



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

April 20, 2011

Mr. Joseph Plona  
Site Vice President  
Nuclear Generation  
The Detroit Edison Company  
6400 North Dixie Highway  
Newport, MI 48166

**SUBJECT: NRC INSPECTION REPORT 050-00016/11-10(DNMS) - ENRICO  
FERMI UNIT 1**

Dear Mr. Plona:

On April 7, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Enrico Fermi Unit 1 facility. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection on April 7, 2011, the NRC inspector discussed the findings with members of your staff.

The inspection consisted of an examination of activities at the facility as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection included facility management and control and radiological safety. Within these areas, the inspection consisted of a selective examination of procedures and representative records, field observations of activities in progress, and interviews with personnel.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Document Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

J. Plona

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We will gladly discuss any questions you have concerning this inspection.

Sincerely,

*/RA/*

Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch

Docket No. 050-00016  
License No. DPR-9

Enclosure:  
Inspection Report 050-00016/11-10(DNMS)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.: 050-00016

License No.: DPR-9

Report No.: 050-00016/11-10(DNMS)

Licensee: Detroit Edison Company

Facility: Enrico Fermi Unit 1

Location: 6400 North Dixie Highway  
Newport, MI 48166

Inspection Dates: April 6 through 7, 2011

Inspector: Peter J. Lee, Ph.D., CHP

Approved by: Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure

## EXECUTIVE SUMMARY

### Enrico Fermi Unit 1 NRC Inspection Report 050-00016/11-10(DNMS)

This routine decommissioning inspection included reviews of facility management and control, and radiological safety.

#### Facility Management and Control

- The inspector concluded that the conditions of the facility and equipment were adequate and capable of supporting the decommissioning activities. (Section 1.1)

#### Radiological Safety

- The inspector determined that the licensee continued to be effective in maintaining dose to workers well below the regulatory limits. (Section 2.1)
- The inspector determined that the licensee had complied with NRC and Department of Transportation regulations for shipments of radioactive waste. (Section 2.2)
- The inspector verified that no detectable licensed material had been released to the environment through the discharge from Sump 4. (Section 2.3)

## Report Details<sup>1</sup>

### Summary of Plant Activities

During the inspection period, the licensee was continuing decommissioning activities and implementing the reactor vessel removal project.

#### **1.0 Facility Management and Control**

##### 1.1 Decommissioning Performance and Status Review at Permanently Shut Down Reactors

###### a. Inspection Scope (71801)

The inspector toured the plant to assess working conditions and the status of decommissioning activities.

###### b. Observations and Findings

During the inspection, contract workers were preparing diamond wire cutting of the Transition Deck to separate it from the Lower Reactor Vessel. Workers wore appropriate protective equipment and followed established procedures. The licensee maintained the work location with adequate shielding, personnel barriers, and high efficiency particulate air (HEPA) filter exhaust systems, all to minimize worker doses. All radiological areas were adequately marked and posted.

###### c. Conclusions

The inspector concluded that the conditions of the facility and equipment were adequate and capable of supporting the decommissioning activities.

#### **2.0 Radiological Safety**

##### 2.1 Occupational Radiation Exposure (83750)

###### a. Inspection Scope

The inspector interviewed the licensee personnel and reviewed the work requests and ALARA review for the cutting up of the reactor vessel to evaluate the effectiveness of licensee controls to minimize the potential radiation exposure to the workers.

###### b. Observations and Findings

The dose received from completing the cutting of one segment of transition deck during March, 2011, was 732 millirem (mrem). There are 8 more segments remaining. Also, 4 of 5 workers conducting the cutting had received dose around 1000 mrem for 2011. Due to the unexpected high dose, the licensee currently stopped the cutting process until implementing more effective radiological controls, such as placing eight inches of carbon steel additional shielding plate on top of the lower reactor vessel and transition deck. The additional shielding will allow workers to have better access to the wire saw

when adjustments or repairs are required. This is expected to result in a significant dose reduction from 732 mrem per segment cut. The licensee expects that the goal of 18,350 mrem will be met when completing removal of the reactor vessel and workers will receive dose less than 2000 mrem during 2011.

c. Conclusions

The inspector determined that the licensee continued to be effective in maintaining dose to workers well below the regulatory limits.

2.2 Transportation of Radioactive Materials (86750)

a. Inspection Scope

The inspector reviewed radioactive waste shipping documents for selected shipments and conducted interviews of the responsible individual to ensure compliance with NRC and U.S. Department of Transportation (DOT) regulations.

b. Observations and Findings

Since the last inspection, the licensee made one Low Specific Activity (LSA)-II shipment of Dry Activity Waste (DAW) and metal to the Energy Solutions site in Clive, Utah for burial. The licensee verified that the results of radiation and removable contamination levels were within applicable limits. The waste manifest included all the information according to the DOT and 10 CFR Part 71 transportation requirements

c. Conclusions

The inspector determined that the licensee had complied with NRC and Department of Transportation regulations for shipments of radioactive waste.

2.3 Effluent and Environmental Monitoring (84750)

a. Inspection Scope

The inspector reviewed the analytical sampling data of ground water from the East Sodium Gallery, Sump 4, and the discharge of Sump 4, as well as a soil sample from Sump 4 discharge area, to evaluate the potential release of radioactive material to the environment.

b. Observations and Findings

Groundwater seeps into the East Sodium Gallery. From the East Sodium Gallery, it drains to Sump 4. A sump pump in Sump 4 pumps the water out a pipe. The discharge flows on the ground to the storm sewer nearby. In December 2010, the original sample collected from Sump 4 and analyzed on January 13, 2011, indicated Cesium (Cs)-137 concentration of  $2 \times 10^{-8}$  micro curies per milliliter ( $\mu\text{Ci/ml}$ ). The sample contained a significant amount of sediment due to the disturbing the sediment in the sump. The backup sample contained little or no sediment and indicated no detectable Cs-137. The bottom suction of the pump was several inches above the sediment in the bottom of the

Sump 4. A sample collected on January 10, 2011 from the discharge of Sump 4, indicated no sediment and no detectable Cs-137. That indicated the Cs-137 contamination was retained in the sediment.

The water samples collected from the East Sodium Gallery floor on March 14, 2011, and the tank on March 21, 2011 that water on the floor had been pumped to, indicated no detectable Cs-137. That indicated the contamination in the Sump 4 sediment is due to the buildup of past years of operation, not from the ongoing decommissioning and decontamination activities.

A top 6 inches soil sample taken on January 19, 2011 from Sump 4 discharge area indicated no detectable Cs-137. A scraping surface layer of the soil taken on January 18, 2011 indicated  $1.5 \times 10^{-7}$   $\mu\text{Ci}/\text{gram}$  of Cs-137, which is within range of the Cs-137 background activity. That indicated no evidence of releasing Cs-137 to the environment from past years of operation.

The licensee removed the contaminated sediment from Sump 4. Sample taken post cleanup on April 4, 2011 from agitated water containing sediment, indicated no detectable Cs-137.

c. Conclusions

The inspector verified that no detectable licensed material had been released to the environment through the discharge from Sump 4.

**3.0 Exit Meeting**

The inspector presented the inspection results to members of the licensee's staff at the conclusion of the inspection on April 7, 2011. The licensee did not identify any of the documents or processes reviewed by the inspector as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

- \* L. Goodman, Manager, Fermi 1
  - \* C. Becker, Project Manager
  - W. Colonnello, Director, Nuclear Support, Fermi 1
  - \* D. Randall, License Termination Manager
  - \* D. Kejkitalo, Radiation Protection Supervisor
  - D. Breiding, Reactor Project Manager
  - D. Swindle, Sodium Project Manager
  - \* C. Aldridge-Nunn, Office Administration
  - \* D. Mihalik, FSS Engineer
- \* Present at the April 7, 2011, exit meeting.

### **LIST OF PROCEDURES USED**

- IP 83750: Occupational Radiation Exposure
- IP 84750: Effluent and Environmental Monitoring
- IP 86750: Transportation of Radioactive Materials
- IP 71801: Decommissioning Performance and Status Review at Permanently Shut Down Reactors

### **LIST OF ACRONYMS USED**

- ADAMS Agency Document and Management System
- CFR Code of Federal Regulations
- DAW Dry Activity Waste
- DOT Department of Transportation
- DNMS Division of Nuclear Materials Safety
- HEPA High Efficiency Particulate Air
- LSA Low Specific Activity
- NRC Nuclear Regulatory Commission
- µCi/ml micro curie per milliliter

### **LICENSEE DOCUMENTS REVIEWED**

Licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

None



J. Plona

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We will gladly discuss any questions you have concerning this inspection.

Sincerely,

*/RA/*

Christine A. Lipa, Chief  
Materials Control, ISFSI, and  
Decommissioning Branch

Docket No. 050-00016  
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