September 29, 2005

EA-05-021

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

SUBJECT: KEWAUNEE POWER STATION
NRC INSPECTION REPORT NO. 05000305/2005015(DRP)
INSPECTION FOR ONE OR TWO WHITE INPUTS IN A STRATEGIC PERFORMANCE AREA

Dear Mr. Christian:

The NRC conducted Supplemental Inspection Procedure 95001 “Inspection For One or Two White Inputs In A Strategic Performance Area” at your Kewaunee Power Station (KPS). The enclosed report documents the inspection findings which were discussed on September 20, 2005, with Mr. Michael Gaffney and other members of your staff.

The NRC performed this supplemental inspection as required by the NRC Action Matrix based on our assessment of plant performance. As stated in our letter dated August 30, 2005, plant performance at KPS was within the Regulatory Response Column of the NRC Action Matrix based on one White finding within the Barrier Integrity Cornerstone.

The White finding was associated with the inability to expeditiously close the containment hatch during the Fall 2004 refueling outage and represented an issue with low to moderate increased importance to safety that required additional NRC inspection. This supplemental 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. The purpose of this inspection was to (1) provide assurance that the root and contributing causes for both White finding and for the overall performance issues which resulted in the degraded cornerstone are understood; (2) independently assess the extent of condition and generic implications; and (3) provide assurance that the corrective actions are sufficient to prevent recurrence.

Based upon the results of this inspection no findings of significance were identified.

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

Sincerely,

/RA/

Thomas J. Kozak
Team Leader, TSS
Division of Reactor Projects

Docket Nos. 50-305
License Nos. DPR-43

Enclosure: Inspection Report 05000305/2005015(DRP)
w/Attachment: Supplemental Information

cc w/encl: M. Gaffney, Site Vice President
C. Funderburk, Director, Nuclear Licensing
and Operations Support
T. Breene, Manager, Nuclear Licensing
L. Cuoco, Esq., Senior Counsel
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U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Docket No.:	50-305
License No.:	DPR-43
Report No.:	05000305/2005015(DRP)
Licensee:	Dominion Energy Kewaunee, Inc.
Facility:	Kewaunee Power Station
Location:	N490 Highway 42 Kewaunee, WI 54216
Dates:	September 6 through September 20, 2005
Inspectors:	S. Burton, Senior Resident Inspector
Observers:	None
Approved by:	Thomas Kozak Team Leader - TSS Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000305/2005015(DRP); 09/06/2005 - 09/20/2005; Kewaunee Power Station; Inspection For One or Two White Inputs In A Strategic Performance Area.

This report covers a supplemental inspection conducted by the Senior Resident Inspector from September 06 - 20, 2005, to address a White finding identified in the Barrier Integrity Cornerstone which was associated with the inability to expeditiously close the containment hatch during reactor vessel head replacement activities during the Fall 2004 refueling outage. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Cornerstone: Barrier Integrity

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess the licensee's evaluation associated with the inability to expeditiously close the containment hatch during the Fall 2004 refueling outage. This performance issue was previously characterized as having low to moderate risk significance ("white") in NRC Inspection Report 05000305/2005009. During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspectors determined that the licensee performed a comprehensive evaluation of the inability to expeditiously close the containment hatch during the Fall 2004 refueling outage. The licensee's evaluation identified two root causes for this issue as follows: site personnel do not always recognize what constitutes a potentially risk significant or consequential condition outside of the Technical Specification or licensing basis; and Kewaunee has selectively incorporated elements of industry guidance documents such as Nuclear Energy Institute (NEI), NUMARC, Electric Power Research Institute (EPRI), Nuclear Maintenance Applications Center (NMAC), Institute of Nuclear Power Operators (INPO), etc., without a sound documented basis for the parts of the recommendations or guidance that the site determines are not necessary. Given the licensee's acceptable performance in addressing the inability to expeditiously close the containment hatch during the Fall 2004 refueling outage, Violation 05000305/2004009-006 will be closed and the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

A. <u>Inspector-Identified and Self-Revealed Findings</u>

None.

B. <u>Licensee-Identified Violations</u>

None.

Report Details

01 INSPECTION SCOPE

Supplemental Inspection Procedure 95001, "Inspection For One or Two White Inputs In A Strategic Performance Area," was conducted to assess the licensee's evaluation associated with the inability to expeditiously close the containment hatch during the Fall 2004 refueling outage. This issue was previously characterized as White in NRC Inspection Report 05000305/2005009 and is related to the barrier integrity cornerstone in the reactor safety strategic performance area. Kewaunee Power Station entered the Regulatory Response Column of the NRC's Action Matrix in the fourth quarter of 2004 as a result of this finding. The inspection objectives were to provide assurance that the root and contributing causes were understood for the individual and collective performance issues, to independently assess the extent of condition for the individual and collective issues, and to provide assurance that the corrective actions were sufficient to address the causes and prevent recurrence. The scope of this supplemental inspection included the root cause evaluation, extent of condition, extent of cause, and corrective actions for the White finding. In addition to the detailed review of the licensee's evaluation, the inspectors performed random assessments in each area to evaluate the thoroughness of the licensees evaluation.

02 EVALUATION OF INSPECTION REQUIREMENTS

02.01 Problem Identification

a. Determine that the evaluation identifies who (i.e., licensee, self revealing, or NRC), and under what conditions the issue was identified.

The licensee's root cause evaluation (RCE) identified that the performance deficiency was NRC identified during a review of actions taken to address the inability to close the containment hatch due to interference. The inability to close the hatch was self revealing when the licensee attempted to close the hatch after installation of the runway system which was installed to facilitate the installation of a new reactor pressure vessel head.

b. Determine that the evaluation documents how long the issue existed, and prior opportunities for identification.

The licensee concluded that the issues existed for just over three days. The RCE indicated that prior opportunities to identify the deficiency existed when post-installation fit up checks were not performed. The inspector also concluded that performance of a post-installation fit check would have identified the deficiency.

Additionally, the RCE indicated that there were prior existing indicators of conditions related to prevention of the root causes. Specifically, five internal and three external events were identified that related to a failure to appropriately incorporate industry guidance or instances where events challenged the licensee's knowledge of industry standards. The licensee also reviewed regulatory correspondence such as Generic Letter (GL) 87-12 and GL 88-17, and determined through procedural review that the contents of these generic letters were appropriately incorporated into KPS procedures. The RCE also indicated that in 1996, the

licensee reviewed Nuclear Management and Resources Council (NUMARC) Report 91-06 to ensure operating procedures and station support training programs implemented the guidance as necessary. As a result, the licensee revised the reduced inventory procedure to incorporate time to boil and time to core uncovering calculations, but did not ensure all recommendations in the guidance were incorporated into station procedures and programs.

The inspector agreed with the licensee's evaluation.

c. Determine that the evaluation documents the plant specific risk consequences (as applicable) and compliance concerns associated with the issue.

The licensee's evaluation assigned a change in Large Early Release Frequency (LERF) of $1.9x10^{-8}$ which differed from the NRC's evaluation which assigned a change in LERF of greater than $1x10^{-7}$. The difference in the values was based on the time assumed for personnel to remove the runway from the containment hatch area. The difference in assumptions did not require a modification to the shutdown risk model. However, as a result of this issue, the licensee identified deficiencies in its shutdown risk model and implemented corrective actions to address the deficiencies.

The licensee acknowledged that a violation of procedure CMP-89 A-02, "Containment Building Inner Equipment Door Opening and Closing Instructions," occurred. No other compliance concerns were identified.

The inspector agreed with the licensee's evaluation.

02.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

a. Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).

The licensee's RCE methodology used a combination of event and causal factor flow charts and "why" tree analyses. The method was systematic and the evaluation was completed in accordance with guidance outlined in the licensee's RCE process. However, the licensee's evaluation did not specifically identify contributing causes; rather it identified two root causes with ten supporting elements. Although no contributing cause(s) were identified, the inspector concluded that the supporting elements constituted what would have been considered the contributing causes.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

The identified root causes were not narrowly focused, identified both root causes and contributing elements that were of sufficient scope, and, if corrected, should prevent recurrence. Specifically, the licensee identified two root causes: first, "Site personnel do not always recognize what constitutes a potentially risk significant or consequential condition outside of the TS or licensing basis;" and second, "Kewaunee has selectively incorporated elements of industry guidance documents such as Nuclear Energy Institute (NEI), NUMARC, Electric Power Research Institute (EPRI), Nuclear Maintenance Applications Center (NMAC), INPO, SDP, etc., without a sound documented basis for the parts of the recommendations or

guidance that the site determines are not necessary." The inspectors concluded that corrective actions for these causes should prevent recurrence of not only the specific issue, the inability to close the containment hatch if required, but should evaluate the issue relative to the crosscutting aspects of the more global root causes.

c. Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.

The RCE considered prior occurrences for identification of both the root causes and of the specific issue (Section 02.01.b).

d. Determine that the root cause evaluation addresses the extent of condition and the extent of cause of the problem.

The RCE evaluated the extent of condition and concluded that the condition was not limited only to outage conditions where the reactor coolant system or containment integrity were required; that no similar equipment issues existed; that there were latent organizational weaknesses related to the incorporation of industry guidelines; that these organizational weaknesses were cross-cutting in nature; and the historical method used to incorporate industry guidance into station procedures was weak and required review.

The extent of cause found similar instances where the root causes extended into other areas, but because of the global nature of the root causes and their associated cross-cutting nature, no specific "extent of cause" issues were identified.

02.03 Corrective Actions

a. Determine that appropriate corrective action(s) are specified for each root/contributing cause or that there is an evaluation that no actions are necessary.

The licensee developed eight corrective actions to prevent recurrence (CATPR). Additionally, corrective actions (CA) were developed for the contributing elements that were related to each root cause. The inspector concluded that the CATPRs established for the root cause evaluations appeared sufficient to prevent recurrence of the identified root causes.

The inspectors selected CATPR7 as a sample to assess the appropriateness of the designated CAs. This CATPR required the development of a detailed change management plan and the implementation of an industry guidance review process. The licensee indicated that the review process completed as part of the Spring 2005 restart nuclear improvement initiative met the requirements for this CA. However, the inspector noted that some of the CAs established for the contributing elements contradicted this assertion. Specifically, CAs existed that indicated that procedures for the loss of decay heat removal needed significant revision, yet the related industry review indicated otherwise. The inspector presented his observations to the licencee and found that the licensee had utilized global statements from the industry guidance as their CAs, however they had performed a detailed review and found that the changes required were minimal. The inspector concluded that the intent of the CA was met, however the CA statements could have been better defined. The licensee agreed with this assessment and initiated corrective action documents to assess lessons learned from the inspection and determine if clarifications to the RCE were warranted.

Although specific contributing causes were not identified, the contributing causes were expressed as supporting elements to the identified root causes. The inspector concluded that this process, although acceptable by procedure, would result in the corrective actions for the contributing causes being directly tied to the CATPR. As a result, any future modifications or revisions to procedures or processes that were modified as a result of a contributing cause would require the same rigor and review necessary to modify a CATPR. The licensee concurred with this assessment and included it in their CA process for review.

b. Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance.

No specific prioritization for corrective actions existed. Prioritization of corrective actions was completed using the normal CA process as a function of the due date assignment. Because all CAs were scheduled to be completed prior to November 2005 and with relatively the same due date, no issues were identified. Additionally, many of the sub-elements were completed prior to the scheduled due date and as a function of the restart initiative.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

The schedule for implementing corrective actions was a function of the due date's established for the item in the corrective action program (Section 02.03.b). Additionally, the inspectors reviewed barriers established to ensure that, in the event of a forced shutdown or other need, barriers existed to prevent recurrence of the identified causes. The inspector found that the licensee had not established interim measures to ensure that CAs required for success would be implemented if a need arose prior to the assigned due date. However, the licensee was able to demonstrate that existing night orders had been established for issues related to the finding, that the RCE was adequate, and that operating procedures had been reviewed to identify any significant issues. Although there was a lack of designated interim barriers, the inspector concluded that the licensee's awareness of the issues, coupled with the relative short due date assignments of the CAs, indicated that sufficient information existed which provided confidence that CAs would be taken should the need arise.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.

In-progress and post-completion effectiveness reviews have been established which appear to be sufficient in evaluating success.

02.04 (Closed): Violation (VIO) 05000305/2004009-006 - Inability to Close Equipment Hatch. Licensee actions to address this violations have been reviewed and documented in this inspection report. This violation is closed.

03 MANAGEMENT MEETINGS

Exit Meeting Summary

On September 20, 2005, the inspection results were presented to Mr. Michael Gaffney and other members of licensee management at the conclusion of the inspection. The licensee acknowledged the observations presented.

On September 28, a regulatory performance meeting was held via telephone between Mr. Tom Kozak and Mr. Stephen Burton of the NRC, and Mr. Michael Gaffney and other members of licensee management. The purpose of the meeting was to discuss the performance deficiency associated with the White finding described in this report, and the licensee's proposed corrective actions in order to arrive at a shared understanding of the performance issues, underlying causes, and planned licensee actions to address the finding.

SUPPLEMENTAL INFORMATION

Key Points of Contact

Licensee

M. Gaffney, Site Vice President
T. Webb, Director Safety and Licensing
L. Armstrong, Director Engineering
T. Breene, Manager Nuclear Licensing
J. Ruttar, Manager Nuclear Operations

NRC

S. Burton, Senior Resident Inspector
T. Kozak, Team Lead, Reactor Projects Branch TSS

List of Items Opened, Closed, and Discussed

Open

None

Closed

VIO 05000305/2004009-006 - Inability to Close Equipment Hatch (Section 02.04)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Corrective Action Program Documents

CAP 29167; NRC 95001 Inspection Issues on RCE668, Containment Hatch Interference (NRC Identified)
CA 18771; Containment Hatch Closure Interference - NRC Significant Issue (NRC Identified)
CA 18772; Containment Hatch Closure Interference - NRC Significant Issue (NRC Identified)
CAP 29298; RCE process "Lessons Learned" identified during 95001 inspection (RCE 668) (NRC Identified)
CAP 23950; Containment Hatch Closure Interference - NRC Significant Issue (NRC Identified)
CAP 23274; Runway Interference Prevent Closure of Equipment Hatch
ACE 2824; Runway Interference Prevent Closure of Equipment Hatch
CE 14782; Runway Interference Prevent Closure of Equipment Hatch
CA 18765; Risk Training for Management Staff - Containment Hatch Closure Interference
CA 18858; Assure Managers Recognize the Significance of Long Standing Issues
RCE 668, Root Cause Evaluation - Runway Interference Prevented Timely Closure of Containment Hatch; Revisions 0, 1, & 2

Procedures and Work Requests

NEP-14.13; Operating Experience Procedure; Revision G
2005-003-2-005NOS Observation Report - Containment Hatch White Finding Issue
NAD-04.08; Charter - Independent Review Group; Revision A
NMC RCE Evaluation Manual, Revision 6
Night Order - Equipment Hatch; March 4, 2005
CMP-89A-02; BLD - Containment Building Inner Equipment Door Opening and Closing Instructions; Revision E
GNP-03.24.01; Job Briefs Implementation; Revision H
GNP-11.08.01; Action Request Process; Revisions T & U

List of Acronyms

ACE	Apparent Cause Evaluation
ADAMS	Agency-wide Documents Access and Management System
CA	Corrective Action
CAP	Corrective Action Program document
CATPR	Corrective Action to Prevent Recurrence
CE	Cause Evaluation
DRP	Division of Reactor Projects
EA	Enforcement Action
EPRI	Electric Power Research Institute
GL	Generic Letter
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
KPS	Kewaunee Power Station
LERF	Large Early Release Frequency
LERP	Large Early Release Probability
NMAC	Nuclear Maintenance Applications Center
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
NUREG	NRC technical report designation
PARS	Publicly Available Records
RCE	Root Cause Evaluation
SDP	Significance Determination Process