



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

August 9, 2021

Ms. Mary J. Fisher, Vice President
Energy Production & Nuclear Decommissioning
Omaha Public Power District
Fort Calhoun Station
Mail Stop FC-2-4
9610 Power Lane
Blair, NE 68008

SUBJECT: FORT CALHOUN STATION – NRC INSPECTION REPORT 050-00285/2021-003

Dear Ms. Fisher:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) decommissioning inspection conducted on July 12-15, 2021, at the Fort Calhoun Station, located near Blair, Nebraska. The NRC inspectors discussed the results of the decommissioning inspection with you and other members of your staff during a final exit meeting conducted on July 15, 2021. The inspection results are documented in the enclosure to this letter.

The NRC inspection examined activities conducted under your license as they relate to public health and safety, the common defense and security, and confirmed compliance with the Commission's rules and regulations, and with the conditions of your license. Within these areas the inspection consisted of selected examination of procedures and representative records, observation of activities, and interviews with personnel. Specifically, the inspectors reviewed your decommissioning performance, radioactive waste management and transportation program, and your radiation safety program. No violations of significance were noted and no response to this letter is required.

In accordance with Title 10 *Code of Federal Regulations* 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and Enclosure 1 of the enclosed inspection report will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. However, Enclosure 2 of the enclosed inspection report contains Security-Related information in accordance with 10 CFR 2.390(d)(1) and its disclosure to unauthorized individuals could

Enclosure 2 transmitted herewith contains SUNSI. When separated from Enclosure 2, this transmittal document and Enclosure 1 are decontrolled.

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2

present a security vulnerability. Therefore, Enclosure 2 of the enclosed inspection report will not be made available electronically for public inspection in the NRC Public Document Room or from ADAMS.

Should you have any questions concerning this inspection, please contact Mr. Chris Steely, Health Physicist, at 817-200-1432 or the undersigned at 817-200-1249.

Sincerely,



Signed by Warnick, Gregory
on 08/11/21

Gregory G. Warnick, Chief
Reactor Inspection Branch
Division of Nuclear Materials Safety

Docket No.: 050-00285

License No.: DPR-40

Enclosure:

NRC Inspection Report 05000285/2021-003

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3

FORT CALHOUN STATION – NRC INSPECTION REPORT 050-00285/2021-003 DATED - AUGUST 9, 2021

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket No.: 050-00285

License No.: DPR-40

Report No.: 050-00285/2021-003

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

Location: 9610 Power Lane
Blair, Nebraska

Dates: July 12-15, 2021

Inspectors: Chris D. Steely
Health Physicist
Reactor Inspection Branch
Division of Nuclear Materials Safety

Linda M. Gersey
Health Physicist
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety

Accompanied By: Mary C. Muessle, Director
Division of Nuclear Materials Safety

Approved By: Gregory G. Warnick, Chief
Reactor Inspection Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Fort Calhoun Station
NRC Inspection Report 050-00285/2021-003

The U.S. Nuclear Regulatory Commission (NRC) inspection was a routine, announced inspection of decommissioning activities being conducted at the Fort Calhoun Station (FCS) under inspection report 050-00285/2021-003. In summary, the licensee was conducting these activities in accordance with site procedures, license requirements and applicable NRC regulations.

Decommissioning Performance and Status Review at Permanently Shutdown Reactors

- The licensee was implementing the decommissioning activities in accordance with the regulations and license requirements. The inspectors determined that the licensee was adequately controlling decommissioning activities and radiological work areas at the facility. (Section 1.2)

Solid Radioactive Waste Management and Transportation of Radioactive Materials

- The licensee was packaging and shipping radioactive wastes in accordance with regulatory requirements and with the appropriate documentation and shipping papers. (Section 2.2)

Radioactive Waste Treatment, and Effluent and Environmental Monitoring

- The licensee maintained effluent monitoring and control systems as required, to support the condition of the facility since permanently ceasing operations. The effluent flow paths and monitoring system reviewed aligned with the descriptions in the Offsite Dose Calculation Manual. The licensee's environmental monitoring program was being conducted in accordance with the appropriate regulatory requirements as described in the Offsite Dose Calculation Manual. (Section 3.2)

Report Details

Summary of Plant Status

On June 24, 2016, Omaha Public Power District (OPPD), the licensee, formally notified the Nuclear Regulatory Commission (NRC) by letter of its intent to permanently cease operations of Fort Calhoun Station (FCS) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16176A213). By letter dated November 13, 2016, OPPD notified NRC that it had permanently ceased power operations at FCS on October 14, 2016, and certified pursuant to Title 10 of the *Code of Federal Regulations* (CFR) 50.82(a)(1)(ii), that as of November 13, 2016, all fuel had been permanently removed from the FCS reactor vessel and placed in the FCS spent fuel pool (SFP) (ADAMS Accession No. ML16319A254). On December 28, 2016, the NRC informed the licensee that it was no longer under NRC Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," IMC 0608, "Performance Indicator Program" and IMC 2515, "Light-water Reactor Inspection Program," when conducting oversight activities and assessing site performance (ADAMS Accession No. ML1636A449). The licensee was informed that the NRC's oversight of licensed activities under decommissioning would be conducted under the provisions of IMC 2561, "Decommissioning Power Reactor Inspection Program."

The licensee submitted its Post Shutdown Decommissioning Activities Report (PSDAR) on March 20, 2017 (ADAMS Accession No. ML17089A759). The PSDAR is not a licensing action and therefore is not approved by the NRC; however, the NRC reviewed the report. The licensee's PDSAR described the decommissioning activities and schedule to support SAFSTOR strategy for the facility which is one of the options allowed by the NRC for decommissioning. The NRC subsequently held a public meeting in Omaha, Nebraska on May 31, 2017, to discuss comments regarding the FCS PSDAR. The transcript of the public meeting is available on the NRC's Website at <http://www.nrc.gov/reading-rm/adams.html>, under (ADAMS Accession No. ML17160A394).

The licensee selected the SAFSTOR decommissioning options as described in the PDSAR. The licensee had planned to continue in SAFSTOR until the spent fuel was transferred to the U.S. Department of Energy in 2058. On April 29, 2019, however, the OPPD voted to change its decommissioning approach from SAFSTOR to DECON by contracting with Energy Solutions. DECON will consist of decontamination and destruction of the site in a process that will begin much sooner on a date to be determined by OPPD. FCS submitted a new PDSAR to reflect the change from SAFSTOR to DECON (ADAMS Accession No. ML19351E355).

On May 13, 2020, FCS removed the last canister of fuel and all special nuclear material (SNM) from the SFP. The licensee documented this event with a letter to the NRC dated May 18, 2020 (ADAMS Accession No. ML20139A138). Accordingly, FCS has entered Independent Spent Fuel Storage Installation (ISFSI)-only Technical Specifications (TS) and Emergency Plan on May 18, 2020, and ISFSI-only Security Plan on June 24, 2020.

1 Decommissioning Performance and Status Review at Permanently Shutdown Reactors (71801)

1.1 Inspection Scope

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

- Status of decommissioning and verify whether the licensee is conducting decommissioning and maintenance activities in accordance with regulatory and license requirements,
- Licensee awareness of work activities to assess their control and conduct of decommissioning,
- Status of the licensee's decommissioning staffing, personnel qualifications, and training requirements, including that of the contracted workforce, to ensure that license requirements are met, as applicable to the current decommissioning status,
- Progress and changes that potentially impact decommissioning financial assurance, to supplement information for the Financial Assurance Branch to support and ensure a thorough financial analysis review of the annual decommissioning trust fund reported by the licensee,
- Whether the licensee is identifying problems related to decommissioning and maintenance activities at an appropriate threshold and entering them into the corrective action program,
- Performed plant tours to assess field conditions and decommissioning activities; and
- Observed and assessed the status of facility housekeeping.

1.2 Observations and Findings

The inspectors listened to the weekly senior leadership team meeting, which focused on the overall status of the plant and the upcoming major work activities. The licensee's conversations were detailed, and management facilitated knowledgeable, wide ranging discussions to discern risk, schedule, resource needs, and how to improve the process controls and oversight. The licensee management discussions demonstrated a focus on safety in addition to efficiency and budget. The inspectors also met with the Senior Director for Decommissioning to discuss plans for decommissioning activities, current and projected staffing levels as site activities progress, and the decommissioning milestones.

Inspectors toured the facility, including containment, the deconstruction area, Waste Processing Facility, which is a new temporary building in order to facilitate rubble removal via railcars from the site, radiologically controlled areas, the ISFSI pad, and the ISFSI Operation Facility (IOF). Through observations and plant tours, discussions with staff, and records reviews, the inspectors determined that the licensee was appropriately controlling and conducting facility operations in a safe manner. General observations by

the inspectors identified good housekeeping practices, rigorous focus on safety, and appropriate radiological postings and labeling. Independent radiation surveys were conducted during the plant tours using a Thermo Scientific RadEye-G (Serial No. 373, calibration due date of July 27, 2021). The inspectors did not identify any radiation area that was not already identified and posted by the licensee.

Fort Calhoun Station is currently preparing the containment building and immediately adjacent area for the reactor vessel internals segmentation project. This will be a several months long project in which an ingress/egress route is developed through the containment building in order to allow large cutting equipment to be brought in to facilitate the segmentation and disposal offsite and to the ISFSI pad of the reactor vessel internal structure. FCS has completed the process of de-tensioning the containment tendons to allow the development of the ingress/egress route while also removing structure and equipment inside of containment which will allow the space necessary for the cutting equipment. The inspectors walked through the work area and evaluated that site personnel were focusing on safety, adherence to procedure, and radiological precautions as directed by regulatory and procedural requirements.

The inspectors conducted a review of maintenance procedures, condition reports, and the prioritization schedule for preventative maintenance. The licensee's work prioritization schedule is consistent with the current status of the plant. The equipment selected for prioritization are of risk significance and are being maintained in accordance with the licensee's maintenance program with the appropriate amount of managerial oversight.

The inspectors also evaluated staff levels and training for both the special nuclear materials management and the fire response group. Staffing levels are expected to change as the licensee progresses through the deconstruction and decommissioning process. The inspectors determined that staffing levels for these groups were commensurate with the current plant condition. Staff in both groups were qualified in their applicable positions with annual refresher training up to date as required by licensee procedures.

1.3 Conclusion

The licensee was implementing the decommissioning activities in accordance with the regulations and license requirements. The inspectors determined that the licensee was adequately controlling decommissioning activities and radiological work areas at the facility.

2 Solid Radioactive Waste Management and Transportation of Radioactive Materials (86750)

2.1 Inspection Scope

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

- Whether the licensee provided detailed instructions and operating procedures for transfer, packaging, and transport of low-level radioactive waste,

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- Whether the material was properly classified, described, packaged, marked, and labeled for transportation,
- Effectiveness of the licensee’s programs for processing, handling, storage, and transportation of radioactive material,
- Whether the licensee is identifying problems related to radioactive waste storage, processing, and transportation activities at an appropriate threshold and entering them into the corrective action program,
- Whether the licensee used up dated and audited procedures when scaling factors or correlation factors are used to quantify the concentration of hard-to-detect radionuclides; and
- Whether shipments made by the licensee were in compliance with NRC and U.S. Department of Transportation regulations.

2.2 Observations and Findings

The inspectors reviewed the licensee’s radioactive waste shipment log, which documented 40 shipments from January 1, 2021, through June 17, 2021. The first 37 shipments during 2021 (RW-21-001 – RW-21-037) were transported by truck and contained a mixture of demolition rubble and trash and were classified as Dry Active Waste. Shipments 38-40 (RW-21-038 – RW-21-040) were transported by rail to a disposal site and contained the spent fuel racks. All of the shipments were sent to a licensed waste burial site. The inspectors selected five shipments from the log to review for compliance with the regulations under 10 CFR 71.2, “Transportation of Licensed Material,” and the licensee’s procedures. These shipment numbers were RW-21-017, RW-21-025, RW-21-035, RW-21-036, and RW-21-040. All shipments were accurately characterized, packaged, and met applicable regulatory requirements. The inspectors discussed the process for preparing shipments with licensee personnel. Through these discussions and a review of pertinent records, the inspectors concluded that the shipments were made in accordance with NRC and U.S. Department of Transportation requirements and licensee procedures.

The licensee had multiple individuals qualified in accordance with the requirements under 49 CFR Part 172, Subpart H. All licensee staff and contractors involved in radioactive waste packaging and the associated paperwork had received the proper training. The inspectors reviewed the training documented in the training records for two individuals and found them to meet regulatory requirements.

The inspectors reviewed the licensee’s 2021 condition reports associated with the radioactive waste management and transportation programs. Specifically, the inspectors evaluated the reports for clarity of the documented condition, implementation, and appropriateness of the condition resolution, and verified licensee management had performed a final review of the condition. The inspectors discussed several of the condition reports with staff and management concerning observations and the management review process. The inspectors concluded that the licensee was

appropriately implementing the corrective action program, as it concerns radioactive waste management and transportation of radioactive materials and had sufficient management oversight.

2.3 Conclusion

The licensee was packaging and shipping radioactive wastes in accordance with regulatory requirements and with the appropriate documentation and shipping papers.

3 Radioactive Waste Treatment, and Effluent and Environmental Monitoring (84750)

3.1 Inspection Scope

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

- Radioactive waste treatment systems are maintained and operated to keep offsite doses ALARA,
- Licensee effectively controls, monitors, and quantifies releases of radioactive materials in liquid, gaseous, and particulate forms to the environment,
- Radiological environmental monitoring programs are effectively implemented to ensure effluent releases are being adequately performed as required to minimize public dose,
- Licensee implementation of the voluntary NEI/Industry Ground Water Protection Initiative.

3.2 Observations and Findings

a. Offsite Dose Calculation Manual (ODCM)

On September 28, 2018 (ADAMS Accession No. ML18275A323), the licensee submitted a request to remove the Technical Specification requirements associated with the ODCM and the radiological environmental monitoring program (REMP) and place those requirements into the Quality Assurance Topical Report (QATR). This license amendment request was approved on December 19, 2019, with the issuance of License Amendment #299 (ADAMS Accession No. ML19297D677). Under the QATR, the licensee is required to monitor the radiation and radionuclides in the environs of the plant. The environmental monitoring program is required to provide: (1) representative measurements of radioactivity in the highest potential for exposure pathways and (2) verification of the accuracy of the effluent monitoring program and modeling of the environment exposure pathways.

The environmental monitoring program required under the QATR is detailed in CH-ODCM-1001, "Offsite Dose Calculation Manual (ODCM)," Revision 37. The last review of the ODCM by the NRC was Revision 33, as documented in the NRC Inspection Report 050-00285/2020-002 (ADAMS Accession No. ML20266G344).

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The inspectors reviewed Revisions 34 through 37 of the ODCM. Technical updates to Revision 34 included removal of one of the two effluent gaseous monitors for the Auxiliary Building Stack, description of the new Alternate Liquid Release System, and updates for the 2020 Land Use Survey. Each change included an analysis and verification that the level of radioactive effluent controls remained adequate. Revision 35 was administrative in nature. Revision 36 added the new Waste Processing Structure location and updated the average relative disposition per unit area values (D/Q), based on the 2020 Annual Radiological Effluent Release Report results to align with the last 5 years of monitoring information. Revision 37 updated the Restricted Areas and removed references to the withdrawn NRC Regulatory Guide 4.8. The inspectors concluded that the revisions to the ODCM did not impact the adequacy of the radioactive effluent controls.

Section 5.1.2 of the ODCM, *Surveillance Requirements*, states, in part, that the REMP samples shall be collected at the specific locations and frequency provided in Tables 5.1, *Radiological Environmental Monitoring Plan*, and 5.2, *Radiological Environmental Sampling Locations and Media*; and analyzed in accordance with the detection capabilities for environmental sample analysis lower limits of detection provided in Table 5.3, *Detection Capabilities for Environmental Sample Analysis Lower Limit of Detection*. The inspectors compared the REMP sample results documented in the Radiological Environmental Operating Reports for 2020 and concluded that the sample collection and frequency for air, surface water, groundwater, vegetation, sediment, milk, food crops, and fish (as applicable), along with direct radiation exposure measurements made by thermoluminescent dosimeters (TLDs), were performed in accordance with the collection and frequency prescribed in the ODCM. The sample results reflected historical data or were less than the lower limit of detection.

The inspectors observed licensee personnel collect the weekly air particulate samples at two locations (OAP-B-(I) and OAP-K(I)), in accordance with procedure CH-FT-RV-0008, Revision 0, *Environmental Sampling Collection-Air Monitoring*. Licensee personnel appropriately completed the work instructions contained in the *Weekly Environmental Radiation Air Sampler Operational Checks*, Work Order Number 706405-06. The inspectors concluded that the licensee was performing the collection of particulate sampling as required by procedures.

The licensee uses a total of 59 TLDs for measurement of ambient gamma radiation as part of the REMP. Fourteen TLDs are located at indicator stations, 16 TLDs are located in the unrestricted area boundary and within 2.5 miles of containment, and 17 TLDs are located at background stations. Twelve TLDs were added to the monitoring program within the owner-controlled area to support data collection for the determination of radiation doses in accordance with the requirements of 40 CFR Part 190 for public dose.

The inspectors reviewed condition reports related to the environmental monitoring program and determined that the reports identified and provided documentation associated with all missing environmental monitoring data points due to flooding or other issues associated with collection of environmental samples or TLDs. The sample results reflected historical data or were less than the lower limit of detection. The inspectors concluded that the results verified that the effluent monitoring program was satisfactory.

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b. Radwaste Treatment and Radioactive Waste Storage

The inspectors walked down and reviewed the systems in place for liquid waste treatment and release, including the ion exchange units, the monitor tanks, and the outfall location. Several liquid waste systems had been relocated, due to preparation for the reactor vessel internals segmentation project, which included the piping from the SFP to the ion exchange system and the piping from the river water intake to the outfall location. The inspectors determined the licensee was operating the systems as specified in the ODCM Section 4.1 *Radioactive Liquid Effluents*.

During the tour of the facility, the inspectors observed the collection, handling and storage of radioactive material and solid radioactive wastes. The material was being handled, labeled, and stored appropriately. The inspectors observed good housekeeping throughout the site. The licensee made radioactive material disposal shipments in such a manner as to keep the buildup of stored material and wastes to a manageable level.

c. Radioactive Effluent Monitoring

The inspectors reviewed the licensee's effluent monitoring program and determined that it was being implemented in accordance with the requirements of the ODCM. The review consisted of the annual effluent release reports that covered the period of calendar year 2020. Effluents released in 2020 did not exceed the limits established in the ODCM. Doses calculated were less than 2 mrem and did not exceed the dose to members of the public limit established in 10 CFR 20.1301. In addition, the licensee demonstrated compliance with dose to members of the public as specified under 10 CFR 20.1302.

3.3 Conclusions

The licensee maintained effluent monitoring and control systems as required, to support the condition of the facility since permanently ceasing operations. The effluent flow paths and monitoring system reviewed aligned with the descriptions in the ODCM. The licensee's environmental monitoring program was being conducted in accordance with the appropriate regulatory requirements as described in the ODCM.

4 **Exit Meeting Summary**

On July 15, 2021, the NRC inspectors presented the final inspection results to Ms. Mary Fisher, Vice President, Energy Production and Nuclear Decommissioning, and other members of the licensee's staff. All proprietary information was returned by the NRC inspection team.

SUPPLEMENTAL INSPECTION INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Fisher, Vice President, Energy Production and Nuclear Decommissioning
R. Beck, Supervisor, Chemical Operations
K. Daughenbaugh, Supervisor, ISFSI Shift
A. Barker, Regulatory Assurance & Emergency Planning Manager
C. Cameron, Principal Regulatory Specialist
T. Uehling, Senior Director, Decommissioning
T. Maine, Plant Manager
D. Whisler, Radiation Protection Manager

INSPECTION PROCEDURES USED

IP 71801 Decommissioning Performance and Status Review at Permanently
Shutdown Reactors
IP 84750 Radioactive Waste Treatment and Effluent and Environmental Monitoring
IP 86750 Solid Radioactive Waste Management and Transportation of Radioactive
Materials

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Open

None

Closed

None

Discussed

None

LIST OF ACROYMNS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	<i>Code of Federal Regulations</i>
CR	Condition Report
DLBR	Design License Basis Review
FCS	Fort Calhoun Station
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IOEP	ISFSI-only Emergency Plan
IOF	ISFSI Operations Facility
ISFSI	Interim Spent Fuel Storage Installation
mrem	millirem
NRC	U. S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OPPD	Omaha Public Power District
PSDAR	Post Shutdown Decommissioning Activities Report
QATR	Quality Assurance Topical Report
REMP	Radiological Environmental Monitoring Program
SFP	Spent Fuel Pool
SNM	Special Nuclear Material
SSCs	Structures, Systems, and Components
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications