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

November 26, 2019

Ms. Mary J. Fisher, Vice President
Energy Production and 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 050-00285/2019-004

Dear Ms. Fisher:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on October 28-31, 2019, at the Fort Calhoun Station, located near Blair, Nebraska. The NRC inspector discussed the results of the inspection with yourself, Vice President, Energy Production and Nuclear Decommissioning, and other members of your staff during a final exit meeting conducted on October 31, 2019. 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 confirm 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 inspector reviewed your adverse weather preparations for winter, spent fuel pool management and safety program, and radioactive waste management and transportation to include the shipment of a steam generator from onsite to the Energy Solutions waste facility in Clive, Utah. No violations of significance were noted and no response to this letter is required.

In accordance with Title 10 *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure and your response, if you choose to provide one, 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. To the extent possible, your response, if you choose to provide one, should not include any personal privacy or proprietary, information so that it can be made available to the public without redaction.

If you have any questions regarding this inspection report, please contact Mr. Chris Steely at 817-200-1432 or the undersigned at 817-200-1249.

Sincerely,

/RA by LLCarson, II Acting for/

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

Docket No.: 050-00285
License No.: DPR-40

Enclosure:
Inspection Report 050-00285/2019-004

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket No.:	050-00285
License No.:	DPR-40
Report No.:	050-00285/2019-004
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	9610 Power Lane Blair, Nebraska
Dates:	October 28-31, 2019
Inspectors:	Chris D. Steely Health Physicist Reactor Inspection Branch Division of Nuclear Materials Safety
Approved by:	Greg Warnick, Chief Reactor Inspection Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Fort Calhoun Station
NRC Inspection Report 050-00285/2019-004

This 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 050-00285/2019-004. In summary, the licensee was conducting these activities in accordance with site procedures, license requirements and applicable NRC regulations.

Spent Fuel Pool Safety at Permanently Shutdown Reactors

The licensee's spent fuel pool was being maintained in accordance with permanently defueled technical specifications and procedural requirements. The licensee was safely storing the spent fuel assemblies contained in the spent fuel pool. (Section 1.2)

Adverse Weather Protection

The licensee had initiated its adverse weather preparations in accordance with regulatory and license requirements. (Section 2.2)

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 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 ease operations of Fort Calhoun Station (FCS) (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 *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 (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 plans to continue in SAFSTOR until the spent fuel is 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 be begin much sooner on a date to be determined by OPPD. FCS will be required to submit a new PDSAR to reflect the change from SAFSTOR to DECON.

On April 12, 2017, Region IV closed the Confirmatory Action Letter regarding the resolution of design issues that had been documented during the IMC 0350 operation period, based on FCS's commitment to either: (1) complete the design and licensing basis reconstruction for spent fuel pool/cooling and supporting structures, systems and components, or (2) submit a license amendment request for an independent spent fuel cooling system (ADAMS Accession No. ML17102B737). On December 14, 2017, the licensee requested to remove Option 2 above and committed to complete Option 1 by June 25, 2018. The licensee entered the commitment into the Corrective Action Program as Condition Report 2017-00842. By letter dated June 24, 2018, the licensee informed the NRC that the commitment actions and associated condition report had been closed (ADAMS Accession No. ML18205A090).

On December 11, 2017, the NRC issued exemptions to Emergency Planning requirements and related safety evaluation (ADAMS Accession No. ML 17263B198). The NRC issued License Amendment No. 295 (ADAMS Accession No. ML18276B286) for the permanently defueled Emergency Plan that is commensurate with significantly reduced spectrum of credible accidents that can occur in the permanently defueled condition. The license amendment became effective on April 7, 2018 and the licensee officially implemented the Permanently Defueled Emergency Plan (PDEP) on April 9, 2018.

On March 6, 2018, the NRC issued License Amendment 297 for the Decommissioning Technical Specifications (ADAMS Accession No. ML18010A087). The license amendment established a licensing and safety basis that reflects the permanently shutdown and defueled conditions of the facility. In general, the amendment eliminated the requirements for operations MODES and MODES where fuel was emplaced in the reactor vessel.

On February 28, 2019, FCS requested a license amendment to replace the existing PDEP and associated Emergency Action Levels (EALs) with an Independent Spent Fuel Storage Installation (ISFSI) – only Emergency Plan and its associated EALs (ADAMS Accession No. ML19064A758) to reflect the ISFSI-only configuration planned for the site by the middle of calendar year 2020 (CY2020). On May 1, 2019, the NRC determined that the license amendment request had sufficient technical information for the NRC to accept it for review (ML19126A280).

1 Spent Fuel Pool Safety at Permanently Shutdown Reactors (60801)

1.1 Inspection Scope

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

- Design, operational, and administrative measures are in place to prevent a substantial reduction in SFP coolant inventory under normal and accident conditions;
- SFP instrumentation, alarms, and leakage detection systems are adequate to assure safe wet storage of spent fuel;
- SFP water chemistry and cleanliness control programs maintain water purity standards, limits on radionuclide concentration, and minimum boron concentration in accordance with the TS requirements (as applicable);
- Criticality controls are consistent with the applicable nuclear criticality safety analyses;
- Procedures, drawings, and Post-Shutdown Decommissioning Activities Report (PSDAR) descriptions and operations regarding the SFP operation and power supplies are adequate; and
- Problem identification issues related to SFP activities are entered into the corrective action program at an appropriate threshold.

1.2 Observations and Findings

The Post Defueled Technical Specifications (PDTS), Section 2.8.3, requires the SFP water level be maintained greater than or equal to 23 feet over the top of the irradiated fuel assemblies stored in the SFP and the SFP boron concentration to be greater or equal to 500 parts per million (ppm). The NRC inspector reviewed the SFP level operational logs and reviewed chemistry data for the period since the last inspection. The inspectors concluded that the SFP level remained relatively steady at approximately 41 feet, which is roughly 28 feet above the top of irradiated fuel, for the monitoring periods reviewed. The boron concentration in the SFP was 2734 ppm, which sufficiently met the refueling operational requirements in the PDTS, as stated above.

The SFP temperature was procedurally required to be maintained between 45 and 100 degrees Fahrenheit (°F). The temperature was tracked in the control room, where alarm panel annunciators were set to alert operators if SFP temperatures exceeded 120°F or fell below 50°F. The SFP temperature was approximately 88°F at the time of the inspection.

The licensee was continuing to monitor the leaks from the spent fuel pool to the liner and subsequently to the drain lines. The licensee was monitored the leak rate monthly and calculated the approximate leak rate at .9 quarts per day (total for both SFP and fuel transfer canal). All leakage was contained and had not impacted the external environment.

1.3 Conclusion

The licensee's (Spent Fuel Pool) SFP was being maintained in accordance with PDTS and procedural requirements. The licensee was safely storing the spent fuel assemblies contained in the SFP.

2 Adverse Weather Protection (IP 71111.01)

2.1 Inspection Scope

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

- That weather-related equipment deficiencies identified during the previous year have been corrected prior to the onset of seasonal extremes;
- Licensee implementation of the seasonal extreme weather preparation procedures and compensatory measures for the seasonal extremes; and
- Risk significant systems that are required to be protected from the seasonal extreme weather conditions are evaluated.

2.2 Observations and Findings

The inspector reviewed several of the licensee's procedures including Procedures OI-EW-1, "Extreme Weather," Revision 44; OI-EW-2, "Cold Weather Operations with Auxiliary Steam Unavailable," Revision 9; and SY-FC-101-146, "Severe

Weather Preparation and Response," Revision 6. The inspector discussed the preparations and lessons learned with several licensee staff members regarding the actions taken by the licensee to ensure those systems important to decommissioning safety would not be impaired due to extreme cold weather. Based on the actions taken during the 2018 winter, the licensee did not experience any pipe breaks or impacts to those systems important to decommissioning safety. In preparation for the 2019 winter readiness, the licensee had initiated several work orders to perform the actions necessary for cold weather preparations.

2.2 Conclusion

The licensee had initiated its adverse weather preparations in accordance with regulatory and license requirements.

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

3.1 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;
- Whether the material was properly classified, described, packaged, marked, and labeled for transportation;
- 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 Departments of Transportation regulations.

3.2 Observations and Findings

The inspector reviewed the licensee's radioactive waste shipment log, which documented five shipments since June 2019 to the present, including an old steam generator from the mausoleum. Of these shipments everything with the exception of the steam generator was sent to a waste processor, while the steam generator was sent to a waste burial site. The inspector selected two 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 19-5 and 19-6, which included several filters the licensee had removed form the spent fuel pool and a tool box classified as Dry Active Waste (DAW). Both shipments were characterized and packaged in a liner for shipment to a waste processor. The inspector discussed the characterization of the filters and DAW with the licensee, including how filter dose rates were measured, how the waste stream analysis was performed, and how appropriate scaling factors were applied for hard-to-detect radionuclides. Through these discussions

and a review of pertinent records, the inspector concluded that the filters and DAW were characterized and packaged appropriately, and the shipping papers were generated in accordance with NRC and DOT requirements and licensee procedures.

In addition to the five shipments documented in the licensee's waste shipment log, the licensee also prepared and shipped a large component from their storage mausoleum (old steam generator) in the time period since the last inspection. For this shipment, the licensee used a contractor (Energy Solutions, Inc.) to prepare, package and transport the steam generator for burial. The inspector reviewed the shipping paperwork associated with the steam generator shipment, and held discussions with both the licensee and Energy Solutions staff. Through these discussions and reviews, the inspector determined that the steam generator was characterized and packaged in accordance with NRC and DOT requirements, and was appropriately classified as required by 10 CFR Part 61.

The licensee had multiple individuals qualified in accordance with the requirements under 49 CFR Part 172 Subpart H. For all licensee staff involved in packaging preparation and transport, the inspector verified that these staff had received the proper training, and that the training was appropriately documented in the training records.

Since the last inspection in this area the licensee had completed a self-assessment of the radioactive waste program. The licensee issued NOSMDA-FC-18-04, "Fort Calhoun Station Nuclear Oversight Management Directed Assessment Report Radiological Waste," to identify three deficiencies and one enhancement. The inspector reviewed this assessment and determined it to be appropriate and in keeping with regulatory requirements.

3.3 Conclusion

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

4 Exit Meeting Summary

On October 31, 2019, the NRC inspector presented the inspection results to Ms. Mary Fisher, Vice President, Energy Production and Nuclear Decommissioning and other members of the licensee's staff. No proprietary information was identified with the exception of handouts from a scheduling meeting, which were returned to the licensee.

SUPPLEMENTAL INSPECTION INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Fisher, Vice President, Energy Production and Nuclear Decommissioning
B. Blome, Director, Licensing and Regulatory Assurance
T. Uehling, Senior Director, Decommissioning
J. McBride, Nuclear Oversight Lead
C. Longua, Manager, Operations
D. Whisler, Manager, Radiation Protection and Chemistry
T. Maine, Plant Manager
C. Cameron, Principal Regulatory Specialist
A. Dudas, Radiation Health Specialist

INSPECTION PROCEDURES USED

IP 60801	Spent Fuel Pool Safety at Permanently Shutdown Reactors
IP 71111.01	Adverse Weather Protection
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Open

None

Closed

None

Discussed

None

Attachment

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As is Reasonably Achievable
CFR	*Code of Federal Regulations*
CY	Calendar Year
FCS	Fort Calhoun Station
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IOEP	ISFSI-only Emergency Plan
ISFSI	Interim Spent Fuel Storage Installation
NRC	U. S. Nuclear Regulatory Commission
DAW	Dry Active Waste
OPPD	Omaha Public Power District
PDEP	Permanently Defueled Emergency Plan
PSDAR	Permanently Shutdown Decommissioning Activities Report
PDTS	Post Defueled Technical Specifications
EAL	Emergency Action Level
SFP	Spent Fuel Pool

FORT CALHOUN STATION – NRC INSPECTION REPORT 050-00285/2019-004 DATED – NOVEMBER 27, 2019

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ADAMS ACCESSION NUMBER: ML19323F701

■ SUNSI Review By: CDS	ADAMS: ■ Yes ☐ No	☐ Sensitive ■ Non-Sensitive	☐ Non-Publicly Available ■ Publicly Available	Keyword NRC-002

OFFICE	RIV DNMS/RxIB		C:RxIB
NAME	CDSteely		GGWarnick
SIGNATURE	*/RA/*		*/RA by LLCarson, II Acting for/*
DATE	11/27/2019		11/27/2019

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