

**Detroit Edison**



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Attention: Document Control Desk  
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Reference: Fermi 2  
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Subject: Annual Non Radiological Environmental Operating Report

Pursuant to Section 5.4.1 of the Environmental Protection Plan, enclosed is the 2002 Annual Non Radiological Environmental Operating Report for Fermi 2.

Should you have any questions regarding this report, please contact Lynda Craine, General Supervisor, RP Technical Services and Support, at (734) 586-4970.

Sincerely,

A handwritten signature in black ink, appearing to read 'Norman K. Peterson'.

Norman K. Peterson  
Manager – Nuclear Licensing

Enclosure

cc: M. A. Ring  
J. F. Stang, Jr.  
NRC Resident Office  
Regional Administrator, Region III  
Supervisor, Electric Operators,  
Michigan Public Service Commission

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# 2002 Annual Nonradiological Environmental Operating Report

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

Reporting Period:

January 1, 2002 to December 31, 2002

Prepared by:

Fermi 2  
Environmental Health

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## 2002 ANNUAL NONRADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

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## **2002 ANNUAL NONRADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **1.0 EXECUTIVE SUMMARY**

The following is a brief summary of the 2002 Annual Nonradiological Environmental Operating Report for the Detroit Edison Enrico Fermi Unit 2 Power Plant (Fermi 2):

- No terrestrial monitoring activities were conducted, or required. Based on the findings of the terrestrial monitoring program, which was concluded in 1994, no further aerial-photographic evaluations are planned.
- Nine herbicides were approved for use and 8 were utilized on site. All herbicide applications were recorded and maintained, as required by the Environmental Protection Plan (EPP).
- 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 EPP.
- No unusual or important environmental events, as defined by the EPP, occurred. Accordingly, no nonroutine reports were submitted.
- A National Pollution Discharge Elimination System (NPDES) noncompliance occurred when a chlorine analysis, other than specified in the site's NPDES permit, was conducted to test a sample from a batch discharge, which goes to Swan Creek from the site's holding pond. All personnel involved in holding-pond discharges received training on permit requirements and the appropriate chemistry work instructions were updated.
- An NPDES noncompliance occurred when a batch discharge to Swan Creek from an oily waste treatment system exceeded the NPDES maximum monthly average for oil and grease. In response, the oil water separator and the associated treatment system have been cleaned to reduce oil and grease levels.
- An NPDES noncompliance occurred when diesel fuel contamination was discovered floating on the groundwater in a dewatering well located near the Residual Heat Removal (RHR) Complex. Initially, it was believed that it was not reportable, however, after investigations progressed, it became apparent (in 2003) that it was an NPDES noncompliance. Investigations indicate that the contamination was from 2 breaks in the 21" oil dump line that leads from the RHR complex to a holding pond. The extent of contamination has not been defined.

## **2002 ANNUAL NONRADIOLOGICAL 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 Nonradiological Environmental Protection Program (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 Nonradiological Environmental Protection Plan (EPP), 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 nonradiological 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.
3. A program to ensure that changes to Fermi 2's 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 nonradiological 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 noncompliances with the EPP and the corrective actions taken to correct the noncompliances.

- 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 1,217 megawatt (gross) electrical General Electric Boiling Water Reactor 4 Nuclear Power Plant. The Fermi 2 power block is situated in the northeast quarter of a 1,120-acre site that is located approximately 8 miles east-northeast of Monroe, Michigan and 20 miles southwest of Detroit, Michigan. The site is fenced with locked or guarded gates.

The Enrico Fermi 1 Power Plant 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. The Fermi 1 general service water system is still in use.

Contiguous to the site are four oil-fired combustion turbine generators, which are periodically operated during periods of high electricity demand.

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 wood 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.

## 3.0 TERRESTRIAL MONITORING

### Overview

Section 4.2.1 of the Fermi 2 EPP requires that a special surveillance program be conducted to evaluate changes to vegetative communities within a 1 kilometer radius of the cooling towers. This program involves analysis of low altitude overflights 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. The discharge consists of water vapor containing naturally occurring dissolved solids at slightly higher concentrations than typical for lake water.

### **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.

No terrestrial monitoring activities were conducted, or required, in 2002. Based on the findings and conclusions of the above described study, 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 on-site herbicide use 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; method and frequency of application; location; and, date of application.



### **Activities and Controls**

Herbicide use on-site is managed in accordance with Section 2.6 of the Chemistry and Environmental Monitoring Conduct Manual, Chapter 6 (MCE06). In accordance with this procedure, all herbicides used on site in 2002 were pre-approved per the Herbicide Application Request Form, which meets the requirements of items 1 and 2 listed above. Once a herbicide is approved, the registered pesticide applicator must fill out a Herbicide Application Record for each application which meets the criteria specified in item 3 listed above.

In 2002, 9 different herbicides were approved for use and 8 were utilized on-site. All herbicide applications were recorded and maintained, as required.

## **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's 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**

No changes or stayed appeals to the Fermi 2 NPDES Permit occurred in 2002.

### **NPDES Noncompliances in 2002**

There were three NPDES noncompliances to the Fermi NPDES permit in 2002, as follows:

- The first occurred on May 15, 2002, when effluent was discharged from the site's holding pond via Outfall 009, which discharges to Swan Creek via the plant's overflow canal. The discharge consisted of primarily stormwater and also included

small amounts of low volume wastewater. Total discharge volume was calculated to be 200,000 gallons of water.

The required sampling and analyses were performed; however, there was a possible noncompliance regarding the Total Residual Chlorine (TRC) analysis. Historically, TRC has been analyzed at Fermi 2 using the colormetric method (DPD method). That method was changed to either amperometric titration (EPA Method 330.1) or the Orion 97-70 electrode when the NPDES permit was reissued in September 2000 (effective date was December 1, 2000). On May 29, 2002, review of the analytical results for this discharge revealed that the analytical method used for this sample was not the correct method per the site's permit. The method used was an EPA approved method (330.5) and chlorine was less than detectable per this analysis; however, this method was not authorized to be used to quantify TRC to the levels required by the permit. Condition Assessment Resolution Document (CARD) 02-13935 was written to document and track this event. In response, the Chemistry Department provided training on permit requirements to all personnel involved in holding pond discharges and the appropriate chemistry work instructions were updated.

- On October 3, 2002, thirty-one thousand (31,000) gallons of treated oily wastewater was discharged from the site's oily waste treatment system (monitoring point 011C) to outfall 011A. Outfall 011A discharges to Swan Creek via the plant's overflow canal. The Fermi oily waste treatment system ("the system") is manually operated and batch processes storm water that is accumulated in an equalization basin. This storm water comes from various locations where oils are handled or stored on site. The equalization basin is designed to allow time for physical separation of oil and water to occur. The system draws process water from the bottom of the equalization basin and passes through an oil water separator. After passing through the oil water separator the water is processed through a train of oil-coalescing filters. The water ends up in the discharge chamber where it passes through an inverted weir before it is released to the 96 inch discharge line to outfall 011A.

On November 4, 2002, it was identified that the oil and grease parameter for this discharge exceeded the monthly concentration limit. The sample results indicated a concentration of 17.6 mg/l, with permit limitations of 20 mg/l and 15 mg/l for daily and monthly maximum concentration limitations respectively. Preliminary investigation of system operation revealed no equipment abnormalities. In response to this incident, CARD 02-18670 was written and the oily waste treatment system was thoroughly cleaned to reduce oil and grease levels. No discharges from this treatment unit have occurred since it was cleaned. Analysis of process water from this system will be conducted to make sure it meets discharge limits prior to any batch discharge to Swan Creek.

- On June 10, 2002, diesel fuel contamination was discovered floating on the groundwater in a dewatering well near the Residual Heat Removal (RHR) Complex.

Initially, the source of the contamination was not known and it was not believed to be reportable under the site's NPDES permit. CARD 02-01448 was written to investigate this issue. As the investigation progressed, it became apparent (in 2003) that the issue was an NPDES noncompliance. Further investigations indicated that the contamination was from 2 breaks in a 21" oil dump line that leads from the RHR complex to a holding pond. The breaks were repaired in early 2003. The extent of the contamination has not been defined. Further information will be provided in the 2003 report, as the investigation progresses.

## **6.0 EPP NONCOMPLIANCE**

### **Overview**

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

### **Activities and Controls**

There were no incidents of EPP noncompliance at Fermi 2 in 2002.

## **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 2002. Accordingly, no nonroutine reports were submitted.

## **9.0 CONCLUSIONS**

In 2002, the environmental health program at Fermi 2 successfully maintained compliance with the EPP and all applicable environmental regulations with the exception of two noncompliances associated with the site's NPDES permit. No significant environmental impacts occurred as a result of these events. Corrective actions have been taken to prevent recurrences of similar events.

In 2003, Fermi 2's environmental health program will strive to continuously improve, proactively manage environmental issues, and maintain compliance with the site's EPP and all applicable environmental regulations.