

REPORT OF RCRA COMPLIANCE EVALUATION INSPECTION

At

DUANE ARNOLD ENERGY CENTER

3277 DAEC Road
Palo, Iowa 52324
319-851-7606

EPA ID Number: IAD984566133

On

January 24, 2023

By

TOEROEK ASSOCIATES, INC.

For

U. S. ENVIRONMENTAL PROTECTION AGENCY

Region 7

Enforcement and Compliance Assurance Division

INTRODUCTION

At the request of the Enforcement and Compliance Assurance Division/Chemical Branch/RCRA Section (ECAD/CB/RCRA) of the U. S. Environmental Protection Agency (EPA) Region 7, Toeroek Associates, Inc., and its subcontractor CLAENE Group (Toeroek team) conducted a hazardous waste compliance evaluation inspection (CEI) at Duane Arnold Energy Center (DAEC) at 3277 DAEC Road in Palo, Iowa. The CEI was conducted under the authority of Section 3007 of Resource Conservation and Recovery Act (RCRA), as amended. The CEI covered hazardous waste generator requirements, used oil management, and universal waste requirements, as applicable. This report and its attachments present the results of the CEI.

PARTICIPANTS

DAEC:

Mike Casey, Radiation Protection and Environmental Manager

Toeroek Team:

Clifford Nelles, Inspector, 816-213-5192

INSPECTION PROCEDURES

Prior to the CEI at DAEC on January 24, 2023, I conducted a drive-by visual inspection. I did not observe any areas of concern during the drive-by. At approximately 0745 hours, I arrived at the main gate, contacted Mr. Casey by telephone, and explained that I was there to conduct a CEI. Approximately 10 minutes later, Mr. Casey arrived at the main gate and notified security to allow me inside. I introduced myself and explained that I was there to conduct a hazardous waste CEI at DAEC. Mr. Casey and I went to a conference room where I conducted an entry briefing with him.

During the entry briefing, I presented my business card and EPA credentials to Mr. Casey. I explained the scope and procedures for the CEI. I explained the facility's right to make confidentiality claims for any or all the information obtained and provided a Notice Regarding Proprietary/Confidential Business Information. I stated that at the conclusion of the CEI, Mr. Casey would be presented with a Confidentiality Notice (Notice) with which he could make or not make a claim of confidentiality for the facility. I also provided Mr. Casey with a copy of U. S. Federal Codes 1001 and 1002, concerning communication of false statements and documents to federal inspectors, and RCRA Section 3007, explaining EPA's inspection authority, both of which he read.

A copy of each of the following documents was left with Mr. Casey during the inspection:

- RCRA Facility Access Information Sheet
- Mr. Trevor Urban's business card
- RCRA Section 3007
- U.S. Federal Codes 1001 and 1002
- Instructions for Responding to a Notice of Preliminary Findings
- Notice Regarding Proprietary/Confidential Business Information
- E-Manifest Fact Sheet: Generators
- Managing your Hazardous Waste: A Guide for Small Businesses
- U.S. EPA Small Business Resources Information Sheet
- Solvent-Contaminated Wipes Final Rule Summary Chart
- IDNR Excluded Solvent-Contaminated Wipes Rule: Management Practices for Wipes, Rags, and Shop Towels
- Recycling Electronics: A Guide for Businesses
- Lead-Based Paint Activities: Handling and Disposal
- Battery Recycling/Disposal
- Management of Fluorescent Lamps for Businesses
- Incompatible Chemicals
- Universal Wastes – Including Aerosol Cans
- TCLP – Toxicity Characteristic Leaching Procedure
- Part 279 Requirements: Used Oil Management Standards
- EPA Region 7 Emergency Response Program
- Chemical Facility Anti-Terrorism Standards
- Iowa Environmental Guide for Businesses

I reviewed the Notification Acknowledgement/Verification Report (Verification Report) with Mr. Casey (Attachment 1). Based on this review, I updated the Verification Report by changing the facility's hazardous waste generator status from large quantity generator (LQG) of hazardous waste (generating more than 1,000 kilograms [kg] of hazardous waste per month) to non-generator of hazardous waste.

I conducted the visual inspection of the facility, accompanied by Mr. Casey. Following the visual inspection, I reviewed facility records including hazardous waste manifests with land disposal restriction (LDR) notifications. I prepared and completed a site-specific inspection checklist to document my observations.

At the conclusion of the CEI, I conducted an exit briefing with Mr. Casey. During the exit briefing, I provided a Receipt for Documents and Samples, which Mr. Casey signed, acknowledging receipt (Attachment 2). I provided Mr. Casey the Notice, which he signed indicating no confidential business information had been provided (Attachment 3). I made no preliminary findings during the inspection so a Notice of Preliminary Findings (NOPF) was not left with the facility at the conclusion of the CEI. However, I explained to Mr. Casey that findings might be added by EPA after review of the inspection report.

A map of the facility obtained during the CEI is included in Attachment 4 (buildings marked with an "X" no longer exist). A Google Earth aerial photograph of the facility is included as Attachment 5. The three photographs taken during the CEI are included in Attachment 6. All three of the photographs are used in the report.

FINDINGS AND OBSERVATIONS

1. Facility Description and General Information

DAEC is a nuclear power plant that was constructed in the early 1970s on approximately 500 acres of land adjacent to the Cedar River. DAEC received its full power operating license in February 1974, and began commercial operation in February 1975. NextEra Energy purchased majority ownership (70 percent) of the facility in 2006, and is the current operator. Central Iowa Power Cooperative and Corn Belt Power Cooperative own 20 and 10 percent, respectively.

DAEC initially planned to decommission the facility October 30, 2020. On August 10, 2020, a derecho (inland hurricane) weather event occurred with 140 mph straight line winds. The winds damaged the outside of the building and the cooling towers which were used to cool steam upon exit from the turbine and produce electricity. The cooling towers were not required to cool critical nuclear components. After conducting a complete assessment of the damage, NextEra Energy announced that they would not restart the reactor and that decommissioning would commence immediately.

The facility is currently transitioning to a state of safe storage (SAFSTOR), which involves removal and storage of spent fuel and radioactive liquids, limited dismantling, and placement of the facility in a safe, stable condition. The facility will be maintained in the SAFSTOR state until full decommissioning, which is projected to occur in 2075. The current decommissioning

operation employs approximately 35 full-time personnel who work one shift, 7:00 a.m. to 3:00 p.m., Monday through Friday.

The facility was last inspected on June 23 & 24, 2014 by an EPA contractor with the following preliminary finding:

- Treatment of hazardous waste without a RCRA permit [40 CFR §261.5(g)(3)].

The preliminary finding was not repeated during this CEI.

2. RCRA Status

DAEC was identified as a LQG of hazardous waste on the Verification Report provided by EPA (Attachment 1). During the CEI, I reviewed hazardous waste manifests generated from the date of decommissioning (August 10, 2020) to present. The facility shipped hazardous waste twice during that timeframe—January 13, 2021, and May 21, 2021. A total of 568 pounds (257 kg) of various hazardous wastes were shipped on January 13, 2021, and 6,000 pounds (2722 kg) of waste phosphonic acid was shipped on May 21, 2021. No hazardous waste has been accumulated or shipped since the May 21, 2021, shipment. Therefore, I determined that DAEC is currently operating as a non-generator of hazardous waste, and I inspected the facility as such.

Used oil is generated from equipment decommissioning; however, the last offsite shipment of used oil was April 1, 2021, and no used oil was in accumulation at the time of the CEI. Universal waste (used batteries) was observed in accumulation at the time of the CEI. Therefore, I also inspected the facility as a small quantity handler (SQH) of universal waste (accumulating less than 5,000 kg of universal waste at any time).

3. Waste Streams

This section of the CEI report describes waste streams generated by the facility during decommissioning, including the facility's waste determination and waste codes, generation process and rate, management at the facility, and ultimate disposition. The following discussion of waste streams is based on conversations with Mr. Casey, the visual inspection, and my review of waste shipping documents. Mr. Casey accompanied me throughout the CEI. The visual inspection included the main building and outlying buildings for wastes in accumulation; however, only one universal waste accumulation container was observed during the CEI.

Waste aerosols were generated during the decommissioning of the facility. The facility considered the waste hazardous (D001) based on product knowledge. The waste was last shipped to Clean Harbors in El Dorado, Arkansas (Clean Harbors), on January 13, 2021, for incineration. A copy of the January 13, 2021, manifest is in Attachment 7. I did not observe waste aerosols in accumulation during the CEI.

Waste flammable liquids were generated during the decommissioning of the facility. The waste consisted primarily of waste diesel fuel and isopropanol. The facility considered the waste hazardous (D001) based on product knowledge. The waste was last shipped to Clean Harbors on

January 13, 2021, for incineration. A copy of the January 13, 2021, manifest is in Attachment 7. I did not observe waste flammable liquids in accumulation during the CEI.

Waste paint related material (WPRM) was generated during the decommissioning of the facility. The facility considered the waste hazardous (D001) based on product knowledge. The waste was last shipped to Clean Harbors on January 13, 2021, for incineration. A copy of the January 13, 2021, manifest is in Attachment 7. I did not observe WPRM in accumulation during the CEI.

Waste paint was generated during the decommissioning of the facility. The facility considered the waste hazardous (D001) based on product knowledge. The waste was last shipped to Clean Harbors on January 13, 2021, for incineration. A copy of the January 13, 2021, manifest is in Attachment 7. I did not observe waste paint in accumulation during the CEI.

Phosphonic acid waste was generated during the decommissioning of the facility. In a normal decommissioning, the power is gradually drawn down and the cooling water is gradually released. With the accelerated decommissioning, the cooling water was transferred to a large tank without being cleansed. Treatment of the cooling water with phosphonic and sulfuric acids was required to prevent microbial growth and suppress odors. When the facility finished cleansing cooling water, the remaining phosphonic acid was shipped off site as waste. The facility considered phosphonic acid waste hazardous (D002) based on product knowledge. The waste was shipped to Clean Harbors in Grantsville, Utah, on January 4, 2022 for incineration. A copy of the January 4, 2022, manifest is in Attachment 8. I did not observe phosphonic acid waste in accumulation during the CEI, and the facility's two phosphonic acid tanks were empty (Attachment 6, Photograph 1).

Sulfuric acid remained at the site when the facility finished cleansing cooling water. The facility considered remaining sulfuric acid to be a product that could be reused. Between May 3, 2021, and August 9, 2021, the facility shipped 11,750 gallons of sulfuric acid to Valicor Environmental Services in Kansas City, Missouri, for reuse. Copies of the bills of lading for sulfuric acid shipments are in Attachment 9. I did not observe sulfuric acid during the CEI, and the facility's sulfuric acid tank was empty (Attachment 6, Photograph 2).

Used oil was generated during the decommissioning of the facility. Used oil was managed according to provisions of Title 40 *Code of Federal Regulations* (40 CFR) Part 279. Used oil was collected by Safety-Kleen Systems in East Chicago, Indiana (Safety-Kleen), for recycling. Copies of the bills of lading for the last two shipments of used oil, dated March 5, 2021, and April 1, 2021, are in Attachment 10. I did not observe used oil in accumulation during the CEI, and the facility's used oil storage tank was empty.

Used batteries are generated during facility maintenance and primarily consist of alkaline batteries. The facility manages all used batteries as universal waste according to provisions of 40 CFR Part 273. Mr. Casey estimated that the facility generates approximately five used batteries per year. Used batteries are consolidated in a universal waste collection area at the security gate, and are collected by Safety-Kleen for recycling.

During the visual inspection, I observed one 5-gallon universal waste accumulation container for used batteries (Attachment 6, Photograph 3). The universal waste accumulation container was labeled with the words “universal waste batteries,” dated June 23, 2022, and held three used alkaline batteries. I did not observe any deficiencies related to used batteries.

General trash consists of nonhazardous production wastes, packaging wastes, and general office-type refuse. The facility considers general trash to be nonhazardous based on product and process knowledge. The waste is accumulated in various containers throughout the facility. General trash is collected by Waste Management and transported to Scott County Landfill in Davenport, Iowa, for disposal. I did not observe any deficiencies related to general trash.

Other than items specifically noted in the narrative, I observed no additional issues. However, further review by EPA may change or add to my findings.

Clifford A. Nelles

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Nelles

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Clifford A. Nelles, Inspector

CLAENE Group

AMBER WHISNANT

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Amber Whisnant, Section Chief

ECAD/CB/RCRA, EPA Region 7

Attachments:

1. Verification Report (2 pages)
2. Receipt for Documents and Samples (1 page)
3. Confidentiality Notice (1 page)
4. Site Map (1 page)
5. Google Earth Photograph of Facility (1 page)
6. Photographic Documentation (Photolog and 3 Photographs) (3 pages)
7. Manifest Dated January 13, 2021 Manifest (1 page)
8. Manifest Dated January 4, 2022 (3 pages)
9. Sulfuric Acid Bills of Lading (8 pages)
10. Used Oil Bills of Lading (2 pages)