



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
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September 22, 2020

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 050-00285/2020-002

Dear Ms. Fisher:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) decommissioning inspection conducted on August 24-27, 2020, 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 August 27, 2020. 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, spent fuel pool management and safety program, radiation safety program, maintenance and surveillance programs, and the implementation of your safety review and design change 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, 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.

M. Fisher

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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,

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

Docket No.: 050-00285

License No.: DPR-40

Enclosure:

Inspection Report 050-00285/2020-002

FORT CALHOUN STATION – NRC INSPECTION REPORT 050-00285/2020-002 DATED -
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ADAMS ACCESSION NUMBER: ML20266G344

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket No.: 050-00285

License No.: DPR-40

Report No.: 050-00285/2020-002

Licensee: Omaha Public Power District

Facility: Fort Calhoun Station

Location: 9610 Power Lane
Blair, Nebraska

Dates: August 24-27, 2020

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

Enclosure

EXECUTIVE SUMMARY

Fort Calhoun Station NRC Inspection Report 050-00285/2020-002

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 050-00285/2020-002. 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)

Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors

- The licensee's safety evaluation program and process for evaluating the safety impacts of facility changes and modifications were adequate for complying with the provisions of Title 10 *Code of Federal Regulations* (CFR) 50.59 and 10 CFR 72.48. The licensee's 10 CFR 50.59 safety evaluation program provided effective periodic training for personnel preparing, reviewing, and approving safety evaluations. (Section 2.2)

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 has permanently removed all spent fuel assemblies from the spent fuel pool. (Section 3.2)

Maintenance and Surveillance at Permanently Shutdown Reactors

- The licensee implemented its maintenance and surveillance program consistent with procedures and regulatory requirements. The licensee was maintaining plant systems in accordance with the permanently defueled technical specifications. The licensee appropriately implemented the maintenance rule to ensure compliance with the requirements of 10 CFR 50.65 for structures, systems, and components associated with the storage, control, and maintenance of spent fuel. (Section 4.2)

Occupational Radiation Exposure

- The licensee effectively implemented its ALARA program in accordance with the procedures and regulatory requirements. The licensee demonstrated methods and practices to maintain doses ALARA. Based on a review of exposure records, RWP's and ALARA planning documentation, the inspectors concluded that there was adequate management support for and cooperation with radiation protection planning for radiological work activities. (Section 5.2)

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 ODCM. The licensee's environmental monitoring program was being conducted in accordance with the appropriate regulatory requirements as described in the ODCM. (Section 6.2)

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) (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 PSDAR 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 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 July 24, 2018, the licensee informed the NRC that the commitment actions and associated condition report had been closed (ADAMS Accession No. ML18205A090).

The licensee commitment for a Design License Basis Review (DLBR) for DECON to be completed by June 25, 2018, was completed before the commitment date. Inspection of the new commitment, tracked by FCS Condition Report CR 2017-00842 occurred as part of an

NRC inspection documented in Inspection Report 2019-002 (ADAMS Accession No. ML19192A278) dated May 13-16, 2019, and was found to meet all regulatory requirements. With the completion of this inspection the NRC considers all remaining items from the EA-13-243 Confirmatory Action Letter (ADAMS Accession No. ML13351A395) to be closed.

On May 13, 2020, FCS removed the last canister of fuel and all Special Nuclear Material (SNM) from the spent fuel pool. 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 (EP) 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 ongoing decommissioning activities and planning for future activities;
- Operability and functionality of systems necessary for safe decommissioning were assessed through plant walkdowns, such as: radioactive effluent monitoring systems and radiation protection monitors and alarms;
- 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 the control room, spent fuel pool, 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, and appropriate radiological postings and labeling. Independent radiation surveys were conducted during the plant tours using a Thermo Scientific RadEye-G (NRC Identification No. 086962, Serial No. 374, calibration due date

of December 16, 2020). The inspectors did not identify any radiation area that was not already identified and posted by the licensee.

Fort Calhoun Station is currently preparing for demolition and decontamination activities at the site. One planned activity to support decommissioning is to install a waste containment structure and associated rail spur, and to expand the waste haul path. In order to prepare for this activity, the licensee will excavate approximately 117,000 yd³ of soil. This area of excavation was previously undisturbed by site operations. The soil produced from the excavation of this area is planned to be used on-site as fill material in basement structures after Final Status Surveys of the structure surfaces. The topsoil and subsurface soil will be stored in piles separated by a physical distance and access controlled by silt fencing, signage, and process to limit access. The inspectors conducted surveys of the area. The inspectors' surveys included measurement of ambient gamma exposure rates and a collection of soil samples.

The inspectors conducted the gamma scan using two RadEye SX survey meters (Serial Nos. 52198 and 52210, both with a calibration due date of July 24, 2021) connected to SPA-3 sodium iodide (NaI) gamma detectors (Serial Nos. 19211 and 19212, both with a calibration due date of July 24, 2021). Prior to conducting the gamma scans, the inspectors measured the ambient background level to establish action levels for the two survey meters. The NRC's background measurements were recorded outside the training building and the area adjacent to the location of the soil samples. The inspectors recorded a background measurement of 9 microRoentgens per hour ($\mu\text{R/hr}$). The inspectors conducted walk-over scan surveys of the planned area for soil excavation. The survey results were consistent with background levels for the two survey meters (7-10 $\mu\text{R/hr}$). No elevated areas of radioactivity were identified during the surveys of the soil excavation area.

The inspectors collected ten soil samples from the soil excavation area. The inspectors submitted the ten soil samples to Radiological and Environmental Sciences Laboratory in Idaho Falls, Idaho for analysis. The soil samples were to be analyzed for Cs-137 and Co-60 as the radionuclides of interest. At the end of the inspection period, the NRC's contract laboratory had not yet completed its analysis of the ten sample results. The inspectors will present the final soil sample results to the licensee at a later date under separate correspondence.

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 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (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 regulations and guidance associated with 10 CFR 50.59;
- Implementation of a sampling of design change modifications to verify that procedures and controls were followed;
- Verify that the applicable changes were effectively implemented in the plant and in plant procedures, drawings, and training programs if applicable; and
- Verify that the changes made under 10 CFR 50.59 did not require prior NRC approval.

2.2 Observations and Findings

The regulations under 10 CFR 50.59 allow a licensee to make changes in the facility as described in the final safety analysis report (as updated), make changes in the procedures as described in the final safety analysis report (as updated), and conduct tests or experiments not described in the final safety analysis report (as updated) without obtaining a license amendment, provided the criteria established in the regulations are met. The inspectors reviewed the licensee's 10 CFR 50.59 safety evaluation program, as implemented by Procedure FCSI-RA-203, "50.59 Review Process," Revision 1. The inspectors determined that the procedures provided adequate instructions to assure proper implementation, review, and approval of design changes.

The inspectors reviewed the licensee's 10 CFR 50.59 safety evaluation program and confirmed that it provided effective periodic training for personnel responsible for preparing, reviewing, and approving safety evaluations. Additionally, the licensee's program established an adequate process to assess training effectiveness. The inspectors reviewed the qualifications for the screeners, evaluators, reviewers, and the process owner to verify they were qualified and trained at the time of performing their job functions.

The inspectors reviewed six 50.59 screenings, where licensee personnel had determined that a full evaluation was not necessary, and an in-depth review of one 50.59 screening that did result in an evaluation. The inspectors concluded that licensee reviewed the proposed activities under the 10 CFR 50.59 screening process in accordance with procedural and regulatory requirements. For the screenings which did not result in an evaluation, the screeners had documented an adequate explanation as to why an evaluation was not necessary.

In accordance with 10 CFR 50.59(d)(2), the licensee is required to submit a 50.59 Summary Report every 24 months to the NRC. The report must contain a brief description of any changes, tests, and experiments, including a summary of the evaluation of each. The inspectors identified a gap between the two most recent summary reports which exceeds 24 months. The licensee most recently submitted a 50.59 summary report on April 20, 2020, approximately 29 months after the previous report, dated December 4, 2017. This is a minor violation of 10 CFR 50.59(d)(2). As a result of the minor violation, the licensee wrote a condition report (CR-2020-00476), identifying the late submittal of the summary report.

2.3 Conclusion

With the exception of one minor violation, the licensee's safety evaluation program and processes for evaluating the safety impacts of facility changes and modifications were adequate for complying with the provisions of 10 CFR 50.59. The licensee's 10 CFR 50.59 safety evaluation program provided effective periodic training for personnel preparing, reviewing, and approving safety evaluations. Additionally, the licensee's program established an adequate process to assess training effectiveness.

3 **Spent Fuel Pool Safety at Permanently Shutdown Reactors (60801)**

3.1 Inspection Scope

The inspectors 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.

3.2 Observations and Findings

The permanently 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 inspectors reviewed the SFP level operational logs and reviewed chemistry data for the period since the last inspection until all spent fuel was removed from the SFP on May 13, 2020. 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 and SFP temperature met all technical specification and regulatory requirements for the same period.

With the completion of this inspection and the certification by letter to the NRC from the licensee of the removal of all SNM from the SFP, dated May 18, 2020, this inspection procedure will no longer be required nor be implemented in future site inspections.

3.3 Conclusion

The licensee's SFP was being maintained in accordance with PDTS and procedural requirements. The licensee was safely storing the spent fuel assemblies contained in the SFP until the last fuel assembly was transferred to the ISFSI pad on May 13, 2020.

4 **Maintenance and Surveillance at Permanently Shutdown Reactors (62801)**

4.1 Inspection Scope

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

- Maintenance and surveillance for structures, systems, and components (SSCs) are being conducted in a manner that results in safe storage of spent fuel and proper operation of radiation monitoring and effluent control equipment;
- Evaluate the effectiveness of the licensee maintaining adequate material and structural integrity of SSCs important to safe decommissioning; and
- Licensee has an effective maintenance program that implements the maintenance rule requirement.

4.2 Observations and Findings

The inspectors reviewed the licensee's work identification process to determine and evaluate how deficient items were captured and prioritized given the change in plant status. The process to capture deficient items was being effectively implemented via required surveillances, normal watch rounds, daily work requests and management reviews. The inspectors determined that the prioritization process for work requests was being effectively implemented based on the inspectors' review of the work schedule and discussions with the licensee staff and management, who determined the necessary resources and overall effect on plant status.

The inspectors also reviewed surveillance records, the maintenance schedule, and items that were currently on the maintenance backlog. Interviews with maintenance management helped the inspectors determine that the maintenance and surveillance program was being effectively implemented with the appropriate amount of management oversight.

As of May 13, 2020, all spent fuel and special nuclear material have been removed from the spent fuel pool and transferred to dry storage on the ISFSI pad. Accordingly, the licensee re-evaluated their equipment being monitored under the Maintenance Rule, 10 CFR 50.65 (a)(1), and determined that since no plant equipment or electrical power is required to keep the spent fuel cool the maintenance rule is no longer applicable. All spent fuel is now stored in horizontal storage modules (HSM) on the ISFSI pad and is

cooled by natural air circulation independent of any electrical power source or running cooling equipment.

The inspectors also evaluated what equipment was being prioritized by maintenance now that the licensee no longer requires a working spent fuel pool with its accompaniment of cooling systems and electrical power. The inspectors determined that the licensee has correctly identified and prioritized equipment such as radiation monitors, fire protection, effluent release systems and electrical power to the security areas as being appropriate for the current condition of the site.

4.3 Conclusions

The inspectors did not identify any regulatory issues associated with the implementation of the maintenance and surveillance program. The licensee is effectively and appropriately implementing this program in accordance with regulatory requirements and current site conditions.

5 Occupational Radiation Exposure (83750)

5.1 Inspection Scope

The inspectors reviewed documents to assess the licensee's performance in the following areas:

- Planning and preparation for radiation work was adequate and licensee management supported radiation protection planning;
- Personnel dosimetry for external exposure meets requirements;
- Management and administrative controls of external and internal radiation exposures meet requirement and were designed to maintain exposures as low as reasonably achievable (ALARA);
- Control of radioactive material and contamination meets requirements; and
- The licensee is effectively implementing the ALARA program.

5.2 Observations and Findings

a. Radiation Work Permits

The inspectors reviewed the following radiation work permits and their associated ALARA planning documents regarding radiological conditions, personnel protective equipment, engineered features or activities to reduce personnel dose and other controls for maintaining doses ALARA:

- 19-0326, Dry Cask Storage Project and Associated Activities;
- 20-0341, Spent Fuel Pool GTCC;

- 20-0202, Operation and Maintenance of Liquid Radwaste;
- 20-0207, Decontamination Activities (High Radiation Area);
- 20-1108, Instrumentation and Control (I&C) Activities;
- 20-0304, AUX/CTMT Maintenance and Inspection;
- 20-0308, WD System Maintenance;
- 20-0324, Resin Transfer Activities; and
- 20-0206, Spent Fuel Pool Activities.

The inspectors determined that the radiation work permits were in sufficient detail to inform workers of the radiological hazards present, and included radiological oversight by radiation protection personnel for specific activities, hold points and stop work criteria, personnel protective equipment or other engineering features required for the work activities, alarm setpoints for dose and dose rates for anticipated work, and an assessment of dose information to be collected for the activity.

b. Maintaining Occupational Exposures ALARA

When reviewing the RWPs and associated ALARA planning documents, the inspectors also assessed the document quality against the program described in RP-401, "ALARA Planning and Control," Revision 0. The exposure estimates and job scopes were well documented and approved in accordance with the licensee's procedure. The associated total effective dose equivalent ALARA reviews for the work packages were written to ensure appropriate consideration and controls were implemented to keep worker doses ALARA. The inspectors determined that the ALARA planning packages, work scope, and dose estimates, including hold points and exposure measurement, were well thought out and provided conservative controls for maintaining exposures ALARA.

c. Personnel Exposures

Occupational exposure was measured onsite by optically stimulated laser dosimeters exchanged annually. Personnel monitored were also provided with self-reading dosimeters when entering the radiation controlled area (RCA). Data from the self-reading dosimeters is entered into the system as individuals exit the controlled area. These results are used to track dose and determine if whole body counting for internal exposure is needed. Once an individual's self-reading dosimeter results reach 1000 millirem (mrem), the optically stimulated laser dosimeter is exchanged. The licensee has established an administrative level of 2000 mrem/year for all monitored individuals. The inspectors reviewed the external monitoring results for the employees monitored in calendar year 2019. Four hundred fifty-three individuals were monitored in 2019, 111 of these individuals had a measurable dose, i.e., a dose reported as greater than zero. Of those reporting a positive dose, 83 of those individual's dose was reported to be less than 100 millirem. The highest dose reported for 2019 was 816 millirem reported for an individual in the maintenance group. There were no planned special exposures or embryo/fetus doses monitored in calendar year 2019.

d. Control of Radioactive Materials and Contamination

The inspectors toured the facility, conducted in plant work activity observations and interviewed personnel regarding the storage and handling of radioactive materials,

control of contamination and the conduct of radiological surveys and monitoring of radiological hazards.

The inspectors verified radioactive materials were properly used, labeled and stored; contaminated and radiation areas were appropriately posted and controlled; and appropriate radiation surveys were being conducted in a timely fashion. Instruments used for surveys were calibrated and were the appropriate type for the radiation measured.

5.3 Conclusions

The licensee effectively implemented its ALARA program in accordance with the procedures and regulatory requirements. The licensee demonstrated methods and practices to maintain doses ALARA. Based on a review of exposure records, RWPs and ALARA planning documentation, the inspectors concluded that there was adequate management support for and cooperation with radiation protection planning for radiological work activities.

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

6.1 Inspection Scope

The inspectors reviewed documents to assess the licensee's performance in the following areas:

- Implementation of the radwaste treatment, effluent and environmental monitoring programs as required by the license; and
- Conduct of decommissioning to minimize the impact on the environment and dose to members of the public.

6.2 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 33. The

last review of the ODCM by the NRC was Revision 30 (NRC Inspection Report 050-00285/2019-003; ADAMS Accession No. ML19247D238).

Revision 31 to the ODCM reformatted information associated with the sample locations and added or deleted locations. Revision 32 to the ODCM removed the Technical Specification references and replaced with the appropriate references from the QATR, and removed requirements for equipment and other protocols no longer needed based on phase of decommissioning (such as noble gas monitoring equipment). Revision 33 to the ODCM updated the tables to remove information no longer needed, and revised the average effluent concentration normalized by source strength (X/Q) and average relative disposition per unit area (D/Q) values to align with the last 5 years of monitoring information.

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 2019 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 TLDs for measurement of ambient gamma radiation were originally located in 16 sectors around the facility within a five mile radius of the site. An additional 12 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 and determined that the condition 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.

The licensee is required to perform a biennial environmental land use survey in accordance with Section 5.2 of the ODCM. The licensee performed the survey for 2019 and documented the results in the annual Radiological Environmental Operating Report (ADAMS Accession No. ML20121A092).

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 reverse osmosis unit, the tubular ultra-filtration unit, the monitor tanks, and the overboard discharge radiation monitor detector. The inspectors determined the licensee was operating the systems as specified in the ODCM

Section 6.1 Process Control Program Requirements and Section 6.2 General Waste Program Requirements.

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 2019. Effluents released in 2019 did not exceed the limits established in the ODCM. Doses calculated were less than 1 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.

6.3 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.

7 Exit Meeting Summary

On August 27, 2020, 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
J. Shuck, Manager, Systems Engineering
J. Layton, Supervisor, Nuclear Decommissioning, Planning and Scheduling
C. Kuchta, Supervisor, Maintenance Services
A. Stabel, Manager, Maintenance Services
A. Barker, Regulatory Assurance & Emergency Planning Manager
C. Cameron, Principal Regulatory Specialist
B. Blome, Director, Licensing and Regulatory Assurance
T. Uehling, Senior Director, Decommissioning
T. Maine, Plant Manager
A. Hansen, Principal Regulatory Specialist
B. Obermeyer, Site Security Manager
D. Whisler, Radiation Protection Manager

INSPECTION PROCEDURES USED

IP 71801	Decommissioning Performance and Status Review at Permanently Shutdown Reactors
IP 37801	Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors
IP 60801	Spent Fuel Pool Safety at Permanently Shutdown Reactors
IP 62801	Maintenance and Surveillance at Permanently Shutdown Reactors
IP 83750	Occupational Radiation Exposure
IP 84750	Radioactive Waste Treatment and Effluent and Environmental Monitoring

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
CY	Calendar Year
DLBR	Design License Basis Review
EP	Emergency Plan
FCS	Fort Calhoun Station
FSAR	Final Safety Analysis Report
HSM	Horizontal Storage Module
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IOEP	ISFSI-only Emergency Plan
IOF	ISFSI Operations Facility
ISFSI	Interim Spent Fuel Storage Installation
µR/hr	microRoentgens per hour
mrem	millirem
NRC	U. S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculations Manual
OPPD	Omaha Public Power District
ppm	parts per million
PDEP	Permanently Defueled Emergency Plan
PDTS	Post Defueled Technical Specifications
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
X/Q	Source Strength