



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

May 16, 2012

Mr. David A. Heacock  
President and Chief Nuclear Officer  
Dominion Energy Kewaunee, Inc.  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION – NRC POST APPROVAL SITE INSPECTION  
FOR LICENSE RENEWAL INSPECTION REPORT 05000305/2012-007

Dear Mr. Heacock:

On April 18, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Power Station. The enclosed inspection report documents the inspection results, which were discussed on April 18, 2012, with Mr. Roy Simmons and other members of your staff.

This inspection was an examination of activities conducted under your renewed license as they relate to the completion of commitments made during the renewed license application process and compliance with the Commission's rules and regulations and the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel. On the basis of the sample selected for review, there were no findings of significance identified during this inspection. The NRC staff did not identify any instances of incomplete commitments with respect to timeliness or adequacy.

In accordance with 10 CFR 2.390 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 (PARS) component of NRC's document system License No: DPR-43 (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Ann Marie Stone, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket Nos: 50-305

Enclosure: Inspection Report 05000305/2012007  
w/ Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000305/2012007

Licensee: Dominion Energy Kewaunee, Inc,

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: April 9, 2012 – April 18, 2012

Inspectors: S. Sheldon, Senior Reactor Engineer (Lead)  
T. Bilik, Senior Reactor Engineer  
J. Corujo-Sandin, Reactor Engineer (Observer)

Approved by: Ann Marie Stone, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## SUMMARY OF FINDINGS

IR 05000305/2012007, 04/09/2012 – 04/18/2012, Kewaunee Power Station Post-Approval Site Inspection for License Renewal

The inspection was conducted by two regional based inspectors. No instances were noted of incomplete license renewal commitments with respect to timeliness or adequacy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors as described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

**A. NRC-Identified and Self-Revealed Findings**

No findings were identified.

**B. Licensee-Identified Violations**

No violations of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

Kewaunee Power Station was in a refueling outage during the period of this inspection.

#### **4. OTHER ACTIVITIES**

##### 4OA5 Other Activities

##### .1 Post-Approval Site Inspection for License Renewal (Phase I) - IP 71003

##### a. Inspection Scope

##### (1) Review of Newly Identified Structures Systems and Components (SSC)

The inspectors discussed the identification of new SSCs, under the purview of Title 10 of the Code of Federal Regulations (CFR) 54.37(b), with the licensee's license renewal staff. The licensee personnel indicated that no new components have been identified to date that should have been within the scope of the license renewal program.

##### (2) Review of Revised Commitments

Based on discussion the inspectors had with licensee staff, at the time of the inspection there were no revised commitments.

##### (3) Review of Commitments

The inspectors reviewed supporting documents including completed surveillance records, conducted interviews, observed non-destructive examination (NDE) activities, performed visual inspection of structures and components, including those not accessible during power operation, and observed the activities described below that the licensee completed to comply with the license conditions that are a part of the renewed operating license. The inspectors verified the licensee implemented the "outage related" aging management programs (AMPs) included in NUREG 1958, "NRC Safety Evaluation Report Related to the License Renewal of Kewaunee Power Station," in accordance with 10 CFR Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants."

##### b. Findings and Observations

The inspectors reviewed portions of the commitments below, which are referenced to commitment number from Appendix A of the safety evaluation report (SER) where applicable. Activities observed related to these commitments are also listed.

##### (1) (KLR-1309A) Reactor Vessel Internal Inspections (Commitment No. 1)

The Reactor Vessel Internal Inspections program is a new plant-specific program which manages the aging effects of changes in dimensions due to void swelling: cracking due to stress corrosion cracking, primary water stress corrosion cracking, irradiation-assisted stress corrosion cracking, and fatigue; loss of fracture toughness due to neutron

irradiation embrittlement and thermal aging embrittlement; loss of material due to wear; and loss of preload due to stress relaxation.

Commitment No. 1 states, "The ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program will be enhanced to: (1) participate in the industry programs for investigating and managing aging effects on reactor internals; (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval to augment the current inspections."

The inspectors observed the licensee perform a portion of their reactor vessel internals program, specifically inspection of the reactor vessel guide cards. The guide card inspection was performed under work order (WO) KW100756609. The inspectors had no concerns with the observed activity.

(2) (KLR-1327) Buried Piping and Tanks Inspection (Commitment No. 4)

The Buried Piping and Tanks Inspection program manages the aging effect of loss of material for the in-scope buried steel (including cast iron) and stainless steel components such as piping, valves, and tanks.

Commitment No. 4 states, in part, "The Diesel Generator System fuel oil storage tanks, which are coated carbon steel, will receive one inspection of one tank prior to the period of extended operation."

The inspectors observed the licensee perform a visual examination of the internal and external surfaces of the emergency diesel generator (EDG) underground tank in accordance with WO KW100797525. The licensee identified a few areas of pitting corrosion during the internal visual inspection which was documented in Condition Report (CR) 467784. The inspectors had no concerns with the observed activity and intend to review the evaluation of CR467784 during Phase II of the IP 71003 inspection.

Additionally, Commitment No. 4 states, in part, "The Diesel Generator System fuel oil storage tanks hold down straps, which are uncoated carbon steel, will be inspected in conjunction with the associated fuel oil storage tank inspection." The inspectors observed the licensee perform a visual examination of the hold down strap in accordance with WO KW100797526. The inspectors had no concerns with the observed activity.

(3) (KLR-1341) Structures Monitoring Program (Commitment No. 6)

The Structures Monitoring Program manages the aging effects of: (1) cracking, loss of bond, loss of material, cracks and distortion, increase in porosity and permeability, loss of strength, and reduction in concrete anchor capacity due to local concrete degradation for concrete, (2) loss of material, and loss of mechanical function for steel, (3) loss of material for stainless steel and aluminum, and (4) change in material properties, cracking, increased hardness, shrinkage and loss of strength, loss of sealing, and reduction or loss of isolation function for elastomers. The Structures Monitoring Program involves periodic visual inspections to monitor the condition of structures, structural elements, miscellaneous structural commodities, and masonry walls.

Commitment No. 6 states, "The External Surfaces Monitoring program will be enhanced to inspect the accessible external surfaces of in-scope components, piping, supports, structural members, and structural commodities, in the infrequently accessed areas, consistent with the criteria used in other plant areas." The inspectors accompanied the licensee while they performed a walkdown and visual inspections associated with the structure monitoring program. The inspectors had no concerns with the observed activities.

(4) (KLR-1325) Fire Protection (Commitment No. 10)

The Fire Protection program manages the aging effects of change in material properties cracking, delamination, increased hardness, loss of material, loss of sealing, loss of strength, shrinkage, and spalling for the in-scope components and features.

Commitment No. 10 states, "The Fire Protection program inspections of the reactor coolant pump oil collection system will be revised to include additional inspection criteria for the visual inspection of the system and to perform a one-time inspection of the internal surfaces of the reactor coolant pump oil collection tank."

The inspectors observed the licensee perform a visual examination of the internal surfaces of the reactor coolant pump oil collection system tank in accordance with WO KW100572037. The inspectors had no concerns with the observed activity.

(5) (KLR-1306) Metal Enclosed Bus (Commitment No. 13)

The Metal Enclosed Bus (MEB) program manages the aging effects of reduced insulation resistance, electrical failure and loosening of bolted bus connections for non-segregated metal enclosed bus and internal components within the scope of license renewal. The program involves visual inspections of the in-scope MEB for cracks, corrosion, foreign debris, excessive dust buildup, and evidence of water intrusion, and visual inspections of component insulation for surface anomalies, such as discoloration, cracking, chipping or surface contamination.

Commitment No. 13 states the MEB program "will be enhanced to include augmented periodical visual inspections of the MEB internal surfaces, bus supports, bus insulation, taped joints, and boots for signs of degradation or aging."

The inspectors observed the licensee perform a visual examination of the internal surfaces of the MEB in accordance with WO KW100787851. The licensee identified a cracked bus support during the internal visual inspection and documented the condition in CR471167. The inspectors had no concerns with the observed activity and intend to review actions associated with CR471167 during Phase II of the 71003 inspection.

(6) (KLR-1303) The Non-Environmental Qualification (EQ) Electrical Cables and Connections (Commitment No.14)

The Non-EQ Electrical Cables and Connections program is a new program intended to be consistent with the recommendations of NUREG-1801, Section XI.E1 "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The program manages the aging effects of reduced insulation resistance and electrical failure of accessible non-EQ electrical cables and connections within the scope of license renewal that are subject to an adverse localized environment.

The inspectors conducted interviews and reviewed documentation. The inspectors also observed visual examinations as part of the AMP Program. These included inspect and clean activities of cables in various cable trays inside containment, performed under WOs KW100781677 and KW100778552. The inspectors had no concerns with the observed activities.

(7) (KLR-1332) Selective Leaching of Materials (Commitment No. 21)

The Selective Leaching of Materials program manages the aging effects of loss of material on internal and external surfaces of in-scope components such as piping, pumps, valves, and heat exchanger components made of steel (cast iron), and copper alloys (brass, bronze, or aluminum-bronze). The program involves a one-time visual inspection, and hardness measurement or qualitative examination, such as resonance when struck by another object, scraping, or chipping, as appropriate, of selected components within the scope of license renewal for loss of material due to selective leaching.

Commitment No. 21 states, "The Selective Leaching of Materials Program will be established. The program will perform a one-time visual inspection and hardness measurement or qualitative examination of selected components, within the scope of license renewal for selective leaching."

The inspectors observed the licensee perform a visual examination of the two service water valves in accordance with WOs KW100785906 and KW100785908. The inspectors had no concerns with the observed activity.

(8) (KLR-1336) Work Control Process (Commitment Nos. 25 and No. 31)

The Work Control Process is a new program that consists of NUREG-1801 Aging Management Programs, Section XI.M32, "One-Time Inspection," and Section XI.M38 "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components." The One-Time Inspection program includes measures to verify the effectiveness of chemistry-related aging management programs and confirms the insignificance of any aging effects.

The inspectors observed the licensee's activities to implement Commitment No. 31, of the NRC license renewal SER. This commitment documents that "the Work Control Process Program will provide for a one-time-inspection of the EDG Day Tanks and the Technical Support Center Diesel Generator Day Tank. An exterior surfaces ultrasonic testing (UT) inspection will be performed to verify wall thickness of the bottom of each day tank. Based upon the UT inspections, the most limiting EDG Day Tank will also be drained, cleaned and visually inspected as a leading indicator for the remaining tanks."

The inspectors accompanied the licensee to observe a visual examination of the internal surface of the EDG Day Tank 1A2 in accordance with WO KW100706676. The inspectors had no concerns with the observed activity.

Also, the inspectors observed the licensee's activities to implement Commitment No. 25, of the NRC license renewal SER. This commitment states, in part, "The Work Control Process program will be established. The program will perform one-time inspections as a verification of the effectiveness of chemistry control programs."

The inspectors observed the licensee perform an UT examination upstream and downstream of valve CI-1010, Caustic Additive Recirc and Fill Pump Suction. In addition, the inspectors observed a visual inspection (VT-1) of lube oil filter bypass valve's, FW(L)-4B, internal surface. These activities were performed under WOs KW100785936 and KW100785996 respectively. The inspectors had no concerns with the observed activities.

(9) (KLR-1317) Flow-Accelerated Corrosion

The Flow-Accelerated Corrosion program manages the aging effect of wall thinning, thus assuring that the structural integrity of all steel (carbon or low-alloy) piping and components containing high-energy fluids (two phases as well as a single phase) are maintained. The program applies to both safety-related and non-safety-related components.

Inspectors observed licensee personnel perform UT examination of piping upstream and downstream of the heater drain tank bypass to condenser 1A valve, HD-622, in order to identify any significant pipe wall thinning. The activity was performed under WO KW100802796. The inspectors had no concerns with the observed activity.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 18, 2012, the inspectors presented the inspection results to Mr. Roy Simmons 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

D. Stoddard	Senior VP Nuclear Operations
R. Simmons	Plant Manager
T. Breene	Licensing Manager
J. Gadzala	Licensing
B. Zipp	Engineering (License Renewal)
T. Snow	Consultant
K. Gillaume	Engineering
J. Rusch	Engineering
T. Hanna	Engineering

### **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

#### Opened, Closed, and Discussed

None.

## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or 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.

### 4OA5 Other Activities

- KW100706676; Inspect Diesel Generator Day Tank 1A2; 3/28/12
- KW100742609; Perform UT Inspection on EDG 1A1 Fuel Oil Tank; 9/15/11
- KW100742610; Perform UT Inspection on EDG 1A 2 Fuel Oil Tank; 9/15/11
- KW100742611; Perform UT Inspection on EDG 1B1 Fuel Oil Tank; 9/20/11
- KW100742612; Perform UT Inspection on EDG 1B2 Fuel Oil Tank; 9/20/11
- KW100756609; KR32 Inspect the Rx Vessel Guide Cards; 4/6/12
- KW100778552; Inspect/Clean Cables and Tray 1CT6S5; 10/28/11
- KW100781677; Inspect/Clean Cables and Tray Discovered During KLR-1303 Cable Walkdowns; 4/8/2012
- KW100785821; Remove TDAFW Lube Oil Sample Valve for VT-1 Inspection Per ER-KW-OTI100; 4/9/12
- KW100785906; Disassemble SW-2001A, NDE Inspect for Selective Leaching; 4/17/12
- KW100785908; Disassemble SW-2001B, NDE Inspect for Selective Leaching; 4/17/12
- KW100785936; UT 2" Piping Upstream and Downstream of Valve CI-1010 per ER-KW-OTI-100; 4/11/12
- KW100785996; Perform One-Time Inspection (NDE) for License Renewal; 3/28/12
- KW100787851; RAT RX Bus General Inspection and Cleaning; 4/18/12
- KW100797525; Inspect 1A D/G Underground Fuel Oil Tank; 4/11/12
- KW100797526; Inspect 1A D/G Underground Fuel Oil Tank Hold Down Strap; 4/13/12
- KW100802796; KR32 FAC Inspections- Turbine Building; 4/12/12

### Procedures:

- ER-AA-BPM-101; Underground Piping and Tank Integrity Program; Revision 3

- ER-KW-CBL-100; Cable Monitoring Aging Management Program Implementation; Revision 0
- ER-KW-OTI-100; One Time Inspection Aging Management Implementation; Revision 0
- NEP-08.04; Maintenance Rule Inspection Guideline for Building Structures; Revision 6
- NPS-Proc-007; Low Frequency Electromagnetic Technique inspection Program; Revision 0

Other:

- CM-AA-CLC-301; Emergency Diesel Generator Fuel Oil Storage Tank Minimum Wall Thickness; Revision 0
- CR467784; One Time Inspection Program Improvements; 3/26/12
- CR471167; Cracked Bus Support on RX Bus; 4/17/12
- KLR-1303; AMP Non-EQ Electrical Cables and Connections; Revision 3
- KLR-1306; Metal Enclosed Bus; Revision 3
- KLR-1309A; Reactor Vessel Internal Inspections; Revision 3
- KLR-1317; Flow-Accelerated Corrosion; Revision 2
- KLR-1325; AMP Fire Protection; Revision 4
- KLR-1327; AMP Buried Piping and Tanks Inspection; Revision 4
- KLR-1332; Selective Leaching of Materials; Revision 4
- KLR-1336; AMP Work Control Process; Revision 5
- KLR-1341; AMP Structures Monitoring; Revision 4

## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AMP	Aging Management Program
CFR	Code of Federal Regulations
CR	Condition Report
EDG	Emergency Diesel Generator
EQ	Environmental Qualification
IP	Inspection Procedure
MEB	Metal Enclosed Bus
NDE	Non-Destructive Evaluation
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
SER	Safety Evaluation Report
SSC	Systems, Structures, and Components
UT	Ultrasonic Testing
VT	Visual Testing
WO	Work Order

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 President and Chief Nuclear Officer  
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Sincerely,

Ann Marie Stone, Chief  
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Letter to David A. Heacock from Ann Marie Stone dated May 16, 2012

SUBJECT: KEWAUNEE POWER STATION – NRC POST APPROVAL SITE INSPECTION  
FOR LICENSE RENEWAL INSPECTION REPORT 05000305/2012-007

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