

Detroit
Edison

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Technical Specification
6.9.1.4

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

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

Subject: 1994 Annual Operating Report for Fermi 2

In accordance with Fermi 2 Technical Specification 6.9.1.4, 4.7.3 and NRC Regulatory Guide 1.16, the Detroit Edison Company is submitting the Annual Operating Report for the Fermi 2 Nuclear Power Plant for the period of January 1, 1994 through December 31, 1994 (see Enclosure 1).

The 1994 Annual Operating Report for Fermi 2 satisfies the reporting requirements of Regulatory Guide 1.16, (Personnel Monitoring Report), Technical Specification 6.9.1.5.a (Annual Exposure Report by Function), Technical Specification 6.9.1.5.b (Safety/Relief Valve Challenges), Technical Specification 6.9.1.5.c (Emergency Core Cooling System Outages), and Technical Specification 6.9.1.5.d (Specific Activity Analysis of the Primary Coolant). The 1994 Annual Operating Report also includes a section on service life of the main steam bypass line. This satisfies the commitment stated in Detroit Edison letter VP-86-0154 to the Nuclear Regulatory Commission dated November 7, 1986.

If you have any questions or comments regarding this report, please contact Mr. Joseph Pendergast, Compliance Engineer, at (313) 586-1682.

Sincerely,

D. R. Gipson

Enclosure

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FERMI 2

ANNUAL OPERATING REPORT

JANUARY 1 - DECEMBER 31, 1994

DETROIT EDISON COMPANY

NRC DOCKET NO. 50-341

FACILITY OPERATING LICENSE NO. NPF-43

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1.0 Introduction

The Fermi 2 Nuclear Power Plant site is located on the western shore of Lake Erie in Frenchtown Township, Monroe County, Michigan. The Nuclear Steam Supply System is a General Electric BWR 4, with a Mark I pressure-suppression containment. The plant is fully owned by the Detroit Edison Company.

2.0 Summary of Operations

2.1 Summary of Operating Experience

Fermi 2 automatically shutdown on December 25, 1993 and entered a turbine generator and refueling outage.

2.2 Summary of Outages and Forced Reductions Greater than 20 Percent of Full Power

Fermi 2 automatically shutdown on December 25, 1993 and entered a turbine generator and refueling outage. Outage work included approximately 8,000 individual work packages and about 250 plant modifications or improvements. There were several major changes. A new solid-state static exciter was installed. The seventh and eight stage low pressure turbine blades were removed, until the new low pressure turbine rotors are installed in 1996. An improvement was made to the reactor water level monitoring system.

2.3 Fuel Performance

In 1994, Fermi 2 generated 0.14 Full Power Days (FPD) due to the fact that the plant was in an outage for the year. The reactor was made critical for the first time in Cycle 5 on December 19, 1994 for the purpose of performing low power physics testing. After completion of the testing, the reactor was immediately shutdown. Over the course of the next two days, the reactor was made critical three additional times for operator training purposes due to the extended duration of the outage. Each time, the reactor was shutdown before achieving the point of adding heat. The fifth reactor startup of Cycle 5 occurred on December 22, 1994. The reactor was pressurized to approximately 120 psig in order to permit startup testing to be performed on various plant systems. The reactor was shutdown on the evening of December 24, 1994 and then restarted on the evening of December 25, 1994 and continued to operate in mode 2 through the end of 1994 as startup testing progressed.

During the fourth refuel outage, a complete core offload/reload was once again performed. 228 new GE11-type fuel bundles were loaded into the core. 40 once burned GE11-type fuel bundles, which were originally scheduled to remain in the core for Cycle 5, had to be discharged due to the premature end of Cycle 4 on December 25, 1993. These 40 fuel bundles are planned for reinsertion in Cycle 6. Fuel sipping was performed on 454 bundles (including all 444 bundles returning to the core for Cycle 5) to identify the leaking

fuel bundle that was first observed during Cycle 4 operation in August of 1993. The sipping activity also served a secondary purpose of providing a flush of the fuel bundles to remove any crud that might have been deposited on the bundles as a result of the circulating water intrusion into the reactor vessel following the turbine failure event. Early in the sipping campaign, the leaking fuel bundle was confirmed to be LYS488, a GE8-type fuel bundle in its third cycle of operation, as predicted previously via power suppression testing and analysis of offgas and chemistry data. A visual inspection of this fuel bundle was performed and the most likely cause of the leak was determined to be debris induced fretting of the fuel cladding.

2.4 Shore Barrier Survey

A survey of the Fermi 2 shore barrier was completed as required by Technical Specification 4.7.3. The results of the survey indicated no damage, significant movement, or deterioration of the barrier. All forty-seven survey point elevations were within the tolerance specified in Technical Specification Table 3.7.3-1. Civil Engineering Drawings 6C721-44 through 49 were revised to incorporate the survey data. No unusual incidents occurred in 1994 that would have required additional surveillance.

2.5 Safety Relief Valve Challenges

There were no safety relief valve challenges during 1994.

2.6 Personnel Monitoring and Exposure

Table 2.6-1 provides a breakdown of radiation exposure by work and job function as required by Technical Specification 6.9.1.5(a). The thermoluminescent dosimeter (TLD) dose is direct reading dosimeter (DRD) dose adjusted with a TLD adjustment factor (multiplier) for Total Effective Dose Equivalent (TEDE).

Regulatory Guide 1.16
Annual Dose Report - Adjusted for TLD Dose
01/01/94 Through 12/31/94

		Number of Personnel			TEDE Manrem		
		Station Employees	Utility Employees	Contract Workers	Station Employees	Utility Employees	Contract Workers
Reactor Operations & Surveillance	Maintenance Personnel	98	9	119	9.296	0.088	14.781
	Operating Personnel	78	2	44	10.639	0.000	13.695
	Health Physics Personnel	26	0	23	3.091	0.000	1.612
	Supervisory Personnel	121	26	192	3.351	0.190	8.739
	Engineering Personnel	106	10	14	2.828	0.011	0.454
Reactor Maintenance	Maintenance Personnel	17	1	8	4.754	0.087	2.081
	Operating Personnel	1	0	0	0.042	0.000	0.000
	Health Physics Personnel	0	0	0	0.000	0.000	0.000
	Supervisory Personnel	1	5	19	0.139	0.234	4.796
	Engineering Personnel	1	0	0	0.043	0.000	0.000
Special Maintenance	Maintenance Personnel	51	3	260	9.348	0.054	43.474
	Operating Personnel	32	0	15	4.097	0.000	4.574
	Health Physics Personnel	17	0	11	3.030	0.000	2.527
	Supervisory Personnel	24	10	217	3.019	0.211	34.848
	Engineering Personnel	23	1	8	1.064	0.000	0.919
Waste Processing	Maintenance Personnel	1	0	3	0.009	0.003	0.374
	Operating Personnel	11	0	18	0.178	0.000	0.725
	Health Physics Personnel	4	0	1	0.289	0.000	0.002
	Supervisory Personnel	0	0	9	0.000	0.000	0.278
	Engineering Personnel	1	0	0	0.000	0.000	0.000
Refueling	Maintenance Personnel	3	0	20	0.431	0.000	3.771
	Operating Personnel	6	0	19	0.873	0.000	4.991
	Health Physics Personnel	3	0	4	0.414	0.000	0.526
	Supervisory Personnel	7	2	77	0.322	0.001	6.718
	Engineering Personnel	15	0	8	0.387	0.000	0.405
Inservice Inspection	Maintenance Personnel	2	0	3	0.298	0.000	0.956
	Operating Personnel	1	0	0	0.000	0.000	0.000
	Health Physics Personnel	0	0	0	0.000	0.000	0.000
	Supervisory Personnel	0	0	10	0.000	0.000	2.845
	Engineering Personnel	1	0	0	0.018	0.000	0.000
Totals	Maintenance Personnel	172	13	413	24.139	0.229	65.437
	Operating Personnel	129	2	96	16.030	0.000	23.986
	Health Physics Personnel	50	0	39	6.824	0.000	4.667
	Supervisory Personnel	153	43	524	6.831	0.636	58.223
	Engineering Personnel	147	11	30	4.340	0.011	1.778
	Total	651	69	1102	58.163	0.876	154.092
Grand Totals	Personnel			1822	TEDE Manrem		
						213.131	

2.7 Service Life of Main Steam Bypass Line

In accordance with Detroit Edison letter VP-86-0154, dated November 7, 1986, the cumulative time the main steam bypass lines are operated with the bypass valves between 30 percent and 45 percent opened will be reported annually. A cumulative value of 100 days is not to be exceeded without prior NRC notification.

Evaluations performed by Stone and Webster and by Hopper and Associates concluded that the bypass lines are acceptable for safe operation when operated within the 100 day constraint. Based on these evaluations, the new main steam bypass piping that was installed in 1985 has a service life which will allow it to function for the life of the plant under anticipated operating conditions. The main steam bypass lines usage was 32.25 days as of December 31, 1994.

2.8 Specific Activity Analysis of the Primary Coolant Exceeding the Limits of Technical Specification 3.4.5

During 1994, the specific activity of the primary coolant did not exceed the limits of Technical Specification 3.4.5.

2.9 ECCS Outages

Pursuant to Fermi 2 Technical Specification 6.9.1.5.c, a summary of the ECCS system outages which occurred between January 1, 1994 and December 31, 1994 is provided. The tabulation of ECCS outage hours (Table 2.9-1) includes both forced and planned outages for the Low Pressure Coolant Injection (LPCI), Core Spray, High Pressure Coolant Injection (HPCI), and Automatic Depressurization Systems (ADS). An outage was considered to be whenever one of the ECCS systems was out-of-service at a time it was required to be operable per Technical Specifications.

ECCS Outages

Table 2.9-1

ECCS Outage Hours
January 1, 1994 to December 31, 1994

<u>ECCS System</u>	<u>Forced Hours</u>	<u>Planned Hours</u>
LPCI Division I	0.0	0.0
LPCI Division II	29.13	0.0
Core Spray Division I	0.0	2.37
Core Spray Division II	0.0	0.0
ADS	0.0	0.0
HPCI	0.0	0.0

DIVISION II LOW PRESSURE COOLANT INJECTION

- o ECCS System Outage: Division II Low Pressure Coolant Injection
Out of Service from 1907 12/10/94 to 0015 12/12/94
Duration: 29.13 hours Forced Outage

Outage Summary:

The division II LPCI system was removed from service to perform various CM and PM activities. Following completion of the activities and required surveillances, the division 2 LPCI system was returned to service.

DIVISION I CORE SPRAY

- o ECCS System Outage: Division I Core Spray
Out of Service from 2038 12/12/94 to 2300 12/12/94
Duration: 2.37 hours Planned Outage

Outage Summary:

The division I core spray system was removed from service to perform various PM activities. Following completion of the activities and required surveillances, the division I core spray system was returned to service.