

October 30, 2001

Mr. M. Reddemann
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 50-305/01-13

Dear Mr. Reddemann:

On September 30, 2001, the NRC completed an inspection at your Kewaunee Nuclear Power Plant. The enclosed report documents the inspection results which were discussed on October 2, 2001, with you, Mr. K. Hoops, 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. Specifically, this inspection was a routine review of plant activities by the resident inspectors and by regional inspectors who conducted reviews of radiation protection access control to radiologically significant areas, as-low-as-reasonably-achievable (ALARA) planning and controls, and steam generator replacement - lifting and rigging activities.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (No Color). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a 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.

Since September 11, 2001, the Kewaunee Nuclear Power Plant has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

The NRC continues to interact with the Intelligence Community and to communicate information to the Nuclear Management Company, LLC. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

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

Original signed by
Roger D. Lanksbury

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

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

Enclosure: Inspection Report 50-305/01-13

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

DOCUMENT NAME: G:\KEWA\KEW 2001-13 dtp.WPD

To receive a copy of this document, indicate in the box "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

| | | | | | | |
|--------|---------------|------------|--|--|--|--|
| OFFICE | Rlll | Rlll | | | | |
| NAME | MKunowski:dtp | RLanksbury | | | | |
| DATE | 10/30/01 | 10/30/01 | | | | |

OFFICIAL RECORD COPY

ADAMS Distribution:

WDR

DFT

JGL1

RidsNrrDipmlipb

GEG

HBC

JFL

C. Ariano (hard copy)

DRPIII

DRSIII

PLB1

JRK1

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-305/01-13

Licensee: Nuclear Management Company, LLC

Facility: Kewaunee Nuclear Power Plant

Location: N 490 Highway 42
Kewaunee, WI 54216

Dates: August 10 through September 30, 2001

Inspectors: J. Lara, Senior Resident Inspector
Z. Dunham, Resident Inspector
M. Castanedo, Reactor Engineer
D. Jones, Reactor Engineer
P. Krohn, Senior Resident Inspector, Point Beach
J. Maynen, Resident Inspector, D.C. Cook
D. Nelson, Radiation Specialist
R. Powell, Resident Inspector, Point Beach
K. Walton, Reactor Engineer

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

SUMMARY OF FINDINGS

IR 05000305-01-13, on 08/10-09/30/2001, Nuclear Management Company, LLC, Kewaunee Nuclear Power Plant. Refueling and Outage.

The inspection was conducted by resident inspectors, a regional radiation specialist, and regional reactor engineer. 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" (SDP). Findings for which the SDP 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

No Color. The inspectors identified the failure to establish contingency plans during a planned high risk plant configuration. Contrary to administrative requirements, the licensee approved an orange risk condition during a refueling outage with no contingency plans to mitigate the consequences of a loss of spent fuel pool cooling with a full core offload in the pool. A Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified.

The finding was of very low safety significance because although the licensee had not approved appropriate contingency actions for the orange risk condition, the licensee subsequently rescheduled the planned maintenance to eliminate the orange risk condition. (Section 1R20.2)

B. Licensee-Identified Findings

No findings of significance were identified.

Report Details

Summary of Plant Status

The plant was operated at approximately 96 percent power for most of the period until September 23, 2001, when the unit was taken offline to start the 2001 refueling outage. The unit remained shutdown at the end of this inspection period.

1. REACTOR SAFETY

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

1R02 Evaluations of Changes, Tests or Experiments (71111.02)

.1 Review of 10 CFR 50.59 Evaluation for Changes, Tests or Experiments

a. Inspection Scope

The inspectors reviewed the safety evaluation for “Replacement Lower Assemblies and Steam Dome Modifications” to verify that the design changes and modifications were reviewed in accordance with 10 CFR 50.59. The review was to confirm that the evaluation was appropriate and that approval had been obtained for any necessary Technical Specification amendments.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

.1 Train ‘B’ Component Cooling Water (CCW) Partial System Walkdown

a. Inspection Scope

On August 23, 2001, the licensee performed in-service testing of the CCW pumps. The licensee determined that the in-service test would result in an increased risk such that the overall plant risk entered the caution band (yellow). While the testing of the Train ‘A’ CCW water pump was taking place, the inspectors walked down accessible portions of Train ‘B’ of the CCW system, and reviewed normal operating procedures and system flow diagrams to verify that the system was operable and in a configuration to perform its designed safety function. Additionally, the inspectors walked down the ‘A’ train of CCW following the testing to verify that the system was returned to its proper alignment. The CCW system was selected because of the increased risk to the plant while the in-service test was in progress.

b. Findings

No findings of significance were identified.

.2 Residual Heat Removal (RHR) Partial System Walkdown

a. Inspection Scope

On September 18, 2001, the inspectors performed a walkdown of accessible portions of the Train 'B' RHR system to verify system operability. The RHR system was selected due to its impact on plant risk during the upcoming refueling outage. The inspectors used RHR system checklists and system drawings to accomplish the inspection.

The inspectors conducted the walkdown to verify the position of open, shut, locked, and throttled valves; verify that control power was aligned to select motor-operated valves; and inspected valve material condition. Additionally, the inspectors evaluated other elements such as pipe supports, area radiation levels, housekeeping, and component labeling.

b. Findings

No findings of significance were identified.

.3 Semi-Annual System Walkdown of the Spent Fuel Pool (SFP) System

a. Inspection Scope

During the week of September 4, 2001, the inspectors performed a complete system walkdown of the SFP system. The SFP system was chosen due to the full-core offload to the SFP planned during the planned 2001 refueling outage. The SFP cooling system provided for decay heat removal of the spent fuel. The inspectors considered the condition of a fully off-loaded core stored in the SFP to be one of the facility's most risk significant conditions during the upcoming refueling outage. The inspectors reviewed normal, abnormal, and emergency operating procedures, vendor manuals, engineering evaluations and calculations, system drawings, and the Updated Safety Analysis Report (USAR) to verify that the system configuration and operation were consistent with the design bases. The inspectors also reviewed maintenance records for the spent fuel pumps and system instrumentation to verify that maintenance had been performed within its scheduled periodicity and that there were no outstanding maintenance work requests which would impact the ability of the spent fuel pool system to perform its design function.

The inspectors conducted the walkdown to check that valves and electrical breakers were properly positioned; verify that system components were properly labeled; examine hangars and supports to verify they were correctly installed and functional; and evaluate system material condition and housekeeping.

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:

- Fire Zone AX-24, Fuel Handling Rooms, September 19, 2001
- Fire Zone TU-22, Turbine Room, Elevation 626, August 27, 2001
- Fire Zone TU-92, 'B' Diesel Generator Room, September 14, 2001

The inspectors selected these fire zones since these areas were subjected to abnormally large transient combustible loads during the licensee's outage preparations. 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 prevent fire damage or propagation. Area conditions and configurations were evaluated based on information provided in the licensee's fire protection program analysis.

The inspectors inspected fire hoses and portable fire extinguishers to verify that they were installed at their designated locations, were in satisfactory physical condition, and were unobstructed. Additionally, passive features such as fire doors, fire dampers, and mechanical and electrical penetration seals were inspected to verify that they were in good physical condition.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

On September 18, 2001, the inspectors observed operations department "Just in Time" training which was conducted to refresh operating crews with shutdown and cooldown procedures prior to the planned 2001 refueling outage. The inspectors observed both classroom lectures and simulator training to verify that the training was of sufficient quality and detail. Topics included reactivity management, procedure reviews, industry operating experience and lessons-learned, and operations department outage management responsibilities. During the simulator training, the inspectors assessed the crew's performance and the oversight and direction provided by shift management. The inspectors also evaluated the simulator configuration to verify that it adequately modeled the actual control room configuration.

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) that scoping was in accordance with 10 CFR 50.65; (2) the characterization of systems, structures, and components (SSCs) failures; (3) the SSC safety significance classification; (4) the 10 CFR 50.65(a)(1) or (a)(2) classification for the SSCs; and (5) the 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:

- Chemical and Volume Control System, System 35
- Fire Protection, System 08
- Reactor Protection, System 47

The inspectors selected the Chemical and Volume Control System and the Reactor Protection System for review based on the relatively high risk impact associated with these systems on plant safety as defined by their associated "High Risk Significant Functions" within the facility's maintenance rule program. Although the Fire Protection System did not have any functions defined as "High Risk Significant" within the maintenance rule program, the inspectors selected the system for review based on recently identified fire protection system issues (see Inspection Reports 50-305/01-02, 01-04, and 01-06).

b. Findings

No findings of significance were identified.

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

.1 Valve SI-304A Body to Bonnet Leakage

a. Inspection Scope

On August 8, 2001, during a routine containment entry and tour, the licensee identified that a discharge check valve (Valve SI-304A) on the safety injection line to the reactor vessel had an active leak of approximately 15 drops per minute. The licensee installed scaffolding to allow closer inspection of the valve and determined that the leak was at the body-to-bonnet interface. The inspectors reviewed the scaffolding erection engineering evaluation since the scaffolding was installed in relative close proximity to

safety-related equipment. The inspectors attended licensee meetings which discussed qualitative risk analysis for different repair options. Factors in the repair options included minimizing radiation dosage to workers, heat stress, and time to shutdown for the planned 2001 refueling outage. The inspectors evaluated the licensee's management of risk for this emergent work. Subsequently, the licensee torqued the valve bonnet studs to the vendor recommended nominal torque which resulted in the leakage lowering to an occasional wisp of steam. The licensee determined that no further repair actions would be taken while the plant was on-line and that the valve would be repaired during the upcoming refueling outage. The inspectors examined the area of containment where the scaffolding had been installed to verify that the area did not contain foreign material which could impact safety-related equipment or block the suction strainers of the containment sump.

b. Findings

No findings of significance were identified.

.2 Maintenance Risk Review of Weekly Maintenance

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and assessment of plant risk, scheduling, and configuration control during the planned maintenance activities for the week of August 27, 2001. 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. Findings

No findings of significance were identified.

1R14 Non-Routine Evolutions (71111.14)

a. Inspection Scope

On September 23, 2001, the inspectors observed licensee performance during the unit shutdown and cooldown for the 2001 refueling outage. The inspectors evaluated the performance and interactions between the reactor operators, control room supervisor, and shift manager. Additionally, the inspectors evaluated adherence to the licensee's communications and alarm response operations standards.

The inspectors also assessed the adequacy of operations activities during the plant cooldown activities and other outage-related activities, such as configuration management, clearances, and system tagouts.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the operability evaluations listed below to verify that they addressed the applicable current licensing basis requirements and commitments, and provided an adequate basis for justifying operability. When the documented basis for operability was insufficient, independent reviews were conducted by the inspectors, including a discussion with licensee personnel.

The inspectors reviewed the following operability evaluations:

- Several weaknesses concerning Procedure NEP 15.31, Diesel Generator Start-up Air System Leakage Test
- Diesel Generator 'B' speed indicator in control room failed during performance of Procedure SP 42-312B
- Reactor building vent system duct work joint gasket material

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (OWAs) (71111.16)

a. Inspection Scope

The inspectors reviewed the cumulative effect of OWAs to determine the total impact of these work-arounds on plant operations. Specifically, the inspectors considered the interactions between OWAs associated with the turbine stop valve position indicating lights on the control room electro-hydraulic control panel, three station air system related work-arounds affecting the air supply to the instrument air system, a leaking pressure gage affecting operation of the condenser second-stage air ejectors, and an out-of-service pressurizer sample valve affecting primary containment integrity. The inspectors also reviewed the OWA procedure to determine if guidance for considering the aggregate effect of work-arounds was provided.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

On August 15, 2001, the inspectors reviewed and observed Procedure PMP 35-09, "Charging Pump Pulsation Dampener Maintenance," performed by mechanical maintenance on the 'B' charging pump. The inspectors observed maintenance personnel install and remove test equipment, perform leak checks of the pulsation damper mechanical joints, and interviewed personnel associated with the maintenance activity. The inspectors observed worker practices including cleanliness control and radiological controls. The inspectors observed subsequent pump operations to verify that the post-maintenance testing adequately verified charging pump operability.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage (71111.20)

.1 New Fuel Receipt

a. Inspection Scope

During the week of August 20, 2001, the licensee received several shipments of new fuel in preparation for an upcoming refueling outage. On August 23, 2001, the inspectors observed the licensee's receipt inspection of a new fuel cask. These inspections of fuel receipt were conducted to verify that the licensee adhered to approved procedures for proper fuel handling, inspecting foreign material exclusion, and industrial safety. The inspectors also observed activities to verify that the licensee checked the cask and fuel for external damage, dose, and contamination.

b. Findings

No findings of significance were identified.

.2 Review of Planned Outage Activities, Schedule, and Associated Risk

a. Inspection Scope

Prior to commencement of the 2001 refueling outage, the inspectors reviewed the licensee's planned outage activities and scheduling, Shutdown Safety Assessment (SSA), USAR, technical specifications, and system configuration controls to evaluate the adequacy of the SSA. The SSA documented a deterministic evaluation of plant risk in the areas of reactivity, core cooling, power availability, containment, inventory, Reactor Coolant System (RCS) integrity, and SFP cooling. Relative risk was determined by the licensee based on the plant configuration and redundancy of available systems and components for each day of the outage. Inspection attributes included verifying that the licensee considered actions such as establishing compensatory actions, minimizing the duration of the activity, and obtaining appropriate onsite review committee approval.

The inspectors noted that on September 10, the licensee's Plant Operations Review Committee (PORC) approved an Orange risk configuration on Day 18 when Motor Control Center (MCC) 52B would be taken out-of-service, thereby rendering the 'A' SFP pump inoperable with the full core stored in the SFP. The Day 18 configuration was approved based on the existing abnormal operations procedures to provide contingency actions in the event of the loss of the remaining SFP pump. An additional Orange risk configuration on Day 31 was not approved due to the lack of contingency plans. The inspectors performed a review of the established contingency actions.

b. Findings

One issue of very low safety significance (No Color), a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for failure to follow administrative procedures to verify contingency plans were established for high risk plant configurations.

The inspectors concluded that the safety assessment and contingency plans approved for Day 18 were inadequate and did not meet the requirements prescribed in General Nuclear Procedure (GNP) 8.4.1. Specifically, on Day 18 the plant configuration consisted of a full core offload with only the 'B' SFP pump available due to work on the MCC for the 'A' pump. Of primary concern was the potential loss of the only available pump or SFP Heat Exchanger (Hx). The facility's PORC approved the Orange risk condition based on the actions prescribed in the abnormal procedure for the SFP system. However, the inspectors concluded that the reliance on the abnormal procedure was inappropriate. The abnormal procedure provided various actions to perform in the event of a SFP system malfunction. The following concerns were identified:

- Actions included starting the redundant SFP pump upon loss of the running pump. However, the redundant pump was not available since its associated MCC was out of service for scheduled maintenance.
- Actions to cross-tie the SFP system to the 'A' RHR Hx upon loss of the SFP Hx would not have been successful. Additional maintenance activities scheduled for the same day would have isolated the 'A' RHR Hx and prevented the cross-tie valves from being opened.
- The facility's USAR Table 9.3-5 presented a failure analysis which included the potential loss of the SFP Hx while the core was fully offloaded. It stated that an alternate cooling system was provided through the 'A' RHR Hx and this system would only be required when the core was unloaded and stored in the SFP. Therefore, the analysis relied upon the 'A' RHR Hx which would not have been available as reflected in the approved outage schedule.

In summary, the SSA and subsequent PORC reviews for Day 18 plant configuration were inadequate in that contingency plans to manage the Orange risk conditions were essentially non-existent. Subsequently, the SSA and contingency plans were re-evaluated and the Orange paths were removed through re-scheduling of work activities. The licensee also revised the existing schedule to ensure that the RHR Hx would be

available as an alternate source of cooling in the event the SFP Hx was rendered inoperable as assumed in USAR Table 9.3-5.

This finding was considered to be of greater than minor safety significance since, in the event of a loss of the only available SFP pump or SFP Hx, spent fuel damage could occur. Therefore, the inspectors considered the issue to have a credible impact on safety. However, the inspectors also determined that the issue did not affect a Significance Determination Process cornerstone, therefore the issue was characterized as a finding of "No Color." Procedure GNP 8.4.1, Shutdown Safety Assessment, Step 2.5 stated that the final outage schedule shall be reviewed by PORC and approved prior to the start of the outage. Appendix A of Procedure GNP 8.4.1, stated that PORC approval was required for intentional entry into an Orange condition. Furthermore, contingency plans shall be created that would compensate for a further loss of redundancy due to equipment failure. Appendix B, Criterion V, of 10 CFR Part 50 required, in part, that activities affecting quality be prescribed by documented instructions and accomplished in accordance with these instructions. The failure to establish contingency plans to compensate for a further loss in redundancy due to equipment failure as required by Procedure GNP 8.4.1 was considered a violation of 10 CFR Part 50, Appendix B, Criterion V. However, because the finding was "No Color" and because the licensee entered the issue into their corrective action program as Kewaunee Assessment Process Document (KAP) Work Orders (WOs) 01-5423, 01-5427 and 01-5435, this Severity Level IV violation is being treated as a Non-Cited Violation (NCV 50-305/01-13-01, Failure to Establish Contingency Plans for Orange Risk Condition), consistent with Section VI.A.1 of the NRC Enforcement Policy.

.3 RCS Cooldown and Transition to RHR Cooling

a. Inspection Scope

Following the unit shutdown to start the 2001 refueling outage, the inspectors periodically monitored the cooldown of the RCS to verify that the licensee was cooling the RCS in accordance with their operating procedures. The inspectors also conducted reviews to verify that the cooldown rate did not exceed the RCS cooldown limitations. Once conditions were met, the inspectors observed the licensee transition the plant to residual heat removal cooling and performed walkdowns of the residual heat removal pumps. Additionally, the inspectors toured containment to identify level instruments which were to be used in draining down the reactor coolant system to 6 inches below the reactor vessel flange. Once the instruments were identified, the inspectors checked that the level instruments were aligned properly to ensure that reactor vessel level would be accurately indicated.

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 Technical Specifications 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:

- In Service Inspection of Charging and Volume Control System Class II Piping - August 21, 2001
- Motor-Driven and Turbine-Driven Auxiliary Feedwater Pumps Full Flow In-Service Test - September 23, 2001

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiological Boundary Verifications

a. Inspection Scope

The inspector conducted walkdowns of the radiologically controlled area 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 and the Spent Fuel Pool area to verify that these areas were posted and controlled in accordance with 10 CFR Part 20, licensee procedures, and Technical Specifications.

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71121.02)

.1 Radiological Work Planning

a. Inspection Scope

The inspector reviewed the ALARA planning for selected activities during the steam generator replacement project outage to verify that the technical bases for dose estimates were adequate. Activities included the removal and replacement of the plant's two steam generators; the installation, modification, and removal of scaffolds; refueling operations; containment structural modifications; and insulation activities. The inspector reviewed the draft ALARA job evaluations, exposure estimates, and exposure mitigation requirements for each activity. The inspector also evaluated the planning stage interfaces between radiation protection, maintenance, maintenance planning, scheduling, and engineering groups to verify that any interface problems or missing program elements had been addressed. In addition, the inspector evaluated the effectiveness of the proposed interfaces between radiation protection, plant management and the steam generator replacement contractors, and discussed with the ALARA technologist the integration of ALARA requirements into work packages.

The inspector attended an ALARA briefing for the contractors who would be working (cutting and welding) on and around the steam generator primary side piping. The inspector attended the briefing to determine if ALARA controls as described in the ALARA plan were clearly presented to those present and whether clear lines of communications and control had been established.

b. Findings

No findings of significance were identified.

.2 Source Term Reduction and Control

a. Inspection Scope

The inspector reviewed the status of the licensee's source term reduction program, focusing on those initiatives which had the potential to reduce radiological exposure during the outage. These activities included shutdown chemistry controls, hydrolazing and other decontamination work, and installation of permanent and temporary shielding. The inspector also evaluated other proposed source term reduction strategies such as water chemistry control and hot spot reduction initiatives.

b. Findings

No findings of significance were identified.

.3 Verification of Exposure Goals and Exposure Tracking System

a. Inspection Scope

The inspector reviewed the methodology and assumptions used for the steam generator replacement project outage exposure estimates and exposure goals. The inspector evaluated the use of job dose history files and dose reductions anticipated through lessons learned to verify that appropriate methods were used to forecast outage doses. The inspector also reviewed the licensee's exposure tracking system to determine if the level of tracking detail, report timeliness and report distribution was sufficient to support the control of collective exposures.

b. Findings

No findings of significance were identified.

.4 Declared Pregnant Workers

a. Inspection Scope

The inspector reviewed licensee records to determine if there were any worker declared pregnancies during the current assessment period. Even though there were no declared pregnancies during the assessment period, the inspector reviewed the monitoring controls to verify that those controls met the requirements contained in 10 CFR Part 20 and the licensee's procedures.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

To evaluate the effectiveness of the licensee's self-assessment process, the inspector reviewed the May 1, 2001 Steam Generator Replacement Outage (SGRO) Radiation Protection Readiness Assessment Report and the 2001 Nuclear Insurance Inspection Report of the ALARA program. The evaluation concentrated on the ability of the assessment process to identify, characterize, and prioritize problems. Additionally, the inspector reviewed all KAPs generated in 2001 through September 2001 that addressed the ALARA program and access control, to verify that the licensee had effectively identified problems and implemented its corrective action program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification - Safety System Functional Failures (71151)

Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors reviewed the licensee's PI data from the 4th quarter 2000 through the 2nd quarter 2001 for safety system functional failures. The inspectors compared the licensee's reported PI data to the licensee event reports (LERs) submitted to verify the PI data was accurate.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 Closure of Open Items

(Closed) LER 305/2001-004-000: Air Volume Booster Diaphragm Failure Results in RPS [Reactor Protection System] Actuation and Reactor Trip

The licensee submitted this LER to document the events and causes regarding an automatic reactor trip which occurred on June 20, 2001, due to a feedwater regulating valve which failed in the closed position. The valve failed due to the failure of an "Air Volume Booster" which caused the valve to drift closed. The inspectors reviewed the LER and corrective actions documented in Root Cause Evaluation 01-058. Additionally, the inspectors interviewed licensee personnel regarding the adequacy of completed corrective actions, and the schedule for completion of corrective actions which had not yet been completed. The inspectors evaluated this event utilizing the significance determination process and determined that this event was of minor safety significance. This event did not constitute a violation of NRC requirements.

4OA5 Other

.1 Steam Generator Replacement - Lifting and Rigging Activities (50001)

c. Inspection Scope

The inspectors conducted a review of the preparations and procedures for heavy lifting and rigging including crane and rigging inspections, testing, equipment modifications, lay-down area preparations, and crane operator training. The review was to verify that a load test had been performed on the haul route to confirm the capacity of the pavement to support the loaded transporter.

b. Findings

No findings of significance were identified.

4OA6 Meetings

Exit Meeting

On October 2, 2001, the resident inspectors presented the inspection results to Mr. M. Reddemann, Mr. K. Hoops, 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

| | |
|--------------------------------|--|
| Senior Official at Exit: | M. Reddemann, Site Vice President |
| Date: | September 21, 2001 |
| Proprietary: | No |
| Subject: | As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls, and Access Control to Radiologically Significant Areas |
| Change to Inspection Findings: | No |

| | |
|--------------------------------|--|
| Senior Official at Exit: | T. Taylor, Operations Manager |
| Date: | September 28, 2001 |
| Proprietary (explain "yes"): | No |
| Subject: | Steam Generator Replacement Inspection |
| Change to Inspection Findings: | No |

KEY POINTS OF CONTACT

Nuclear Management Company, LLC

S. Baker, Manager, Radiation Protection
W. Bosacki, Installation Engineer
R. Farrell, Manager, Planning and Scheduling
M. Fencil, Security Manager
G. Harrington, Licensing
K. Hoops, Plant Manager, Kewaunee Plant
J. Krueger, Steam Generator Replacement Project Shift Manager
M. Kwitek, Assistant Plant Manager, Maintenance
J. Palmer, Mechanical Maintenance Superintendent
K. Peveler, Manager, Nuclear Oversight
R. Pulec, Manager, Site Assessment
R. Mende, Engineering Director
M. Reddemann, Site Vice President
J. Schweitzer, Manager, Engineering and Technical Support
J. Stoeger, Superintendent, Operations
T. Taylor, Assistant Plant Manager, Operations
M. Van Noy, Steam Generator Replacement Project Licensing Engineer
P. Walker, Training Manager
T. Webb, Nuclear Licensing Director

Nuclear Regulatory Commission - RIII

R. Lanksbury, Branch Chief, DRP, Branch 5

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|-----------------|-----|---|
| 50-305/01-13-01 | NCV | Failure to Establish Contingency Plans for Orange Risk Condition (Section 1R20.2) |
|-----------------|-----|---|

Closed

| | | |
|--------------------|-----|---|
| 50-305/2001-004-00 | LER | Air Volume Booster Diaphragm Failure Results in RPS Actuation and Reactor Trip (Section 4OA3.1) |
|--------------------|-----|---|

| | | |
|-----------------|-----|---|
| 50-305/01-13-01 | NCV | Failure to Establish Contingency Plans for Orange Risk Condition (Section 1R20.2) |
|-----------------|-----|---|

Discussed

None

LIST OF ACRONYMS USED

| | |
|------|--|
| CCW | Component Cooling Water |
| CFR | Code of Federal Regulations |
| DRP | Division of Reactor Projects, Region III |
| GNP | General Nuclear Procedure |
| Hx | Heat Exchanger |
| KAP | Kewaunee Assessment Process (Corrective Action Program) Document |
| IST | Inservice Testing |
| LER | Licensee Event Report |
| MCC | Motor Control Center |
| NCV | Non-Cited Violation |
| NRC | Nuclear Regulatory Commission |
| OWA | Operator Work-Around |
| PI | Performance Indicator |
| PORC | Plant Operations Review Committee |
| RHR | Residual Heat Removal |
| RCS | Reactor Coolant System |
| RPS | Reactor Protection System |
| RWP | Radiation Work Permit |
| SFP | Spent Fuel Pool |
| SSA | Shutdown Safety Assessment |
| SSC | System, Structure, and Component |
| USAR | Updated Safety Analysis Report |
| WO | Work Order |

LIST OF DOCUMENTS REVIEWED

1R02 Evaluations of Changes, Tests or Experiments

| | | |
|----------------|--|-----------------|
| DCR-2858 Mod 1 | Replacement Lower Assemblies and Steam Dome Modifications | August 21, 2001 |
| GNP 4.3.1 | Guide to Safety Review, Safety Evaluations, and Second Level Reviews | April 30, 1996 |

1R04 Equipment Alignment

| | | |
|-------------------|---|-------------------|
| USAR, Section 9.3 | Auxiliary Coolant System | Revision 16 |
| N-CC-31 | Component Cooling System Operation | Revision T |
| N-CC-31-CL | Component Cooling System Prestartup Checklist | Revision V |
| A-CC-31A | Abnormal Conditions in the Component Cooling System | Revision M |
| SP-31-168 | Component Cooling Pump and Valve Test - IST [Inservice Testing] | Revision AG |
| N-RHR-34-CL | Residual Heat Removal Prestartup Checklist | Revision AF |
| OPERXK-100-18 | Auxiliary Coolant System | Revision AK |
| A-SFP-21 | Abnormal Spent Fuel Pool Cooling and Cleanup System Operation | Revision O |
| C11168 | SFPCS [Spent Fuel Pool Cooling System] Heat Removal Capacity | Original Revision |
| OPERM-218 | Flow Diagram - Spent Fuel Pool Cooling and Clean-up System | Revision AA |
| E-1617 | Integrated Logic Diagram Spent Fuel Pool Cooling & Cleanup | Revision E |
| | Safety Review RF-01.00 | Revision 1 |

1R05 Fire Protection

| | | |
|----------------------------------|---|-------------------|
| FPP 08-08 | Control of Transient Combustibles | Revision A |
| Fire Protection Program Analysis | Kewaunee Nuclear Power Plant, Fire Zone TU-22 | Revision 2 |
| | Appendix R Design Description | December 14, 2000 |
| | Kewaunee Fire Protection Program Plan | Revision 4 |

1R12 Maintenance Rule Implementation

| | | |
|------------------------|--|-------------------|
| USAR Section 9.2 | Chemical and Volume Control System | Revision 16 |
| Regulatory Guide 1.160 | Monitoring the Effectiveness of Maintenance at Nuclear Power Plants | Revision 2 |
| NUMARC 93-01 | Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants | Revision 2 |
| | Maintenance Rule Expert Panel Meeting Minutes | May 2, 2001 |
| | Maintenance Rule Performance Criteria Sensitivity | May 17, 2001 |
| KAP 01-005161 | Maintenance Rule (a)(1) Evaluation | May 2, 2001 |
| | Maintenance Rule Program Plan | Revision 3 |
| KAP 00-01131 | Reactor Coolant Temperature Instrument Channel 1 Top Mounting Screw Found Stripped | April 28, 2000 |
| KAP 00-01176 | Reactor Coolant Temperature Instrument Channel 1 Top Mounting Hole on Tavq Converter Found Stripped | April 28, 2000 |
| KAP 00-01223 | Reactor Coolant Temperature Instrument Channel 1 Dynamic Testing Identified Non-Conservative Results | May 9, 2000 |
| KAP 00-01407 | Reactor Coolant Temperature Instrument Channel 3 Out of Calibration | May 9, 2000 |
| KAP 00-01408 | Reactor Coolant Temperature Instrument Channel 3 Dynamic Testing Identified Non-Conservative Results | May 9, 2000 |
| KAP 00-01435 | Reactor Coolant Temperature Instrument Channel 2 Dynamic Testing Identified Non-Conservative Results | May 10, 2000 |
| KAP 00-02984 | Low Pressure Reactor Trip Circuit in 1/3 Coincidence vs. 2/4 Coincidence as Designed. | August 23, 2000 |
| KAP 00-02996 | KAP 00-01407 Closed Without Required Maintenance Rule Evaluation Completed | August 24, 2000 |
| KAP 01-03284 | Received Alarm While Going to Pull Out on Tavq Defeat Switch | February 27, 2001 |
| KAP 01-08290 | RCS Channel Delta-T Deviation Annunciator Came in Unexpectedly | May 4, 2001 |
| KAP 01-06433 | Received Pressurizer Level High Alarm With No Change in Level | March 24, 2001 |

| | | |
|--------------|--|--------------|
| KAP 01-11531 | As-Found Value for S/G Level Low Low Out of Specification High | July 2, 2001 |
| KAP 01-11560 | White Channel RPS TSP2 Calculator Out of Calibration | July 2, 2001 |

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

| | | |
|------------------|--|-------------------|
| GNP 08.21.01 | Risk Assessment for Plant Configurations | Revision A |
| USAR, Section 4 | Reactor Coolant System | Revision 16 |
| XK100-338 | 6" Primary Nuclear Swing Check Valve | February 14, 1972 |
| OPERXK-100-28 | Flow Diagram - Safety Injection System | Revision AK |
| SP 36-082 | Reactor Coolant System Leak Rate Check | Revision Y |
| KAP WO 01-013239 | 6 In. Valve - Check - Residual Hx Low Head Injection to Reactor Vessel | |

1R14 Non-Routine Evolutions

| | | |
|--------|---|----|
| N-0-03 | Plant Operation Greater than 35% Power | AL |
| N-0-04 | 35% Power to Hot Shutdown Condition | V |
| N-0-05 | Plant Cooldown from Hot Shutdown to Cold Shutdown Condition | AO |

1R15 Operability Evaluations

| | | |
|-------------------|---|-------------------|
| KAP WO 01-005190 | Audit Finding - Several Weaknesses Concerning NEP 15.31, Diesel Generator Start-up Air System Leakage Test | |
| NEP 15.31 | Diesel Generator Start-up Air System Leakage Test | Revision Original |
| LER 89-005-01 | Inspection of Diesel Generator Start-up Air System Finds Deficiencies That Could Render Both Diesel Generators Inoperable | |
| KAP WO 01-004896 | Diesel Generator 'B' Speed Indicator In Control Room Failed During Performance of SP 42-312B | |
| Drawing E-1634 | Integrated Logic Diagram Diesel Generator Electric | Revision U |
| USAR, Section 8.2 | Electrical System | Revision 16 |
| KAP WO 01-005084 | Reactor Building Vent System Duct Work Joint Gasket Material | |

USAR, Section 6.3 Containment Air Cooling System Revision 16

1R16 Operator Workarounds

| | | |
|--|--|-----------------|
| Operations Department Instruction Book | Operator Workarounds | July 13, 2001 |
| | Operator Workaround Status Sheet | August 13, 2001 |
| OPERM-M213-1 | Flow Diagram Station & Instrument Air System | Revision 1 |
| M212 | Flow Diagram Air Removal System | Revision AF |

1R20 Refueling and Outage

| | | |
|----------------|--|----------------|
| RE-22 | Receipt and Inspection of New Fuel | Revision L |
| HP-05.012 | Receipt of New Fuel Assemblies | Revision E |
| N-RC-36E | Draining the Reactor Coolant System | August 9, 2001 |
| N-0-05 | Plant Cooldown from Hot Shutdown to Cold Shutdown Condition | Revision AO |
| GNP 8.4.1 | Shutdown Safety Assessment | D |
| KAP WR 01-5423 | Engineering Response to Questions Concerning SFP Cooling | |
| KAP WR 01-5427 | Evaluate Contingency Actions in Event of Loss of SFP Hx | |
| KAP WR 01-5435 | PORC [Plant Operations Review Committee] Approval of Day 18 Orange Path Flawed | |

1R22 Surveillance Testing

| | | |
|--------------|--|------------|
| TS 4.2 | ASME [American Society of Mechanical Engineers] Code Class In-Service Inspection and Testing | |
| SP-35-038 | Chemical and Volume Control System Pressure Test | Revision E |
| ISI XK100-36 | ISI Flow Diagram, Chemical and Volume Control System | Revision N |
| SP-05B-283 | Motor Driven AFW Pumps Full Flow Test - IST | Revision K |
| SP-05B-284 | Turbine Driven AFW Pump Full Flow Test - IST | Revision L |

4OA1 Performance Indicator Verification

| | | |
|--------------|---|------------|
| EPRI 99-02 | Regulatory Assessment Performance Indicator Guideline | Revision 1 |
| GNP 03.18.01 | NRC Performance Indicators Reporting Instructions | Revision B |

4OA3 Event Followup

| | | |
|-----------------|---|----------------|
| LER 2001-004-00 | Air Volume Booster Diaphragm Failure Results in RPS Actuation and Reactor Trip | |
| RCE 01-058 | Root Cause Evaluation - Failed Feedwater Regulation Valve Booster Causes Plant Trip | August 9, 2001 |

4OA5 Other

| | | |
|---------------|---|--------------------|
| M-MD-QC 4.2.2 | Operate Overhead Crane | August 17, 1994 |
| 23452-C-035 | Polar Crane Ring Girder Evaluation | July 27, 1999 |
| 23452-C-040 | Evaluation of Mezzanine Floor for SGR [Steam Generator Replacement] Loads | September 27, 1999 |
| 23452-C-019 | Center of Gravity and Weight of Old Steam Generator Lower Assembly | June 8, 1999 |
| 23452-C-035 | Polar Crane Ring Girder Evaluation | July 28, 1999 |

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls

| | | |
|--------------|---|--------------------|
| NAD-01.11 | Personnel Monitoring | Revision I |
| HP-01.003 | Administrative Exposure Control | Revision G |
| HP-04.001 | ALARA Plan | Revision C |
| HP-04.002 | Temporary Radiation Shielding | Revision B |
| | Kewaunee Steam Generator Replacement Project Radiation Protection Plan | Revision 0 |
| | Kewaunee Plant Dose Report 1973 to 1999 | September 20, 2001 |
| | Daily ALARA Report | September 12, 2001 |
| HPF-146 | Pregnancy Declaration Form | Revision A |
| PMETS Report | Actual vs. Estimated Exposures Per RWP [Radiation Work Permit] Sorted by Task | September 19, 2001 |

| | | |
|--------------------|---|--------------------|
| | 2001 Refueling Outage Physical Change List | August 17, 2001 |
| | 2001 Estimated Dose Goals | September 20, 2001 |
| ALARA Plan #01-063 | Scaffold Installation, Modification, and Removal During the Steam Generator Replacement | August 9, 2001 |
| ALARA Plan #01-001 | Refueling Operations | September 11, 2001 |
| ALARA Plan #01-062 | Containment Structural Mods | August 24, 2001 |
| ALARA Plan #01-064 | Insulation | August 19, 2001 |
| RF-01.00 | KNPP [Kewaunee Nuclear Power Plant] Refueling Procedure | Revision I |
| RWP 506 | Scaffolding Installation & Removal, to Include Erection of Shielding Supports | Revision 0 |
| RWP 519 | Perform Containment Structural Mods | Revision 0 |
| RWP 507 | Remove & Reinstall Insulation | Revision 0 |
| | Radiological Performance Committee, Meeting Minutes | May 29, 2001 |