UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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July 18, 2008

Mr. David A. Christian
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION – NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION 05000305/2008007

Dear Mr. Christian:

On June 6, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed a Problem Identification and Resolution team inspection at your Kewaunee Power Station. The enclosed report documents the inspection findings, which were discussed on June 6, 2008, with Mr. M. Crist 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.

On the basis of the samples selected for review, there were no findings of significance identified during this inspection. The team concluded that problems were properly identified, evaluated, and resolved within the corrective action program. The inspection team did identify several examples of minor documentation issues, including insufficient documentation, lack of documentation of completed actions, and missing links between corrective action documents. The inspection team also noted that while there has been improvement in the site's trending program, the program was still in a state of transition at the time of the inspection.

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system (ADAMS), accessible from the NRC Web site at
http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Michael Kunowski, Chief
Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report 05000305/2008007
w/Attachment: Supplemental Information

cc w/encl: S. Scace, Site Vice President
T. Webb, Director, Nuclear Safety and
Licensing
C. Funderburk, Director, Nuclear Licensing
and Operations Support
T. Breene, Manager, Nuclear Licensing
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D. Zellner, Chairman, Town of Carlton
J. Kitsembel, Public Service Commission of Wisconsin
P. Schmidt, State Liaison Officer

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Letter to D. Christian from M. Kunowski dated July 18, 2008

SUBJECT: KEWAUNEE POWER STATION PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION 05000305/2008007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-305
License No:	DPR-43
Report No:	05000305/2008007
Licensee:	Dominion Energy Kewaunee, Inc.
Facility:	Kewaunee Power Station
Location:	Kewaunee, WI
Dates:	May 19 through June 6, 2008
Inspectors:	R. Orlikowski, Senior Resident Inspector, Duane Arnold Energy Center, Team Lead G. Wright, Project Engineer A. Dunlop, Senior Engineering Inspector N. Feliz, Reactor Inspector
Approved by:	M. Kunowski, Chief Projects Branch 5 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000305/20008007; 05/19/2008-06/06/2008; Kewaunee Power Station; Routine Biennial Problem Identification and Resolution Inspection.

This inspection was conducted by the Duane Arnold Energy Center senior resident inspector and three regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Identification and Resolution of Problems

On the basis of the sample selected for review, the team concluded that implementation of the corrective action program (CAP) at Kewaunee Power Station was generally good. The licensee had a low threshold for identifying problems and entering them in the CAP. Items entered into the CAP were screened and prioritized in a timely manner using established criteria; were properly evaluated commensurate with their safety significance; and corrective actions were generally implemented in a timely manner, commensurate with the safety significance. The team noted that the licensee reviewed Operating Experience (OE) for applicability to station activities. Audits and self-assessments were determined to be performed at an appropriate level to identify deficiencies. In interviews conducted during the inspection, workers at the site expressed freedom to enter safety concerns into the CAP.

A. NRC-Identified and Self-Revealed Findings

No violations of significance were identified.

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152B)

Completion of sections .1 through .4 constitutes one biennial sample of Problem Identification and Resolution (PI&R) as defined in Inspection Procedure 71152.

.1 Assessment of the Corrective Action Program

a. Inspection Scope

The inspectors reviewed the licensee's CAP implementing procedures and attended CAP meetings to assess the implementation of the CAP by site personnel.

The inspectors reviewed risk and safety significant issues in the licensee's CAP since the last NRC PI&R inspection in May 2007. The selection of issues ensured an adequate review of issues across NRC cornerstones. The inspectors used issues identified through NRC generic communications, department self assessment, licensee audits, OE reports, and NRC documented findings as sources to select issues. Additionally, the inspectors reviewed condition reports (CRs) generated by facility personnel during the course of their daily plant activities. In addition, the inspectors reviewed CRs and a selection of completed investigations from the licensee's various investigation methods, which included root cause, apparent cause, equipment apparent cause, and common cause evaluations.

The inspectors selected one high risk system, the auxiliary feedwater (AFW) system, to review in detail. The inspectors' review was to determine whether the licensee staff were properly monitoring and evaluating the performance of this system through effective implementation of station monitoring programs.

During the reviews, the inspectors determined whether the licensee staff's actions were in compliance with the facility's CAP and 10 CFR Part 50, Appendix B requirements. Specifically, the inspectors determined if licensee personnel were identifying plant issues at the proper threshold, entering the plant issues into the station's CAP in a timely manner, and assigning the appropriate prioritization for resolution of the issues. The inspectors also determined whether the licensee staff assigned the appropriate investigation method to ensure the proper determination of root, apparent, and contributing causes. The inspectors also evaluated the timeliness and effectiveness of corrective actions for selected issue reports, completed investigations, and NRC findings, including non-cited violations.

b. Assessment

(1) Effectiveness of Problem Identification

Based on the information reviewed, the inspectors concluded that the threshold for initiating CRs was appropriate and well below the plant procedural requirements. The inspectors concluded that the program was effective at identifying issues.

Findings

No findings of significance were identified.

Observations

Weakness in Initiating Condition Reports (CRs) to Address Problem Identification Issues

The inspectors reviewed several CRs generated to document issues where corrective actions (CAs) were either closed inappropriately or did not adequately address the issue documented in the original CR. In all instances, the deficiencies recognized by the station were corrected. While the licensee appropriately addressed specific issues, CRs were not always written to address the program issues related to why the issues were inappropriately closed or why inadequate CAs were implemented.

An example of this was CA 13151, which was written to address a violation issued during the last PI&R inspection. NRC Inspection Report 05000305/2007008 documented a non-cited violation (NCV) (05000305/2007008-01) for failing to follow the site's cause evaluation procedure, with six examples where Root Cause Evaluations (RCEs) or Apparent Cause Evaluations (ACEs) did not follow the procedure. This CA corrected the deficiencies in the six RCEs or ACEs, but failed to address the deficiency of why the station did not follow the procedures. After reviewing the actions taken in CA 13151, station personnel recognized that the CA was deficient in that it did not address the station's failure to use the cause evaluation procedure. Condition report 23235 was generated to document the lack of adequacy in CA 13151. A new CA (20174) was generated to address the lack of procedure use that resulted in the non-cited violation. However, while CR 23235 addressed the deficiency in CA 13151, it did not address why CA 13151 was written such that it only fixed the specific problems, and did not address the more basic cause of the problem.

In-Depth Review of the AFW System

The inspectors considered risk insights from the NRC's and licensee's risk analyses to select a risk-significant component for a "vertical slice" and chose to review the AFW. For the selected risk-significant system, the inspectors reviewed the system health reports, a sample of work requests and engineering documents, and plant log entries.

When performing the vertical slice on the AFW system, it was observed that there were several CRs written that showed that there was a low threshold for the identification of equipment deficiencies. The housekeeping and cleanliness of AFW rooms were generally good, enhancing the ability of personnel to easily identify equipment deficiencies and monitor equipment for worsening conditions.

(2) Effectiveness of Prioritization and Evaluation of Issues

Inspectors reviewed the classification of CRs for resolution ranging from "1", for the most significant, to "4", the least significant. Inspectors also attended the Condition Review Trending (CRT) meetings to observe the management review of CR classification. All CRs were assigned appropriate prioritization and evaluation levels.

Findings

No findings of significance were identified.

Observations

Trending Program

The inspectors reviewed Kewaunee Power Station's trending program, as well as trend reports from the previous four quarters. The inspectors were informed of a recent change to the CAP that involved tracking and trending cross-cutting issues. The licensee had compared its CAP cause codes with the cross-cutting aspects provided in NRC Inspection Manual Chapter 0305. When there were differences between the NRC's safety culture aspects and its CAP cause codes, the licensee generated new cause codes. The licensee then went back two months and evaluated all condition reports against the CAP cause codes, new and old. The results were then plotted to identify negative trends. While the program has just started, the inspectors concluded that the new initiative had the potential to identify negative trends in performance earlier than waiting for the performance deficiencies to result in significant equipment degradation.

The inspection team did not identify any discrepancies in the site's trending program. However, Kewaunee Power Station's trending program was in a state of transition at the time of the inspection. The site had recently hired a new trending program coordinator, and while some improvements had been initiated already, there were still outstanding actions in Kewaunee's CAP Change Management Transition Plan.

(3) Effectiveness of Corrective Actions

In general, the licensee's corrective actions for the samples reviewed were appropriate, and appeared to have been effective. The inspectors determined that the timeliness of issue resolution had improved since the last biennial PI&R Inspection. Interviews with licensee staff indicated that there has been a significant increase in management attention to the identification and timely resolution of issues. In addition, staff interviews indicated that the development and staffing of the Department Corrective Action Coordinator (DCAC) position has been very beneficial to each organization's implementation of the CAP.

Findings

No findings of significance were identified.

Observations

Follow-up of Issues from Supplemental Inspection 95002 Report 05000305/2007011

During the supplemental inspection 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," completed on December 19, 2007, the inspectors concluded that the corrective actions appeared adequate to address the Yellow finding associated with the failure to evaluate and repair a fuel oil leak on the 1A Emergency Diesel Generator and the White performance indicator for unplanned scrams per 7000 critical hours. The inspectors also noted that while the corrective actions appeared adequate, many of them had not been completed at the time the 95002 inspection was completed. As part of the PI&R Inspection, the inspectors reviewed the status of those corrective actions to ensure that they were being completed as planned. The inspectors determined that the corrective actions associated with the findings inspected in the 95002 supplemental inspection were being completed as scheduled with minimal due date extensions.

The inspectors also reviewed the status of commitments as outlined in Dominion Energy Kewaunee, Inc. Letter Serial Number 08-0114, "Follow-up Commitments Related to the NRC Supplemental Inspection Pursuant to Inspection Procedure 95002." There was one minor discrepancy noted between the due dates stated in the letter and the due dates listed in the respective tracking assignments of Kewaunee's Condition Reporting System (CRS). It was determined that the licensee had not changed the due dates in CRS to match those of letter 08-0114. The licensee initiated CR 100641 to track this discrepancy, and a corrective action was initiated to correct the due dates in CRS to match the dates in the commitment letter. No other discrepancies were identified by the inspectors, and all other commitments were found to be either completed or on schedule for completion by their stated due dates.

Corrective Action Program Documentation

In general, the documentation generated through the CAP did not appear to be generated with the thought that they should be stand alone documents. In most cases, questions generated by the inspectors regarding CAP documents stemmed from their inability to identify all relevant information and successfully integrate the information into a coherent assessment of the issue or corrective action.

The inspectors also identified cases where the final CAs did not match the issue(s) or the original CAs. While CAs can be changed, the differences between the original actions and the final actions need to be addressed and documented to ensure the final actions appropriately address the concerns. The following items serve as examples to some of the issues identified by the inspectors.

a. RCE 2007-039, "Substantive Crosscutting Issue in the Area of Human Performance."

CA 26633 was generated to address the concern of "Standards and Policies were not well communicated to existing workers..." The closure for the corrective action only addressed newly badged workers, thus setting up discrepancy between the defined issue and the corrective action. Additional review by the inspector identified that five additional corrective actions had been generated to address the communications issue;

however, this was not documented as part of the closure for CA 26633. While the issues had been satisfactorily addressed, a significant amount of effort was necessary to understand the closure activity.

While the issues had been satisfactorily addressed, a significant amount of effort was necessary to understand the closure activity.

b. CR 20723, "NOD ID's No CAP Written for Adverse Trend of Department Clock Resets," September 24, 2007.

In reading the corrective actions, the inspector could not identify any information that supported the licensee's conclusion that no additional corrective actions were necessary. Discussions with the licensee identified that most of the deficiencies had been grouped in one area and therefore the corrective action appropriately targeted that area. While the inspector agreed with the licensee's overall conclusion, the documentation provided as part of the CR and CA did not support the documented conclusion.

c. CR 13238, "CA 29984 Closed Without Completing the Action" June 7, 2007.

The inspectors identified that although the licensee's staff had not performed a search of the previous corrective action program's tracking system (t-track) in looking for additional examples of corrective actions closed without completing the actions. The actions taken were appropriate, overall. Pending integration of the previous CAP data base into the new system, additional actions should be considered to ensure appropriate system searches are accomplished.

d. CR 26711, "2007 95002 NRC Insp – Potential Adverse Trend for Identification of Leaks," December 10, 2007.

Condition report was evaluated through ACE 000864. That apparent cause stated that "...the station failed to recognize that the threshold for identification and documentation of leaks was not in alignment with industry standards..." The licensee had generated a number of corrective actions to address the threshold for leak identification; however, there were no corrective actions to address the "...failed to recognize..." aspect of the issue. This is a case where the licensee's staff failed to verify the corrective actions against the cause(s). If the verification had been properly performed, the delta between the cause and the corrective actions would likely have been identified.

The inspectors noted that the licensee was taking actions, stemming from other assessments, to address the "...failed to recognize..." aspect of the concern; however, the actions were not included in the resolution of CR 26711.

e. CA 21419, "Perform FME Training, with "hands on" Laboratory Exercises (Operations)," November 16, 2007.

This CA was generated based on the results of ACE 662 that addressed foreign material exclusion (FME) issues at the site. The CA's description was "Develop and perform FME Training with 'hands on' laboratory exercises to demonstrate knowledge and skills for FME controls. This training shall cover all the different risk levels. Training will be

provided to Operations, Radiation Protection, Outage & Planning, Nuclear Security Services, and Chemistry." However, CA 21419 only addressed operations personnel.

CA 21419, without further action, was closed to CA 23169 that required operations to generate a request to the Training department for evaluation and training for FME. CA 23169 was closed without further action to CA 21427 that required organizations to have sufficient staff trained to perform FME activities. Operations closed CA 21427 by stating that it already had nine individuals certified as FME monitors; however, there was no mention of how or if the training received by the nine individuals met the actions of CA 021419, nor was there any mention as to when the individuals had been trained.

Discussions with the licensee and review of documentation identified that the nine individuals had received training in response to CA 21427. In addition, the training received by the operations' personnel was in excess of the training being requested in the original CA. Again, however, none of the detail provided to the inspectors has been included in any of the CAs mentioned above. Without the additional information it would not have been possible to determine that the licensee had successfully completed the original corrective action.

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the facility's OE program. Specifically, the inspectors reviewed Kewaunee's OE program procedures, attended daily CRT meetings, OE Screening Board, and Significant Information Focus Team meetings. The inspectors also observed the screening and use of OE information, reviewed completed evaluations of OE issues and events, and reviewed monthly/weekly assessments of the OE performance indicators. The inspectors' review was to determine whether the licensee was effectively integrating OE into the performance of daily activities, whether evaluations of issues were proper and conducted by qualified personnel, whether the licensee's program was sufficient to prevent future occurrences of previous industry events, and whether the licensee effectively used the information in developing departmental assessments and facility audits. The inspectors also assessed if corrective actions, as a result of OE experience, were identified and effectively and timely implemented.

b. Assessment

In general, OE was being evaluated and incorporated into station processes and procedures, although this effect has not been very timely based on the station's OE performance indicators and an assessment of the OE program. Based on the assessment, the licensee performed ACE 657, which determined the cause to be the lack of priority management assigned to OE evaluations and actions. As part of the corrective actions, evaluations were now included as part of the CAP process where significance levels were assigned to evaluations and corrective actions. Also, additional performance indicators were established to allow management to track by department overdue evaluations and corrective actions. The station has seen some improvement in timeliness since implementing the corrective actions for the assessment finding, but was still not meeting the timeliness metric for overdue items.

The inspectors did not identify any significant concerns with the sample of evaluations reviewed for OE, nor with the proposed or implemented corrective actions. The inspectors noted that the licensee performed and documented OE reviews for RCEs, ACEs, and Maintenance Rule (a)(1) determinations.

The inspectors observed the weekly OE Screening Board meeting that conducted the initial OE review to determine if the OE was applicable to the site such that an evaluation was necessary. The OE was screened to assess whether the components/systems were the same or similar to those at Kewaunee, and also for generic aspects, such as human performance, management, or generic component issues that may also be applied to Kewaunee. The generic aspect portion was part of the corrective action of RCE 718, where it was determined that OE was not adequately assessed in a manner aimed at improving plant processes and procedures. For OE that was screened out of the evaluation process, the Screening Board also made recommendations to send the OE to relevant staff for information. The Significant Information Focus meeting was a weekly call with the four Dominion sites and corporate to discuss items that were potentially generic to all stations such that corporate would conduct a review to determine if there would be actions for all fleet sites. The inspectors did not identify any OE inappropriately screened out of the evaluation process. The CRT meeting, which performed the initial screening of internal CRs, was also used to identify issues from CRs to be sent to the nuclear industry as OE. The inspectors, who observed several CRT meetings during the course of the inspection, did not identify any missed opportunities for the station to identify OE during the course of the CRT meetings.

Findings

No findings of significance were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors assessed the licensee staff's ability to identify and enter issues into the CAP, prioritize and evaluate issues, and implement effective corrective actions, through efforts from departmental assessments and audits. The inspectors reviewed seven self-assessments in a number of areas.

b. Assessment

In general, the assessments appeared thorough and identified a number of issues that needed to be assessed by site personnel. The licensee identified corrective actions to address the issues, however, since the majority of assessments reviewed were performed within the last year, implementation of these actions were not yet complete at the time of the inspection.

One issue identified by the inspectors was the lack of a tracking mechanism for issues identified in the As-Low-As-Is-Reasonably-Achievable (ALARA) Improvement Plan. In 2007, an industry evaluation identified weaknesses in implementation of the site ALARA program (CR 18761). The licensee's action was to develop a performance improvement plan; however, the actions identified in the plan were not being formally tracked as

required by the corrective action program for a Category 2 significance CR. The licensee initiated CR 100478 to address this issue.

Findings

No findings of significance were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

The inspectors assessed the licensee's safety conscious work environment through the reviews of the facility's employee concern program implementing procedures, discussions with coordinators of the employee concern program (ECP), interviews with personnel from various departments, and reviews of issue reports. The inspectors also reviewed the results from two previous safety culture surveys.

The inspectors interviewed approximately 34 individuals from various departments to assess their willingness to raise nuclear safety issues. The individuals were selected to provide a distribution across the various departments at the site. The sample was made up of licensee staff level individuals only. In addition to assessing individuals' willingness to raise nuclear safety issues, the interviews also addressed the changes in the CAP over the past year to year and a half.

- Knowledge and understanding of the program;
- Effectiveness and efficiency of the program;
- Willingness to use program;
- Management's support of the program;
- Feedback on issues raised; and
- Ease of input to the system.

b. Assessment

Personnel Interviews

All interviewees indicated that they would raise safety issues and were comfortable doing so. Further, they were encouraged by all levels of management to input issues into the CAP. All individuals knew that in addition to the CAP they could raise issues to their management, the ECP, or the NRC. None of the individuals interviewed indicated they had been retaliated against for raising issues nor were they aware of anyone who had been retaliated against.

Only a couple of individuals had direct experience with the ECP. They indicated that their issues had been fairly reviewed and would have no problem going back to the ECP if necessary.

All individuals indicated there had been a significant positive shift in the implementation of the CAP over the past year to year and a half. Management is much more supportive of the program and emphasized its use on a regular basis. The program is addressing issues in a more timely manner and individuals are notified when the issues they raised have been addressed.

Based on the interview results, the inspectors determined that the conditions at the Kewaunee Power Station were conducive to identifying issues. Further, no negative issues relating to safety conscious work environment were raised by individuals interviewed by the inspectors.

Findings

No significant findings were identified.

Safety Culture Self-Assessment SAR-000310 (KPS-SA-07-61), October 19, 2007

In reviewing the corrective actions taken against the planned corrective actions, the inspectors identified that there was a mismatch in some cases without any explanation for the differences.

In discussing the various issues with the licensee, the inspectors learned that this self-assessment had been performed by individuals not familiar with Kewaunee's process for performing and documenting self-assessments. As a result, following completion of the self-assessment, the Vice President, Director Organizational Effectiveness, Director Safety and Licensing, and the Supervisor Human Performance reviewed the self-assessment. Following their review, the group developed corrective actions to address the identified concerns. None of this detail was provided in the original package.

Again, the licensee's failure to view CAP documents as stand-alone documents resulted in a document where listed corrective actions and corrective actions taken were not consistent.

Findings

No significant findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000305/2006013-00: Reactor Trip from Nuclear Instrumentation Low Range-High Flux Trip Caused by Blind Relay Contact

On November 11, 2006, Kewaunee Power Station personnel were performing a planned shutdown to investigate abnormal temperature and vibration indications on the number nine turbine bearing. With reactor power at approximately 10 percent, a spurious reactor protection system actuation occurred. The cause of the reactor trip was determined to be a "blind" contact failure (i.e., the relay appeared to be closed mechanically but there was no electrical continuity) of relay NC41P-XB associated with power range nuclear instrumentation low range-high flux trip for power range channel N-41. As the reactor protection system permissive P-10 cleared at approximately 10 percent reactor power, the reactor tripped since the two-of-out-four reactor trip signal logic was made up by nuclear instrumentation power range channels N-41 and N-42 (Note: The P-10 permissive interlock, when enabled, permits the operator to manually block the intermediate power range nuclear instrument high flux trips to prevent inadvertent reactor trips during startup). Following the trip, the NC41P-XB relay was checked and contacts were found to be mechanically closed but electrically open. The cause of the

reactor trip was the low current application in which the relays were used, which led to contact oxidation and tarnish. Corrective actions included: (1) revising test procedures to check for "blind" failures in permissive logic matrices; and (2) modifying the system to enable testing contacts that are normally de-energized (open) to mechanically wipe the contact surface to remove oxidation layers. Documents reviewed as part of this inspection are listed in the Attachment. This LER is closed.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

.2 (Closed) LER 05000305/2007001-01: Reactor Trip During Turbine Trip Mechanism Testing

On January 12, 2007, the turbine and reactor tripped while plant personnel were performing a turbine mechanical trip test. Additional reactor coolant system cool down occurred during the transient when valve MS-201B1, Reheat Steam to moisture separator reheater (MSR) B1, failed to close. Operators took action to close MS-201B1 and restore average coolant temperature to 547 degrees F. The additional cool down resulted in letdown isolation on low pressurizer level. Feedwater isolated and AFW initiated, as designed, due to low-low level in the steam generators.

The cause of the transient was the loss of auto stop oil pressure to the turbine interface steam valve that resulted in a turbine-reactor trip. Although foreign material was found on the valve seating surface, this was identified as a probably cause and no root cause could be determined. Since no root cause was identified for the trip, no root cause corrective actions existed. To address the foreign material issue, Kewaunee Power Station implemented a Change Management Plan that included procedure enhancements to the foreign material and supplemental personnel process procedures, as well as improvements to training and qualification requirements related to foreign material control at the station. Documents reviewed as part of this inspection are listed in the Attachment.

Maintenance was performed to shorten the stroke of MS-201B1 during the forced outage. After comparing the air operated valve diagnostic testing of MS-201A1 and MS-201B1, a determination was made to declare the issue an Operator Work Around and procedure changes were made to address the possibility of MS-201B1 not closing on future trips. This LER is closed.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

.3 (Closed) LER 05000305/2007004-00: Reactor Trip During Quarterly Nuclear Instrumentation Calibration Procedure

On February 27, 2007, the reactor tripped while plant personnel were performing a quarterly channel calibration on nuclear instrument channel N-43. Additional Reactor Coolant System cool down occurred during the transient when valve MS-201B1, Reheat Steam to MSR B1, failed to close. Operators took action to close MS-201B1 and restore average coolant temperature to 547 degrees F. The additional cool down resulted in letdown isolation on low pressurizer level. Feedwater isolated and AFW initiated, as designed, due to low-low level in the steam generators.

The cause of the event was a failure of a Westinghouse BF66 relay contact in the reactor protection system trip matrix associated with nuclear instrumentation. The most probably root cause has been determined to be "blind" contact relay failures due to a combination of relay contact sulfidation caused by poor circuit design, manufacturing defects in some installed relays, and installation practices from the original installation 30 years ago being inconsistent with current standards and practices. Corrective actions to address the root cause included replacing 88 reactor protection system trip matrix relays, inspection and preventative maintenance was performed in both reactor trip breakers and both bypass breakers, and MS-201B1 was rebuilt. Documents reviewed as part of this inspection are listed in the Attachment.

Because the root cause of the reactor trip on February 27, 2007, and the root cause of the reactor trip on November 11, 2006, were both due to "blind" relay failures, NRC inspection report 05000305/2007011 identified and documented a non-cited violation (05000305/2007011-05) for Kewaunee Power Station's failure to perform an adequate extent of condition review of BF-66 Relays due to their potential for "blind" relay failures. The inspectors did not identify any additional findings while reviewing this LER. This LER is closed.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On June 6, 2008, the inspectors presented the inspection results to Mr. Crist, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee:

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T. Breene, Manager Licensing
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J. Ruttar, Operations Manager
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S. Wood, Emergency Preparedness Manager

Nuclear Regulatory Commission

G. Shear, Deputy Director, Division of Reactor Projects
M. Kunowski, Chief, Division of Reactor Projects, Branch 5

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000305/2006013-00	LER	Reactor Trip from Nuclear Instrumentation Low Range-High Flux Trip Caused by Blind Relay Contact
05000305/2007001-01	LER	Reactor Trip During Turbine Trip Mechanism Testing
05000305/2007004-00	LER	Reactor Trip During Quarterly Nuclear Instrumentation Calibration Procedure

LIST OF DOCUMENTS REVIEWED

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

Section 4OA2B

PI-KW-200; Corrective Action; Revision 5
PI-AA-300; Cause Evaluation; Revision 1
PI-AA-200-2001; Trending; Revision 1
Cause Evaluation Handbook; Revision 9
Job Familiarization Guide (JFG) # NU-KPS-JFG CARB; Corrective Action review Board (CARB) Job Familiarization Guide; Revision A
JFG # NU-KPS-JFG SCEC; Station Cause Evaluation Coordinator (SCEC) Job Familiarization Guideline; Revision 0
JFG # NU-KPS-JFG DCAC; Department Corrective Action Coordinator Job Familiarization Guideline; Revision 0
SAR 000347; PI&R Self Assessment
Kewaunee Power Station – 1st Quarter 2008 Trend Report
CA 75752; Determine if CRs Closed to ACE/RCE will have the Trend Code Removed or Adjusted
CCA 000038; Perform Common Cause Analysis (CCA) on Human Performance Issues
CA 069694; Implement Process to Provide Management Review for human Performance Issues
CA 069695; Security Training to Determine Need for Additional Human Performance Training
CA 071378; CA to OR to Promote and Communicate Appropriate Trending
CA 075857; Determine, Document, and Initiate Actions regarding the Timeliness of Trend Coding in CA
Dominion Nuclear Trend Report for Kewaunee Power Station, 2nd Quarter 2007
Dominion Nuclear Trend Report for Kewaunee Power Station, 3rd Quarter 2007
Dominion Nuclear Trend Report for Kewaunee Power Station, 4th Quarter 2007
Dominion Nuclear Trend Report for Kewaunee Power Station, 1st Quarter 2008
CR 096078; Time Allowance for ACE's Returned from Quality Checks
CR 021740; Approval of Cause Evaluations is not meeting Timeliness Expectations
CR 023013; Current CARB Approval Rate for ACE's does not meet Timeliness Expectations
ACE 000847; ACE to OR Issue with RCE 736 EOC Performed
CAP Measures of Success Weekly Report for Week of April 27th, 2008
CAP Measures of Success Monthly Report for Month of April 2008
CRT Meeting package for weeks of May 19th, 2008 and June 2nd, 2008
CARB Meeting Agenda for May 22nd, 2008 and June 5th, 2008
ACE 013714; Evaluate Overpressurization of 24032 and 21081
ACE 000519; ACE to Chemistry to Determine and Correct
ACE 000787; ACE to Component Engineering for Inoperable Train System
RCE 000041; RCE to OR to Perform a Common Cause RCE using RCE 746 and RCE 736
CR 019211; Persistent Substantive Cross-Cutting Issue – Problem Identification and Resolution
CR 019208; Persistent Substantive Cross-Cutting Issue in Human Performance
CAP 044253; CAPR Closed without Having all Required CA's Complete
ACE 003427; CAPR Closed without Having all Required CA's Complete

CA 022382; Organizational Effectiveness Group to Review the Extent of Condition/Extent of Cause Issue to Determine, Document, and Initiate Actions
CR 025851; 2007 95002 NRC Inspection Issue: Scheduled Thermography Prior to Inverter Adjustments
CR 095027; NRC Inspector Identifies Possible Violation of ASME Code Requirements
ACE 000581; Cont Process Monitoring Equipment for Sec Chemistry Not Maintained
ACE 000588; Service Water (SW) Pump B Rotating Strainer
ACE 000656; Engineering Leadership Ineffective Equipment Reliability and CM
ACE 000657; Some Aspects of OE Program Not Meeting Standards
ACE 000668; Some Changes to Radiation Protection (RP) Program Not Thoroughly Evaluated or Implemented
ACE 000669; Alarm Performance Deficiency
ACE 000679; Risk Assessment for Dayshift on 8/30/2007
ACE 000764; Security Not Notified Prior to Opening Aux Building Roof
ACE 000920; Underground Pathways
CAP 044626; Recent Issues with Motor-Operated Actuators
CAP 044591; NRC RI 2006-23: Post-Tornado Operability of Ventilating and Air Conditioning
CAP 044595; RCE M-06-01330 - Ineffective Resolution of Some Equipment Reliability Issues
CAP 044597; Flow Accelerated Corrosion
CAP 044639; NRC IN 2007-06 - Potential Common Cause Vulnerabilities in Water System
CAP 044642; Emergency Diesel Generator KVAR Increase
CAP 044837; Unqualified Service Level 1 Coatings on Equipment in Containment
CAP 044889; NRC IN 2006-025 - Lessons Learned from NRC Inspection of Control and Accounting
CAP 044970; Possible Concern with Allowable Variation in Emergency Diesel Generator
CR 014334; Shell Growth in Stagnant Service Water Piping
CR 017054; Recent Industry Experiences Involving Alpha Contamination
CR 022459; Turbine Building Service Water Header B Air Accumulator Pressure Low
CR 025312; Different Gamma Analysis Results for Radwaste Samples
CR 096203; Manipulation of 480VAC MCC breaker Handle Results in an Arc Flash Event
CR 013279; Review of CRs for OE Submittal Not Evident at CRT Meetings
CR 013664; Continuation of Deficiency in the Assigned Priority and Time for Implementations of CAPRs
CR 013849; Degraded SSC [Systems, Structures, and Components] Not Entered into Op Determination Process
CR 014216; Ineffective Tracking of Actions to Prevent Recurrence
CR 016716; Cont Process Monitoring Equipment for Sec Chemistry Not Maintained
CR 018761; RP Performance Deficiency – ALARA
CR 019597; Insufficient Prioritization of Less Important Work
CR 025312; Different Gamma Analysis Results for Radwaste Samples
CR 028784; Room Heat Load Increase Not Evaluated/Documented in Calculation by Design Change Request
CR 033282; Failure of FW-101B Not Completely Investigated
CR 099214; Document Engineering Strategic Plan
CR 091368; X-ray Leakage from Security X-Ray Baggage Inspection Unit
CR 099836; Evaluate Revision to RP-KW-005-0013
CR 100478; ALARA Program Improvement Plan
NEP-14.13; Operating Experience Procedure; Revision 14
PI-KW-200; Corrective Action; Revision 5
PI-AA-100-1007; Operating Experience Program; Revision 1
PI-AA-300; Cause Evaluation; Revision 1

RP-KW-005-013; X-ray Machine Survey; Revision 0
RP-KW-009-011; Waste Stream Analysis; Revision 0
SA-07-06; Maintenance Rule Program Periodic Assessment; July 25, 2007
SA-07-51; Radiation Monitoring Program; June 18, 2007
SA-07-24; Design Basis Document Preparation and Maintenance; July 2, 2007
SA-07-53; Engineering Specifications Preparation & Control; August 14, 2007
SA-07-60; Respiratory Protection Program; December 6, 2007
SA-07-12; Maintenance Worker Practices; February 29, 2008
SAR-000383; Security Training and Qualification/Task Performance Evaluations; February 5, 2008
RCE 000673; Maintenance Rule (a)(1) Evaluation – CC-4A, CC-4B
RCE 000712; Maintenance Rule (a)(1) Evaluation – Feedwater Pump B
RCE 000718; Failure of FW-101B Not Completely Investigate
Significant Information Focus Meeting Agenda for June 4, 2008; May 28, 2008
OE Screening Board Meeting Agenda for May 27, 2008 and June 3, 2008
EFR 025081; Failure of FW-101B Not Completely Investigated; May 11, 2008
EFR 032566; RCE718 - CAPR 1; February 25, 2008
MRE 000667; Turbine Building Fan Failure
MRE 000943; SW-4B Failure
MRE 001069; Turbine Building FCU A Failure to Start
MRE 002560; CC Pump A Discharge Valve Bushing Failure
MRE 002764; Feedwater Pump B Motor
MRE 006418; SW Pump B Rotating Strainer
CAP 043019; Met Instrumentation Procedures Have Not Been Developed
CAP 041498; Routine Operations Checks Of Meteorological Instrumentation Improperly Deleted
ACE 003401; Design Closeout Process Deficiencies Preventing Performance Of Maintenance
CAP 043022; Specialized Periodic Retraining Program Curriculums
CAP 031275; KPS Drill Reports non-QA Status Is Not Consistent With Rest Of Dominion Fleet
CR 029152; NOD ID's EP Qualification Records Weren't Available, Completed Or In Vault
CR 095627; Critical EP Equipment O.O.S. For Extended Period Of Time
CR 016964; New Members Not ERO assigned and same ERO Members Are Always Participants In The Drills
CAP 041216; Emergency Response and Chemistry Training Concerns
CR 025788; EP Failure To Require Demonstrated Proficiency/Experience
CR 095628; Met Tower Availability Less Than 90%
ACE 000667; Repeat failures on Both Met Towers
WO-05-008412-000; Calibrate the Primary and Backup Met Tower Equipment
WO-05-004979-000; Calibrate the Primary and Backup Met Tower Equipment
WO-05-005528-000; Calibrate the Primary and Backup Met Tower Equipment
WO-06-013121-000; Calibrate the Primary and Backup Met Tower Equipment
WO-06-005523-000; Calibrate the Primary and Backup Met Tower Equipment
CAP 033085; No Mechanism in Place to Support the 6 Month Cal's On MET Sensors
ICP-63-31; Met-Backup Tower Sensor Calibrations Surveillance Results
ICP-63-30; Met-Primary Tower Sensor Calibrations Surveillance Results
CAP 027767; Non-Conservative Value for AFW Recirc Flow Is Used as Input to Accident Analysis
CAP 040465; Guidance In Procedure PMP-05B-01 is Lacking for Governor Oil Change
CAP 033790; Oil Level Not apparent in Site Glass for Turbine Driven Auxiliary Feedwater (TDAFW) Pump Turbine Governor Drive
ACE 003245; Oil Level Not Apparent In Site Glass for TDAFW Pump Turbine Governor Drive

CAP 029006; TDAFW Pump Oil Level Could Not Be Verified Within the Normal Range Operating
CAP 029280; Both Component Cooling Pumps Inoperable When Shifting Running Equipment
RCE 000697; Root Cause Evaluation: Both Component Cooling Pumps Inoperable When Shifting Running Equipment
CAP 035457; Daily Operability Test for Diesel Generator Was Late
RCE 000728; Root Cause Evaluation: Daily Operability Test for Diesel Generator Was Late
System Health Report Auxiliary Feedwater System; Revision 0
Kewaunee Safety Culture Assessment – 2006; June 29, 2006
Kewaunee Safety Culture Assessment – 2007; June 25, 2007
RCE 2007-039, "Substantive Crosscutting Issue in the Area of Human Performance"
RCE 2007-040, "NRC Identified Crosscutting Issues Remain Open in the Area of Problem Identification and Resolution"
RCE 2007-0044; MS-201-B1 Failed To Operate As Designed
ACE 000606; ACE to OR to Determine What Actions to Take To Address The Issues Identified
ACE 000662; ACE to Maintenance for AFI for FME practices And Program Implementation
CR 013238; CA 29984 Closed Without Completing the Action
CR 016205; CARB is Missing Opportunities for Improvement
CR 017417; CA31943 (CAPR from RCI000760) not Effectively Implemented
CR 020723; NOD ID's No CAP written for Adverse Trend of Department Clock Resets
CA 010535; CA to OR to complete DCAC training and qualification using a JFG
CA 010536; CA to OR to Complete Training for RC Evaluations, Managers, and Supervisors
CA 021419; Perform FME Training, with "hands on" Laboratory Exercises (Operations)
CA 021427; Qualify Sufficient Personnel to Perform FMI Monitor activities
CA 023169; Present "Request for Training" for FME Training To LOR TRB
CR 024596; Documentation of the Results of FME Self Assessment
CR 026711; 2007 95002 NRC Insp – Potential Adverse Trend for Identification of Leaks
CR 028206; NOS ID's Adverse Trend for Meeting On-line Work Management T-6 Milestone

Section 4OA3

Kewaunee Power Station LER 2007-004-00; Reactor Trip during Quarterly Nuclear Instrumentation Calibration Procedure
Kewaunee Power Station LER 2006-013-00; Reactor Trip from Nuclear Instrumentation Low Range-High Flux Trip Caused by Blind Relay Contact Failure
Kewaunee Power Station LER 2007-001-00; Reactor Trip during Turbine Trip Mechanism Testing

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
AFW	Auxiliary Feedwater System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CA	Corrective Action
CARB	Corrective Action Review Board
CAP	Corrective Action Program
CCA	Common Cause Analysis
CFR	Code of Federal Regulations
CR	Condition Report
CRS	Condition Reporting System
CRT	Condition Review Trending
DCAC	Department Corrective Action Coordinator
ECP	Employee Concerns Program
FME	Foreign Material Exclusion
JFG	Job Familiarization Guide
LER	Licensee Event Report
MSR	Moisture Separator Reheater
NRC	U.S. Nuclear Regulatory Commission
OE	Operating Experience
PI&R	Problem Identification and Resolution
RCE	Root Cause Evaluation
RP	Radiation Protection
SW	Service Water
TDAFW	Turbine Driven Auxiliary Feedwater System