

Fermi 2  
6400 North Dixie Hwy., Newport, MI 48166

**Detroit Edison**



April 25, 2012  
NRC-12-0031

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington D C 20555-0001

Reference: Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43

Subject: Annual Non-Radiological Environmental Operating Report

Pursuant to Section 5.4.1 of the Environmental Protection Plan, enclosed is the 2011 Annual Non-Radiological Environmental Operating Report for Fermi 2.

Should you have any questions regarding this report, please contact me at (734) 586-5076.

Sincerely,

A handwritten signature in cursive script, appearing to read "Rodney W. Johnson for".

Rodney W. Johnson  
Manager, Nuclear Licensing

Enclosure

cc: NRC Project Manager  
NRC Resident Office  
Reactor Projects Chief, Branch 4, Region III  
Regional Administrator, Region III  
Supervisor, Electric Operators,  
Michigan Public Service Commission



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# 2011 Annual Non-radiological Environmental Operating Report

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**Detroit Edison - Fermi 2**  
6400 North Dixie Highway  
Newport, MI 48166

Reporting Period:

January 1, 2011 to December 31, 2011

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## 2011 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

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## **2011 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **1.0 EXECUTIVE SUMMARY**

The following is a brief summary of the 2011 Annual Non-Radiological Environmental Operating Report for the Detroit Edison Enrico Fermi Unit 2 Power Plant (Fermi 2):

- No terrestrial monitoring activities were conducted, or required to comply with the Fermi 2 Operating License. Terrestrial monitoring was conducted in 2008 to support the licensing of a new unit at the site and is detailed in the Combined Operating License Application for Fermi 3 which was submitted to the NRC on September 18, 2008. Based on the findings of the terrestrial monitoring program, which was concluded in 1994, no further aerial-photographic evaluations are planned.
- ITC Transmission currently owns and operates the transmission infrastructure, including the corridor rights-of-way where herbicides are applied. Four herbicides were approved and used in the transmission corridor rights-of-way. All herbicides were applied within parameters of ITC procedures, and the applications were in compliance with State and Federal requirements.
- During the period covered by this report, there were no changes to station design that created an unreviewed environmental question, per the requirements and definitions of the Environmental Protection Plan.
- No unusual or important environmental events, as defined by the Environmental Protection Plan, occurred. Accordingly, no non-routine reports were submitted.
- One noncompliance with the Fermi 2 National Pollutant Discharge Elimination System Permit occurred in 2011. The non-compliance is described in Section 5.0.

## **2011 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **2.0 INTRODUCTION**

#### **2.1 Purpose**

The purpose of this report is to provide the Nuclear Regulatory Commission (NRC), site personnel, and the public with information regarding the implementation of the Non-Radiological Environmental Protection Plan (EPP) at the Detroit Edison Enrico Fermi Unit 2 Power Plant (Fermi 2). This report is due prior to May 1 of each year and meets the requirements specified in Section 5.4.1 of the Fermi 2 Non-Radiological Environmental Protection Plan, which is included in Appendix B of Facility Operating License No. NPF-43.

#### **2.2 Environmental Protection Plan Overview**

As part of the application for the nuclear power plant construction permit and operating license, extensive environmental studies were conducted to evaluate potential non-radiological environmental risks that could result from the construction and operation of Fermi 2. In August 1981, the NRC published the Final Environmental Statement (FES) for the operation of Fermi 2. The FES was developed pursuant to the guidelines of the National Environmental Policy Act of 1969 (NEPA) and Title 10 of the Code of Federal Regulations (CFR), Part 51.

The EPP was prepared, based on the potential environmental risks and monitoring requirements identified in the FES. The purpose of the EPP is to provide for the protection of the environment during any additional construction and the continued operation of Fermi 2. The principle objectives of the EPP are as follows:

1. Verify that Fermi 2 is operated in an environmentally acceptable manner, as established by the FES and Environmental Impact assessments.
2. Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
3. Keep the NRC informed of the environmental effects of facility construction and operation, and of actions taken to control those effects.

The components of the EPP are as follows:

1. A terrestrial monitoring program to detect long-term or sudden changes in vegetation that may be attributable to the dispersion of Fermi 2 cooling tower vapor. The terrestrial monitoring program was completed in 1994, after 4 successive monitoring cycles were completed, as required.
2. A program to establish the controlled use of herbicides within transmission rights-of-way.
3. A program to ensure that changes to Fermi 2 design or operation and potential tests or experiments are adequately reviewed prior to implementation to avoid adverse environmental impacts not previously evaluated. Changes in plant design, operation, tests or experiments which do not affect the environment or which are required to achieve compliance with other Federal, State or local environmental regulations, are not subject to the requirements of this EPP.
4. Routine monitoring for evidence of unusual or important environmental events.
5. Any changes, renewals or stayed appeals to the Fermi 2 National Pollution Discharge Elimination System (NPDES) Permit, or the State certification, must be reported to the NRC within 30 days.

### **2.3 Annual Report Objectives**

According to Section 5.4.1 of the EPP, the required objectives of the Annual Report are as follows:

- Provide summaries and analyses of the results of environmental protection activities conducted in the following areas: unusual or important environmental events and terrestrial monitoring (includes aerial remote sensing and herbicide application). Where applicable, the report should compare these activities to pre-operational studies, operational controls, observed environmental impacts, and previous non-radiological environmental monitoring reports. Provide detailed data analysis and a proposed course of action if harmful effects or evidence of trends towards irreversible damage to the environment are identified.
- Describe any changes to the Fermi 2 design, operation, testing or experimentation that were implemented without adequate review that adversely impacted, or could have adversely impacted, the environment, in accordance with Section 3.1 of the EPP.
- Describe any non-compliance with the EPP and the corrective actions taken to correct the non-compliances.

- Describe any nonroutine reports submitted to the NRC as the result of an unusual or important environmental event, in accordance with Section 5.4.2 of the EPP.

## **2.4 Site Description**

Fermi 2 operates a 3,430 megawatt (gross) thermal General Electric Boiling Water Reactor 4 Nuclear Power Plant. The Fermi 2 power block is situated in the northeast quarter of a 1,260-acre site that is located approximately 6 miles east-northeast of Monroe, Michigan and 30 miles southwest of Detroit, Michigan. The site is fenced with locked or guarded gates.

The Enrico Fermi 1 Power Plant (Fermi 1) is on the site as well. Fermi 1 was an experimental fast breeder reactor that is presently in a SAFSTOR condition and is currently undergoing decommissioning. Subsequent to shut down, an oil-fired boiler was constructed. Operation of this boiler ceased in 1980 and it was removed from site in 1999.

Contiguous to the site are four oil-fired combustion turbine generators (CTGs), which are periodically operated during periods of high electricity demand. Also, there is an emergency backup diesel generator for the site's station blackout (SBO) combustion turbine generator (CTG-11-1), located adjacent to the combustion turbine generators.

The site is bounded on the north by Swan Creek, on the east by Lake Erie, on the south by Pointe Aux Peaux Road, and on the west by a private road owned by Detroit Edison. The northern and southern areas of the site are dominated by large lagoons. The western side of the site is predominately covered by several wooded lots and a series of small quarry lakes. Site elevation ranges from approximately 25 feet above lake level on the western edge of the site to lake level on the eastern edge.

Per a Cooperative Agreement between Detroit Edison and the U.S. Fish and Wildlife Service (FWS), the Lagoona Beach Unit of the Detroit River International Wildlife Refuge has been located on site since September 2003.

## **3.0 TERRESTRIAL MONITORING**

### **Overview**

Section 4.2.1 of the Fermi 2 EPP required that a special surveillance program be conducted to evaluate changes to vegetative communities within a 1 kilometer radius of the cooling towers. This program involved analysis of low altitude over flights prior to harvest utilizing color infrared photography, backed up by field reconnaissance inspections to verify areas of vegetative stress and nonstress along with soil sampling and analysis. The first flights and report were required after one year of plant operation and then every alternate year for 3 successive periods.

It should be noted that the above-described studies were not conducted to assess radiological impacts to the terrestrial environment, because discharge from the cooling towers is not radiologically active.

### **Activities and Controls**

The final required aerial photographic events were performed in 1994 and a final terrestrial monitoring report summarizing all collected data was completed in April 1995.

The report concluded the following:

- No long-term accumulation of dissolved solid deposition was detected in any of the soil samples collected within the survey area.
- No vegetative stress associated with cooling tower emission was observed in any of the survey reports.
- No correlation was observed between the distribution of stressed vegetation areas and the calculated deposition of dissolved solids and other materials contained within the vaporous cooling tower discharge.
- The absence of observed impacts attributable to the cooling towers is consistent with findings in the scientific literature.

Terrestrial monitoring was conducted in 2008 to support the licensing of a new unit at the site and is detailed in the Combined Operating License Application for Fermi 3 which was submitted to the NRC on September, 18, 2008. No terrestrial monitoring activities were conducted, or required, under the Fermi 2 Operating License in 2011. Based on the findings and conclusions presented in the 1995 report, no further aerial photographic evaluations are planned.

## **4.0 HERBICIDE MONITORING**

### **Overview**

Section 4.2.2 of the Fermi 2 EPP requires that herbicide use meet the following conditions:

1. Herbicides used must be registered by the United States Environmental Protection Agency (EPA) and utilized in accordance with EPA approved use instructions.
2. Herbicides used must be approved by State authorities and applied in accordance with State instructions.



3. Records of herbicide use within the corridor rights-of-way must be maintained for a period of 5 years and contain the following information: commercial and chemical names of herbicide used; concentration of active material in formulations diluted for field use; diluting substances other than water; rates of application; total pounds used; method and frequency of application; location; and, date of application.

### **Activities and Controls**

The herbicide application program, detailed in a conduct manual, is designed to maintain records for herbicide application on-site but does not impose requirements on the application of herbicides within the transmission corridor rights-of-way outside of the Owner Controlled Area. The transmission infrastructure is currently owned and operated by ITC Transmission.

Records pertaining to the application of herbicides within the rights-of-way have been obtained from ITC Transmission. These records include extensive mapping of the Wayne-Monroe and Brownstown-Fermi transmission corridors showing location and method for herbicide application. Data regarding chemical name, concentration, diluting substance, rate of application and total pounds used, method and frequency of application, location and date of application was provided for 2011.

Four herbicides were approved and utilized within the rights-of-ways. All herbicides within the rights-of-way were applied within the parameters of site and ITC procedures, and the applications were in compliance with State and Federal requirements.

## **5.0 AQUATIC MONITORING**

### **Overview**

According to Section 2.1 of the EPP, the NRC will rely on the Michigan Department of Environmental Quality (MDEQ) for the protection of the aquatic environment from nonradiological operational impacts via the National Pollution Discharge Elimination System (NPDES) Permit. NPDES permits are issued in accordance with provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq.), Michigan Act 451, P.A. of 1994, as amended, Part 31, and Michigan Executive Orders 1991-31, 1995-4 and 1995-18.

### **Activities and Controls**

Fermi 2 Chemistry Department closely monitors effluent characteristics per the NPDES requirements. Effluent discharge data are summarized in monthly Discharge Monitoring Reports, which are then submitted to the MDEQ.

### **NPDES Permit Changes**

Fermi 2 received the renewal of its NPDES Permit on June 7, 2010. The new permit went into effect on August 1, 2010. On August 24, 2011, a permit modification request was made to allow for a flow increase in the discharge of Traveling Screen and Pump Strainer Backwash from Fermi 2 that is permitted to be discharged from the Fermi General Service Water Intake to the Fermi 1 Overflow Canal at Outfall 011.

### **NPDES Non-compliances in 2011**

One NPDES non-compliance was reported for the site during 2011:

A reportable release of sodium hypochlorite (NaOCl) to secondary containment was self-identified on January 26, 2011. All of the NaOCl remained inside the secondary containment, and was not released to surface water, ground water or to a public sewer. However, because the leak was identified in early November 2010 and recovery of the material did not begin within 24 hours of the discovery of the leak, this condition was identified as a possible MI Part 5 reportable release on January 27, 2011. A corrective action document was initiated. The NaOCl was removed from the secondary containment on January 29, 2011, and the remaining product was transferred to an existing onsite tank.

## **6.0 ENVIRONMENTAL PROTECTION PLAN NON-COMPLIANCES**

### **Overview**

In accordance with Section 5.4.1 of the EPP, all occurrences of non-compliance with the EPP must be reported along with a discussion of actions taken to correct the situation.

### **Activities and Controls**

One incident of EPP noncompliance occurred at Fermi 2 in 2011. Per Section 3.2 of the EPP, the licensee is required to notify the NRC of changes to the effective NPDES Permit proposed by the licensee by providing NRC with a copy of the proposed changes at the same time it is submitted to the permitting agency. An NPDES Permit modification request was made on August 24, 2011 to allow for a flow increase in the discharge of Travelling Screen and Pump Strainer Backwash from Fermi 2. The NRC was not notified of the proposed changes to the effective NPDES Permit at the same time it was submitted to the permitting agency. As part of the corrective action, a description of the proposed change is included in Section 5.0 of this report. This problem was recently identified and additional corrective actions are under development.

## **7.0 DESIGN OR OPERATION CHANGES**

### **Overview**

In accordance with the Fermi 2 EPP, before engaging in additional construction or operational activities, which might affect the environment, Fermi 2 is required to prepare and record an environmental evaluation of such activity. If the evaluation should indicate that the proposed activity involves an unreviewed environmental question, Detroit Edison must provide a written evaluation of the activity and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. Activities are excluded from this requirement if all measurable, nonradiological effects are confined to the on-site areas previously disturbed during site preparation and plant construction.

### **Activities and Controls**

During the period covered by this report, there were no changes to station design or operational activities that created an unreviewed environmental question per the requirements of the EPP.

## **8.0 UNUSUAL OR IMPORTANT ENVIRONMENTAL EVENTS**

### **Overview**

According to Section 4.1 of the EPP, any unusual occurrence or important event which indicates, or could result in, significant environmental impact causally related to plant operation must be reported to the NRC within 24 hours, followed by a written report within 30 days.

The following are considered examples of unusual or important environmental events:

- Excessive bird impacts
- On-site plant or animal disease outbreaks
- Mortality or unusual occurrence of any species protected by the Endangered Species Act
- Fish kills
- Increase in nuisance organisms or conditions

### **Activities and Controls**

No unusual or important environmental events occurred during 2011. Accordingly, no nonroutine reports were submitted.

## **9.0 CONCLUSIONS**

In 2011, with the exception of one incident of noncompliance as discussed in Section 6.0, Detroit Edison successfully maintained compliance with the EPP.