



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

January 15, 2019

Mr. Daniel G. Stoddard
President and Chief Nuclear Officer
Dominion Energy Kewaunee, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NRC INSPECTION REPORT NO. 05000305/2018001(DNMS) – KEWAUNEE
POWER STATION

Dear Mr. Stoddard:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed onsite inspection activities for February through December 2018, at the permanently shut down Kewaunee Power Station (KPS) in Kewaunee, Wisconsin. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of this inspection, which were discussed with Mr. B. McMahon and other members of your staff on January 9, 2019.

During the inspection period, the NRC inspectors reviewed the following aspects of onsite activities: organization, management, and cost control at the site; safety reviews, design changes and modifications; self-assessments, audits, and corrective actions; decommissioning performance; occupational radiation exposure; radioactive waste treatment, effluent, and environmental monitoring; and solid radioactive waste management and transportation of radioactive material. The inspection consisted of an examination of activities at the site as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observation of work activities, and interviews with personnel.

Based on the results of this inspection, no violations of NRC requirements were identified.

This letter and its enclosure will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC's Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Michael A. Kunowski, Chief
Materials Control, ISFSI and
Decommissioning Branch
Division of Nuclear Materials Safety

Docket No. 050-00305
License No: DPR-43

Enclosure:
IR 05000305/2018001(DNMS)

cc w/encl: Distribution via ListServ®

Letter to Daniel G. Stoddard from Michael A. Kunowski, dated January 15, 2019.

SUBJECT: NRC INSPECTION REPORT NO. 05000305/2018001(DNMS) – KEWAUNEE
POWER STATION

DISTRIBUTION w/encl:

Darrell Roberts
John Giessner
Christine Lipa
Bruce Watson
Ted Carter
Stu Sheldon
MCID Inspectors

ADAMS Accession Number: ML19018A062

OFFICE	RIII-DNMS	C	RIII-DNMS	C	RIII-DNMS	C		
NAME	REdwards:cl		MLaFranzo		MKunowski			
DATE	1/10/2019		1/14/2019		1/15/2019			

OFFICIAL RECORD COPY

**U.S. NUCLEAR REGULATORY COMMISSION
REGION III**

Docket No. 050-00305

License No. DPR-43

Report No. 05000305/2018001(DNMS)

Enterprise Identifier: I-2018-001-0084

Licensee: Dominion Energy Kewaunee, Inc., (DEK)

Facility: Kewaunee Power Station (KPS)

Location: Kewaunee, WI

Dates: February 20, 2018, through December 31, 2018

Inspectors: Rhex A. Edwards, Senior Health Physicist
Michael M. LaFranzo, Senior Health Physicist

Approved by: Michael A. Kunowski, Chief
Materials Control, ISFSI, and
Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Kewaunee Power Station NRC Inspection Report 05000305/2018001(DNMS)

Kewaunee Power Station (KPS) operated at full power until May 7, 2013, when KPS shutdown and permanently ceased power operation. On May 14, 2013, KPS certified the permanent removal of fuel from the reactor vessel (ADAMS Accession No. ML13135A209). On May 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) notified KPS that the Operating Reactor Assessment Program had ceased and that implementation of the Decommissioning Power Reactor Inspection Program would begin on June 1, 2013 (ADAMS Accession No. ML13151A375).

Currently, KPS is a permanently shut-down and defueled power reactor facility that was maintained in a Safe Storage (SAFSTOR) condition with all the spent fuel stored at an Independent Spent Fuel Storage Installation.

Organization, Management, and Cost Controls

- The licensee adequately implemented organization, management, and cost controls in accordance with regulatory requirements, license conditions, and the Technical Specifications (TSs). (Section 1.0)

Safety Reviews, Design Changes, and Modifications

- The licensee performed adequate safety evaluations or screenings, completed design change evaluations, and properly assessed decommissioning impacts of various work activities as required by Title 10 of the *Code of Federal Regulations* (CFR) 50.59. (Section 2.0)

Self-Assessment, Auditing, and Corrective Action

- Issues were identified by the licensee at appropriate thresholds and entered into the Corrective Action Program (CAP). Issues were screened and prioritized commensurate with safety significance. Licensee evaluations determined the significance of issues and included appropriate remedial corrective actions. (Section 3.0)

Decommissioning Performance and Status Review

- The inspectors determined that the licensee conducted decommissioning activities in accordance with the regulations and license requirements. The inspectors verified that the licensee's activities were in accordance with TSs, the Updated Safety Analysis Report (USAR), and the Post-Shutdown Decommissioning Activities Report (PSDAR). Finally, the inspectors conducted plant tours to verify that the material condition of structures, systems, and components supported the SAFSTOR condition. (Section 4.0)

Occupational Radiation Exposure

- Radiation Work Permit (RWP) and As Low As Is Reasonably Achievable (ALARA) reviews provided contamination controls and dose reduction measures appropriate for the work activities. Workers adhered to the radiological controls provided in the RWPs and ALARA plans and followed the Radiation Protection (RP) staff instruction.

- Decommissioning activities were executed in general alignment with planning documents and as provided in RWPs and ALARA reviews. Radiation surveys were performed adequately to identify the hazards present. Command and control of radiologically significant activities was executed in a manner that was safe and achieved the desired result. (Section 5.0)

Radioactive Waste Treatment, and Effluent and Environmental Monitoring

- The licensee controlled, monitored, and quantified releases of radioactive materials to the environment to ensure offsite doses were within regulatory limits and ALARA. (Section 6.0)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- Radioactive materials planned for shipment were classified, characterized, and packaged appropriately, in accordance with NRC and Department of Transportation (DOT) requirements. (Section 7.0)

REPORT DETAILS

Summary of Plant Activities

During the inspection period, the licensee maintained the unit in SAFSTOR conditions. Following removal of all spent fuel from the Spent Fuel Pool (SFP) in 2017, the licensee abandoned the SFP during this inspection period.

1 Organization, Management, and Cost Controls at Permanently Shutdown Reactors (Inspection Procedure (IP) 36801)

1.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Implementation of CAP procedures;
- Implementation of a cost and personnel reduction strategy that did not adversely challenge public health and safety;
- Regulatory requirements were properly implemented with respect to the site organization, staffing, and staff qualifications;
- Future licensee plans for decommissioning organization and staffing would continue to meet regulatory requirements;
- Licensee appropriately implemented TS, Technical Requirements Manual, PSDAR, and fire protection plan requirements and commitments; and
- Licensee continued implementation of regulatory requirements that remained applicable as described in NRC Bulletins, Generic Letters, and Orders.

As part of the inspection, the inspectors verified that licensee programs and procedures were appropriately implemented by licensee staff. In addition, the inspectors verified that when issues were identified, licensee personnel appropriately documented the issue in the CAP.

1.2 Observations and Findings

The inspectors determined through direct licensee observation, reviews of licensee programs and procedures, sampling of corrective action documents, and interviews with licensee personnel that the appropriate regulatory requirements and commitments were followed.

No findings were identified.

1.3 Conclusions

The licensee adequately implemented organization, management, and cost controls in accordance with regulatory requirements, license conditions, and the TSs.

2 Safety Reviews, Design Changes, and Modifications (IP 37801)

2.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Determination that licensee procedures and processes conform to the regulation and guidance associated with 10 CFR 50.59;
- Implementation of a sampling of design change modifications to verify that procedures and controls were followed; and confirm that the applicable changes were effectively implemented in the field and in plant procedures, drawings, and training programs if applicable; and
- Verification that changes made under 10 CFR 50.59 did not require prior NRC approval.

The inspectors verified that when issues were identified that licensee personnel appropriately documented the issue in the CAP.

2.2 Observations and Findings

The inspectors reviewed the licensee's programs for changes and performed a review of procedure and modification changes on a sample of licensee-approved changes. Specifically, the inspectors reviewed plans for abandoning the SFP and changes to the Offsite Dose Calculation Manual (ODCM) to support long-term SAFSTOR conditions.

No findings were identified.

2.3 Conclusions

The licensee performed adequate safety evaluations or screenings, completed design change evaluations, and properly assessed decommissioning impacts of various work activities as required by 10 CFR 50.59.

3 Self-Assessments, Auditing, and Corrective Action (IP 40801)

3.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Administrative procedures prescribed actions for the identification, evaluation, and resolution of problems;
- License procedures prescribed thresholds for the performance of self-assessments, audits, and surveillances;
- Licensee management reviewed self-assessments, audits, and corrective actions to remain knowledgeable of plant performance;

- Self-assessments were conducted with technically qualified personnel and sufficient independence from the licensee;
- Issues or problems were identified and corrected in accordance with the licensee's CAP; and
- Quality assurance personnel audited changes in the status of decommissioning and licensee organization.

The inspectors reviewed CAP documents to determine if a sufficiently low threshold for problem identification existed; the quality of follow-up evaluations, including extent-of-condition; and if the licensee assigned timely and appropriate prioritization for issue resolution commensurate with the significance of the issue.

3.2 Observations and Findings

The inspectors determined that issues were identified by the licensee at an appropriate threshold within various functional areas of the site and entered into the CAP. Issues were effectively screened, prioritized, and evaluated commensurate with safety significance. The scope and depth of evaluations were adequate in that the evaluations reviewed addressed the significance of issues and assigned an appropriate course of remedial action.

No findings were identified.

3.3 Conclusions

Issues were identified by the licensee at appropriate thresholds and entered into the CAP. Issues were screened and prioritized commensurate with safety significance. Licensee evaluations determined the significance of issues and included appropriate remedial corrective actions.

4 Decommissioning Performance and Status Reviews (IP 71801)

4.1 Inspection Scope

The inspectors reviewed documents, interviewed plant personnel, and toured the plant to assess the licensee's performance in the following areas:

- Status of ongoing decommissioning activities and planning for future activities;
- Licensee activities were in accordance with license conditions and docketed commitments, as well as, within the bounds of the docketed PSDAR;
- Operability and functionality of systems necessary for safe decommissioning were assessed through plant walkdowns, including radioactive effluent monitoring and RP monitors and alarms;
- Appropriate plant staffing was maintained and appropriate management oversight of licensee and supplemental activities was performed;
- Pre-job briefs were conducted for facility operations, including maintenance, surveillance, operations, and decommissioning activities;

- In-plant field conditions and decommissioning abandonment activities were adequate;
- In-progress field work was conducted in accordance with approved work instructions and workers were knowledgeable of tasks; and
- Storage of combustibles and flammables was in accordance with plant procedures and the fire plan for the subject location.

The inspectors verified that when issues were identified, licensee personnel appropriately documented the issue in the CAP.

4.2 Observations and Findings

The inspectors determined through plant tours and activities observed that the licensee conducted activities in accordance with regulatory requirements and plant procedures.

No findings were identified.

4.3 Conclusions

The inspectors determined that the licensee conducted decommissioning activities in accordance with the regulations and license requirements. The inspectors verified that the licensee's activities were in accordance with TSS, the USAR, and the PSDAR. Finally, the inspectors conducted plant tours to verify that the material condition of structures, systems, and components supported the SAFSTOR condition.

5 **Occupational Radiation Exposure (IP 83750)**

5.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Planning and preparation for radiation work were adequate and licensee management supported RP planning;
- Personal dosimetry for external exposure met requirements;
- Management and administrative controls of external radiation exposure met requirements and were designed to make exposures ALARA;
- Processes or engineering controls were used to the extent practicable to limit concentrations of airborne radioactive materials;
- Survey and monitoring activities were performed as required;
- Control of radioactive materials and contamination met requirements;
- Effective implementation of the ALARA program;
- ALARA-related training was adequate and provided to appropriate personnel; and

- Initiatives to implement operational methods and practices maintained doses ALARA.

The inspectors verified that when issues were identified, licensee personnel appropriately documented the issues in the CAP.

5.2 Observations and Findings

During the week of September 10, 2018, the inspectors observed the licensee performing licensed operations and reviewed documentation associated with internal and external dosimetry programs. RP workers were observed performing radiological surveys and demonstrated effective implementation of the ALARA program.

No findings were identified.

5.3 Conclusions

ALARA and documentation reviews provided contamination controls and dose reduction measures appropriate for the work activities. Workers adhered to the radiological controls provided in the RWPs and ALARA plans and followed the RP staff instruction.

Decommissioning activities were executed in general alignment with planning documents and as provided in RWPs and ALARA reviews. Radiation surveys were performed adequately to identify the hazards present. Command and control of radiologically significant activities was executed in a manner that was safe and achieved the desired result.

6 **Radioactive Waste Treatment, and Effluent and Environmental Monitoring (IP 84750)**

6.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- Radioactive waste treatment systems were maintained and operated to keep offsite doses ALARA;
- The licensee effectively controlled, monitored, and quantified releases of radioactive materials in liquid, gaseous, and particulate forms to the environment; and
- The radiological environmental monitoring programs were effectively implemented to ensure effluent releases were being adequately performed as required to minimize public dose;

As part of the inspection, the inspectors verified that licensee programs and procedures were appropriately implemented by licensee staff. In addition, the inspectors verified that when issues were identified licensee personnel appropriately documented the issues in the CAP and adequate corrective actions were taken. Specifically, the inspectors reviewed the following radioactive effluent equipment and associated pathway:

- Radiation monitor R-13 for the Auxiliary Building Vent
- Radiation monitor R-14 for the Auxiliary Building Vent

6.2 Observations and Findings

The inspectors noted during walkdowns of the above radioactive effluent equipment and pathways that they were configured as described in the ODCM and were in good material condition. In addition, the inspectors noted that during a review of past Annual Radiological Effluent Release Reports, no anomalous results, unexpected trends, or abnormal releases were identified. For the inter-laboratory comparison results reviewed, the inspectors noted the program contained the appropriate radioisotopes for current plant conditions and it was performed as required.

No findings were identified.

6.3 Conclusions

The licensee controlled, monitored, and quantified releases of radioactive materials released to the environment to ensure offsite doses were within regulatory limits and ALARA.

7 **Solid Radioactive Waste Management and Transportation of Radioactive Materials (IP 86750)**

7.1 Inspection Scope

The inspectors reviewed documents and interviewed plant personnel to assess the licensee's performance in the following areas:

- The licensee provided detailed instructions and operating procedures for transfer, packaging, and transport of low-level radioactive waste;
- Material was properly classified, described, packaged, marked, and labeled for transportation; and
- Shipments made by the licensee followed NRC and DOT regulations.

7.2 Observations and Findings

Characterization assumptions, activation analysis results, and shipping manifests were reviewed by the inspectors to verify the accuracy of the licensee's characterization and waste classification calculations.

No findings were identified.

7.3 Conclusions

Radioactive materials planned for shipment were classified, characterized, and packaged appropriately, in accordance with NRC and DOT requirements.

8 Exit Meeting

The inspectors presented the results of the inspection to Mr. B. McMahon and other members of the KPS staff at an exit meeting on January 9, 2019. The licensee acknowledged the results presented and did not identify any of the information discussed as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

B. McMahon, Kewaunee Site Director
D. Shannon, Radiation Protection Manager
T. Olson, Nuclear Engineering and Technical Support Manager
W. Zipp, Nuclear Decommissioning Coordinator

INSPECTION PROCEDURES (IPs) USED

IP 36801	Organization and Management Controls at Permanently Shutdown Reactors
IP 37801	Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors
IP 40801	Self-Assessment, Auditing, and Corrective Action at Permanently Shutdown Reactors
IP 71801	Decommissioning Performance and Status Reviews at Permanently Shutdown Plants
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Opened</u>	<u>Type</u>	<u>Summary</u>
---------------	-------------	----------------

None

<u>Closed</u>	<u>Type</u>	<u>Summary</u>
---------------	-------------	----------------

None

PARTIAL 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 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.

- 2016 Annual Radioactive Effluent Release Report; 04/24/2017
- 2017 Annual Radioactive Effluent Release Report; 04/19/2018
- CR 1579; Sludge Intercept Tank Level HiHi Out of Tolerance ICP-FP-001
- CR 1759; Revision to ODCM
- CR 569714; Level 1 Personnel Contamination
- CR 571456; Alpha Contamination Found on Spent Fuel Pool Index Strips
- CY-KW-049-002; Miscellaneous Chemistry Sample Points – Liquid Systems; Revision 4
- Gamma Spectrum Analysis Report; Sample Point: SGBT Holdup Tank 1B; 02/21/2018
- ICP-32D-07; PM32D604: Calibrate-Sludge Interceptor Tank Level Loops 16433 & 26839; 01/30/2018
- ICP-32A-09; PM32A522: Calibrate-Liquid Waste Disposal Holdup Tank Level Control Loop 1001; 07/3/2017
- KPS Permit Application for Reissuance WPDES Permit No. WI-0001571-08-1; 02/24/2017
- KW101010228; PM45-016: Calibrate-RMS Channel R-14 Aux Bldg Vent Exhaust Train B Rad Monitor; 10/10/2017
- KW101002716; PM45-015: Calibrate-RMS Channel R-13 Aux Bldg Vent Exhaust Train A Rad Monitor; 03/16/2017
- KW-MANUAL-000-REMM; Radiological Environmental Monitoring Manual (REMM); Revision 21
- MA-KW-ISP-RM-050-18; Instrument Calibration; Revision 0
- Memorandum; Audit 16-04: RP/Chemistry/PCP/Millstone Refueling; 06/22/2016
- Memorandum; Audit 19-04: Radiological Protection, Process Control Program, and Chemistry; 07/10/2018
- NAD 01.13; Radiological Liquid Waste Discharge; Revision 7
- NAD 01.16; Solid Radioactive Waste Process Control Program (PCP); Revision 11
- NAD-01.20; Radiological Environmental Monitoring Program; Revision 9
- Offsite Dose Calculation Manual (ODCM); Revision 18
- ODCM/REMM Revision Documentation Form; 01/02/2018
- ODCM 13.3.1; Instrumentation – Radioactive Liquid Effluent Monitoring Instrumentation; 09/25/2014
- Procedure Change Request; Radiological Environmental Monitoring Manual (REMM), New Revision Number 21; 12/14/2017
- Radiological Liquid Waste Discharge Permit #L-20170915, 09/15/2017
- RP-KW-003-006; Health Physics – In-Vitro Bioassay Measurement; Revision 1
- RP-KW-003-008; Radiation Protection – Evaluation of Inhalations or Ingestions; Revision 4
- RP-KW-006-107; Health Physics – Instrument Operating Procedure – Canberra Whole Body Counter; Revision 3
- RP-KW-006-116; Instrument Operating Procedure – Canberra Apex Multichannel Analyzer (MC) System; Revision 1
- RP-KW-104; Health Physics – Internal Radiation Exposure Control Program; Revision 1
- RP-KW-224; Health Physics – Airborne Radioactivity Surveys; Revision 1
- RP-KW-226; Health Physics – Alpha Monitoring; Revision 1
- RP-KW-230; Radiation Protection – Personnel Contamination Monitoring and Decontamination; Revision 1
- SAR 003121; Three Year Self-Assessment of the ALARA Program
- SAR 0136 (CA358/CA136); Internal Exposure Control Program

- SAR CA#137; 2015 – Kewaunee Station Self-Assessment for RWPs
- SAR 0140 (CA358/CA140); External Exposure Control Program
- SAR 274 (CR764/CA274); Radiological Survey Program
- SAR 334 (CR954/CA334); Respiratory Protection Program
- SAR 335; RP Instrument Program
- SAR 336 (CR954/CA336); Radioactive Contamination Control
- SP-45-049.18; RMS Channel R-18 Waste Discharge Liquid Radiation Monitor Quarterly Functional Test; 04/25/2016
- TSD 15-082; Kewaunee Passive Internal Monitoring Evaluation; Revision 1
- TSD 18-017 Volume 1; Dispersion and Deposition Coefficients for KPS SAFSTOR and DECON; Revision 0
- WO24055; Repair Air Leaks on LT-24055 (Waste HUT Level Transmitter) and Valve Manifold; 09/21/2017
- WPDES Permit WI-0001571-08-1; Dominion Energy Kewaunee, Inc.; 10/1/2013

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
ALARA	As Low As Is Reasonably Achievable
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DEK	Dominion Energy Kewaunee
DNMS	Division of Nuclear Materials Safety
DOT	Department of Transportation
IP	Inspection Procedure
KPS	Kewaunee Power Station
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PSDAR	Post-Shutdown Decommissioning Activities Report
RP	Radiation Protection
RWP	Radiation Work Permit
SAFSTOR	Safe Storage
SFP	Spent Fuel Pool
TS	Technical Specification
USAR	Updated Safety Analysis Report