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REPORT ON REACTOR OPERATIONS
Cycle 184 Operations Summary

For the Period

26 February - 10 March 1980

FORD NUCLEAR REACTOR
MICHIGAN MEMORIAL - PHOENIX PROJECT
THE UNIVERSITY OF MICHIGAN
Ann Arbor

Prepared For
The Director, Michigan Memorial - Phoenix Project

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1. INTRODUCTION

The report on reactor operations provides a brief summary of reactor operations, power generation, unscheduled shutdowns, reactor utilization, reactor teaching and instruction, and reactor maintenance for the cycle and calendar period indicated. The appropriate hours are tabulated for the cycle and for the average cycle of the previous calendar year. Cumulative totals are provided for all cycles within the current calendar and fiscal year.

2. OPERATIONS SUMMARY

2.1 Unscheduled Shutdown Descriptions

There was one unscheduled shutdown during cycle #184. This shutdown was by operator action when he became aware of a local tornado warning. The procedure was carried out according to plan. The warning condition lasted for approximately two hours. When the all clear signal was given the reactor was returned to power without difficulty.

2.2 Maintenance, Surveillance Tests and Inspection Results as Required by Technical Specifications

All routine maintenance items were completed as scheduled.

2.4 Reactor Teaching and Instruction

2.4.1 NE445 Reactor Laboratory Critical loading experiments were performed.

2.4.2 Michigan Technological Institute Reactor Laboratory (March 3, 1980)

Twelve intense hours of laboratory experiments were conducted with 25 students. Experiments included control rod calibration, power level determination subcritical multiplication, and reactor flux profile. In addition four students participated in a neutron activation analysis laboratory.

2.8 Routine Administrative Items

2.8.1 Spent Fuel Shipment (March 4, 10, and 17, 1980)
Three shipments of twelve elements each were shipped to Savannah River, South Carolina.

3. POWER GENERATION SUMMARY

	<u>Cycle 184</u>	<u>Average Cycle</u>		<u>Cumulative Totals</u>	
		Cal. Year 1/1, 1979 <u>12/31, 1979</u>	Cal. Year 1/1, 1980 <u>12/31, 1980</u>	Fiscal Year 7/1, 1979 <u>6/30, 1980</u>	
<u>Operating Hours</u>	470.7	440.4	1,792.1	4,598.3	
<u>High Power Hours (>1.8 MW)</u>	454.0	399.7	1,652.9	4,143.4	
<u>Integrated Power (MWH)</u>	908.0	799.4	3,305.8	8,286.8	

4. UNSCHEDULED REACTOR SHUTDOWN SUMMARY

<u>Single Rod Drop (NAR)</u>	0	.3	1	4
<u>Multiple Rod Drop (NAR)</u>	0	0	0	0
<u>Operator Action</u>	1	.9	1	4
<u>Operator Error</u>	0	.3	1	3
<u>Process Equipment</u>	0	0	0	0
<u>Reactor Controls</u>	0	.4	0	1
<u>Electric Power Failure</u>	0	.2	.2	1
<u>TOTAL Unscheduled Shutdowns</u>	<u>1</u>	<u>2.1</u>	<u>3</u>	<u>13</u>

5. REACTOR UTILIZATION HOURS SUMMARY

		<u>Average Cycle</u>	<u>Cumulative Totals:</u>	
		Cal. Year	Cal. Year	Fiscal Year
		1/1, 1979	1/1, 1980	7/1, 1979
	<u>Cycle 184</u>	<u>12/31/1979</u>	<u>12/31, 1980</u>	<u>6/30, 1980</u>
<u>University of Michigan</u>				
Chemistry Department	0	.6	2.0	7.1
Ford Nuclear Reactor				
a. Long Term	849.2	3,195.5	3,036.1	13,022.0
b. Short Term	4.9	9.2	35.3	44.0
Nuclear Engineering				
a. Long Term	1,816.0	1,654.3	6,611.6	16,573.6
b. Short Term	0	69.2	514.8	905.1
Phoenix Memorial Laboratory	240.9	262.8	717.3	1,772.3
School of Public Health	0	0	4.4	4.4
<u>Subtotal</u>	<u>2,911.0</u>	<u>5,191.6</u>	<u>10,921.5</u>	<u>32,328.6</u>
<u>Colleges and Universities</u>				
Eastern Michigan University	0	4.2	0	0
Ohio State University	172.7	107.7	796.7	1,537.0
Wayne State University	0	1.9	0	.1
<u>Subtotal</u>	<u>172.7</u>	<u>113.8</u>	<u>796.7</u>	<u>1,537.1</u>
<u>Industrial Research</u>				
Battelle	0	0	0	0
Bisco	0	0	0	0
Brooks & Perkins	0	0.9	0	0
Dow Corning	0	102.2	0	67.6
Environmental Research Group	4.8	10.0	15.8	79.5
Ford Motor Company	11.5	2.9	24.4	38.2
General Motors Corporation	0	.02	0	.3
KMS Fusion	0	.9	1.2	5.4
Rad Syn	.7	0	1.7	1.7
<u>Subtotal</u>	<u>17.0</u>	<u>124.9</u>	<u>43.1</u>	<u>192.7</u>
TOTAL Experimental Utilization				
	3,100.7	5,430.2	11,761.3	34,058.4

6. REACTOR TEACHING HOURS SUMMARY

		<u>Average Cycle</u>		<u>Cumulative Totals</u>	
		Cal. Year 1/1, 1979 12/31, 1979	Cal. Year 1/1, 1980 12/31, 1980	Fiscal Year 7/1, 1979 6/30, 1980	
	<u>Cycle 184</u>				
<u>University of Michigan</u>					
Environmental & Industrial Health Department	0	0.2	0	0	
Mechanical Engineering Dept.	0	0.3	0	2	
Nuclear Engineering Dept.	8	11.9	60	112	
Residential College	0	0.2	0	0	
<u>Other Universities and Colleges</u>					
Akron University	0	0	0	0	
Eastern Michigan University	0	0	3	3	
Michigan Tech. University ¹	24	1.9	24	36	
Wayne State University	0	0	0	0	
<u>Industrial Organizations</u>					
Consumer's Power Company	0	11.1	0	144	
Detroit Edison	0	4.9	0	64	
Indiana & Michigan Electric Power Company	0	6.2	0	80	
<u>Service Organizations</u>					
Ambulance Service	0	0.2	0	2	
Ann Arbor Fire Department	0	0.9	0	11	
Ann Arbor Police Department	0	0.9	0	11	
State Security	0	0.6	2	10	
<u>TOTAL Teaching Hours</u>	32	39.3	99	471	