July 25, 2002

Mr. M. Warner
Site Vice President
Kewaunee and Point Beach Nuclear Plants
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT
NRC INTEGRATED INSPECTION REPORT 50-305/02-03

Dear Mr. Warner:

On June 30, 2002, the Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Nuclear Power Plant. The enclosed report documents the inspection findings which were discussed on June 24, 2002, with you, Mr. T. Coutu, 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, the inspectors identified three issues of very low safety significance (Green). These issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-Cited Violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Kewaunee facility. In addition, two violations of very low safety significance (Green) were identified by your staff and are listed in Section 4OA7 of the attached report.

The NRC has increased security requirements at Kewaunee in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to monitor overall security controls and will issue temporary instructions in the near future to verify by inspection the licensee's compliance with the Order and current security regulations.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and any response you provide, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (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/

Roger D. Lanksbury, Chief
Branch 5
Division of Reactor Projects

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

cc w/encl: T. Coutu, Manager, Kewaunee Plant
D. Graham, Director, Bureau of Field Operations
Chairman, Wisconsin Public Service Commission
State Liaison Officer

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-305
License No:	DPR-43
Report No:	50-305/02-03
Licensee:	Nuclear Management Company, LLC
Facility:	Kewaunee Nuclear Power Plant
Location:	N 490 Highway 42 Kewaunee, WI 54216
Dates:	April 1 through June 30, 2002
Inspectors:	J. Lara, Senior Resident Inspector Z. Dunham, Resident Inspector T. Madeda, Physical Security Inspector M. Castanedo, Reactor Engineer H. Gonzalez, Reactor Engineer
Approved By:	Roger D. Lanksbury, Chief Branch 5 Division of Reactor Projects

Summary of Findings

IR 05000305-02-03; Nuclear Management Company, LLC; on April 1 - June 30, 2002; Kewaunee Nuclear Power Plant; Operability Evaluations, Surveillance Testing, Event Followup

The inspection was conducted by resident inspectors and a physical security inspector. There were three Green findings identified during the inspection which were Non-Cited Violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the Significance Determination Process (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 Findings

Reactor Safety

- Green. The licensee failed to incorporate vendor information in an operations procedure which resulted in a service water pump being inappropriately declared operable.

  This finding was determined to be a Non-Cited Violation of Technical Specification 6.8.a, "Procedures." (Section 1R15)

- Green. The licensee failed to measure and record safety-related battery cell electrolyte levels on a quarterly basis due to surveillance procedure inadequacies, which inhibited the licensee's ability to monitor and trend battery cell performance.

  Technical Specifications 4.6.b.2 and 4.6.b.3 required that the licensee measure and record battery cell electrolyte level on a quarterly basis. A Non-Cited Violation was identified. (Section 1R22)

Other Activities

- Green. The licensee failed to adequately maintain design control of the component cooling water pumps, which resulted in the inability of a redundant train component cooling pump to provide cooling of safety-related loads due to the likely failure of the pump following a safety injection actuation.

  This finding was determined to be a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. (Section 4OA3.2)

B. Licensee-Identified Findings

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

Report Details

Summary of Plant Status

The plant was operated at approximately 100 percent power until May 5, 2002. On May 5, the unit was shut down to facilitate repairs to the component cooling water (CCW) heat exchangers. Following the repairs, the unit was restarted on May 15. The plant was operated at approximately 100 percent power for the rest of the period, except for a brief reduction in power to facilitate scheduled testing.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Anticipated Adverse Weather

a. Inspection Scope

On April 18, 2002, the facility was notified of potential adverse weather conditions which were predicted to develop in the area. The conditions included possible high winds and heavy rain and/or hail associated with a thunderstorm expected to move through the area. In addition, tornado warnings had been issued for surrounding counties. The inspectors walked down the facility's protected area to determine if there were any loose material or equipment which, if not properly secured, could become a missile hazard and impact outside transformers or other plant equipment. The inspectors also interviewed operations shift personnel and reviewed Procedure E-0-05, "Natural Disaster," Revision J, which prescribed actions for adverse weather conditions.

b. Findings

No findings of significance were identified.

.2 Substation Switchyard Walkdown

a. Inspection Scope

On April 19, 2002, the inspectors walked down the site substation switchyard to determine if the area was maintained and ready for seasonal adverse weather conditions which include potential high winds and tornados. The inspectors noted that a loss of offsite power contributed up to 55 percent of the facility's core damage frequency, and therefore considered the substation switchyard to be a potential risk significant area. Inspection attributes included evaluating housekeeping of the area, interviewing electrical maintenance personnel, and a review of the Updated Safety Analysis Report (USAR).

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors conducted partial walkdowns of the system trains listed below while the opposite train of equipment was out-of-service to verify that the systems were correctly aligned to perform their design safety function. In preparation for the walkdowns, the inspectors reviewed the system lineup checklists, normal operating procedures, abnormal and emergency operating procedures (EOPs), and system drawings to verify the correct system lineup. During the walkdowns, the inspectors also examined valve positions and electrical power availability to verify that valve and electrical breaker positions were consistent with, and in accordance with, the licensee's procedures and design documentation. The material condition of the equipment was also inspected.

- Safety Injection (SI) (Train 'A') - April 16, 2002
- Engineering Safeguards Features (Train 'B') - May 8, 2002
- Turbine-Driven and 'B' Motor-Driven Auxiliary Feedwater (AFW) Trains - June 4, 2002

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Fire Zone Inspections

a. Inspection Scope

The inspectors walked down the following areas to assess the overall readiness of fire protection equipment and barriers:

- Auxiliary Feedwater Pump Areas (Zone TU-95B) - April 5, 2002
- Cable Spreading Room (Zone AX-32) - April 8, 2002
- CCW Pump 'A' Area (Zone AX-23B) - April 11, 2002
- CCW Pump 'B' Area (Zone AX-23D) - April 11, 2002
- Turbine Building - April 29, 2002
- Charging Pump Area (Zone AX-23B) - May 20, 2002
- Screenhouse (Zone SC-70B) - May 24, 2002

Emphasis was placed on the control of transient combustibles and ignition sources, the material condition of fire protection equipment, and the material condition and operational status of fire barriers used to mitigate fire damage or propagation. Additionally, fire hoses, sprinklers, and portable fire extinguishers were inspected to verify that they were in satisfactory physical condition and were unobstructed. Passive features, such as fire doors, fire dampers, and fire zone penetration seals, were also inspected to verify that they were in satisfactory condition and capable of providing an

adequate fire barrier. In addition to the above walkdowns, the inspectors also observed hot work and fire watch activities on June 7, 2002, associated with an auxiliary feedwater pump cable replacement.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

.1 Screenhouse External Flooding Barriers

a. Inspection Scope

During the week of April 22, 2002, the inspectors reviewed the licensee's evaluation of the facility's susceptibility to external flooding to determine the design considerations for external flooding prevention at the facility. In general, the inspectors noted that the facility was not susceptible to external flooding from heavy rains; however, the facility was susceptible to a design seiche from Lake Michigan. Without installed flood barriers, a design seiche could cause flooding of the screenhouse, which contains the safety-related service water (SW) pumps, and potentially flood the 'A' train diesel generator and 4160-volt alternating current safety-related electrical buses. The inspectors reviewed the design attributes and inspected the flood barriers in the screenhouse to verify that they were installed properly and would perform their design function.

b. Findings

No findings of significance were identified.

.2 Internal Flooding Review and Walkdown

a. Inspection Scope

During the week of May 3, 2002, the inspectors performed walkdowns and design reviews to verify the adequacy of the licensee's flooding analysis for the 'A' train auxiliary feedwater pump room and the 'A' train 480-volts alternating current safety-related electrical bus switchgear. Flooding analysis attributes which were reviewed included:

- Potential flooding sources
- Material condition and assumed clearances of doors credited as flood barriers
- Material condition of drain systems
- Potential unidentified, unsealed penetrations between flood areas
- Credit for operator actions to isolate flooding

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On May 20, 2002, the inspectors observed a simulator dynamic requalification exam to evaluate crew performance, formality of communications, and annunciator response. In addition, the inspectors evaluated the crew's implementation of the facility's abnormal procedures and EOPs, oversight and direction provided by the shift manager and control room supervisor, and the adequacy of identification and reporting of the event classification in accordance with the facility's emergency plan. The inspectors also compared the simulator board configuration with the actual control room board configuration for consistency between the two to verify that the simulator environment matched the actual control room environment as closely as possible. The inspectors observed the post-scenario critique to determine whether performance issues were accurately identified and addressed.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the Maintenance Rule, 10 CFR 50.65, for the systems listed below. The inspectors reviewed recent maintenance rule evaluations to assess: (1) scoping in accordance with 10 CFR 50.65; (2) characterization of system, structure, and component (SSC) failures; (3) SSC safety significance classification; (4) 10 CFR 50.65(a)(1) or (a)(2) classification for the SSCs; and (5) performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1). The inspectors also interviewed licensee staff and evaluated the licensee's monitoring and trending of performance data.

Specific systems and/or components evaluated were:

- Diesel Generator Mechanical and Electrical (Systems 10 and 42) - April 12, 2002
- Station and Instrument Air (System 01) - April 29, 2002
- Control Room Air Conditioning (System 25) - May 13, 2002
- TSC [Technical Support Center] Diesel Generator (System 10 and 42) - June 7, 2002
- Service Water Pump Bearing Cooling Water Pressure Regulators - June 19, 2002

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and assessment of plant risk, scheduling, and configuration control during the planned and emergent work activities listed below. In particular, the licensee's planning and management of maintenance was evaluated to verify that on-line risk was acceptable and in accordance with the requirements of 10 CFR 50.65(a)(4). Additionally, the inspectors compared the assessed risk configuration against the actual plant conditions and any in-progress evolutions or external events to verify that the assessment was accurate, complete, and appropriate. Licensee actions to address increased on-line risk during these periods were also inspected to verify that actions were in accordance with approved administrative procedures.

- Valve BT-2A Failed to Open - April 5, 2002
- Work scheduled for week of April 15, 2002
- CCW Heat Exchanger Tube Leakage - May 2, 2002
- Work scheduled for week of May 20, 2002
- 'A' Train Auxiliary Feedwater Pump Cable Re-route - June 5, 2002

b. Findings

No findings of significance were identified.

1R14 Non-Routine Evolutions (71111.14)

.1 Plant Shutdown in Response to CCW Heat Exchanger (HX) Leakage

a. Inspection Scope

On May 5, 2002, the Unit was shutdown to facilitate repairs on the 'A' CCW HX which had developed tube leakage. The inspectors observed control room activities to evaluate control room staff adherence to plant shutdown procedures, equipment operation, and communications.

b. Findings

No findings of significance were identified.

.2 Plant Startup Following Repairs to CCW HXs

a. Inspection Scope

On May 15, 2002, the Unit was brought online following repairs to the CCW HXs (the licensee repaired the "B" CCW HX, as well as the "A" HX). The inspectors observed control room activities to evaluate control room staff adherence to plant startup procedures, equipment operation, and communications.

b. Findings

No findings of significance were identified.

.3 Power Reduction for AFW Quarterly Full Flow In-Service Testing

a. Inspection Scope

On June 22, 2002, the Unit was reduced to 95 percent power to facilitate quarterly AFW full flow in-service testing. The inspectors observed control room activities to evaluate control room staff adherence to plant shutdown procedures, equipment operation, and communications.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed design basis information and Technical Specification (TS) requirements to verify the technical adequacy of the operability evaluations listed below and to verify that system operability was properly justified and the system remained available, such that no unrecognized increase in risk occurred.

The inspectors reviewed the following operability evaluations:

- Action Request (AR) Corrective Action Process (CAP) 003980, NRC Resident Inspector Questions Conditions During B2 Traveling Water Screen Maintenance - April 25, 2002
- AR CAP 011530, CC [Component Cooling] System Leak Developed Following SW Flush of CC System HX - May 2, 2002
- AR CAP 011577, Valve AFW-2B Not Responding Properly - May 11, 2002
- AR CAP 011858, Over Current Coordination Concern During Safety Injection with Safeguard Bus Fed by Diesel Generator - May 13, 2002
- AR CAP 011913, Local Semi-monthly Check of Backup Bearing Lube Water for Service Water Pump 1A1 Unsuccessful - June 17, 2002

b. Findings

Introduction

A finding of very low risk significance (Green) was identified by the inspectors for the licensee's failure to accurately incorporate vendor information in an operations procedure. The inaccurate information resulted in the licensee inappropriately declaring a SW pump operable. This finding was a Non-Cited Violation of TS 6.8.a, "Procedures."

Description

On June 16, 2002, while performing a routine semi-monthly verification of the backup safety bearing lube water supply to the safety-related SW Pump 1A1, the licensee identified zero indicated flow and pressure with the safety water supply in service. The pump upper and lower bearings normally received lube water from a non-safety source of water, while the backup lube water supply is a safety-related source of water. The procedure contained a range of acceptable flow to the bearings: 0.75 to 3.0 gallons per minute. Following the identification of the problem, the licensee concluded that the pump was operable based on a note in Procedure N-SW-02, "Service Water System," Revision V, which stated that "Failure to achieve minimum flow or pressure does NOT affect operability." The licensee documented this operability evaluation in AR CAP 011913.

On June 17, the inspectors reviewed the licensee's operability determination and background documents relating to the procedure note. The inspectors determined that the note was added to provide information and guidance to operators when minimum lube water flow could not be achieved. Additionally, the pump manufacturer provided guidance that the pump should be shutdown if lube water flow was zero. The inspectors concluded that since the as-found safety-related backup lube water flow and pressure was zero, the 1A1SW pump should be declared inoperable until further engineering analysis could be performed. The inspectors discussed this concern with the licensee who subsequently declared the pump inoperable from the original time of discovery on June 16. The licensee documented the inspectors questions and concerns in AR CAP 011926 and 011938. The licensee subsequently replaced the backup lube water supply pressure regulator and returned the 1A1SW pump to service.

With the A1 service water pump inoperable, the associated 'A' train diesel generator was also declared inoperable per the TSs. At the time the licensee determined that the pump was inoperable, greater than 24 hours had elapsed from when the associated 'A' train diesel generator was considered inoperable. Therefore, the 'B' train diesel generator was not tested on a daily basis in accordance with TS 3.7, "Auxiliary Electrical Systems." The licensee subsequently tested the 'B' diesel generator within the 24-hour time restriction on June 17.

Analysis

The inspectors evaluated the issue of not incorporating the vendor acceptance criteria guidance for bearing lube water flow to the SW pumps (a mitigating system) utilizing the Significance Determination Process (SDP). The inspectors determined that the

licensee's failure to incorporate the vendor's guidance that the pump be shutdown if lube water flow was zero could become a greater safety concern if left uncorrected since the failure to shut the pump down affected pump operability. Accordingly, the inspectors determined the finding to be of greater than minor risk significance and that the finding impacted a mitigating system.

Utilizing the Phase 1 screening worksheet of Manual Chapter 0609, Appendix A, the inspectors characterized the finding to be of very low risk significance (Green) based on the following criteria; 1) there was never an actual loss of safety function for the SW system since SW pump 1A2 could still provide cooling to the 'A' train loads and the redundant 'B' train of SW was operable, 2) the finding was not associated with a design qualification deficiency, 3) the finding was not associated with an external event such as flooding, seismic, fire, or severe weather, and 4). the 1A1 SW pump was not inoperable for greater than the TS allowed time.

Enforcement

Technical Specification 6.8.a, "Procedures," required, in part, that written procedures be established and implemented that met the requirements and recommendations of Section 5.2.15 of American National Standards Institute N18.7-1976. Section 5.2.15 of American National Standards Institute N18.7-1976 required, in part, that procedures for operational activities reflect conditions that existed at the time the procedure was written. These conditions include the technical information available and industry experience. Contrary to TS 6.8.a, the licensee incorporated a note in Procedure N-SW-02, "Service Water System," Revision N, which did not reflect the current technical information available. Specifically, the procedure did not accurately reflect the vendor's acceptance criteria guidance that there be some measurable lube water flow (greater than zero) to the SW pump bearings to ensure pump operation. Because of the inaccuracy of the note, the licensee incorrectly declared the 1A1 SW pump operable even though measured lube water flow and pressure was zero. The failure to incorporate adequate acceptance criteria in Procedure N-SW-02 was considered to be a violation of TS 6.8.a, "Procedures." This issue was characterized to be of very low safety significance (Green). This Severity Level IV violation is being treated as a Non-Cited Violation (NCV 50-305/02-03-01, Failure to Incorporate Adequate Acceptance Criteria in Service Water Procedure) consistent with Section VI.A.1 of the NRC Enforcement Policy. As immediate corrective actions, the licensee repaired the 1A1 SW pump back-up lube water supply and revised Procedure N-SW-02 to accurately reflect the vendor information. The licensee documented the issues in the corrective action program as AR CAPs 11926 and 11938.

1R16 Operator Workarounds (OWAs) (71111.16)

.1 OWA 02-06

a. Inspection Scope

On April 11, 2002, the licensee determined that Valve MD-400-1, used for directing secondary analytical sample drains to either the steam generator blowdown holdup tank or to the turbine building sump, was stuck in an intermediate position. The inspectors

noted that in this condition, during steam generator sampling following a steam generator tube leak or rupture, the sample drains would be contaminated and, therefore, potentially result in a release path to the turbine building sump. The turbine building sump pumps various secondary drains to the circulating water discharge and ultimately to Lake Michigan and the environment. The inspectors reviewed OWA 02-06 which documented contingency actions for operators to take in the event of a steam generator tube rupture. The inspectors evaluated OWA 02-06 to determine whether there was any impact on the operators to properly respond to plant transients and accidents and to implement abnormal operating procedures and EOPs.

b. Findings

No findings of significance were identified.

.2 OWA 02-08

a. Inspection Scope

During a Unit startup on May 15, 2002, the Unit condenser steam dumps cycled erratically while in automatic pressure control mode. The control room operators took manual control of the dumps and operation stabilized. The inspectors reviewed the conditions surrounding the erratic operation to determine whether the issue warranted an OWA, since the steam dump operation in automatic steam pressure mode was prescribed in the facility's EOPs. On May 20, the inspectors concluded that the issue did warrant an OWA, but noted that the licensee had not issued an OWA at that time. The inspectors communicated their conclusions to operations management. On May 21, the licensee issued OWA 02-08 which prescribed contingency actions to take in the event of future erratic steam dump operation. The inspectors evaluated OWA 02-08 to determine whether the contingency actions impacted the operators to properly respond to plant transients and accidents and to implement abnormal operating procedures and EOPs.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed proposed revisions to the following EOPs:

- E-0, "Reactor Trip or Safety Injection," Revision T
- ES-1.3, "Transfer to Containment Sump Recirculation," Revision S
- ECA-1.1, "Loss of Emergency Coolant Recirculation," Revision M

The inspectors reviewed the proposed changes, USAR, and design accident documentation to verify that the procedures would meet design accident requirements and that the procedures could be performed as written.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed maintenance and associated post-maintenance testing activities associated with the maintenance and emergent work activities listed below to verify that the test was adequate for the scope of the maintenance work which had been performed, and that the testing acceptance criteria were clear and demonstrated operational readiness consistent with the design and licensing basis documents. The inspectors attended pre-job briefings, when applicable, to verify that the impact of the testing had been properly characterized, observed or reviewed the test to verify that the test was performed as written and all testing prerequisites were satisfied, and reviewed the test acceptance criteria. Following the completion of the test, the inspectors conducted walkdowns, when applicable, of the affected equipment to verify that the test equipment was removed and that the equipment was returned to a condition in which it could perform its safety function.

- Negative Rate Trip Reactor Protection Relay Replacement N-42 - April 1, 2002
- Valve BT-2A, Steam Generator Blowdown Containment Isolation Valve, Motor-Operated Valve Actuator Repair - April 5, 2002
- Valve SW-301A, Diesel Generator 'A' SW Outlet Isolation Valve, Actuator Replacement - May 2, 2002
- Repair of CCW HXs Trains 'A' and 'B' - May 15, 2002
- 'A' Auxiliary Feedwater Motor Power Cable Re-route - June 5, 2002
- Technical Support Center Diesel Generator Coolant Leak Repair - June 6, 2002
- Diesel Generator 'B' Vibration Alarm and Associated Wiring Problem - June 13, 2002
- Replace SW Supply Pressure Regulator to SW Pump 1A1 - June 18

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage (71111.20)

.1 Unit Shutdown to Facilitate CCW HX Repairs

a. Inspection Scope

On May 5, 2002, the Unit was shutdown to facilitate inspection and repair of the 'A' CCW HX. During the shutdown, the inspectors reviewed shutdown safety assessments to verify that shutdown risk was adequately analyzed and addressed, performed control room observations to evaluate reactor operator performance during plant shutdown conditions, and performed equipment walkdowns to verify that required safety equipment was available to perform their design safety function in the event of an emergency

condition. Additionally, the inspectors reviewed plant status to verify that TSs were met prior to making Unit mode changes during the reactor startup and that safety equipment was aligned to mitigate design accident conditions.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing on risk-significant equipment to verify that the equipment was capable of performing its intended safety function and that the surveillance tests satisfied the requirements contained in TSs and the licensee's procedures, and that the equipment was capable of meeting its design function. During the surveillance tests, the inspectors reviewed the test to verify that it was adequate to demonstrate operational readiness consistent with the design and licensing basis documents, and that the testing acceptance criteria were clear. Portions of the test were observed to verify that the test was performed as written, that all testing prerequisites were satisfied, and that the test data were complete, appropriately verified, and met the requirements of the testing procedure. Following the completion of the test, where applicable, the inspectors conducted walkdowns of the affected equipment to verify that the test equipment was removed and that the equipment was returned to a condition in which it could perform its safety function.

The inspectors observed and reviewed the performance of the following surveillance testing on risk-significant equipment:

- SP 38-101A, "Station Battery BRA-101 Monthly and/or Quarterly Test," Revision F - April 5, 2002
- SP 42-322A, "Bus 1-5 Auto Inhibit Relay Test," Revision B - April 8, 2002
- SOP CC-31-19, "CC Heat Exchanger A Leak Test," Original Revision - May 3, 2002
- SP 31-168, "Component Cooling Pump and Valve Test - IST [Inservice Testing]," Revision AH - May 22, 2002
- SP 34-99B, "Train B RHR [Residual Heat Removal] Pump and Valve Test - IST," Original Revision - June 11, 2002

b. Findings

Introduction

A finding of very low risk significance (Green) was identified by the inspectors for failure to comply with TS requirements and related inadequate acceptance criteria in the safety-related battery surveillance procedure. This finding was a Non-Cited Violation of TSs 4.6.b.2 and 4.6.b.3.

Description

On April 5, 2002, the inspectors observed the monthly surveillance on the 'A' train safety-related battery. As part of the surveillance activities, plant personnel planned to add water to the battery cells since numerous cells had electrolyte levels at the "low-level" mark. During a review of the TS and the surveillance procedure, the inspectors noted that TS 4.6.b required that battery electrolyte levels and specific gravity be measured on a quarterly frequency, and that all measurements be recorded and compared with previous data to provide for detection of battery cell deterioration. The surveillance procedure prescribed taking specific gravities but did not direct the measurement or recording of the cell electrolyte level. Measurement of cell electrolyte levels was used to correct the measured specific gravity since specific gravity varies with electrolyte temperature and level. Monitoring of the battery's specific gravity provided useful trending data, which along with monitoring of other battery parameters, such as physical condition and individual cell voltages, could provide for early indication of battery degradation.

The inspectors also noted that the battery vendor manual provided instruction for correcting specific gravity for electrolyte level variances and also provided an acceptable minimum/maximum specific gravity range (1.200 to 1.220), which was level corrected to a reference "high-level" mark. In contrast, the surveillance procedure only required a minimum acceptance criterion for specific gravity, which was not level corrected (1.200), and did not state an upper limit for measured specific gravity.

During the conduct of this surveillance procedure, the plant personnel determined that water should be added to the 'A' train battery, since a majority of the cells were at the "low-level" mark for electrolyte level. The inspectors observed that the procedure included a note which prescribed taking specific gravities on all cells prior to any water addition. However, the inspectors observed the technicians prepare to add water to a battery cell without first measuring specific gravity. The inspectors discussed the note with the technicians, who subsequently discussed the issue with their supervisor. The technicians then measured the specific gravity before adding water. The inspectors also reviewed the historical test data for previous water additions and determined that there was insufficient documentation to conclude that specific gravities had ever been taken prior to water additions on cells for which water had been added.

The inspectors discussed the above concerns with electrical maintenance management. The licensee documented the concerns in AR CAP 003894 on April 15, 2002.

On May 29, 2002, the licensee performed the quarterly station battery surveillance again. The inspectors noted that the licensee again did not measure nor record electrolyte level as required by TSs, nor had the procedure been revised to reflect the vendor's recommended specific gravity acceptance criteria. The inspectors considered this to be a repetitive issue in that the concerns raised by the TS non-compliance and procedural inadequacies had not been addressed prior to the performance of the next battery surveillance procedure and that TSs were violated a second time.

Analysis

The inspectors evaluated the risk significance of the TS non-compliance and the inadequate procedure acceptance criteria as a single issue which could impact battery performance. The surveillance procedure inadequacies, which contributed to the TS non-compliance, prevented effective trending of battery data to ensure timely and early detection of degraded battery cell conditions. The inspectors considered the issue to be of greater than minor risk significance because the inability to effectively monitor and trend battery cell conditions could have impacted the reliability and availability of the 'A' safeguards battery (a mitigating system). The inspectors utilized the SDP Phase 1 screening worksheet to evaluate the risk significance of the issue and determined that it was of very low risk significance (Green). Assumptions and factors which mitigated the risk significance of this finding in the Phase 1 screening included: 1) The finding was not associated with a design or qualification deficiency, 2) The finding did not result in an actual loss of the battery; therefore the battery could perform its safety function, and 3) The finding was not associated with a system required for mitigation of external events such as seismic, fire, flooding, or severe weather.

Enforcement

Technical Specifications 4.6.b.2 and 4.6.b.3 required, in part, that the specific gravity and height of electrolyte in every battery cell be measured on a quarterly basis and that those measurements be recorded and compared with previous data to detect signs of deterioration. Contrary to the above, on May 29, 2002, and during previous quarterly surveillances, safety-related battery cell electrolyte level was not measured nor recorded. Without measuring or recording electrolyte level, the licensee was unable to properly trend and analyze specific gravity data which could provide early detection of a deteriorating battery cell. The failure to measure and record battery cell electrolyte level was considered to be a violation of TSs 4.6.b.2 and 4.6.b.3. This issue was characterized to be of very low safety significance (Green). This Severity Level IV violation is being treated as a Non-Cited Violation (NCV 50-305/02-03-02, Failure to Meet Battery Surveillance TS Requirements) consistent with Section VI.A.1 of the NRC Enforcement Policy. The licensee subsequently took corrective actions to implement a temporary change to the surveillance procedure which included steps to measure and record electrolyte levels on a quarterly basis. The licensee documented the concerns and corrective actions in AR CAP 003894.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On April 30, 2002, the licensee performed an emergency planning drill. The drill was designed to exercise the licensee's onsite and offsite emergency response organization and emergency plan. The inspectors observed portions of the drill from the control room simulator and the technical support center to evaluate the licensee's evaluation, classification, and notification of the simulated event. The inspectors also attended the general drill critique and the debrief to determine whether the licensee was properly identifying drill weaknesses.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP4 Security Plan Changes (71130.04)

a. Inspection Scope

The inspector reviewed Revision 16 to the Kewaunee Nuclear Power Plant Security Manual to verify that the changes did not decrease the effectiveness of the submitted document. The referenced revision was submitted in accordance with 10 CFR 50.54(p)(2) requirements by licensee letter dated May 6, 2002.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed the licensee's Performance Indicator data collection process and historical data from the second quarter of 2001 through the second quarter of 2002, to verify the accuracy of collected and submitted data. Additionally, the inspectors reviewed corrective action records, monthly operating reports, control room logs, and licensee event reports to independently verify the data that the licensee had collected. The following Performance Indicators were evaluated:

- Safety System Functional Failures
- Unplanned Transients per 7000 Critical Hours
- Unplanned Scrams per 7000 Critical Hours
- Scrams with Loss of Normal Heat Removal

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Missed TS Surveillance Requirements for the Safety-Related Batteries

On April 5, 2002, the inspectors communicated concerns to electrical maintenance management regarding missed quarterly TS surveillance testing requirements on the 'A' train safety-related battery and associated surveillance procedure inadequacies. On May 29, the licensee performed the quarterly surveillance test without correcting the surveillance procedure inadequacies and again failed to perform required quarterly TS surveillance testing. The inspectors noted that the licensee failed to adequately evaluate the initial non-compliance, and therefore failed to develop and implement appropriate corrective actions. (See Section 1R22)

4OA3 Event Follow-up (71153)

.1 (Closed) Unresolved Item (URI) 50-305/01-14-02: Unanalyzed Condition - Inoperable Service Water Train, Phase 3 SDP

Introduction

Two licensee identified findings of very low risk significance (Green) were determined to be violations of NRC requirements and were determined to be NCVs. (See Section 4OA7.1 and 4OA7.2 of this report for enforcement disposition).

Description

The licensee had identified in October 2001 that high flows to the nonsafety-related turbine building SW header, combined with the known lake water temperatures, resulted in one train of safety-related SW system being unable to perform its safety function. This URI was opened pending completion of further licensee review and NRC completion of a Phase 2 SDP. (See Inspection Report 50-305/01-14, Section 4OA3.1).

Analysis

The NRC evaluated the risk significance of the inspection finding in terms of the contribution from both internal, external, and Large Early Release Frequency (LERF) events. Consistent with the guidance for the SDP, the change in core damage frequency (ΔCDF) was evaluated stemming from the identified plant design deficiency. External initiating events, seismic, fire, and tornado/high winds were individually considered. The following summarizes the NRC's Phase 2 risk assessment.

Internal Initiating Events

Assumptions:

1. The SW system had been in this condition since original construction. The licensee determined that the degraded condition only existed during the summer when SW (lake water) temperature exceeded 57.9 degrees Fahrenheit. The licensee further determined that the lake water was above 57.9 degrees

Fahrenheit for 16.1 percent of the previous year. This represented an exposure time for the degraded condition of 59 days, or Column 1 of Table 1 of the SDP worksheets. Consequently, the initiating event likelihood rating was based on greater than 30 days of exposure time.

2. Recovery of the SW train aligned to the turbine building loads was not credited as there was no reasonable assurance that operators would recognize that excessive flow was being diverted from safety-related loads. However, once recognized, recovery of the SW train aligned to the turbine building loads could be accomplished by closure of either SW-4A or SW-4B from the main control room.

3. Only one of the two SW trains was considered degraded when aligned to the nonsafety-related turbine building loads. The affected SW train serviced the following safety-related equipment: diesel generator, RHR pump seal cooler, SI pump seal cooler, CCW heat exchanger, and several fan coil units. The licensee was able to demonstrate through engineering calculations that the RHR and SI pump seal coolers did not impact the RHR or SI pumps during initial injection utilizing Refueling Water Storage Tank (RWST) water. In addition, the licensee was able to demonstrate that the diesel generator was provided sufficient cooling flow during Loss of Off-site Power (LOOP) or Loss of Coolant Accident (LOCA) conditions.

4. Sufficient SW flow to safety-related equipment would be available following a turbine trip upon closure of Valves SW 1801A-1 (SW 1801B-1), Turbine Oil Reservoir Oil Coolers 1A (1B), and SW 2602, Generator Hydrogen Coolers 1A1 and 1B1. These were air-operated flow control valves controlling turbine lube oil and hydrogen temperature. The valves were nonsafety-related temperature control valves that typically closed within 30 minutes of a turbine trip. A turbine trip signal would be generated following most transients including a turbine trip, SI signal, and LOCA conditions. Following closure of these valves, SW flows in the SW train aligned to the turbine building would be sufficiently restored to satisfy safety-related loads. Therefore, credit for these turbine building valves was provided for all initiating events except LOOP and Loss of Instrument Air (LOIA). Credit was not provided for closure of the turbine building valves described above during a LOOP or LOIA as there would be no assurance that these valves would close under LOOP or LOIA conditions. Therefore, there would be no assurance that sufficient cooling to safety-related equipment could be assured under these conditions. On a LOIA, Valves SW 1801A-1, SW 1801B-1, and SW 2602 fail open.

Worksheet Results

LOOP

LOOP (2) + AFW (4) + High Pressure Recirculation (HPR) (2) = 8
LOOP (2) + AFW (4) + Early Inventory High Pressure Injection (EIHP) (2) =8
LOOP (2) + Emergency Alternating Current Power (EAC) (3) + Turbine-Driven Auxiliary Feedwater Pump Train (TDAFW) (1) + HPR (2) = 8

LOOP (2) + EAC (3) + TDAFW (1) + Motor Driven Auxiliary Feedwater Pump Train (MDAFW) (3) + EIHP (2) = 11

LOIA

LOIA (3) + Secondary Heat Removal (AFW) (4) + Main Feedwater (MFW) (2) = 9

Based on the LOOP sequences, this issue was considered Green (10^{-7}). In Licensee Event Report (LER) 50-305/2001-005-02, the licensee stated that the incremental increase in core damage frequency was 1.1E-7/year based on the site-specific probabilistic risk assessment.

External Events

The NRC determined that the ΔCDF due to external events was small; much less than one order of magnitude.

1. Fire - The Kewaunee fire-induced CDF estimate was approximately 1.8E-4/year based on the IEEE submittal; however, the licensee had just completed an Individual Plant Examination for External Events (IEEE) update which stated that the Fire CDF contribution was approximately 2.3E-4/year. Fire was not found to result in a significant contribution to ΔCDF. The plant coped with major fires by initiating a self-induced station blackout. The blackout prevented spurious equipment operation and possible damage to equipment by hot shorts before control could be transferred from the control room to the dedicated shutdown panel. The licensee's Procedures E-FP-08, "Emergency Operating Procedure-Fire," E-0-06, "Fire in Alternate Fire Zone," and E-0-07, "Fire in Dedicated Fire Zone," provided direction to operators during a fire emergency which resulted in the operators inability to monitor or control major plant parameters necessary for safe shutdown from either the control room or the dedicated shutdown system. These procedures required the operators to close the turbine building header isolation Valves SW-4A (SW-4B) following recovery of onsite alternating current power and restoration of the SW system. Isolation of the header from the respective safe shutdown train would result in restoration of the safety-related portion of the SW system, thus restoring full flow to safety-related components. Therefore, there would be a negligible impact on Fire CDF as a result of the SW degradation.

2. Seismic - The Kewaunee seismic-induced CDF estimate was approximately 1.1E-5/year based on the IEEE submittal; however, the licensee had just completed an IEEE update which stated that the seismic CDF contribution was approximately 9.79E-6/year. A large fraction (95%) of the seismic CDF was determined by 8 accident sequences involving the LOOP, surrogate components, and operator error. The surrogate components involved the following systems/structures: containment, steam generators, screen house, auxiliary building, turbine building, reactor vessel, emergency alternating current power, SW, and direct current power. Operator error was dominated by operators failure to shift auxiliary feedwater pumps from the condensate storage tanks to SW system. While a surrogate approach could result in conservative results, it did

not produce valid probabilistic risk analysis insights/findings. Specifically, surrogate components occurred in dominant sequences, and, as a result, the dominant risk contributors could be different than those obtained by the licensee. Therefore, a meaningful set of dominant contributors could not be found in the IEEE.

Dominant contributors from seismic Probabilistic Risk Analysis (PRAs), that typically impact internal event performance deficiencies, involve seismic failure of electrical systems, including failure of offsite power systems. The NRC evaluated the external event contribution due to seismic events utilizing the methodology from NUREG/CR-6544, Methodology for Analyzing Precursors to Earthquake-Initiated and Fire-Initiated Accident Sequences. The NRC compared the risk contribution from a median earthquake on the LOOP seismic fragility curve that causes a LOOP event against a randomly occurring LOOP. The risk due to a seismic LOOP was found to be several orders of magnitude lower than the randomly occurring LOOP. This is a result of the seismic initiating event frequency (based on the Lawrence Livermore National Laboratory Hazard Curve) of 2E-5/year verses a random LOOP initiating event frequency (based on Kewaunee updated PRA) of 3E-2/year. Overall, seismic events were not found to result in a significant contribution to ΔCDF.

3. High Winds, Floods, and other External Events - The IEEE study concluded that the high winds, floods, and other external events had an insignificant contribution to the CDF.

Considering the information available in the IPEEE, safety evaluation report, and technical evaluation reports, accounting for external events had a minimal impact on plant risk.

Potential Risk Contribution due to LERF

In large dry pressurized water reactor containments, only a subset of core damage accidents can lead to large, unmitigated releases from containment that have the potential to cause prompt fatalities prior to population evacuation. Core damage sequences of particular concern for large dry pressurized water reactor containments are inter-system LOCA and steam generator tube rupture sequences. Neither of these initiating event sequences were determined to be associated with the finding. The analysts also obtained the licensee's Level 2 results, which provided a more refined tool than MC 0609, Appendix H, "Containment Integrity SDP." The licensee determined that the incremental increase in LERF to be approximately 6.0E-9/year, based on the site-specific probabilistic risk assessment. In summary, the NRC risk analysts determined that the change in LERF was negligible.

The NRC's risk evaluation determined that the increase in CDF due to internal events was of very low safety significance and the risk impact of the inspection finding due to external initiating events to be very small. The potential risk contribution to LERF due to the SW train unavailability was determined to be negligible. The NRC concluded that the risk significance of the inspection finding based on the change in CDF due to internal, external and LERF considerations to be of very low safety significance (Green).

The inspectors reviewed the licensee's corrective actions as documented in LERs 50-305/2001-005-00, 2001-005-01, and 2001-005-02. Corrective actions included additional testing of the SW system under postulated accident conditions, installation of a design change to automatically isolate the turbine building SW header from the safety-related SW headers under certain flow conditions, and implementation of administrative controls to control plant configuration in the event that a required component becomes inoperable. The inspectors determined that the corrective actions were acceptable.

Enforcement

During the review, the inspectors identified two violations of NRC requirements that were considered licensee-identified (See Section 4OA7.1 and 4OA7.2 for enforcement disposition).

.2 (Closed) URI 50-305/01-17-02: Unanalyzed Condition - One Component Cooling Water Train Inoperable Due to One Component Cooling Pump Operating in a Deadhead Condition

Introduction

A finding of very low risk significance (Green) was identified by the inspectors for failure to maintain adequate design control over the CCW system. This finding was an NCV of 10 CFR Part 50, Appendix B, Criterion III, Design Control.

Description

The licensee had identified in January 2002 that a redundant train CCW pump would be unavailable to provide cooling of safety-related loads due to the likely failure of one pump shortly after starting on a SI actuation signal. A URI was opened pending the completion of a Phase 3 SDP analysis (See Inspection Report 50-305/01-17-02, Section 4OA3.1).

Analysis

The NRC performed a Phase 2 analysis. The initial results yielded a potentially risk significant finding. Although the Kewaunee Site Specific Worksheets have not been benchmarked, the licensee's preliminary results also identified that the finding was potentially risk significant. Table 2, "Initiators and System Dependency for Kewaunee Nuclear Power Plant," specified that all initiating event worksheets be worked for a CCW finding. The NRC noted that the CCW system was a single train support system that serviced both trains or divisions of emergency core cooling systems. As such, the dependency matrix should only require the Loss of CCW (LCCW) worksheet to be performed for a CCW finding.

The NRC reviewed the Phase 2 worksheets for a LCCW and found it to be consistent with the licensee's Individual Plant Examination and current PRA model. The loss of CCW resulted in loss of cooling to the reactor coolant pumps, the RHR heat exchangers, the RHR pumps, the SI pumps, and the containment spray pumps. Loss of CCW most

likely resulted in a manual reactor trip because of loss of cooling to the reactor coolant pumps. Success of the charging function required either continued operation of 1of 3 charging pumps for seal injection or operator action to start a charging pump within 30 minutes following a reactor trip. The worksheets were based on these assumptions. However, the licensee was able to demonstrate that both the RHR and SI pumps would not be impacted during the initial injection phase of an accident as the pump seals would be adequately cooled by the RWST injection water. The seals were found to only be impacted by the hotter water from the containment sump during the recirculation phase of injection. During its review, the licensee recognized that the Kewaunee PRA did not credit High Pressure Injection (HPI) following failure of charging, although EOPs had been in place to perform this activity.

The licensee modified the current PRA to reflect credit of the SI pumps following failure of the charging pumps. This also included throttling flow of the SI pumps to preserve inventory and refilling the RWST following initial injection. As documented in LER 50-305/2002-001-00, dated March 11, 2002, the licensee concluded that the CCW finding resulted in an incremental core damage frequency of 8.5E-7. This equated to a finding of very low safety significance (Green).

As a result of the changes to the licensee's PRA, the NRC performed a Phase 3 analysis to evaluate the impact of the changes and appropriate credit to be provided in the Kewaunee Site Specific Worksheets. The resident inspectors reviewed the EOPs, operations procedures, and interviewed a control room supervisor as part of this review. The licensee was found to have had procedures in place to refill the RWST, from the reactor makeup storage tanks, throttle back on SI flow, and add boron to the RWST as part of actions to mitigate the potential loss of CCW. Hence, procedures were determined to be adequate. The NRC modified the LCCW worksheets to reflect credit for this activity.

Kewaunee Revision 0 LCCW Worksheet

LCCW - AFW - MFW
LCCW - Charging Pumps (CHG)

Kewaunee Modified LCCW Worksheet

LCCW - AFW - MFW
LCCW - CHG - HPI
LCCW - CHG - RWST REFILL

In performing the LCCW worksheet, the NRC determined the LCCW initiating event frequency for one year duration was a "C" or 10^{-3} order of magnitude. However, because the inspection finding increased the likelihood of a LCCW, the initiating event frequency was increased one order of magnitude. This resulted in the following:

LCCW - AFW - MFW = 2 + 4 + 3 = 9
LCCW - CHG - HPI = 2 + 3 + 3 = 8
LCCW - CHG - RWST REFILL = 2 + 3 + 2 = 7

Therefore the issue was determined to be a 10^{-7} issue or a finding of very low safety significance (Green).

The inspectors reviewed the licensee's corrective actions as documented in LER 50-305/2002-001-00. Immediate corrective actions consisted of preliminary reviews of other systems to ensure that adequate mini-flows were assured to prevent pump dead-heading, implementation of administrative controls of CCW pump operation to prevent pump dead-heading, and initiation of a root cause evaluation. Planned corrective actions consisted of a design change to install mini-flow recirculation lines on the CCW pumps to eliminate dead-heading. The inspectors determined that the corrective actions were acceptable.

Enforcement

Appendix B of 10 CFR Part 50, Criterion III, Design Control, required, in part, that measures be established to assure that applicable regulatory requirements and design basis were correctly translated into specifications and procedures, and instructions. The design control measures must provide for verifying the adequacy of the design, such as by the performance of design reviews or by the performance of a suitable testing program. Contrary to the above, the licensee's design controls failed to ensure that the CCW system would be able to perform its regulatory and safety functions. Specifically, from initial plant startup until January 2002, the component cooling water system design was inadequate in that a redundant train component cooling pump would be unavailable to provide cooling of safety-related loads due to the likely failure of one pump following a safety injection actuation. The failure to maintain an adequate CCW system design was considered to be a violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. This self-revealing finding was characterized to be of very low safety significance (Green). This Severity Level IV violation is being treated as an NCV (NCV 50-305/02-03-03, Failure to Maintain Design Control of Component Cooling Water Pumps) consistent with Section VI.A.1 of the NRC Enforcement Policy. The licensee documented the concerns and corrective actions in Kewaunee Assessment Process (KAP) WO 02-156, WO 02-1188, WO 02-1932, WO 02-2210, and LER 2002-001-00.

.3 (Closed) LERs 50-305/2001-005-00, 2001-005-01, 2001-005-02: Unanalyzed Condition: Non-Safety-Related Service Water Header Flows Affects Safety-Related Components

These LERs documented the licensee's identification that high flows to the nonsafety-related turbine building SW header, combined with the known lake water temperatures, resulted in one train of safety-related SW system being unable to perform its safety function (See Inspection Report 50-305/01-14, Section 4OA3.1). This issue, which was also an URI (50-305/01-14-02), was reviewed by the inspectors and documented in Section 4OA3.1 of this report.

.4 (Closed) LER 50-305/2002-001-00: Unanalyzed Condition: Strong Pump - Weak Pump Interaction Between Component Cooling Water Pumps

This LER documented the licensee's identification that under certain operating conditions a redundant train CCW pump would be dead-headed and subsequently damaged. This resulted in one train of CCW being determined to be inoperable

(See IR 50-305/01-17, Section 4OA3.1). This issue, which was also an URI (50-305/01-17-02), was reviewed by the inspectors and documented in Section 4OA3.2 of this report.

4OA6 Management Meetings

Exit Meeting Summary

On June 24, 2002, the inspectors presented the routine resident inspection results to Mr. M. Warner, Mr. T. Coutu, and other members of the Nuclear Management Company staff. 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.

Interim Exit Meeting Summary

The results of the Safeguards inspection were presented to Mr. B. Presl at the conclusion of the inspection on May 24, 2002. The licensee acknowledged the findings presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

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

1. Appendix B of 10 CFR Part 50, Criterion III, Design Control, required, in part, that measures be established to assure that applicable regulatory requirements and design basis were correctly translated into specifications and procedures, and instructions. The design control measures must provide for verifying the adequacy of the design, such as by the performance of design reviews or by the performance of a suitable testing program. From initial plant startup until November 2001, the licensee's design controls failed to ensure that the SW system would be able to perform its regulatory and safety functions as documented in the licensee's corrective action program KAP WO 01-16436 and LERs 2001-005-00, 2001-005-01, and 2001-005-02. Following the NRC's evaluation of the risk and review of the licensee's risk evaluation (See Section 4OA3.1), this violation was determined to be of very low risk significance, and is being treated as an NCV.

2. Appendix B of 10 CFR Part 50, Criterion XI, Test Control, required, in part, that a test program be established to assure that testing required to demonstrate that systems and components will perform satisfactorily in service is identified and incorporates the requirements and acceptable limits contained in applicable design documents. The licensee's SW system testing conducted prior to and during May 2000, was not adequate to demonstrate that safety-related systems and components cooled by the SW system would perform satisfactorily as

documented in the licensee's corrective action program KAP WO 01-16436 and

LER 2001-005-02. Following the NRC's evaluation of the risk and review of the licensee's risk evaluation (See Section 4OA3.1), this violation was determined to be of very low risk significance, and is being treated as an NCV.

KEY POINTS OF CONTACT

Nuclear Management Company, LLC

T. Coutu, Plant Manager, Kewaunee Site
S. Baker, Manager, Radiation Protection
R. Farrell, Manager, Planning and Scheduling Manager
M. Fencl, Manager, Security
G. Harrington, Licensing Leader
M. Kwitek, Manager, Maintenance
J. McCarthy, Assistant Plant Manager, Operations
B. Presl, Security Operations Supervisor, Kewaunee/Point Beach
S. Putman, Manager, Engineering Systems
J. Stoeger, Superintendent, Operations
M. Warner, Site Vice-President
T. Webb, Manager, Regulatory Affairs

Nuclear Regulatory Commission - RIII

R. Lanksbury, Branch Chief, DRP, Branch 5

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-305/02-03-01	NCV	Failure to Incorporate Adequate Acceptance Criteria in Service Water Procedure (Section 1R15)
50-305/02-03-02	NCV	Failure to Meet Battery Surveillance TS Requirements (Section 1R22)
50-305/02-03-03	NCV	Failure to Maintain Design Control of Component Cooling Water Pumps (Section 4OA3.2)

Closed

50-305/02-03-01	NCV	Failure to Incorporate Adequate Acceptance Criteria in Service Water Procedure (Section 1R15)
50-305/02-03-02	NCV	Failure to Meet Battery Surveillance TS Requirements (Section 1R22)
50-305/02-03-03	NCV	Failure to Maintain Design Control of Component Cooling Water Pumps (Section 4OA3.2)
50-305/01-14-02	URI	Unanalyzed Condition - Inoperable Service Water Train, Phase 3 SDP (Section 4OA3.1)
50-305/01-17-02	URI	Unanalyzed Condition - One Component Cooling Water Train Inoperable Due to One Component Cooling Pump Operating in Deadhead (Section A3.2)
50-305/2001-005-00, 2001-005-01, 2001-005-02	LER	Unanalyzed Condition: NonSafety-Related Service Water Header Flows Affects Safety-Related Components (Section 4OA3.3)
50-305/2002-001-00	LER	Unanalyzed Condition: Strong Pump - Weak Pump Interaction Between Component Cooling Water Pumps (Section 4OA3.4)

Discussed

None

LIST OF ACRONYMS USED

ΔCDF	Change in Core Damage Frequency
AFW	Auxiliary Feedwater
AR	Action Request
CAP	Corrective Action Process
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CHG	Charging Pumps
DG	Diesel Generator
DRP	Division of Reactor Projects, Region III
EAC	Emergency Alternating Current Power
EIHP	Early Inventory High Pressure Injection
EOP	Emergency Operating Procedure
HPI	High Pressure Injection
HPR	High Pressure Recirculation
HX	Heat Exchanger
IPE	Individual Plant Examination
IEEE	Individual Plant Examination for External Events
IST	Inservice Testing
KAP	Kewaunee Assessment Process
LCCW	Loss of Component Cooling Water
LER	Licensee Event Report
LERF	Large Early Release Frequency
LOCA	Loss of Coolant Accident
LOIA	Loss of Instrument Air
LOOP	Loss of Off-Site Power
MDAFW	Motor-Driven Auxiliary Feedwater
MFW	Main Feedwater
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OWA	Operator Workaround
PRA	Probabilistic Risk Analysis
RHR	Residual Heat Removal
RWST	Refueling Water Storage Tank
SDP	Significance Determination Process
SI	Safety Injection
SSC	System, Structure, and Component
SW	Service Water
TDAFW	Turbine-Driven Auxiliary Feedwater
TS	Technical Specification
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WO	Work Order

LIST OF DOCUMENTS REVIEWED

1R01 Adverse Weather Protection

E-0-05	Natural Disaster	Revision J
USAR, Section 2.7	Meteorology	Revision 16
USAR, Appendix B.4.2	Tornado Loads	Revision 16
USAR, Appendix B.6	Design Criteria for Structures	Revision 16
KAP 01-8383	NRC Comments on E-0-05	
E-0-05	Natural Disaster	Revision J

1R04 Equipment Alignment

KAP WR 01-00394	Low DG [Diesel Generator] circulating oil pressure	
KAP WR 01-01039	Fuel oil transfer pump switch out of specification	
KAP WR 01-00982	DG starting air relief valve weeping	
KAP WR 01-00709	Problems with DG air start relief valves	
KAP WR 01-00717	Maintenance Rule evaluation of DG air start relief valve problems	
KAP WR 01-02582	DG fuel oil day tank out of tolerance	
KAP WR 01-03832	Maintenance Rule evaluation of fuel oil indicator problem	
KAP WR 01-04896	DG speed indicator failed during surveillance test	
N-FW-05B-CL,	Auxiliary Feedwater System Prestartup Checklist	Revision AI
N-MS-06-CL	Main Steam and Steam Dump Prestartup Checklist	Revision AC
N-TD-13-CL	Turbine Room Traps and Drains Prestartup Checklist	Revision L

1R05 Fire Protection

FPP 08-07	Control of Ignition Sources	Revision F
FPP 08-08	Control of Transient Combustibles	Revision A
FPP 08-09	Barrier Control	Revision D
FPP 08-12	Fire Prevention Tour	Revision B

N-FP-08-CL	Fire Protection System Checklist	Revision AN
	Appendix R Design Description	December 14, 2000
	Kewaunee Fire Protection Program Plan	Revision 4

1R06 Flood Protection Measures

E-0-05	Natural Disaster	Revision J
USAR, Section 2.6.2	General Lake Hydrology	Revision 16
USAR, Section 9.6.2	Service Water	Revision 16
USAR, Section 10.0	Steam and Power Conversion	Revision 16
CAP 003980	NRC Resident Questions Conditions During B2 Traveling Water Screen Maintenance	April 23, 2002
Safety Evaluation of the Kewaunee Nuclear Power Plant, Section 2.4.3	Probable Maximum Surge Flooding	July 24, 1972
KAP WO 00-3961	Traveling Water Screen Covers do not have gaskets as reference in the USAR	
LER 50-305/2000-015-01	Service Water Traveling Water Screens Not Sealed As Per USAR	March 12, 2001
CMP 02-04	Service Water Traveling Screens Overhaul	Revision A
NUMARC 93-01	Assessment of Risk Resulting from Performance of Maintenance Activities	February 22, 2000
IEEE, Section 5	Other External Events and Analysis	
Regulatory Issue Summary 01-009	Control of Hazard Barriers	
SL-7234	Internal Flood Level Due to Postulated Moderate Energy Piping Failures - KNPP	October 30, 1989
WPS 77688	Safe Shutdown Assessment of Internal Flood Levels Due to Postulated Moderate Energy Piping Failures	May 1, 1990, Revision 0

1R12 Maintenance Rule Implementation

NAD 08.20	Maintenance Rule Implementation	Revision B
GNP 08.20.01	Maintenance Rule Scoping and Performance Criteria	Revision B

GNP 08.20.2	Maintenance Rule Data Evaluation	Revision B
GNP 08.20.3	Maintenance Rule Periodic Reviews	Revision A
GNP 08.20.4	Maintenance Rule MRFF and MPFF Evaluations	Revision B
GNP-08.20.05	Maintenance Rule (a)(1)/(a)(2) Evaluations	Revision A
	Maintenance Rule Periodic Assessment Report	January through December 2001
	SSC Performance Criteria, Maintenance Rule Basis Document, and Maintenance Rule Scoping Questions for System 01, Station and Instrument Air	
CAP 011608	Perform Maintenance Rule Evaluation for Air Compressor 1G	
KAP 00-4190	Air Compressor G tripped	
KAP 99-3065	Air Compressor G tripped	
WO 02-6168	SW Pump B2 Lube Water Pressure Indicator Reads Zero	
CAP 4033	Perform MR Evaluation	
CAP 3065	Minimal Lube Water Flow to SW Pump B2	
MRE 1481	Maintenance Rule Evaluation	
MRE 0559	Maintenance Rule Evaluation	
DCR 3042	Design Change Request for SW Regulator Setpoint	

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

NAD 08.2	Work Request/Work Order	Revision F
GNP 08.21.01	Risk Assessment for Plant Configurations	Revision C
NAD 08.21	Configuration Risk Management	Revision A
GNP 08.02.01	Work Request/Work Order Processing	Revision I
Individual Plant Examination, Section 5	Core Damage Frequency Quantification	

1R14 Non-Routine Evolutions

N-0-02	Plant Startup From Hot Shutdown to 35% Power	Revision AG

N-0-03	Plant Operation Greater Than 35% Power	Revision AM
N-0-04	35 Percent Power to Hot Shutdown Condition	Revision W
SP 05B-284	Turbine Driven AFW Pump Full Flow Test - IST [Inservice Testing]	Revision N

1R15 Operability Evaluations

AR CAP003980	NRC Resident Inspector Questions Conditions during B2 Traveling Water Screen Maintenance	April 23, 2002
AR CAP011530	CC [Component Cooling Water] System Leak Developed Following SW Flush of CC System HX	May 2, 2002
TS 3.3.d	Component Cooling System	
USAR, Section 9.3	Auxiliary Coolant System	Revision 16
USAR, Section 6.5	Leakage Detection and Provisions for the Primary and Auxiliary Coolant Loops	Revision 16
AR CAP 11926	SW Pump 1A1 Operability Question	
AR CAP 11938	SW Pump 1A1 Technical Specification LCO [Limiting Condition for Operation	

1R16 Operator Workarounds

OWA 02-06	MD-400-1 Secondary Analytical Panel Drain Broken	April 12, 2002
Operations Night Order	MD-400-1 Contingencies	April 11, 2002
Tagout 02-428	MD-400-1 Broke	April 11, 2002
E-0-14	Steam Generator Tube Leak	Revision B
E-3	Steam Generator Tube Rupture	Revision S
N-SI-33-CL	Safety Injection System Prestartup Checklist	Revision AF
OPER XK-100-29	Flow Diagram - Safety Injection	Revision Y
	Erratic Steam Dump Control	May 21, 2002
NAD 12.07	Operator Workarounds	Revision A
AR CAP 11667	Erratic Steam Dump Valve Operation	

E-2	Faulted Steam Generator Isolation	Revision N
ES-0.1	Reactor Trip Response	Revision N

1R19 Post-Maintenance Testing

WO 02-5994	During performance of SP 47-316A, B reactor trip breaker tripped	
GIP-016	Bench Testing Westinghouse MG-6 and BF Type Relays	Revision A
SP 47-062B	Reactor Protection Logic Train B Test, Partial Procedure	April 2, 2002
CAP003782	Informal Documentation Used to Receipt Inspection Protection Relay	
CAP003780	Inadequate Acceptance Criteria in GIP-016 for Relay Bench Testing	
KAP WO 01-16049	Measured Thrust on MOV BT-2A Exceeded GMP-238 Actuator Thrust Limit	
WO 02-6008	BT-2A Could Not Be Opened from the Control Room	
WO 01-16133	Investigate the Cause of the BT-2A Over-thrusting Event on 9/28/01	
GMP 236-02	MOV Diagnostic Test Analysis and Acceptability Determination,	Revision B
WO 02-3411	Installation of New Actuator, SW-301A	
SP 42-047A	Diesel Generator A Operational Test	Revision S
SOP-CC-31-19	CC Heat Exchanger A Leak Test	Revision A
DCR 3367	A AFW Pump Motor Power Supply Cable 15P12 Re-route	
WO 02-6000	Re-route A AFW Pump Motor Power Supply Cable 15P12	
GMP 202	Cable Pulling Procedure	Revision H
AR CAP 2489	NRC Question on if an Aging Study of Cable in PB 2105	
KAP WO 02-8803,	Leak Located on TSC DG	
RT-DGM-10-TSC	Technical Support Center Diesel Generator	Revision U

TCR 02-09	Install Temporary Pipe Patch on Keep Warm Heating Unit	June 6, 2002
USAR, Section 8.2.4	Station Blackout	Revision 17

1R20 Refueling and Outage

	Technical Specifications	
N-0-02-CLB	Precritical Checklist	Revision AM
N-0-02-CLA	Plant Prestartup Checklist	Revision L
N-0-02	Plant Startup From Hot Shutdown to 35 Percent Power	Revision AG
N-0-04	35 Percent Power to Hot Shutdown Condition	Revision W

1R22 Surveillance Testing

IEEE Std 450-1980	Large Lead Storage Batteries for Generating Stations	
SP 38-101A	Station Battery BRA-101 Monthly and/or Quarterly Test	Revision F
C&D Power Systems Inc.	Model: ARR, LCR-19 305-1	Revision 0
SP 38-182	(EDC) QA-1 Station Battery BRA-101 1A Cell to Cell Resistance Check	
SOP CC-31-19	CC Heat Exchanger A Leak Test	Original Revision
CMP-31-02	Component Cooling Water Heat Exchanger Tube Cleaning (QA-1)	Revision G

1EP6 Drill Evaluation

	Emergency Preparedness Drill and Exercise Manual	April 30, 2002
EPIP-AD-02	Emergency Class Determination	Revision AC
EPIP-AD-03	KNPP Response to an Unusual Event	Revision AE
EPIP-AD-04	KNPP Response to Alert or Higher	Revision AH
EPIP-AD-07	Initial Emergency Notifications	Revision AP

3PP4 Security Plan Changes

	Kewaunee Nuclear Power Plant Security Manual	Revision 16 September 24, 2001

4OA1 Performance Indicator Verification

NEI 99-02	Regulatory Assessment Performance Indicator Guideline	Revision 1
	Reactor Operator and Shift Manager Logs	April 1, 2001 through March 31, 2002
LER 2001-001	Single Barrier Appendix R Fire Door Failed to Close; Door Had Not Been Part of a Periodic Test Program	May 1, 2001
LER 2001-003	Single Barrier Appendix R Doors Installed Improperly - The Closure Actuation System Did Not Conform to Code	April 23, 2001
	Monthly Operating Reports	April 2001 through March 2002