March 19, 2002

EA-02-045

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 INSPECTION REPORT 50-305/01-17

Dear Mr. Warner:

On February 21, 2002, the NRC completed an inspection at your Kewaunee Nuclear Power Plant. The enclosed report documents the inspection results which were discussed on February 26, 2002, with you and 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. During the inspection, Temporary Instruction 2515/146, "Hydrogen Storage Locations," was closed.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as Non-Cited Violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Kewaunee facility.

Based on the results of this inspection, the inspectors also identified one finding for which the safety significance was still to be determined. This issue pertained to the self-revealing identification that one component cooling water pump could be operating immediately following a safety injection actuation signal with its respective discharge check valve closed during parallel pump operations. Prolonged pump operation in this condition would render one pump inoperable through failure due to overheating. This condition existed for a period of greater

than 30 continuous days. At the end of this inspection period, both your staff and the NRC were still evaluating this issue. This issue will be considered an unresolved item pending completion of those reviews. A preliminary NRC review of the risk significance of the finding determined that it was at least of very low safety significance (Green).

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to make one, 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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/Roger D. Lanksbury

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:	50-305/01-17
Licensee:	Nuclear Management Company, LLC
Facility:	Kewaunee Nuclear Power Plant
Location:	N 490 Highway 42 Kewaunee, WI 54216
Dates:	December 30, 2001, through February 21, 2002
Inspectors:	J. Lara, Senior Resident Inspector Z. Dunham, Resident Inspector D. Chyu, Reactor Engineer T. Madeda, Physical Security Inspector D. Nelson, Radiation Specialist T. Ploski, Senior Emergency Preparedness Analyst
Approved By:	Roger D. Lanksbury, Chief Branch 5 Division of Reactor Projects

Summary of Findings

IR 05000305-01-17, on 12/30/01-2/21/02, Nuclear Management Company, LLC, Kewaunee Nuclear Power Plant. Permanent Plant Modifications.

The inspection was conducted by resident inspectors and regional inspectors. The inspection identified one No Color finding which was a Non-Cited Violation. 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 does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector-Identified Findings

Green. The inspectors identified a Non-Cited Violation for failure to perform an adequate 10 CFR 50.59 safety evaluation associated with emergency operating procedure changes to address component cooling water pump dead-head operational concerns. The safety evaluation did not evaluate the potential for initiating a loss-of-coolant accident via the reactor coolant loop seals during conditions of a complete loss of component cooling water. (Section 1R17)

B. Licensee-Identified Findings

A licensee-identified violation was reviewed by the inspectors. Corrective actions taken or planned by the licensee appeared reasonable. The violation is listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

The plant was operated at 100 percent full power for most of the inspection period. A brief plant downpower to approximately 96 percent occurred due to a secondary system plant transient.

1. REACTOR SAFETY

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

1R04 Equipment Alignments (71111.04)

.1 Technical Support Center (TSC) Diesel Generator (DG)

a. Inspection Scope

On January 8, 2002, the inspectors performed a partial walkdown of the facility's TSC DG. The licensee credited the TSC DG as an alternate power source during a station blackout event. The inspectors reviewed the system lineup Checklist N-DGM-10-CLC, "TSC Diesel Generator Prestartup Checklist," Revision B, the facility's probabilistic risk analysis, and emergency operating procedures (EOPs), and system drawings to verify the correct system lineup. Local valve positions, switch lineups, and electrical breaker positions were examined by the inspectors to verify that system component alignment was consistent with the licensee's operating procedures. The inspectors also examined component material condition. Lastly, the inspectors performed a partial walkdown of Procedure ECA-0.0, "Loss of All AC," Revision W, to verify that all procedure steps could be performed as written.

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:

- Battery Rooms 1A and 1B, Zone TU-97 and TU-98
- Condensate Storage and Reactor Make-up Water Storage Room, Zone AX-33
- Main Steam Containment Penetration Train B, Zone AX-32

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, portable fire extinguishers, and fire detection devices were inspected to verify that they were installed at their designated locations, 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.

b. Findings

No findings of significance were identified.

.2 (Closed) Temporary Instruction (TI) 2515/146, "Hydrogen Storage Locations"

a. Inspection Scope

On February 6, 2002, the inspectors walked down various plant areas to verify the locations of hydrogen storage. Additionally, the inspectors evaluated the material condition of gas storage cylinders and verified that storage locations were in excess of 50 feet from ventilation intakes, safety-related water tanks, and other safety-related or risk significant systems, structures, and components (SSCs). The inspectors also walked down the facility to verify that there were no other hydrogen storage locations which the licensee had not documented nor analyzed.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On February 4, 2002, the inspectors observed a simulator dynamic requalification exam to evaluate crew performance, formality of communications, and annunciator response. Additionally, 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 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 evaluated were:

- Steam Generator Blowdown System
- Chemical Volume and Control System
- Component Cooling Water (CC) System

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.

- 'B' CC Pump Inoperable, January 11, 2002
- Maintenance Activities Scheduled for week of February 4, 2002
- Traveling Water Screen 1B2 Isolated from Forebay, February 21, 2002

b. Findings

No findings of significance were identified.

1R14 Non-Routine Evolutions (71111.14)

a. Inspection Scope

On January 19, 2002, plant personnel were performing corrective maintenance on a secondary system drain valve to repair a steam leak. During the maintenance activity, maintenance personnel became concerned due to an increase in the leak. The control room was notified and the operators proceeded to reduce reactor power from 100 approximately 96 percent. The downpower was initiated to facilitate taking one feedwater heater out-of-service.

The inspectors evaluated the personnel response to the increasing steam leak on Valve HS-12B2, Reheater Drain Tank 2B Drain to FW [Feedwater] Heater 15B. Plant personnel were interviewed to verify that the facility emergency and abnormal operating procedure requirements were met. Additionally, the inspectors reviewed equipment response and plant parameters during and following the transient to verify that equipment responded as designed.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Tape Splice Deficiencies

a. Inspection Scope

The inspectors reviewed the facility's Updated Safety Analysis Report (USAR), corrective action documents, and Technical Specification (TS) requirements to verify the technical adequacy of the operability evaluations listed below and that the components' operability was properly justified. The inspectors reviewed the operability evaluations listed below relating to tape splice installation deficiencies on containment fan coil unit motors.

- Kewaunee Assessment Process (KAP) Work Request (WR) 01-7222, Tape Splice Deficiencies on Containment Fan Coil Unit A Motor
- KAP WR 01-7365, Tape Splice Deficiencies on Containment Fan Coil Unit B motor
- KAP WR 01-7365, Tape Splice Concerns on Containment Fan Coil Unit Motor Circuits

b. Findings

No findings of significance were identified.

.2 CC Pump Inoperability

a. Inspection Scope

The inspectors reviewed the facility's USAR, calculations, and TS requirements to verify the technical adequacy of the operability evaluation associated with the CC pumps. This operability issue was identified on January 10, 2002, when the licensee determined that one of two CC pumps was susceptible to failure due to parallel pump, dead-headed operations. The inspectors verified that the licensee implemented immediate corrective actions, including declaring one CC pump inoperable, entering the respective 72-hour Limiting Condition for Operation, and performing engineering evaluations to identify corrective actions. The inspectors also reviewed the final approved safety evaluation and associated procedure changes which included changes to emergency operating procedure E-0, Reactor Trip or Safety Injection," Revision R. Once the procedure changes were approved, the licensee exited the Limiting Condition for Operation.

b. Findings

No findings of significance were identified.

.3 CC Pump Runout Condition

a. Inspection Scope

The inspectors reviewed the facility's USAR, design basis information, and TS requirements to verify the technical adequacy of the operability evaluations associated with the issue of the potential for one CC pump to operate in a runout condition when one pump was supplying cooling for both CC and Residual Heat Removal (RHR) heat exchangers. The licensee established administrative controls to ensure that the CC system could provide sufficient cooling to required loads without operating in a runout condition. The inspectors also reviewed the licensee's implementation of compensatory measures to verify operability, as appropriate.

b. Findings

No findings of significance were identified.

.4 CC System Thermal Relief Valves

a. Inspection Scope

The inspectors reviewed the facility's USAR, design basis information, vendor manuals, and TS requirements to verify the technical adequacy of the operability evaluations regarding KAP Work Request 01-0004595. This document discussed the problem where CC thermal relief valves, CC-401A/B, did not have back pressure properly considered in establishment of the respective lift pressure. The inspectors reviewed the operability evaluations, in-service testing requirements, and design basis information during this review.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (OWAs) (71111.16)

.1 OWA 02-01

a. Inspection Scope

The inspectors reviewed OWA 02-01 which documented CC pump overheating concerns. The OWA required the operators to take manual actions to stop one CC pump during conditions when both pumps were operating due to potential dead-head operations which could result in pump damage. The inspectors reviewed OWA 02-01, and emergency and abnormal operating procedures to determine whether there was any impact on the ability of 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 Safety Evaluation SE-02-01, "Safety Review/Safety Evaluation for Procedure Changes to Address Component Cooling Pump Operation with Two Pumps Running." This evaluation was proposed to provide changes to existing EOPs, as well as other operations procedures, to resolve concerns regarding the potential failure of one CC pump during operation of two pumps in parallel, under dead-headed conditions. The inspectors reviewed the evaluation to verify proper consideration of USAR, TS, and 10 CFR 50.59 requirements. The concern regarding the potential for one pump to fail was reported to the NRC on January 10, 2002, pursuant to 10 CFR 50.72.

b. Findings

A Non-Cited Violation (NCV) of 10 CFR Part 50.59(d)(1), was identified for failure to evaluate and provide the bases for why a license amendment was not required prior to implementing an EOP change which created a possibility for an accident of a different type than any previously evaluated.

On January 10, 2002, the licensee identified that one or both CC pumps were susceptible to failure during parallel pump, dead-head operations. During parallel pump operations following a safety injection actuation, both CC pumps could have operated in a region of their operating curves where relative changes in system flow have minimal impact on pump differential pressure. In this condition, one pump would not develop enough discharge pressure to open its respective discharge check valve. This condition was identified during post-maintenance testing activities. The licensee subsequently declared one CC pump inoperable and entered the appropriate TS Limiting Condition for

Operation.

On January 11, 2002, the Plant Operations Review Committee approved Safety Evaluation SE-02-01, "Safety Review/Safety Evaluation for Procedure Changes to Address Component Cooling Pump Operation with Two Pumps Running." The evaluation assessed the effects and consequences of securing one CC pump following automatic actuation. One aspect of the evaluation considered the consequences of a potential failure of the one operating CC pump subsequent to stopping the other pump. In this circumstance, all CC flow would be lost to the serviced loads. The inspectors reviewed the safety evaluation and concluded that it did not consider all the potential consequences of securing one CC pump. The evaluation did not address the potential for creating a different type of accident than previously analyzed when one pump was secured in that the safety evaluation did not address the potential loss of all CC to the reactor coolant pump seals. In this event, operators must identify that a complete loss of CC cooling occurred and restart the redundant pump, prior to reactor coolant pump seal degradation. Degradation of a reactor coolant pump seal could result in a small break loss-of-coolant accident. Based on a review of design and risk information, such as USAR and Individual Plant Examination (IPE) documents, the inspectors estimated that the loss of CC cooling to the reactor pump seals could result in seal degradation after approximately 15 minutes, assuming that operators could not restore CC cooling within that time. The inspectors concluded that the safety evaluation was inadequate and did not properly evaluate the changes to existing EOP E-0, “Reactor Trip or Safety Injection,” Revision R. The inspectors discussed this concern with the licensee. The licensee subsequently revised the safety evaluation to incorporate additional evaluations to demonstrate that operators would be able to identify the failed CC pump and restart the remaining pump within 7 minutes to prevent any reactor coolant pump seal degradation.

Enforcement

Section 50.59(d)(1) of 10 CFR Part 50, required, in part, that the licensee maintain a written evaluation which provided the bases for the determination that the change, test, or experiment did not require a license amendment. Safety Evaluation 02-01 revised operator procedure actions to require securing of an operating CC pump following a safety injection actuation. This change could have resulted in a small break loss-of-coolant accident through degraded reactor coolant pump seals shortly following the initiation of a design bases loss-of-coolant accident. Section 14 of the USAR, “Safety Analysis,” did not consider nor provide analysis for simultaneous loss-of-coolant accidents from two different locations. These two potential simultaneous events, introduced by the change in operating procedures, were considered to be a different type of accident than previously analyzed. The failure to adequately evaluate and provide the bases that the procedure change did not require a license amendment was considered to be a violation of 10 CFR 50.59(d)(1). This issue was characterized to be of very low safety significance (Green) by the inspectors and a regional senior reactor analyst because of the very low initiating event frequency associated with a loss-of-coolant accident in conjunction with a complete loss of CC cooling. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV 50-305/01-17-01, Failure to Perform Thorough 10CFR50.59 Safety Evaluation), consistent with Section VI.A.1 of the NRC Enforcement Policy. The licensee entered this issue into their

corrective action program as KAP WR 02-00214.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the completed post-maintenance test results following maintenance associated with the deadhead of the 'B' train CC pump. The inspectors reviewed procedure SP-31-168, "Component Cooling Pump and Valve Test - IST," Revision AG, 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 observed 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 of the affected equipment to verify that the equipment was returned to a condition in which it could perform its safety function.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Anticipated Transients Without Scram Mitigation System Actuation Circuitry (AMSAC)

a. Inspection Scope

On January 9, 2002, the inspectors observed quarterly surveillance testing of the reactor protection AMSAC circuitry. The AMSAC was designed to provide a redundant and diverse method of shutting down the unit due to a failure of the reactor trip breakers to open when required. The inspectors reviewed Procedure SP-47-281, "AMSAC Quarterly Functional Test," Revision J, logic diagrams, and the USAR, and interviewed maintenance personnel to verify that the surveillance test appropriately tested all aspects of the AMSAC circuitry which could be tested at power and that the equipment was capable of meeting its design function. The inspectors also observed performance of the surveillance test to verify that the test was performed as written, that all test prerequisites were satisfied, and that test data met the requirements of the test procedure. Finally, the inspectors observed maintenance personnel restore the AMSAC system to an operational configuration to ensure that the system would actuate automatically as designed when required to do so.

b. Findings

No findings of significance were identified.

.2 Special Operating Procedure CC-302 Flow Limiter Installation

a. Inspection Scope

On January 25, 2002, the licensee performed Procedure SOP-CC-31-16, “CC-302 Flow Limiter Installation,” Original Revision. This procedure was performed to install a flow limiting device on Valve CC-302, the letdown heat exchanger CC outlet temperature control valve. The inspectors attended an operations shift briefing which outlined the details of the procedure and highlighted precautions and operator responsibilities. Additionally, the inspectors independently reviewed the test procedure and an associated safety review which was conducted by the licensee. The inspectors observed the test to verify that it 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, the inspectors conducted partial 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.

b. Findings

No findings of significance were identified.

.3 Safeguards Battery Monthly Surveillance Test and Inspection

a. Inspection Scope

On February 5, 2002, the licensee performed Procedure SP-38-101A, “Station Battery BRA-101 Monthly and/or Quarterly Test,” Revision F. This procedure was performed to inspect the safety-related batteries and verify that individual cell voltages and pilot cell temperature and specific gravity were acceptable. The inspectors reviewed the test procedure and the USAR. The inspectors observed the test to verify that it was performed as written, that all testing prerequisites were satisfied, that the test data was collected in accordance with the procedure and met the test acceptance criteria.

b. Findings

No findings of significance were identified.

.4 Turbine-Driven Auxiliary Feedwater (AFW) Pump

a. Inspection Scope

On February 19, 2002, the inspectors observed quarterly in-service surveillance testing of the turbine-driven AFW pump and associated valves. The inspectors reviewed Procedure SP-05B-105, "Turbine Driven AFW Pump and Valve Test - IST," Revision BD, the USAR, Kewaunee in-service test plan, and system flow diagrams to verify that the surveillance test was appropriate and was performed in accordance with the established procedure. Following the test completion, the inspectors reviewed the system lineup to verify system readiness.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the temporary modifications listed below to verify that the installation was consistent with design modification documents and that the modification did not adversely impact system operability or availability. The inspectors attempted to verify that configuration control of the modification was correct by reviewing design modification documents and confirming that appropriate post-installation testing was accomplished. The inspectors reviewed the design modification documents and the 10 CFR 50.59 evaluation against the applicable portions of the USAR.

- Temporary Change Request 02-01, "Install a Mechanical Travel Stop on CV-31100/CC-302, Letdown Heat Exchanger Flow Control Valve"
- Temporary Change Request 02-02, Bypass the Forebay Lo-Lo Level CW Pump Trip Signal Associated with Traveling Water Screen 1B2

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector reviewed Revision 25 to certain Sections, Figures, and Tables of the Kewaunee Nuclear Power Plant Emergency Plan to determine whether the changes identified in Revision 25 reduced the effectiveness of the licensee's emergency planning, pending onsite inspection of the implementation of these changes.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Controls for Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiological Boundary Verification

a. Inspection Scope

The inspector conducted walkdowns of selected radiologically controlled areas within the plant to verify the adequacy of radiological boundaries and postings. Specifically, the inspector walked down several radiologically significant work area boundaries (high and locked high radiation areas) in the Auxiliary Building. The inspector performed confirmatory radiation measurements to verify that these areas and selected radiation areas were properly posted and controlled in accordance with 10 CFR Part 20, licensee procedures, and TSs.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Walkdowns of Liquid and Gaseous Effluent Monitoring and Control Systems

a. Inspection Scope

The inspector performed walkdowns of selected components of the liquid and gaseous effluent monitoring and control systems, including point of discharge effluent radiation monitors and liquid radioactive waste processing tanks. The inspector performed the walkdowns to verify that the current system configuration was as described in the USAR and was consistent with the Offsite Dose Calculation Manual (ODCM) and to observe equipment material condition.

b. Findings

No findings of significance were identified.

.2 Radioactive Effluent Data, Dose Calculations, and ODCM Changes

a. Inspection Scope

The inspector reviewed the 2000 Annual Radioactive Effluent Release Report and radioactive effluent release data for 2001 to verify that the radioactive effluent control program was implemented as described in the ODCM and to ensure that any anomalies in the release data were adequately understood and properly assessed by the licensee. The inspector evaluated the licensee's methodology for the calculation of offsite dose and selectively reviewed results of effluent sample analyses for 2001 to verify that the licensee properly calculated dose from effluents consistent with the ODCM. The inspector also determined if there had been revisions made to the ODCM in calendar years 2000 and 2001 to verify they were completed and reported in accordance with TSs and the ODCM.

b. Findings

No findings of significance were identified.

.3 Liquid and Gaseous Effluent Releases

a. Inspection Scope

As there were no liquid or gaseous batch releases performed during the inspection, the inspector reviewed selected discharge permits for liquid and gaseous effluent batch releases completed in 2001 to verify that the licensee's release procedures and practices, including dose projections to members of the public and use of station specific scaling factors, were technically sound and conformed to ODCM methodology and TS requirements.

b. Findings

No findings of significance were identified.

.4 Liquid and Gaseous Effluent Monitor Calibration

a. Inspection Scope

The inspector reviewed records of instrument calibrations performed since the last inspection for selected point of discharge effluent radiation monitors to determine if they had been calibrated consistent with industry standards and in accordance with station procedures and the ODCM. Specifically, the inspector reviewed the calibration records for:

- RMS R-11 Containment System Vent;
- RMS R-13 Aux Building Ventilation Exhaust Vent A;
- RMS R-13 Aux Building Ventilation Exhaust Vent B;
- RMS R-18 Waste Discharge Liquid Radiation Monitor; and
- RMS R-19 Steam Generator Blowdown Sample Radiation Monitor.

The inspector also reviewed current alarm setpoint values for these monitors to assess compliance with ODCM requirements. Additionally, the inspector examined the licensee's data for tracking the reliability and maintenance of selected point of discharge effluent radiation monitors to assess the adequacy of the licensee's efforts to identify repetitive problems and to maintain the operating condition of the effluent radiation monitoring system.

b. Findings

No findings of significance were identified.

.5 Air Cleaning System Surveillance Tests

a. Inspection Scope

The inspector reviewed the results from the most recent ventilation filter tests for the Auxiliary Building Special Ventilation System, the Shield Building Vent Filter System, and the Control Room Post Accident Recirculation System to verify that test methodology, frequency, and test results met Technical Specification requirements. Specifically, the inspector reviewed the results of in-place high efficiency particulate air filter (HEPA) and charcoal adsorber penetration and bypass tests, laboratory tests of charcoal adsorber methyl iodide penetration, and in-place HEPA and charcoal adsorber differential pressure tests completed in 2001.

b. Findings

No findings of significance were identified.

.6 Analytical Instrumentation Inter-laboratory Comparison Program

a. Inspection Scope

The inspector reviewed the results of the 2001 inter-laboratory comparison program to assess chemistry analytical capabilities, to determine if the program was adequately implemented in accordance with station procedure, and to verify the quality of the radioactive effluent analyses performed by the licensee.

b. Findings

No findings of significance were identified.

.7 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed a 2001 Chemistry Program self-assessment of the liquid radioactive release monitoring program; Quality Programs quarterly audits completed in 1999, 2000, and 2001; and selected KAP documents generated during the twelve month period preceding the inspection that focused on ODCM implementation and the liquid and gaseous effluent monitoring and control program. The documents were reviewed to evaluate the licensee's ability to assess the effluent control program; to identify repetitive problems or trends, contributing causes and extent of condition; and to implement corrective actions to achieve lasting results.

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 15 and Appendix 1 to Revision 15 of the Kewaunee Nuclear Power Plant Security Manual to verify that the changes did not decrease the effectiveness of the submitted documents. The referenced revisions were submitted in accordance with 10 CFR 50.54(p)(2) requirements by licensee letter dated September 24, 2001.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA3 Event Follow-up

.1 CC System Capability to Perform Safety Function

a. Inspection Scope

The inspectors reviewed the licensee's event notification on January 10, 2002, pursuant to 10 CFR 50.72, which documented the potential for one CC pump to fail when operating in a deadheaded configuration following a safety injection actuation signal. The scope of this review included test results; USAR Chapter 9.3, Auxiliary Cooling System; TS Section 3.3.d, Component Cooling System; and design drawings.

b. Findings

For a period exceeding 30 days, one train of the CC system was inoperable due to the expected failure of one of two redundant CC pumps. One CC pump could have operated in a dead-head configuration following a safety injection actuation signal and could have subsequently failed due to overheating. This failure would then have prevented one train of CC from being capable of performing its intended function. Pending completion of further licensee review and NRC completion of a Phase 3 SDP, this issue, which was evaluated to be at least of a very low risk significance (Green), is considered an Unresolved Item.

SDP

The inspectors determined that one CC train would be unavailable to provide cooling of safety-related loads due to the likely failure of one pump shortly after starting on a safety injection actuation signal. During parallel pump operations upon safety injection actuation, both CC pumps could have operated in a region of their operating curves where relative

changes in system flow would have very little impact on pump differential pressure. Hence, one pump would not develop enough discharge pressure to open the respective discharge check valve. The system flow demand would change when operators began to cooldown the plant to achieve a safe shutdown condition or when long-term recirculation injection was needed to provide sufficient equipment cooling. This condition existed for greater than 30 continuous days following startup of the facility in December 2001, until discovery.

The inspectors used NRC Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, dated February 5, 2001, and Risk-Informed Inspection Notebook for Kewaunee Nuclear Power Plant, Revision 0. This finding was more than minor (Group 1 questions) because it had a credible impact on safety since it resulted in one CC train being unable to provide cooling to safety-related components as designed. The finding affected the reactor safety cornerstone (Group 2 questions) because it affected the availability of mitigating systems (e.g., RHR and high pressure safety injection). As a result, the inspectors performed a Phase 1 SDP.

Using the SDP Phase 1 Screening Worksheet for the Mitigating Systems Cornerstone, the inspectors concluded that the likely failure of one CC pump would have resulted in one train of the CC system being unable to perform its safety function. This condition existed for greater than 30 continuous days following completion of the Fall 2001 outage. Based on this information, the inspectors determined that this finding was at least of very low safety significance (Green).

During the Phase 2 SDP assessment, the inspectors concluded that the affected initiating event categories included reactor trip and small-, medium-, and large-break loss-of-coolant accidents, with initiating frequencies of 1 per 1 to 10 years, 1 per 100 to 1000 years, 1 per 1000 to 10,000 years, and 1 per 10,000 to 100,000 years, respectively. An exposure time of greater than 30 days was used. These factors resulted in an Estimated Likelihood Rating of "A", "C", "D", and "E" in accordance with Table 1 of the inspection notebook.

The inspectors further evaluated the core damage sequences for the above initiating events. Based on the results of the SDP Worksheets, the inspectors concluded that the finding was of at least very low safety significance (Green). Pending completion of a Phase 3 SDP analysis, the safety significance of the finding is To Be Determined (TBD) and this issue is considered an Unresolved Item (URI 050-305/01-17-02, Unanalyzed Condition - One Component Cooling Water Train Inoperable Due to One CC Pump Operating in Deadhead Condition, Phase 3 SDP). The issue is assigned to the Mitigating Systems cornerstone.

4OA6 Management Meetings

Exit Meeting Summary

On February 26, 2002, the inspectors presented the inspection results to Messrs. M. Warner,

A. Cayia, and 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 Meetings Summary

Senior Official at Exit:	N/A. Phone call with Mr. Gary Harrington
Date:	January 29, 2002, via telephone
Proprietary (explain "yes")	No
Subject:	Results of a licensee investigation on failure to implement fire watch requirement.
Change to Inspection Findings:	No

Senior Official at Exit:	M. Fencl, Security Manager
Date:	February 5, 2002
Proprietary:	No
Subject:	Kewaunee Nuclear Power Plant Security Manual
Change to Inspection Findings:	No

Senior Official at Exit:	D. Farrell, Outage Manager, Planning and Scheduling
Date:	February 8, 2002
Proprietary:	No
Subject:	Occupational and Public Radiation Safety
Change to Inspection Findings:	No

4OA7 Licensee-Identified Violation

The following finding of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1699 for being dispositioned as a Non-Cited Violation (NCV).

NCV Tracking Number	Requirement Licensee Failed to Meet

NCV 50-305/01-17-03

Kewaunee Facility Operating License No. DPR-43, Section 2.C.(3), “Fire Protection” required, in part, that the licensee implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Kewaunee Nuclear Power Plant Fire Plan. The Kewaunee Nuclear Power Plant Fire Plan defined a Fire Plan Procedure as “a written procedure that describes and directs the implementation of fire protection practices required by the Fire Plan. Fire Plan Procedure FPP-08-07, “Control of Ignition Sources,” Section 5.3.6, required, in part, that upon completion of a hot work job that requires a continuous fire watch, the assigned hot work fire watch remain at the hot work location for a minimum of 30 continuous minutes to verify that the area is fire safe. Contrary to the above, on September 30, 2001, a hot work fire watch did not remain at the hot work location for 30 minutes following completion of a hot work job in the containment. This issue constituted a violation of more than minor significance because the situation, if left uncorrected, could become a more significant safety concern, i.e., a lack of timely fire suppression activities to mitigate re-flash or re-ignition of hot work materials resulting in fire damage to redundant safe shutdown equipment in other fire areas. This issue is not suitable for Significance Determination Process evaluation because it did not involve impairment or degradation of a fire protection feature (No Color). Since the licensee has entered this issue into the corrective actions program as KAP WR 01-006317, this is being treated as a Non-Cited Violation.

KEY POINTS OF CONTACT

Nuclear Management Company, LLC

S. Baker, Radiation Protection Manager
T. Coutu, Plant Manager, Kewaunee Plant
R. Farrell, Outage Manager, Planning and Scheduling
M. Fencl, Security Manager
B. Gauger, Radiation Protection Supervisor
D. Gauger, Chemistry Supervisor
G. Harrington, Licensing
M. Kwitek, Assistant Plant Manager, Maintenance
J. Schweitzer, Manager, Engineering and Technical Support
D. Seebart, Emergency Preparedness Group Leader
J. Stoeger, Assistant Plant Manager, Operations
M. Warner, Site Vice-President
T. Webb, Nuclear Licensing Director

Nuclear Regulatory Commission - RIII

R. Lanksbury, Branch Chief, DRP, Branch 5

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-305/01-17-01	NCV	Failure to Perform Thorough 10CFR50.59 Safety Evaluation (Section 1R17).
50-305/01-17-02	URI	Unanalyzed Condition - One Component Cooling Water Train Inoperable Due to One CC Pump Operating in Deadhead Condition, Phase 3 SDP (Section 4OA3.1).
50-305/01-17-03	NCV	Failure to Implement Required Fire Watch Following Completion of Hot Work Activities (Section 4OA7).

Closed

50-305/01-17-01	NCV	Failure to Perform Thorough 10CFR50.59 Safety Evaluation (Section 1R17).
50-305/01-17-03	NCV	Failure to Implement Required Fire Watch Following Completion of Hot Work Activities (Section 4OA7).

Discussed

None

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
AMSAC	Anticipated Transients Without Scram Mitigation System Actuation Circuitry
CC	Component Cooling Water
CFR	Code of Federal Regulations
DG	Diesel Generator
DRP	Division of Reactor Projects, Region III
EOP	Emergency Operating Procedure
HEPA	High Efficiency Particulate Air Filter
IPE	Individual Plant Examination
KAP	Kewaunee Assessment Process
LER	Licensee Event Report
MRFF	Maintenance Rule Functional Failure
MPFF	Maintenance Preventable Functional Failure
NAD	Nuclear Administrative Directive
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OWA	Operator Workaround
PI	Performance Indicator
RHR	Residual Heat Removal
SDP	Significance Determination Process
SSC	System, Structure, and Component
TBD	To Be Determined
TCR	Temporary Change Request
TS	Technical Specification
TSC	Technical Support Center
URI	Unresolved Item
USAR	Updated Safety Analysis Report
WO	Work Order
WR	Work Request

LIST OF DOCUMENTS REVIEWED

1R05 Fire Protection

FPP 08-07	Control of Ignition Sources	Revision D
FPP 08-08	Control of Transient Combustibles	Revision A
FPP 08-09	Barrier Control	Revision C
FPP 08-10	Fire Drills	Revision A
FPP 08-12	Fire Prevention Tour	Revision B
N-FP-08-CL	Fire Protection System Checklist	Revision AL
	Appendix R Design Description	December 14, 2000
	Kewaunee Fire Protection Program Plan	Revision 4
NFPA 50A	Gaseous Hydrogen Systems at Consumer Sites	1994 Edition
NFPA 803	Fire Protection for Light Water Nuclear Reactors	1993 Edition

1R11 Licensed Operator Requalification

EPIP-AD-02	Emergency Class Determination	Revision AC
FR-H.1	Response to Loss of Secondary Heat Sink	Revision P
E-0	Reactor Trip or Safety Injection	Revision S
ES-0.1	Reactor Trip Response	Revision N

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 A
GNP-08.20.05	Maintenance Rule (a)(1)/(a)(2) Evaluations	Revision A
NUMARC 93-01	Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	Revision 2

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

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

1R14 Non-Routine Evolutions

KAP WR 02-000319	High Instantaneous Reactor Thermals During Feedwater Transient
Procedure A-HD-11	Abnormal Heater and Moisture Separator Drain System and Bleed Steam System, Revision I
KAP WR 02-000323	Steam Leak/Plant Transient

1R15 Operability Evaluations

Procedure GNP 11.08.03	Operability Determination, Revision A
KAP WR 01-7222	Tape Splice Deficiencies Associated With Containment Fan Coil Unit A motor
KAP WR 01-7365	Tape Splice Deficiencies Associated With Containment Fan Coil Unit B motor
KAP WR 01-7365	Tape Splice Concerns Associated With Containment Fan Coil Unit Motor Circuits
Calculation C11357	Evaluation of Maximum Service Water Inlet Temperature to Support RHR Heat Exchanger Operability at Reduced CC Flows
Calculation C11359	Component Cooling Flow Evaluation
Calculation C11356	Component Cooling Pump Motor Operation at 280HP
KAP WR 02-000335	Potential for component cooling pump runout

Safety Evaluation SE-02-01	Safety Review/Safety Evaluation for Procedure Changes to Address Component Cooling Pump Operation with Two Pumps Running	
ANSI/ANS58.8-1984	Time Response Design Criteria for Nuclear Safety Related Operator Actions	
KAP WR 02-000165	CC Discharge Valve Stem Nut Stripped	
Procedure E-0	Reactor Trip or Safety Injection	Revision S
KAP WR 02-000214	Concerns Regarding Operator Action and Reactor Coolant Pump Seals	

1R16 Operator Workarounds

OWA 02-01	Component Cooling Pump Overheating Concerns	January 11, 2002

1R17 Permanent Plant Modifications

Procedure E-0	Reactor Trip or Safety Injection	Revision S
Procedure ES-0.1	Reactor Trip Response	Revision N
Procedure N-RHR-34	Residual Heat Removal System Operation	Revision AQ
Procedure N-CC-31	Component Cooling System Operation	Revision U

1R22 Surveillance Testing

E-2802	Integrated Logic Steam Generator Trip Signals	Revision M
E-1602	Integrated Logic Diagram - Auxiliary Feedwater	Revision AW
USAR, Section 14.1.11	Anticipated Transients Without Scram	Revision 16
USAR, Section 9.2	Chemical and Volume Control System	Revision 16
USAR, Section 9.3	Auxiliary Coolant System	Revision 16
XK-100-19	Flow Diagram - Auxiliary Coolant System	Revision AD

1R23 Temporary Plant Modifications

Temporary Change Request (TCR)02-01	Install a Mechanical Travel Stop on CV-31100/CC-302, Letdown Heat Exchanger Flow Control Valve	
SOP-CC-31-16	CC-302 Flow Limiter Installation, Original Revision	
TCR 02-02	Bypass the Forebay Lo-Lo Level CW Pump Trip Signal Associated with Traveling Water Screen 1B2	
PMP 04-15	CW - Lowering and Raising Screenhouse Gates (QA-2)	Revision C

1EP4 Emergency Action Level and Emergency Plan Changes

	Kewaunee Nuclear Power Plant Emergency Plan	Revision 25
	Kewaunee Nuclear Power Plant Emergency Plan - Sections, Tables, and Figures Replaced by Revision 25	

3PPR Security Plan Changes

	Kewaunee Nuclear Power Plant Security Manual	Revision 15 September 24, 2001
	Kewaunee Nuclear Power Plant Security Manual	Appendix 1 September 24, 2001

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Quality Programs Audit 99-002	Second Quarter 1999, Environmental Radiological Monitoring Program	
Quality Programs Audit 00-002	Second Quarter 2000, Environmental Radiological Monitoring Program	
Quality Programs Audit 01-002	Second Quarter 2001, Environmental Radiological Monitoring Program	
KSA-Chem-01-01	Focused self-Assessment, Chemistry End of Cycle 2001	
Discharge Permit No. 02-0001	Batch Gaseous Release	January 14, 2002
Discharge Permit No. 02-0002	Batch Gaseous Release	February 1, 2002

Discharge Permit No. 02-0003	Batch Gaseous Release	February 6, 2002
Discharge Permit No. 01-0084	Batch Liquid Release	December 28, 2001
Discharge Permit No. 02-0002	Batch Liquid Release	January 5, 2002
Discharge Permit No. 02-0003	Batch Liquid Release	January 23, 2002
	2000 and 2001 Gross Gamma Comparison, Kewaunee and Analytics	
	2000 and 2001 Gross Alpha Comparison, Kewaunee and Analytics	
	2000 and 2001 Tritium Comparison, Kewaunee and Analytics	
	Offsite Dose Calculation Manual	Revision 8
	Effluent Dose Limit Verification Data Sheet A, 01/01/01 - 03-31-01	April 23, 2001
	Effluent Dose Limit Verification Data Sheet A, 04/01/01 - 06-30-01	August 3, 2001
	Effluent Dose Limit Verification Data Sheet A, 10/01/01 - 12-31-01	February 1, 2002
KAP 00-00552	X/Q Values in USAR Are Not the Values in the ODCM	March 7, 2000
KAP 00-001920	Missed Requirement to Change Sr-89/90 Filter in Aux. Bldg. Stack Sampler	May 29, 2000
KAP 01-006813	Analysis Performed More than 10 Days Past the Due Date	October 25, 2001
KAP 01-006839	R-18 Setpoint Could Have Set Too Low and Caused an Alarm	October 26, 2001
	RMS R-11 Containment System Vent Calibration	January 16, 2002
	RMS R-13 Aux Building Ventilation Exhaust Vent A Calibration	September 22, 2000
	RMS R-18 Waste Discharge Liquid Radiation Monitor Calibration	January 19, 2001
	RMS R-19 Steam Generator Blowdown Sample Radiation Monitor Calibration	August 16, 2001

Auxiliary Building Zone SV Filter Laboratory Testing	August 2, 2001
Auxiliary Building Zone SV A&B Filter Testing	August 9, 2001
Control Room Post Accident Recirculation Filter Laboratory Testing	August 2, 2001
Control Room Post Accident Recirculation A&B Filter Testing	August 7, 2001
Shield Building Vent Filter Laboratory Testing	August 2, 2001
Shield Building Vent A&B Filter Testing	November 20, 2001 September 6, 2001