

DTE Energy Company  
6400 North Dixie Highway  
Newport, MI 48166



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

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

Subject: Annual Non-Radiological Environmental Operating Report

Pursuant to the Fermi 2 Operating License, Appendix B, "Environmental Protection Plan," Section 5.4.1, DTE Electric Company hereby submits the 2016 Annual Non-Radiological Environmental Operating Report for Fermi 2.

Should you have any questions or require additional information, please contact me at (734) 586-5076.

Sincerely,

Scott Maglio  
Manager, Nuclear Licensing

Enclosure: 2016 Annual Non-Radiological Environmental Operating Report

cc: NRC Project Manager  
NRC Resident Office  
Reactor Projects Chief, Branch 5, Region III  
Regional Administrator, Region III  
Michigan Public Service Commission  
Regulated Energy Division (kindschl@michigan.gov)



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# 2016 Annual Non-Radiological Environmental Operating Report

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**DTE Electric Company - Fermi 2**  
6400 North Dixie Highway  
Newport, MI 48166

Reporting Period:

January 1, 2016 to December 31, 2016

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## 2016 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

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## **2016 ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

### **1.0 EXECUTIVE SUMMARY**

The following is a brief summary of the 2016 Annual Non-Radiological Environmental Operating Report for the DTE Electric Company - Enrico Fermi Unit 2 Power Plant (Fermi 2):

- No terrestrial monitoring activities were conducted, or required to comply with the Fermi 2 Operating License. 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. ITC vegetation managers confirmed that in 2016 they did not apply herbicide on the Wayne-Monroe transmission corridor, but that they did perform sporadic herbicide application on the Brownstown-Fermi transmission corridor.
- 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 (EPP).
- No unusual or important environmental events, as defined by the EPP, occurred. Accordingly, no nonroutine reports were submitted.
- Three incidents of noncompliance with the Fermi 2 National Pollutant Discharge Elimination System (NPDES) Permit occurred in 2016.



## **2016 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 EPP at the DTE Electric Company - 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 (EPP), which is included in Appendix B of Renewed 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 non-routine 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**

DTE Electric Company operates Fermi 2 which is a 3,486 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 gates or gates that are guarded at the discretion of Fermi 2 Security.

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. Subsequent to shut down in 1972, 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 as well as during required testing.

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 DTE Energy. 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.

Per a Cooperative Agreement between DTE Electric Company and the U.S. Fish and Wildlife Service (FWS), the Lagoon Beach Unit of the Detroit River International Wildlife Refuge has been designated 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 non-stress 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 (COLA) 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 2016. 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 were 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 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 surface area treated, and location and date of application was provided for 2016. The total pounds used of each herbicide were calculated based upon the information provided.

Four herbicides were approved and utilized within the Brownstown-Fermi transmission corridor rights-of-way. All herbicides within the rights-of-way were applied within the parameters of the site and ITC procedures, and the applications were in compliance with State and Federal requirements. There were no herbicides applied within the Wayne-Monroe transmission corridor rights-of-way in 2016.

## **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 non-radiological 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 most recent renewal of its NPDES Permit on June 7, 2010. The new permit went into effect on August 1, 2010. The permit was subsequently modified on April 23, 2012. This modification eliminated the flow limitation on service water screen backwash at Outfall 011A, which includes Travelling Screen and Pump Strainer Backwash.

An application for permit renewal was submitted to the Michigan Department of Environmental Quality (MDEQ) on March 31, 2014 in accordance with the requirements of the NPDES Permit. The MDEQ has not issued a new permit, even though the existing permit expired in October 2014. However, because the application was submitted within the specified time frame, Fermi 2 is allowed to operate under the existing permit until such time as the MDEQ issues a renewed permit.

Fermi 2 continued to operate under the expired permit in 2016, and will continue to do so until MDEQ issues a new permit. Fermi 2 is not required to take further action on issuance of the new permit until MDEQ provides a draft permit for review.

### **NPDES Non-compliances in 2016**

Three incidents of non-compliance with the Fermi 2 NPDES permit occurred at Fermi 2 during 2016. All three incidents, none of which were immediately reportable to the MDEQ per permit requirements, occurred on the same date at Outfall 001. Fermi was required to submit a report when the November Discharge Monitoring Report (DMR) was submitted to the MDEQ's online reporting system, MiWaters. The following report was submitted:

"This follow up report is being submitted in accordance with Part II.C.6.b of NPDES permit No MI0037028. On December 13, 2016 at approximately 1700 hours, Fermi staff identified that discharge from Outfall 001 occurred between 0000 and 0405 hours on November 3, 2016, without obtaining 3 required samples for total residual chlorine (TRC), discharge temperature or outfall observation. No further discharge from Outfall 001 occurred on that calendar day. Analytical data obtained for all other days during the month were well within the permit limitations for TRC, discharge temperature and outfall observation; therefore, it is believed that no exceedance of permit limitations occurred on November 3, 2016."

The incidents of non-compliance were entered into the Fermi 2 Corrective Action Program. Corrective actions included; (1) determining if there was a need for additional training in the Chemistry program, (2) sharing learnings within the Chemistry program, (3) reviewing Chemistry and Operations procedures for shut down of Circulating Water decant, and (4) changing an Operations procedure to improve communication with Chemistry when shutting down the decant pumps for Outfall 001.



## **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**

No incidents of EPP noncompliance occurred at Fermi 2 in 2016.

## **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 un-reviewed environmental question, DTE Electric Company 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, non-radiological 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 un-reviewed 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 2016. Accordingly, no non-routine reports were submitted.

## **9.0 CONCLUSIONS**

In 2016, DTE Electric Company - Fermi 2 successfully maintained compliance with the EPP.