



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

January 3, 2023

Ronald P. Worster
Project Director
KewauneeSolutions
Kewaunee Power Station
N490 Highway 42
Kewaunee, WI 54216

**SUBJECT: NRC INSPECTION REPORT NOS. 05000305/2022002(DRSS) – KEWAUNEE
POWER STATION**

Dear Ronald Worster:

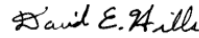
On Dec 8, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed onsite inspection activities for July 6 through December 8, 2022, at the permanently shutdown Kewaunee Power Station in Kewaunee, Wisconsin. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of this inspection, which were discussed with J. Lynch and other members of your staff on December 8, 2022.

During the inspection period, the NRC inspectors reviewed the following aspects of onsite activities: safety review, design changes, and modification; problem identification and resolution; occupational radiation exposure; radiological surveys; radioactive waste treatment, effluent, and environmental monitoring; and material control and accounting at decommissioning reactors. 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, reviewing work activities onsite and remotely, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations

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

Sincerely,



Signed by Hills, David
on 01/03/23

David E. Hills, Chief
Decommissioning, Reactor, and ISFSI
Health Physics Branch
Division of Radiological Safety and Security

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

Enclosure:
IR Nos. 05000305/2022002 (DRSS)

cc w/encl: Distribution via LISTSERV®

Letter to R. Worster from D. Hills dated January 3, 2023.

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| DATE | 12/30/2022 | | 1/3/2023 | | | | | |

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U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Docket No: 50-305

License No: DPR-43

Report No: 05000305/2022002(DRSS);

Enterprise Identifier: I-2022-002-0085

Licensee: KewauneeSolutions

Facility: Kewaunee Power Station (KPS)

Location: Kewaunee, WI

Dates: July 6, to December 8, 2022

Inspectors: Bill Lin, Health Physicist

Approved by: David E. Hills, Chief
Decommissioning, Reactor, and ISFSI
Health Physics Branch
Division of Radiological Safety and Security

EXECUTIVE SUMMARY

Kewaunee Power Station NRC Inspection Report Nos. 05000305/2022002(DRSS)

The Kewaunee Power Station (KPS) is a permanently shutdown and defueled power reactor maintained in a Safe Storage (SAFSTOR) condition. This periodic safety inspection reviewed licensed activities associated with safety review, design changes, and modification; problem identification and resolution; occupational radiation exposure; radiological surveys; radioactive waste treatment, effluent, and environmental monitoring; and material control and accounting at decommissioning reactors.

Safety Review, Design Changes, and Modification

- 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, "Changes, Tests, and Experiments," and their safety review process.

Problem Identification and Resolution

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

Occupational Radiation Exposure

- Adequate protection of worker health and safety from exposure to radiation and radioactive material was provided. Decommissioning activities were executed in general alignment with planning documents and as provided in Radiation Work Permits (RWPs) and As Low As Is Reasonably Achievable (ALARA) reviews. Radiation surveys were performed adequately to identify the hazards present.

Radioactive Waste Treatment, and Effluent and Environmental Monitoring

- The effluent flow paths and environmental monitoring systems reviewed aligned with descriptions in the Offsite Dose Calculation Manual (ODCM) and were functional. The effluent monitors reviewed were functional, calibrated, and alarm set points conservatively set to meet regulatory requirements. Changes to the effluent and environmental monitoring program were consistent with regulatory requirements.

Material Control and Accounting at Decommissioning Reactors

- The inspectors determined that the licensee conducted materials control and accounting activities in accordance with the regulation.

Report Details

Summary of Plant Activities

During this inspection period, the licensee maintained the unit in SAFSTOR conditions. No major decommissioning activities occurred during the inspection period.

1.0 Safety Review, Design Changes, and Modification (IP 37801)

1.1 Inspection Scope

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

- Whether the licensee's safety review process and procedures identified potential changes to Technical Specification (TS) results from proposed changes, tests, experiments, or modifications;
- Whether the licensee's training program effectively trained and assesses qualified personnel for performing safety evaluations;
- Changes to design basis documentation are updated consistent with design changes;
- Design changes or modifications were effectively evaluated to maintain safety; Maintenance and/or work activities appropriately considered whether the activity resulted in a change or modification and was assessed in accordance with 10 CFR 50.59; and
- Verification that changes made under 10 CFR 50.59 did not require prior NRC approval.

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

1.2 Observations and Findings

The licensee did not have any changes to its TS during this inspection period. The inspectors reviewed the licensee's 10 CFR 50.59 evaluation and safety review process. The inspectors interviewed licensee personnel regarding the process the licensee implemented to determine whether prior NRC approval is needed for any proposed changes. The inspectors also reviewed the licensee's training program and determined that it is able to train personnel for performing safety evaluations. During this inspection period, there were changes to the decommissioning facility that required an evaluation according to the provisions of 10 CFR 50.59. The inspectors reviewed the KSP Hydrological Conceptual Site Model which was developed to support data quality objectives and the framework associated with routine groundwater monitoring to comply with NEI 07-07. The inspectors verified that changes made by the licensee in the groundwater monitoring program and under 10 CFR 50.59 did not require prior NRC approval.

No findings were identified.

1.3 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 and its safety review process.

2.0 **Problem Identification and Resolution at Permanently Shutdown Reactors (IP 40801)**

2.1 Inspection Scope

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

- Effectiveness at preventing, detecting, and correcting issues;
- Identifying and evaluating potential 10 CFR Part 21, "Reporting of Defects and Non-Compliance Issues;"
- Audits and assessments evaluating the Corrective Action Program and Quality Assurance Program; and
- The licensee's safety culture.

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.

2.2 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. The inspectors reviewed several CAP entries for follow-up. For example, the inspectors followed up on Condition Report (CR) 2314. CR 2314 documented that the licensee discovered that the environmental air sampler at location K-43 was not running. The inspectors reviewed the licensee's actions and after discussing with the licensee, the inspectors determined that the licensee had performed the appropriate follow-up actions. In addition, the inspectors also followed up with CR 2315 and CR 2316. In each of these CRs, the inspectors reviewed the licensee's corrective actions, interviewed the appropriate personnel, and determined the licensee's corrective actions were appropriate. The inspectors verified that self-assessments conducted during the inspection period were performed with technically qualified personnel; and when appropriate, utilized personnel independent of the audited organization. The inspectors interviewed station personnel during walkdowns and did not encounter any concerns with safety culture. Finally, the inspectors verified that quality assurance personnel continued to audit changes implemented at the plant.

No findings were identified.

2.3 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.

3.0 **Occupational Radiation Exposure at Permanently Shutdown Reactors (IP 83750)**

3.1 Inspection Scope

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

- Training and qualifications of members of the Radiation Protection (RP) organization;
- Radiological hazards and worker protection in work activities;
- Radiological controls, postings, and material conditions inside the radiological control area;
- Contamination monitoring including release of radioactive materials from controlled areas;
- Accuracy and functionality of radiation monitoring instruments; and
- The characterization of the radiation type and energies were appropriate to the surveys and work practices; and staffing, posting, radiological controls, and changes met regulatory requirements.

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

3.2 Observations and Findings

The inspectors discussed with the licensee the site's RP instrumentations, personnel, and training needs once active decommission begins at Kewaunee. Specifically, the inspectors interviewed licensee management about the potential organization staffing plan, RP procedures, and instrumentation requirements that will be implemented onsite. The current Kewaunee management staff indicated to the NRC inspectors that staffing, instrumentation plans, and site RP procedure plans were being actively implemented. The site had hired four RP supervisors during the inspection period and was actively training the individuals to become RP supervisors. The inspectors reviewed the licensee's training materials and the completed training records and determined that all personnel were appropriately trained, and all training activities were documented in accordance with the approved procedures.

The inspectors reviewed the licensee's radiation and contamination surveys, and source inventories. The inspectors observed the licensee's vendor performing radiation surveys of various warehouses. The inspectors verified that for each type of survey the licensee performed, staff used the appropriate survey instrument to perform these surveys and that the licensee was updating its source term that was currently onsite due to source decay. The RP manager also indicated that once active decommission activities starts, the licensee will rent additional instruments from a third-party vendor.

The inspectors also performed a walkdown of the plant. The inspectors observed that general housekeeping was maintained and that all signs within the plant were appropriately posted and legible. The inspectors also observed that all radioactive material was properly bagged, tagged, and controlled.

No findings were identified.

3.3 Conclusions

Adequate protection of worker health and safety from exposure to radiation and radioactive material was provided. 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.

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

4.1 Inspection Scope

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

- Changes made to the ODCM or liquid, gaseous, and solid radwaste system design and operation were within the licensing basis and regulations;
- Effluent monitoring ventilation and discharge system configurations, flow paths, and operations were consistent with the licensing basis and procedures;
- Effluent monitors were calibrated;
- Radioactive liquid and gaseous waste discharge permits projected doses to members of the public that were based on representative samples in the discharge pathway and were within 10 CFR Part 50, Appendix I, and TS limits; the annual effluent release report was submitted as required, and any anomalous results, unexpected trends, or abnormal releases were identified and entered into the CAP;
- Environmental monitoring equipment was properly located, calibrated and maintained, and environmental samples were adequately collected;
- Whether the Groundwater Protection Initiative program was implemented as intended; and
- The licensee's annual radiological environmental monitoring report was submitted as required, and any anomalous results, unexpected trends, or abnormal environmental impacts were identified and entered into the CAP; and Changes made to the environmental program.

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

4.2 Observations and Findings

The inspectors reviewed the licensee's ODCM, the licensee effluent monitoring and calibration procedures, the licensee's Annual Radiological Environmental Operating Report (AREOR), the Annual Radioactive Effluent Release Report, and interviewed licensee personnel to ensure that the licensee was implementing the effluent and

environmental program in accordance with the applicable procedures. There were no anomalous results in the AREOR, the effluent release reports, and any of the ground water well results. The inspectors also walked down the licensee's effluent flow paths and environmental monitoring system to ensure that they aligned with the descriptions in the ODCM. There were no liquid discharges made in 2022. The inspectors reviewed the licensee's effluent monitors to ensure that they were functional, calibrated, and the alarm set points were set in accordance with regulatory requirements. The inspectors reviewed the licensee's Radiological Environmental Monitoring Program (REMP) and the associated contractor procedures to ensure that the licensee's obtained and analyzed the appropriate environmental samples in accordance with the applicable regulatory requirements and REMP program. The inspectors also reviewed the licensee's quality control program and inter-laboratory comparison program. The summary and result of the inter-laboratory comparison program were in the licensee's submitted AREOR. While onsite, the licensee discussed recent groundwater monitoring well location changes and provided its rationale for making those changes. After review by NRC staff, the inspectors concluded that these changes were appropriate for the site. To date, the NRC has not received any sampling results from the wells, but expects to receive data from the wells in the 2022 REMP which is expected to be submitted in 2023. There were no other changes to the environmental program.

No findings were identified.

4.3 Conclusions

The effluent flow paths and environmental monitoring systems reviewed aligned with descriptions in the ODCM and were functional. The effluent monitors reviewed were functional, calibrated, and alarm set points conservatively set to meet regulatory requirements. Changes to the effluent and environmental monitoring program were consistent with regulatory requirements.

5.0 **Material Control and Accounting at Decommissioning Reactors (IP 85103)**

5.1 Inspection Scope

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

- The licensee implemented and is maintaining an adequate and effective program to control and account for the special nuclear material (SNM) in its possession; and
- The licensee can detect loss, theft, or diversion of SNM in a timely manner.

5.2 Observations and Findings

The inspectors determined through reviews of documents, interviews of plant personnel, and tours that the licensee conducted activities in accordance with regulatory requirements and plant procedures. The NRC inspectors interviewed the site's security managers and verified that the licensee is implementing the approved security plans.

No findings were identified.

5.3 Conclusions

The inspectors determined that the licensee conducted materials control and accounting activities in accordance with the regulations.

6.0 **Exit Meeting**

The inspectors presented the results of the inspection to J. Lynch and other members of the KPS staff at an exit meeting on December 8, 2022. 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

Ronald P. Worster, Site Director
J. Lynch, VP of Regulatory Affair
T. Schneider, Licensing Engineer

INSPECTION PROCEDURES (IPs) USED

| | |
|----------|--|
| IP 37801 | Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors |
| IP 40801 | Problem Identification and Resolution at Permanently Shutdown Reactors |
| IP 83750 | Occupational Radiation Exposure |
| IP 84750 | Radioactive Waste Treatment, and Effluent and Environmental Monitoring |
| IP 85103 | Materials Control and Accounting at Decommissioning Reactors |

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.

- Kewaunee Power Stations Routine Radiation Surveys; January-May 2022
- Kewaunee Power Station Routine Contamination Survey; January-May 2022
- Kewaunee Power Station Routine Air Sample; January-May 2022
- RSCS Radiation Surveys of Kewaunee Warehouse; 06/1/2022
- Kewaunee Power Station; RP-KW-503-Radiological Decommissioning Records; Revision 1
- Kewaunee Power Station; Radiation Survey Instrumentation Calibration Records; January-May, 2022
- Kewaunee Power Station Sealed Source Inventory
- Kewaunee Personnel Department of Transportation Training Records
- Environmental Incorporated; Sampling Procedures Manual; Revision 13, 10/27/2009
- CR 2314; Environmental Air Sampler Found Not Running at Location K-43; 08/08/2022
- CR 2315; Monthly RCA Access Report Not Submitted; 08/15/2022
- CR 2316; ODCM and REMM Revision to Support DQAP Implementation; 08/16/2022
- Weekly Contamination Surveys; June-September 2022

- Monthly Contamination Surveys; 09/6/2022
- Kewaunee Power Station Radioactive Source Leak Test Data Sheet KSP Radiac Calibration Worksheet
- Kewaunee Radioactive Source Inventory and Leak Testing Requirements Procedure; Revision 11KS, 06/28/2022
- Hydrogeologic Conceptual Site Model for Kewaunee Power Station

LIST OF ACRONYMS USED

| | |
|---------|--|
| ADAMS | Agencywide Document Access and Management System |
| ALARA | As Low As Is Reasonably Achievable |
| AREOR | Annual Radiological Environmental Operating Report |
| CAP | Corrective Action Program |
| CFR | Code of Federal Regulations |
| DRSS | Division of Radiological Safety and Security |
| IP | Inspection Procedure |
| KPS | Kewaunee Power Station |
| NRC | U.S. Nuclear Regulatory Commission |
| REMP | Radiological Environmental Monitoring Program |
| RP | Radiation Protection |
| SAFSTOR | Safe Storage |
| TS | Technical Specification |