and one in-service filter; and finally through a pressure

reducing regulator prior to being sent to the pump bearings. The purpose of the water is to flush and cool the pump bearings.

The inspectors questioned the operability of the SW pump bearing cooling and flushing water supply. In the 1980's, a modification was installed to use non-safety related plant treatment water to act as the normal supply to the SW pumps. The inspectors were unable to determine the exact date that the modifications was installed. However, it was determined that the modification was installed after a period of time where fouling of the CUNO filters was occurring frequently due to debris arising from heavy lake conditions. The modification established the normal source of water from plant treatment water, a source which did not come from the pump discharge. Although the modification established plant treatment water as the normal source, the safety related source remained from the pump discharge via the CUNO filters. Current procedures required that approximately every 2 weeks, the safety related water source would be placed into service and after a few minutes, when flow had stabilized, the water source would then be shifted back to the plant water treatment line.

In 1993 and 1994, Incident Reports, IR 93-091, 94-078, 94-079, and 94-100, were written relative to the reduced flow to the bearing cooling lines. The cause of reduced flow to the bearing cooling lines was a combined buildup of chemical deposits, identified as lime, which came from the plant water treatment system, along with silt and sand from the safety related source. Included with these evaluations was a vendor's communication which documented in a letter dated April 18, 1994, that the minimum flow was based on having some flow to the bearings for flushing and cooling. The vendor went stated that if any safety system is proposed, it should be based on zero flow shutdown, not minimum flow. The licensee concluded that operability was based on having greater than zero flow to the bearings and the procedure was changed to indicate this. There were no evaluations relative to the impact on the pump's mission time, the rate of clogging from chemical deposits, or the rate at which the CUNO filter could clog during adverse lake conditions coincident with a need for the safety related supply.

Several CAPs in 2002 and 2003 identified fouling of the CUNO filters or flow degradation in the bearing lines found during testing. The CAPs indicated that CUNO filter fouling was being caused by debris loading and in most cases would not occur in the few minutes when the CUNO filter was in service. The CAPs also indicated that longer term effect of chemical fouling of the line, which may take on the order of days to occur when fouling had been observed, also impacted the overall reliability of the system. Because the safety related system was not normally in service and the 0.25 gpm low flow alarm setpoint was so low that the alarm indicated that significant fouling had already occurred, no data was available to determine the rate that CUNO filters would clog.

In January 2004, as part of an NRC Special Inspection for fouling of the safety injection lube oil cooler, inspectors requested the WO history and questioned the basis for manual actions, plugging analysis, and plugging. At this time the inspectors also inquired about other susceptible SW system components. The licensee indicated that the SW pump CUNO filters were susceptible but, a historical search of WOs would not provide useful information since the CUNO filters were rarely in service. Additionally,

the licensee stated that since the filters were expected to clog, the frequency was moot. However, a recent sensitivity to the timeliness of manual actions and due to the inspectors inquiry, the licensee wrote CAP 19722 to assess both the lack of specific times where a loss of seal cooling would occur, and the lack of detailed analysis to support a period of time where the pump might fail if cooling was completely lost.

The engineering evaluation required by CAP 19722 was documented in EWR 015109. The EWR noted that the rate of deposition of lime was not known, but it would not be instantaneous and some amount of time would exist after the low flow alarm annunciates to allow a period of time for operators to respond and switch the filter elements. The licensee also concluded that pump operation would continue without cooling water being supplied if an operator was unavailable to change filters. The licensee further stated, based on a verbal discussion with the vendor, that as long as cooling water flow was restored in 2 to 4 hours, pump degradation would not occur. However, the licensee did not receive this analysis in writing from the vendor. In addition, the vendor manual states that positive flow must be maintained at all times when the pump is operating.

During the inspection, the inspectors brought up the concern that there still appeared to be no real analysis on how fast the filters would clog during an accident and how fast the operators could respond prior to pump damage during the pump's mission. The 2 to 4 hour bounding response time, assumed by the licensee, for which the pump would be survivable with no flow was determined based on a verbal discussion; and no documents from the vendor pursuant to 10CFR50 Appendix B could be located by the inspectors.

On June 9, 2005, the licensee wrote CAP 27887 to document an inadequate engineering design basis for SW seal water CUNO filter application. The plant was in a mode where SW was not required operable. The operations staff approved OPR 107 which declared the pumps operable and non-conforming with compensatory actions to have a dedicated person, with the appropriate tools, procedures, and training, in the screenhouse. Without the dedicated operator, the pumps would not be operable. Discussion with engineering staff working on OPR 107 indicated that when the CUNO filters were always in service, some operators who had been present during this period remembered having to station a person by the SW pumps, essentially continuously, changing out filters for the four pumps during rough lake conditions. Since the use of plant treatment water was established, the switch to the safety related sources occurs only for a few minutes a month. The OPR stated that in discussion with operations, there have been no cases where the CUNO filters have fouled in that period of time. The low flow conditions have been caused by the chemical deposits which was a longer term issue. Therefore, extremely fast fouling, on the order of several minutes, even in very rough lake conditions, would not be likely. The licensee conservatively used 1 hour for the response and shifting of the CUNO filter, and dedicated a person to be in the screenhouse to respond.

On June 29, 2005, the licensee wrote CAP 28180 indicating the potable water cartridge filters were still ineffective. These cartridges were installed to reduce deposits in the bearing cooling lines from the non-safety related, water treatment source. The CAP

noted the indicators were still getting dirty and needing to be cleaned weekly, reducing system reliability.

#### Service Water System Past Operability

The inspectors determined that the SW system was operable but non-conforming based on the licensee's implementation of compensatory actions to ensure the pump bearing cooling and flushing lines remained unclogged during all conditions. However, the inspectors questioned the past operability of the SW system. This item will be treated as an unresolved item pending further evaluation of the potential for a common mode failure of the SW system due to the potential clogging of pump bearing and flushing water supply filters (URI 05000305/2005008-05).

#### 1R16 Operator Workarounds (71111.16)

##### a. Inspection Scope

The inspectors performed a semiannual review of the cumulative effects of operator workarounds (OWAs). The inspectors reviewed OWAs to identify any potential effect on the functionality of mitigating systems. The inspection activities included, but were not limited to, a review of the cumulative effects of the OWAs on the availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents. Additionally, reviews were conducted to determine if the workarounds could increase the possibility of an initiating event, if the workaround was contrary to training, required a change from long standing operational practices, created the potential for inappropriate compensatory actions, impaired access to equipment, or required equipment uses for which the equipment was not designed. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

The inspectors focused the inspection on the increased number of manual actions resulting from modifications and procedural changes made to mitigate internal flooding events. One semi-annual OWA sample was completed during this inspection.

##### b. Findings

No findings of significance were identified.

#### 1R19 Post-Maintenance Testing (71111.19)

##### a. Inspection Scope

The inspectors verified that the post-maintenance test procedures and activities were adequate to ensure system operability and functional capability. Activities were selected based upon the structure, system, or component's ability to impact risk. The inspection activities included, but were not limited to, witnessing or reviewing the integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, system restoration, and

evaluation of test data. Also, the inspectors verified that maintenance and post-maintenance testing activities adequately ensured that the equipment met the licensing basis, TS, and USAR design requirements. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

The inspectors selected the following post-maintenance activities for review for a total of six samples:

- EDG "B" turbine oil pump;
- EDG "B" day tank level switches;
- Internal Containment Spray Valve ICS-5B inspection and rebuild;
- EDG "A" instrument work;
- TSC Diesel Generator battery maintenance; and
- EDG "A" Bus 5 tie breaker.

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities for an unscheduled outage that was in progress during the entire inspection period. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule, developed mitigation strategies for loss of key safety functions, and adhered to operating license and TS requirements to ensure defense-in-depth. The inspection activities included, but were not limited to, a review of the outage plan, monitoring of shutdown and startup activities, control of outage activities and risk, and observation of reduced inventory operations, maintenance and refueling activities. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding. The inspections conducted during the forced outage represent completion of one inspection sample for this procedure.

In addition to activities inspected utilizing specific procedures, the following represents a partial list of the major outage activities the inspectors reviewed/observed, all or in part:

- review of both outage plans and the ready-backlog;
- control room turnover meetings and selected pre-job briefings;
- containment closure;
- preparation for startup/heatup and mode changes;
- various outage support activities; and
- identification and resolution of problems associated with the outage.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed surveillance testing activities to assess operational readiness and to ensure that risk-significant structures, systems, and components were capable of performing their intended safety function. Activities were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that a system, structure, or component could impose on the unit if the condition was left unresolved. The inspection activities included, but were not limited to, a review for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, impact of testing relative to performance indicator (PI) reporting, and evaluation of test data. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

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

- component cooling pump discharge check valve full flow test; and
- semi-annual Diesel Generator "B" operational test.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors selected emergency preparedness exercises that the licensee had scheduled as providing input to the Drill/Exercise PI. The inspection activities included, but were not limited to, the classification of events, notifications to off-site agencies, protective action recommendation development, and drill critiques. Observations were compared with the licensee's observations and corrective action program entries. The inspectors verified that there were no discrepancies between observed performance and PI reported statistics. As part of this inspection, the documents in the attachment were utilized to evaluate the potential for an inspection finding.

The inspectors selected the following emergency preparedness activity for review for a total of one sample:

- the inspectors observed a dynamic simulator scenario, in conjunction with licensed operator requalification training. Drill notifications were made with state, county, and local agencies for an alert classification.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Public Radiation Safety**

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Radioactive Waste System Description and Waste Generation

a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system descriptions in the Updated Safety Analysis Report (USAR) and the 2003 and 2004 Annual Radioactive Effluent Release Reports for information on the types and amounts of radioactive waste (radwaste) generated and disposed. The inspectors reviewed the scope of the licensee's audit/self-assessment activities with regard to radioactive material processing and transportation programs to determine if those activities satisfied the requirements of 10 CFR 20.1101(c).

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Radioactive Waste System Walkdowns

a. Inspection Scope

The inspectors walked down portions of the solid radwaste processing systems to verify that these systems were consistent with the descriptions in the USAR and the Process Control Program, and to assess the material condition and operability of the systems. The status of radioactive waste process equipment that was not operational was reviewed along with the licensee's administrative controls in order to ensure that the equipment would not contribute to an unmonitored release or be a source of unnecessary personnel exposure.

The inspectors reviewed the licensee's processes for transferring waste resin into shipping containers (and for dewatering) to determine if appropriate waste stream mixing and sampling was performed so as to obtain representative waste stream samples for analysis. The inspectors reviewed the licensee's practices for the collection of area smear surveys to represent the dry-active waste (DAW) stream and the method used for determining the radionuclide mix of various filter media to ensure they were representative of the intended radwaste stream. Additionally, the inspectors reviewed the methodologies for quantifying gamma emitting radionuclide waste stream content, for determining waste stream tritium concentrations and for waste concentration

averaging to ensure that representative samples of the waste products were provided for the purposes of waste classification pursuant to 10 CFR 61.55.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the licensee's methods and procedures for determining the classification of radioactive waste shipments including the use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides and those that decay by electron capture). The inspectors reviewed the licensee's radiochemical sample analysis results for each of the licensee's waste streams which consisted of resins, various filter media, DAW, and occasionally Turbine Building drain sludge. The licensee had not made any shipments of activated metals since the last inspection in this area, so this waste stream was not reviewed. The inspectors also reviewed the minimal detectable concentrations for each waste stream as determined by the licensee's contract analytical laboratory together with the corresponding radionuclide groupings in 10 CFR 61.55 to verify consistency with the NRC Branch Technical Position on Radioactive Waste Classification. The reviews were conducted to verify that the licensee's program assured compliance with 10 CFR 61.55 and 10 CFR 61.56, as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed the licensee's waste characterization and classification program to ensure that reactor coolant chemistry data was periodically evaluated to account for changing operational parameters that could potentially affect waste stream classification and thus validate the continued use of existing scaling factors between sample analysis updates.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Shipment Preparation and Shipment Manifests

a. Inspection Scope

The inspectors reviewed the documentation of shipment packaging, surveying, package labeling and marking, vehicle checks and placarding, emergency instructions, and licensee verification of shipment readiness for several non-excepted radioactive material and radwaste shipments made between April 2003 and June 2005. No shipments in Type B casks were made since the last NRC inspection in his area. The shipment documentation reviewed included:

- Contaminated Equipment Classified as Radioactive Material, Not Otherwise Specified (NOS);
- Contaminated Equipment Classified as Surface Contaminated Object (SCO-II);
- Four Shipments of Dewatered Spent Resin in High Integrity Containers Classified as Low Specific Activity (LSA-II);
- Spent Filters in a High Integrity Container Classified as LSA-II; and
- Dry Active Waste in a Sea-Land Container Classified as LSA-II.

The inspectors selectively verified that the requirements of 10 CFR Parts 20 and 61, and those of the Department of Transportation (DOT) in 49 CFR Parts 170-189 were met for each shipment. Specifically, records were reviewed and staff involved in shipment activities were interviewed to verify that packages were labeled and marked properly, that package and transport vehicle surveys were performed with appropriate instrumentation and survey results satisfied DOT requirements, and that the quantity and type of radionuclides in each shipment were determined accurately. The inspectors also verified that shipment manifests were completed in accordance with DOT and NRC requirements, included the required emergency response information, that the recipient was authorized to receive the shipment, and that shipments were tracked as required by 10 CFR Part 20. The inspectors also reviewed the licensee's transportation security plan required by 49 CFR 172.800/802 and discussed how it would be implemented (if necessary) with the licensee's shipping specialist.

Selected staff involved in shipment activities were questioned by the inspectors to verify that they had adequate skills to accomplish shipment related tasks, and to determine if the shippers were knowledgeable of the applicable regulations to satisfy package preparation requirements for public transport with respect to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and 49 CFR Part 172 Subpart H. Additionally, the lesson plan used most recently for training station Hazardous Materials (Hazmat) Level 1 employees (i.e., those staff involved in shipment preparation activities) was reviewed for compliance with the hazardous material training requirements of 49 CFR 172.704.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems for Radwaste Processing and Transportation

a. Inspection Scope

The inspectors reviewed selected condition reports, self-assessment and audit reports along with field observation reports that addressed the radioactive waste and radioactive materials shipping program since the last inspection to verify that the licensee had effectively implemented the corrective action program and that problems were identified, characterized, prioritized, and corrected. The inspectors also verified that the licensee's oversight mechanisms collectively were capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also selectively reviewed other corrective action program (CAP) reports generated since the previous inspection that dealt with the radioactive material or radwaste shipping program, and 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; and
- Implementation/consideration of risk significant operational experience feedback.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator Verification (71151)

**Cornerstone: Public Radiation Safety**

.2 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors sampled the licensee's submittals for the public radiation protection performance indicator (PI) and periods listed below. The inspectors used PI definitions and guidance contained in Revision 3 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the PI data. The following PI was reviewed:

- Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrence

The inspectors reviewed the licensee's CAP database and selected CAPs generated in 2004 through May 2005, to identify any potential occurrences such as unmonitored, uncontrolled or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent monthly summary data and the results of selected offsite dose calculations for 2005 to determine if indicator results were accurately reported.

b. Findings

No findings of significance were identified.

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

### **Cornerstone: Initiating Events, Mitigating Systems**

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

##### a. Inspection Scope

As part of the routine inspections documented above, the inspectors verified that the licensee entered the problems identified during the inspection into their corrective action program. Additionally, the inspectors verified that the licensee was identifying issues at an appropriate threshold and entering them in the corrective action program (CAP), and verified that problems included in the licensee's CAP were properly addressed for resolution. Attributes reviewed included: complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization and focus were commensurate with safety and sufficient to prevent recurrence of the issue.

##### b. Findings

No findings of significance were identified.

#### .2 Daily Corrective Action Program Reviews

##### a. Inspection Scope

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

##### b. Findings

No findings of significance were identified.

#### .3 Semi-Annual Trend Review

##### a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspector's review was focused on repetitive aging and out-of-tolerance issues with Foxboro bistables, but also considered the results of daily inspector CAP item screening discussed in section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspector's review nominally considered the 6 month period of December 2004 through May 2005, although some examples expanded beyond those dates when the scope of the trend warranted.

Inspectors reviewed adverse trend CAP items associated with various events that occurred during the period. The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and maintenance rule assessments. The specific items reviewed are listed in the documents reviewed section attached to this report. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending documents. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

The inspectors also evaluated the report against the requirements of the licensee's corrective action program as specified in GNP-11.08.01, Action Request Process, and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the attachment to this report.

b. Findings

There were no findings of significance identified.

Although there were no findings identified, the inspectors identified an issue that the licensee was not adequately trending. During surveillance tests, certain Foxboro bistables are found to be out-of-tolerance at a predictable rate. The inspectors determined that the licensee did not always address potential operability considerations when a bistable associated with safety-related TS systems was found out-of-tolerance in the non-conservative direction. The Foxboro components were considered their own in-scope Maintenance Rule system and, due to the system being in 10 CFR 50.65(a)(1) status, out-of-tolerance bistables were handled through the maintenance rule system. Thus, when an adverse condition was identified, the process did not inherently have the CAP address the system that the Foxboro component was associated with. Also, the inspectors determined that when an out-of-tolerance condition was identified, a thorough extent of condition was not always performed.

The licensee acknowledged the inspectors observations and wrote CAP 27936 to modify plant baseline probabilistic RA, due to known failures with the Foxboro units. Additionally, the licensee expressed that when a Foxboro unit was found out-of-tolerance, the system that it was associated with would be considered for operability determination. Additionally, as part of the (a)(1) action plan, the licensee initiated a Foxboro Equipment Replacement Study to investigate plant-wide replacement options for 764 Foxboro H-Line safety (289) and non-safety (475) related process control equipment. The recommendations of the study were to perform equivalent component replacement of these components.

.4 Selected Issue Followup (Annual Sample): Waste Gas Decay Tank Explosive Issues

a. Inspection Scope

The inspectors selected Condition Reports CAP 027385, 027459, 027493, 027873, and 027945 for one annual sample review of the licensee's PI&R program. These CAPs

were written between May 15 and June 13, 2005, and were related to abnormal hydrogen and oxygen levels in the WGDT, a Quality Assurance Class 1 sub-system. On three of these occasions (CAP 027459, 027493, and 027873), explosive mixtures were discovered to exist in the WGDTs during sampling. The WGDTs are located in the auxiliary building. Documents reviewed are listed in the Attachment.

b. Findings

Introduction

The inspectors identified a Non-Cited Violation (NCV) of Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," having very low safety significance (Green) when the licensee failed to prevent explosive gas concentrations in the WGDTs between the dates of May 15 and June 8, 2005, when they had prior opportunity to identify and correct this predictable condition.

Description

On several occasions between May 15 and June 13, 2005, the licensee determined via control room alarms or local sampling that explosive mixtures of oxygen and hydrogen existed within in-service WGDTs, a Quality Assurance Class 1 system. The inspectors determined that explosive mixtures of oxygen and hydrogen existed on several previous occasions, as early as 2002. However, the licensee did not implement effective actions to prevent this condition adverse to quality from recurring.

Since explosive mixtures existed in the WGDTs, the tanks were a potential combustible hazard. In the analysis, the licensee did not consider combustible effects of these tanks in Fire Zone AX-23B. Additionally, the diagrams and the applicable fire area strategy did not identify that the WGDTs could be considered a potential flammable combustible hazard. Specifically, the associated pre fire plan, PFP-17, identified lubricating oil in pumps and propane, hydrogen, and oxygen gas cylinders as the only flammable or combustible gases or liquids in the zone. The licensee stated in CAP 027945 that a 6 percent oxygen content would exceed the flammable limit. In previous CAPs, however, oxygen levels were stated as being found many percent greater than 6 percent but did not consider combustible or explosive impacts on the fire zone or safety-related equipment located in the auxiliary building.

Analysis

The inspectors reviewed this finding using the guidance contained in Appendix B, "Issue Disposition Screening," of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports." The inspectors determined that the failure to implement effective corrective actions to prevent explosive mixtures in the WGDTs and the associated failure to identify the condition adverse to fire protection was a performance deficiency. This performance deficiency was determined to be greater than minor because it affected the mitigating systems cornerstone attribute of protection against external factors (fire). Specifically, the failure to anticipate combustible hydrogen and oxygen mixtures in the WGDTs during plant shutdown conditions could result in the greater likelihood or severity of a fire which affects equipment important to safety.

In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," dated, December 1, 2004, the inspectors performed a SDP Phase 1 screening and determined that the finding affected fire protection defense-in-depth strategy. As such, the inspectors determined that a Phase 2 analysis in accordance with IMC 0609, Appendix F, "Fire Protection SDP," dated February 28, 2005, was required. The inspectors determined that the finding affected the Fire Prevention and Administrative Controls Category. The inspectors assigned a degradation rating of low safety significance because explosive mixtures were only present during plant shutdown conditions, an explosion would not have affected safe shutdown equipment (i.e. RHR), the explosive mixture conditions were only present for short periods of time (<12 hours), and the tanks were isolated and vented per procedure. Based on these factors, the inspectors determined that the issue was of very low safety significance (Green).

The inspectors determined that this finding impacted the cross-cutting issue of Problem Identification and Resolution (PI&R), because on several previous occasions, adverse WGDT gas levels existed under certain plant conditions and effective steps were not taken to address this fire protection issue during the current forced outage.

#### Enforcement

Appendix A of the KNPP Fire Protection Program Plan, "Compliance with Fire Protection Regulatory Documents," provides a comparison of Kewaunee's Fire Protection Program with Branch Technical Position APCS 9.5-1, Appendix A, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976." Branch Technical Position 9.5-1, Appendix A, specifies, in part, that a program is implemented to assure that conditions adverse to fire protection, such as uncontrolled combustible material, are promptly identified, reported, and corrected; and the licensee's operational quality assurance plan identifies 10 CFR 50, Appendix B, programs and Section 3.5, indicates that the Fire Protection Program was covered by this requirement.

Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to ensure that conditions adverse to quality are promptly identified and corrected. Contrary to this requirement the licensee failed to prevent explosive gas concentrations in the WGDTs between the dates of May 15 and June 8, 2005 when there were prior opportunities to identify and correct this predictable condition. Specifically, the inspectors determined that inadequate identification of the WGDT as a combustible hazard and inadequate corrective actions were taken to prevent combustible conditions in the tanks when the licensee prior identified, on multiple occasions, and as early as April 2002, that flammable conditions could exist during shutdown operations.

Once this issue was identified, the licensee performed Apparent Cause Evaluation (ACE) 002986. Corrective actions planned by the licensee include correcting the causes of oxygen intrusion and increases during filling evolutions, and initiating procedure changes, work orders (WOs), and corrective actions, as appropriate, to prevent recurrence. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated

as a NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000305/2005008-05).

.5 Selected Issue Follow up (Annual Sample): Restart Commitments

Introduction

On February 19, 2005, a shutdown was initiated due to the licensee determining that all three AFW pumps were inoperable. On March 3, 2005, the licensee met with senior Region III management to discuss shutdown and performance improvement initiatives. The licensee communicated these initiatives to regional management in a followup letter dated March 18, 2005. The letter identified the improvement initiatives discussed at the meeting which the licensee considered commitments that would be completed before, and subsequent to reactor restart. The inspectors selected the startup related elements of this issue for a detailed review.

a. Inspection Scope

Prior to reactor restart the inspectors reviewed the licensee's condition reports, closure documentation, and interviewed staff to assess the effectiveness and adequacy of the licensee's corrective actions for restart commitments made to the NRC. Attributes reviewed included: complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization and focus were commensurate with safety and sufficient to prevent recurrence of the issue. As part of the inspection, the documents listed in the attachment were utilized to evaluate the accuracy of related data. The review of the restart items represent one annual PI&R sample.

b. Issues

The inspectors reviewed Commitment Letter Item 1.a, "Implement NMC Fleet Operations Mentoring Program to improve Conduct of Operations." The licensee developed an excellence plan in March 2005 as the result of assessments of operations performance. The inspectors noted that all items in the excellence plan were scheduled for completion by the end of 2005. Selected licensee personnel performed on-shift mentoring for a 6 week period in February and March. During this period improvements were noted in operations performance. Areas where the mentors indicated further improvement was warranted were documented in the "Operations Excellence Plan." The licensee completed all actions committed to for item 1.a prior to restart.

The inspectors reviewed Commitment Letter Item 2.a, "Improve the quality of Operability determinations," and Item 2.b, "Validate the quality of existing Operability Determinations." The inspectors found that the licensee was using the independent review group (IRG) and operations supervision as a quality check on new operability determinations and that the quality checks were successful in improving the operability determinations. Engineering provided reviews of existing operability determinations and generated corrective actions for noted deficiencies. The licensee indicated that the

barrier and quality check associated with the CAP process was a combination of training and oversight with the primary oversight function being provided by the CAP screening committee. The inspectors selected for review CAPs generated in mid April, a period approximately 30 days after the completion of the training, and compared the quality of these CAPs to a similar sample of CAPs from mid May. The inspectors identified CAPs from both periods where operability evaluations were warranted but not required by the CAP. The licensee acknowledged the inspector's observations and initiated a CAP to address the lack of operability evaluations when needed. The licensee completed all actions committed to for items 2.a and 2.b.

The inspectors reviewed Commitment Letter Item 3.a, "Confirm prior NRC commitments have been implemented as required." The licensee reviewed 570 related commitments. Their review covered areas including Generic Letters, LERs, responses to violations, and NRC Bulletins back to 1985. The results identified that approximately 11 percent of the commitments were not fully implemented in one form or another. Implementation errors included problems with procedure content, training, testing, design, and inspection. A large number of the errors were administrative in nature. Errors that were more substantive were all resolved using the corrective action process. Additionally, the licensee increased the scope of the review as a result of the identified error rate which revealed approximately the same failure rate. As a result, the licensee was evaluating if further scope expansion or if a review of issues prior to 1985 was warranted. The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 3.a.

The inspectors reviewed Commitment Letter Item 3.b, "Confirm assumptions made in critical engineering calculations, that require operator actions to be performed within specific times, reflect actual operator response times." The inspectors performed a review of the cumulative effects of operator workaround using procedure 71111.16, "Operator Workarounds" (Section 1R16). The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 3.b.

The inspectors reviewed Items 3.c, "Provide reasonable assurance of design basis compliance for high energy line breaks, tornados, flooding, and seismic events," Item 4.a, "Resolve auxiliary feedwater system operability concerns due to a loss of suction from the Condensate System," and Item 4, b "Address turbine building flooding concerns." The inspectors review of these issues will be documented in Inspection Reports 05000305/2005010 and 05000305/2005011. The licensee completed all actions committed to for item 3.c.

The inspectors reviewed Commitment Letter Item 7.a, "Improve the quality of Engineering products." The inspectors reviewed an assessment of engineering that was performed to identify key areas for improvement. The licensee has incorporated all recommendations from the assessment into their corrective action program. The inspectors did not identify any critical issues associated with the engineering improvement initiatives. A review of the items that IRG had performed indicate that the IRG usually identified issues and added value by identifying deficiencies in various engineering products. The licensee completed all actions committed to for item 7.a.

The inspectors reviewed Commitment Letter Item 8.b, "Validate the appropriateness of the significance level assigned for all currently open conditions adverse to quality in the Corrective Action Program." The licensee performed a review of more than 1000 condition reports and found several discrepancies associated with the coding and significance level of the reports. The inspectors also performed an independent review of a random sampling of condition reports and found issues similar to those identified by the licensee. In addition to errors in significance classification, the inspectors identified other minor errors such as improper coding, trending, or timeliness issues. The licensee has entered the observed issues into their corrective action program. The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 8.b.

The inspectors reviewed Item 8.c, "Assure CAP trends are identified and used in the significance level of effort assigned during CAP screening." The inspectors performed this review in parallel with the review of issues for item 8.b. The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 8.c.

The inspectors reviewed Item 9.a, "Improve the quality of Apparant Cause Evaluations." The inspectors performed this review in parallel with the review of issues for item 7.a. The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 9.a.

The inspectors reviewed Item 10.a, "Validate the timeliness for resolution of current open significant issues." The inspectors performed this review in parallel with the review of issues for item 7.a. The inspectors identified no significant issues during their review. The licensee completed all actions committed to for item 10.a.

.6 Cross Reference of PI&R Findings Documented Elsewhere

Section 4OA2.4 describes a finding associated with a NCV of 10 CFR 50, Appendix B, Criterion XVI, when ineffective resolution of waste gas system issues repeatedly led to explosive gas mixtures in the WGDT. The licensee failed to identify and resolve recurring issues with explosive mixture conditions in the Quality Assurance 1 WGDTs and the effect on combustion loading in Fire Zone AX-23B. The inspectors determined that this finding impacted the cross-cutting issue of PI&R, in that, on several previous occasions, adverse WGDT levels existed under certain plant conditions and effective steps were not taken to address this fire protection issue during the current forced outage.

4OA5 Other

.1 Temporary Instruction (TI) 2515/163, "Operational Readiness of Offsite Power"

The inspectors completed the objective of TI 2515/163, "Operational Readiness of Offsite Power," which was to confirm, through inspections and interviews, the operational readiness of offsite power (OSP) systems in accordance with NRC requirements. On May 22 - 25, 2005, the inspectors reviewed licensee procedures and discussed the attributes identified in TI 2515/163 with licensee personnel. In

accordance with the requirements of TI 2515/163, inspectors evaluated licensee procedures against the attributes discussed below.

The operating procedures that the control room operator uses to assure the operability of the OSP have the following attributes:

1. Identify the required control room operator actions to take when notified by the transmission system operator (TSO) that post-trip voltage of the OSP at the NPP will not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply.
2. Identify the compensatory actions the control room operator is required to perform if the TSO is not able to predict the post-trip voltage at the NPP for the current grid conditions.
3. Identify the notifications required by 10 CFR 50.72 for an inoperable offsite power system when the nuclear station is either informed by its TSO or when an actual degraded voltage condition is identified.

The procedures to ensure compliance with 10 CFR 50.65(a)(4) have the following attributes:

1. Direct the plant staff to perform grid reliability evaluations as part of the required maintenance risk assessment before taking a risk-significant piece of equipment out-of-service to do maintenance activities.
2. Direct the plant staff to ensure that the current status of the OSP system has been included in the risk management actions and compensatory actions to reduce the risk when performing risk-significant maintenance activities or when LOOP or SBO mitigating equipment are taken out-of-service.
3. Direct the control room staff to address degrading grid conditions that may emerge during a maintenance activity.
4. Direct the plant staff to notify the TSO of risk changes that emerge during ongoing maintenance at the nuclear power plant.

The procedures to ensure compliance with 10 CFR 50.63 have the following attribute:

1. Direct the control room operators on the steps to be taken to try to recover offsite power within the SBO coping time.

The results of the inspectors' review were forwarded to office of Nuclear Reactor Regulation for further review and evaluation.

.2 Temporary Instruction 2515/161, "Transportation of Reactor Control Rod Drives In Type A Packages"

a. Inspection Scope

The inspectors completed this TI by conducting interviews and reviewing shipment logs to verify that: (1) the licensee had undergone refueling activities since calendar year 2002; and (2) did not ship irradiated control rod drive mechanisms in Department of Transportation Specification 7A, Type A packages during the time frame 2002 to the present.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. Gaffney and other members of licensee management on July 11, 2005. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Public radiation safety radioactive waste processing and transportation program inspection with Mr. M. Gaffney and other licensee staff on June 30, 2005.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

M. Gaffney, Site Vice President  
K. Hoops, Site Operations Director  
L. Hartz, Engineering Improvement Plan Director  
K. Davison, Plant Manager  
L. Armstrong, Site Engineering Director  
W. Henry, Outage and Scheduling Manager  
S. Baker, Radiation Protection Manager  
T. Breene, Regulatory Affairs Manager  
J. Ruttar, Operations Director  
W. Flint, Chemistry Manager  
W. Hunt, Maintenance Manager  
C. Long, Radwaste Supervisor

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

#### Opened

05000305/2005008-01	FIN	Inadequate controls for loose material that could interact with risk significant external plant transmission equipment and become transient initiators during adverse weather conditions. (Section 1R01)
05000305/2005008-02	URI	Potential common mode failure of RHR/LPI due to randomly or seismically induced flooding. (Section 1R06)
05000305/2005008-03	NCV	Failure to manage risk during periods where the grid condition was defined as unstable. (Section 1R13)
05000305/2005008-04	URI	Potential common mode failure of service water pumps due to clogging of bearing/cooling water supply filters. (Section 1R15)
05000305/2005008-05	NCV	Ineffective corrective actions for failure to minimize prior identified and predictable explosive gas concentrations in the WGDTs. (Section 4OA2)

#### Closed

05000305/2005008-01	FIN	Inadequate controls for loss material that could interact with risk significant external plant transmission equipment and become transient initiators during adverse weather conditions. (Section 1R01)
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05000305/2005008-05	NCV	Ineffective corrective actions for failure to minimize prior identified and predictable explosive gas concentrations in the WGDTs. (Section 4OA2)
05000305/2005008-04	NCV	Failure to manage risk during periods where the grid condition was defined as unstable. (Section 1R13)

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather

#### Documents and Procedures:

A-TAV-16; Abnormal Turbine Building and Screenhouse Ventilation System Operation; Revision Q  
OQAP; Modification Planning and Control; Section 9; Revision 15  
NMC Policy Number CP 0072; Summer Readiness; Revision 0  
E-0-05; Response to Natural Events; Revision M  
GNP-01.31.01; Plant Cleanliness and Storage; Revision I

#### Corrective Action Program Documents:

CAP 27447; No Apparent Process for Miscellaneous Material Storage and Potential Missiles Assessment; May 18, 2005; NRC-identified issue  
CAP 27631; Cable Reels Left in Substation (post modification); May 27, 2005

### 1R04 Equipment Alignment

#### Documents and Procedures:

GNP-08.04.01-1; SSA Checklist; Revision M; May 5, 2005  
Protected Equipment Operations Department Instruction; Revision 7; May 5, 2005

### 1R05 Fire Protection

#### Pre-Fire Fighting Procedures and Strategies:

#### Documents and Procedures:

Fire Protection Program Analysis; Revision 5  
Fire Protection Program Plan; Revision 5  
Individual Plant Examination for External Events; Section 9.0; Fire Analysis; Revision 0403  
FPP 08-08; FP - Control of Combustible Materials; Revision E  
Fire Brigade Drill Scenario Number 013; Special Drill - Test Brigade Movement Over Flood Barriers; Revision 1; Performed May 16, 2005  
FPP-08-10; Fire Drills; Revision C;

Corrective Action Program Documents:

CAP 26737; Door 15 Modification Hampers Fire Brigade Response; April 10, 2005  
CAP 27401; Flooding Barriers Impede Fire Fighting Efforts; May 16, 2005  
CAP 27417; Fire Brigade Members May Lack Appendix R Knowledge as Required by FPP; May 17, 2005; NRC-identified issue  
CAP 27488; Life Safety Code Concerns for Door 16; May 18, 2005

1R06 Flood Protection Measures

Documents and Procedures:

Calculation 2005-05708, " Internal Flood Levels Due to Postulated Piping Ruptures in General Pipe Lines in Auxiliary Building"  
Kewaunee Nuclear Power Plant - Safety Evaluation Report for Unresolved Safety Issue A-46 Program Implementation (TAC M 69455) dated April 14, 1998.

Corrective Action Program Documents:

CAP 24848; Vulnerability Due to Internal Floods; January 7, 2005

1R11 Licensed Operator Requalification Program

Documents and Procedures:

Emergency Operating Procedure E-0 "Reactor Trip and Safety Injection", Revision W; June 21, 2005  
Emergency Operating Procedure E-2 "faulted Steam Generator Isolation", Revision R; June 21, 2005  
Emergency Operating Procedure E-3 "Steam Generator Tube Rupture", Revision X; Draft used in simulator  
Functional Recovery Procedure H.1 "Resposne to Loss of Secondary Heat Sink", Revision W; Draft used in simulator

Corrective Action Program Documents:

CAP 27782; NRC Question Regarding 10 Minute Criteria for Isolation of AFW to Faulted S/G; June 3, 2005 (NRC identified)  
CAP 27951; Isolation of feed Flow to Ruptured S/G; June 14, 2005 (NRC identified)  
CAP 27952; Simulator Response to SGTR and MSLB; June 14, 2005 (NRC identified)

1R12 Maintenance Effectiveness

Documents and Procedures:

Maintenance Rule System Basis; Revision 8

Corrective Action Program Documents:

CAP 22907; Reverse Power Trip of TSC Diesel Generator During RT-DGM-10-TSC; August 28, 2004

CAP 23626; B Diesel Generator Frequency Low After Fast Start Per SP 42-047B; October 28, 2004

CAP 24851; Potential for EDG Derating Due to High Air Temperature Not Previously Evaluated; January 7, 2005

CAP 25055; Clarification Needed Regarding NRC Commitment 95-092; January 19, 2005

CAP 25154; Maintenance Rule (a)(1) Evaluation - TSC Diesel Generator; January 25, 2005

CAP 25326; Questioning of Lockwasher Requirements on Relays in Panel D-1A; February 3, 2005

CAP 25809; Work Not Completed Prior to Returning 1A EDG to Operable Status; February 28, 2005

CAP 19767; TSC Diesel Generator Radiator Cooling Fan Did Not Start; January 29, 2005

CAP 24619; TSC Diesel Generator Radiator Cooling Fan Motor Fails to Start; December 18, 2004

CAP 24674; TSC Diesel Generator Water Temperature Low; December 22, 2004

CAP 24676; TSC Diesel Generator Cooling Water Leak; December 23, 2004

CAP 25154; Maintenance Rule (a)(1) Evaluation - TSC Diesel Generator; January 25, 2005

CAP 25516; TSC Diesel Trip; February 16, 2005

CAP 25521; TSC Unavailability; February 16, 2005

CAP 25803; Recommended Compensatory Measures for TSC/SBO Diesel Generator Inoperable; February 28, 2005

1R13 Maintenance Risk Assessments and Emergent Work Control

Documents and Procedures:

Operations Department Instruction Book; Protected Equipment; Revision 7

GNP-08.04.01-1; SSA Checklist; Revision M; May 2-6, 2005

Protected Equipment Operations Department Instruction; Revision 7; May 2-6, 2005

Corrective Action Program Documents:

CAP 27160; SSA Does Not Account for External Events; May 3, 2005; NRC-identified issue

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events

Documents and Procedures:

SOP-AFW-05B-25; AFW-3A and AFW-3B Local Position; Revision A

Corrective Action Program Documents:

CAP 27591; AFW Pump 1A Tripped During SOP-AFW-05B-25; May 25, 2005  
CAP 27594; Improvement Sought in Valve Manipulation Following SOP-AFW-05B-25;  
May 26, 2005  
CAP 27617; N-31 Counts Vary with AFW Flow During SOP-AFW-05B-25; May 26, 2005  
CAP 27618; Lube Oil Pressure Low Alarms During SOP-AFW-05B-25; May 27, 2005

1R15 Operability Evaluations

Documents and Procedures:

DCR 2505; Valve Packing Modification; February 9, 1991  
GMP-130; Valve Packing Removal, Installation and Adjustment; Revision H  
RC-403 Evaluation for WO 04-7068; June 1, 2005  
GMP-147; Powell Check Valve Model #1561A and #3061A Inspection; Revision J  
Calculation C20016; Electrical Penetration Coordination Study; D.G. O'Brien Type 6  
Penetration/Siemens LA600 ST Circuit Breaker  
OPR 000107; SW Pumps A1, A2, B1, and B2 Seal/Bearing Water Supply; June 18,  
2005  
EWR 015109; Continued Reliance on Manual Action for Replacement of SW Seal  
Water Cuno Filter; January 29, 2004  
N-SW-02; SW System; Revision Z; August 17, 2004  
CMP-02-01; SW Dual Filter Cartridge Replacement; Revision C; April 15, 2003  
CEO 16095; Evaluate SW Strainer Fouling Issue; June 14, 2005  
EWR 000555; Perform Review of SW Issues Identified in ACE 2319; June 29, 2003  
S.P. Kinney Engineers, Inc. Bulletin 508.12; Kinney Automatic Sel-Cleaning Strainer;  
Model A; 1972  
Calculation C11201; 2000 SW System Testing; Revision Original; January 8, 2001  
Pioneer Service and Engineering Co. Letter; SW Strainers; September 28, 1971  
CAO16514; Continued Reliance on Manual Action for Replacement of SW Seal Water  
Cuno Filter; July 9, 2004  
PCR 16946; Continued Reliance on Manual Action for Replacement of SW Seal Water  
Cuno Filter; September 16, 2004  
EWR 15109; Continued Reliance on Manual Action for Replacement of SW Seal Water  
Cuno Filter; January 29, 2004  
Incident Report 94-100; Seal Water Supply Lines for SW Pumps A2, B1 and B2 Found  
to be Below 0.5 GPM; June 5, 1994  
Ingersoll-Dresser Pump Company Letter; Lubrication Flows for Worthington  
14QL18 Pump; April 18, 1994  
NMC Documentation of Information Sharing; Manual Operation of SW Pump Rotating  
Strainer; June 17, 2005  
NMC Documentation of Information Sharing; Information Sharing Brief on CMP-02-01  
SW Dual Filter Cartridge Replacement; June 17, 2005

Corrective Action Program Documents:

CAP 27685; Valve RC-403 Stuffing Box Damage; May 31, 2005

CAP 20292; RC-403 Body to Bonnet Leak and Packing Leak; March 4, 2004  
CAP 27421; Nuclear Auxiliary Operator Reports "Banging" Noise in SW Piping near SW-502; May 17, 2005  
CAP 26934; Calculation C10016 Rev 3 Conclusions Need Further Justification; April 20, 2005  
CAP 27564; B Component Cooling Pump Mounting Bolts; May 24, 2005  
CAP 27887; Inadequate Engineering Design Basis for SW Seal Water CUNO Filter Application; June 9, 2005  
CAP 27924; SW Strainer Fouling; June 10, 2005  
CAP 27783; Manual Operation of SW Pump Rotating Strainer; June 3, 2005  
CAP 27763; No SW Rotating Strainer Job Performance Measure for Manual Rotating and Backwashing; June 2, 2005  
CAP 25302; HRLM NRC Inspection Activity - SW Strainer Backwash from Outside the Control Room; February 2, 2005  
CAP 19722; Continued Reliance on Manual Action for Replacement of SW Seal Water Cuno Filter; January 27, 2004  
CAP 13826; SW Pump A2 Backup Bearing Lube Water Flow is Low at 0.4 GPM; December 1, 2002  
CAP 17330; Unable to Perform Check of Backup Bearing Lube Water Supply for SW Pump A2; July 21, 2003  
CAP 11913; Local Semi-Monthly Check of Backup Bearing Lube Water for SW Pump A1 Unsuccessful; June 16, 2002  
CAP 18133; SW Pump A1 Bearing Lube Water Flow Outside of Normal Range; September 21, 2003  
CAP 27361; SW Pump Bearing/Seal Water Flow Low; May 14, 2005  
CAP 27289; Analysis of Vortex Formation in RWST/Containment Sump; May 13, 2005  
CAP 27287; RHR Pump Runout / Loss of IA to RHR-8A/B; May 10, 2005

Corrective Action Program Documents:

1R19 Post-Maintenance Testing

Documents and Procedures:

GMP-236-02; MOV Diagnostic Test Analysis and Acceptability Determination; Revision E  
GMP-236-03; Motor-Operated Valve Diagnostic Testing; Revision E  
GMP-217; Adjustment, Setup and Reconditioning of Limitorque Motorized Valve Actuators; Revision P  
GMP-217-01; MOV Spring Pack Maintenance; Revision D  
SP-42-312A; Diesel Generator A Availability Test; Revision U; Performed May 26, 2005  
RT-DGM-10-TSC; TSC Diesel Generator; Revision AB

Corrective Action Program Documents:

CAP 27613; D/G A Kilowatts were Cycling During SP-42-312A; May 26, 2005  
CAP 26607; EDG 1A Oil Sample Indicates Possible Oil Contamination; April 1, 2005

CAP 27213; As-found MOV Test on ICS-5B Indicates Slight Inertial Overthrust; May 6, 2005

CAP 27853; TSC D/G Oil Level Low Following RT-DGM-10-TSC; June 7, 2005

CAP 28004; DG A Output Breaker Failed to Close; June 16, 2005

Work Orders:

WO 01-006737; GMP-236-02, GMP-236-03, GMP-217, and GMP-217-01 Data Sheets; May 10, 2005

WO 05-006238; Circuit Breaker-Diesel Generator 1A; June 16, 2005

1R20 Outage Activities

Documents and Procedures:

Operating Procedure N-CRD-49B; Reactor Startup; Revision AH; July 1, 2005

CAP 27147; Action Item from 4/20/05 NRC RIII Presentation - Inform NRC on Mode Holds; May 2, 2005

DCR Status Report; All Open DCRs; June 3, 2005

Operable But Degraded Report; June 6, 2005

Kewaunee Forced Outage 28 Startup Commitments; Status as of April 17, 2005

Completed Outage Mode Work Orders; May 5, 2005

Control Room Shift Turnover Checklist; May 2, 2005

CAP 28243; Reactor Start-up Aborted; July 1, 2005

Operating Procedure N-CRD-49B; Reactor Startup; Revision AG; November 22, 2004

KNPP System Description; System 49; Rod Control and Rod Position Indication; Revision 2; July 24, 2002

Infrequently Performed Tests and Evolutions Checklist; June 30, 2005

Tracking and Processing Record; TDAFW Pump Performance Monitoring During Plant Heatup; June 9, 2005

50.59 Applicability Review of SOP-AFW-05B-26, Revision Original; June 9, 2005

Special Operating Procedure SOP-AFW-05B-26; TDAFW Pump Performance Monitoring During Plant Heatup; Revision Original

Tracking and Processing Record; TDAFW Pump Oil Cooler Tests, DCR3577; June 8, 2005

50.59 Applicability Review of SOP-AFW-05B-23; Revision Original; June 10, 2005

Special Operating Procedure SOP-AFW-05B-23; TDAFW Pump Oil Cooler Tests, DCR3577; Revision Original;

Corrective Action Program Documents:

1R22 Surveillance Testing

Documents and Procedures:

Surveillance Procedure SP-31-335; Component Cooling Pump Discharge Check Valve Full Flow Test - IST; Revision C

SP-42-047B; Diesel Generator B Operational Test; Revision AB

Corrective Action Program Documents:

CAP 26669; Problem Encountered During SP-31-335 Component Cooling Pump Discharge Check Valve Check Valve Full Flow Test; April 6, 2005  
CAP 26672; Annunciator 47024-K Alarmed Unexpectedly in Control Room; April 6, 2005  
CAP 26681; Post Job Critique for SP-31-225; April 7, 2005

1EP6 Drill Evaluation

Documents and Procedures:

Simulator Exercise Guide LRC-05-DY301; Simulator Dynamic; Licensed Operator Requalification; Cycle 05-03; Revision B  
EPIP-AD-02; Emergency Class Determination; Revision AK  
EPIP-AD-03; KNPP Response to an Unusual Event; Revision AL  
EPMP-06.01; Preparation, Conduct, and Evaluation of Emergency Preparedness Drills and Exercises; Revision A  
EPMP-02.08; NRC PI Collection and Documentation; Revision C

Corrective Action Program Documents:

CAP 28102; Security Notifier Problems During Dynamic Simulator Scenario; June 22, 2005

2PS2 Radioactive Material Processing and Transportation

Annual Radioactive Effluent Release Reports for 2003 and 2004; Tables Summarizing Solid Waste and Irradiated Fuel Shipments; dated April 29, 2003 and April 26, 2004  
HP 09.031; Radioactive Material Shipping; Revision B  
HP 09.006; 14-170 III Cask Shipping Procedure; Revision C  
HP 09-004; Filling and Dewatering of High Integrity Containers; Revision B  
HP 05.003; Radioactive Material Receipt, Storage and Transfer; Revision E  
HP 09.011; Waste Stream Analysis; Revision C  
Waste Stream Isotopic Comparison Data (licensee analytical result versus contract laboratory analytical result); dated May 10, 2005, and June 27, 2005  
Teledyne Brown Engineering, Inc. Report of Analysis; Resin, Filter and DAW Waste Streams; dated August 6, 2003, May 6, 2005, and June 29, 2005  
NAD 01.16; Solid Radioactive Waste Process Control Program; Revision F  
Radioactive Material and Radwaste Shipment Summary Log for 2003 - May 2005; undated  
49 CFR Regulatory Awareness Training Lesson Plan; Transportation and Packaging of Radioactive Materials; 2005  
49 CFR Regulatory Awareness Training Lesson Plan Attendance Records; dated January 2003 - June 2005  
CAP 027229 and Apparent Cause Evaluation 002975; Workers Who Perform Hazardous Material Shipping Did Not Receive Training; dated May 6, 2005, and May 10, 2005, respectively

CAP 003570; Operating Experience - Radioactive Waste Package Minimum Detectable Activities (MDA) Values Greater than Class A Limit; dated April 21, 2004  
CAP 013586; Operating Experience - Sampling for 10 CFR Part 61 Analysis Indicates Presence of Unexpected Isotopes; dated November 6, 2002  
CAP 021525; Radwaste Shipment, NRC and Department of Homeland Security; dated June 11, 2004  
Self Assessment Report; Overview of Radiation Protection Department Self-Identified Problems and Actions Being Taken; dated January 27, 2004  
Nuclear Oversight Observation Report 2003-004-2-008; Radiological Protection; dated October 29, 2003  
Nuclear Oversight Observation Report 2004-002-2-020; Radiological Protection; dated June 28, 2004  
Nuclear Oversight Second Quarter 2004 Assessment Report 2004-002-2; July 2004 Shipment Manifest and Associated Documentation for Shipment 042103-1; Reactor Coolant Pump Internals; date shipped April 21, 2003  
Shipment Manifest and Associated Documentation for Shipment 050803-2; Westinghouse Contaminated Equipment; date shipped May 8, 2003  
Shipment Manifest and Associated Documentation for Shipment SPF-0803-15; Dewatered Resin to Waste Processor; date shipped August 13, 2003  
Shipment Manifest and Associated Documentation for Shipment SPF-1003-14; Dewatered Resin to Waste Processor; dated shipped October 31, 2003  
Shipment Manifest and Associated Documentation for Shipment 1203-12120; Filter to Low Level Waste Burial Site; date shipped December 18, 2003  
Shipment Manifest and Associated Documentation for Shipment 066204-1; DAW to Waste Processor; date shipped June 2, 2004  
Shipment Manifest and Associated Documentation for Shipment 062205-1; Dewatered Resin to Waste Processor; date shipped June 22, 2005

#### 40A1 Performance Indicator Verification

SP-32-113; Gaseous Radioactive Effluent Reports for Continuous Releases; Revision N Offsite Dose Calculation Manual Calculations for (Gas Decay Tank) Discharge Permits 05-0007 and 05-0009; dated March 20, 2005

#### 40A2 Identification and Resolution of Problems

CAP 27385; Gas Analyzer Indicates High Oxygen Content in Gas Decay Tank C; May 15, 2005  
CAP 27459; Waste Gas Decay Tank 'D' Hydrogen and Oxygen Concentrations Greater Than 2 percent; May 19, 2005  
CAP 27493; High Oxygen Content in WGDT A; May 20, 2005  
CAP 27873; WGDT D Hydrogen and Oxygen Levels Both Greater Than 2.0 percent; June 8, 2005  
CAP 27945; Waste Gas Decay Tank Oxygen Out of Specification; June 13, 2005  
ACE 2986; Gas Analyzer Indicates High Oxygen in Gas Decay Tank C; May 18, 2005  
N-GWP-32B; Gaseous Waste Processing and Discharge System; Revision AC  
N-GWP-32B-2; WGA Operation; Revision G  
CHEM-46.001; Auxiliary Building WGA; Revision E

4OA3 Event Follow-up

4OA5 Other

A-EG-43; Grid Stability and Energy Supply Conditions; Revision C  
A-EHV-39; Abnormal 4160V AC Supply and Distribution System; Revision AC  
Midwest ISO Communication and Mitigation Protocols for Nuclear/Electric System Interfaces; Revision 4  
GNP-11.08.03; Operability Determinations; Revision D  
GNP-11.08.04; Reportability Determinations; Revision D  
GNP-08.21.01; Risk Assessment for Plant Configurations; Revision G  
GNP-08.04.01; SSA Checklist; Revision M; May 5, 2005  
GNP-08.02.17; KNPP Substation and Transformer Bays Maintenance or Modification; Revision A  
BKG ECA-0.0; Loss of All AC Power; February 3, 2005  
ECA-0.0; Loss of All AC Power; Revision AF  
A-SUB-59; Restoration of Off-site Power; Revision B  
Time Validation for Procedure ECA-0.0; Performed February 17, 2005  
CAP 26732; A-EG-43 "Grid Stability and Energy Supply Conditions"; April 9, 2005; NRC-identified issue  
CAP 27487; Research for NRC Requested Information Reveals Procedure Weakness; May 20, 2005; NRC-identified issue  
CAP 27559; Post Trip Voltage Predictions; May 24, 2005; NRC-identified issue  
CAP 27554; NRC Question Pertaining to A-EG-43; May 24, 2005; NRC-identified issue  
CAP 27160; SSA Does Not Account for External Events; May 3, 2005; NRC-identified issue  
CAP 27555; KNPP Risk is Not Communicated to American Transmission Company; May 24, 2005; NRC-identified issue  
CAP 27556; Should GNP-08.02.17 Apply During Plant Shutdown Conditions; May 24, 2005; NRC-identified issue

Corrective Action Program Documents Initiated as a Result of NRC Observations or Questions

CAP 26660; Plastic Bucket Used for Fuel Oil Collection; April 5, 2005  
CAP 26687; Scaffold Procedure and Fire Protection Documentation Observation; April 7, 2005

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
AFW	Auxiliary Feedwater
CA	Corrective Action
CAP	Corrective Action Program
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
DAW	Dry-Active Waste
DOT	Department of Transportation
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
EWR	Engineering Work Request
°F	Degrees Fahrenheit
FIN	Finding
gpm	Gallons Per Minute
KNPP	Kewaunee Nuclear Power Plant
IR	Inspection Report
LOOP	Loss of Offsite Power
NCV	Non-Cited Violation
OPR	Operability Request
OWA	Operator Workaround
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
RA	Risk Assessment
Radwaste	Radioactive Waste
RAT	Reserve Auxiliary Transformer
RCS	Reactor Coolant System
RHR	Residual Heat Removal
SDP	Significance Determination Process
SOP	Special Operating Procedure
SSA	Shutdown Safety Assessment
SW	Service Water
TI	Temporary Instruction
TS	Technical Specification
TSC	Technical Support Center
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WGA	Waste Gas Analyzer
WO	Work Order
WGDT	Waste Gas Decay Tank