

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PRODUCTION
BROWNS FERRY NUCLEAR PLANT

MONTHLY OPERATING REPORT
May 1, 1981 - May 31, 1981

DOCKET NUMBERS 50-259, 50-260, AND 50-296
LICENSE NUMBERS DPR-33, DPR-52, AND DPR-68

Submitted By:

Robert M. Mendenhall
Plant Superintendent

8106190 299

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Operations Summary

May 1981

The following summary describes the significant operational activities during the reporting period. In support of this summary, a chronological log of significant events is included in this report.

There were 23 reportable occurrences and one revision to a previous reportable occurrence reported to the NRC during the month of May.

Unit 1

Unit 1 was in its EOC-4 refueling outage the entire month.

Unit 2

There were three scrams on the unit during the month. On May 6, the reactor scrammed when the main turbine and feedpump turbines tripped from a false high water level signal generated during maintenance on Unit 2 shutdown boards. The reactor scrammed on May 11 when the main turbine and feedpump turbines tripped from high water level from a feedpump MGU lockout on loss of control signal and a recirculation runback caused by a loss of plant preferred power during maintenance on Unit 2 shutdown board. On May 27 the reactor was manually scrammed to begin a short outage in conjunction with Unit 1 EOC-4 refueling outage to accommodate modifications to unit station service transformers.

Unit 3

There were two scrams on the unit during the month. On May 6, the reactor scrammed when the generator field ground relay operated due to a slow transfer of the plant preferred power to its alternate source following a Unit 2 scram which loaded the start bus relay. The reactor was manually scrammed on May 22 to identify and correct leakage (packing on FCV 68-79) in the drywell.

Operations Summary (Continued)

May 1981

Fatigue Usage Evaluation

The cumulative usage factors for the reactor vessel are as follows:

<u>Location</u>	<u>Usage Factor</u>		
	<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 3</u>
→ Shell at water line	0.00503	0.00403	0.00344
Feedwater nozzle	0.24411	0.17387	0.13295
Closure studs	0.19865	0.13859	0.10383

NOTE: This accumulated monthly information satisfies technical specification section 6.6.A.17.B(3) reporting requirements.

Common System

Approximately $1.10\text{E}+06$ gallons of waste liquid were discharged containing approximately $1.84\text{E}+00$ curies of activities.

Operations Summary (Continued)

May 1981

Unit 1

Unit 1 began its EOC-4 refueling outage on April 11, with a scheduled restart date of August 13, 1981. This refueling will involve loading additional 8 X 8 R (retrofit) fuel assemblies into the core, the final fix on the sparger modification, power supply on LPCI modification, generator breaker and unit station transformer tie-in (requires Unit 2 to be shutdown), and torus modifications.

There are 0 fuel assemblies in the reactor vessel. The spent fuel storage pool presently contains 764 EOC-4 fuel assemblies, 550 spent 7 X 7 fuel assemblies, five 8 X 8 spent fuel assemblies, 260 new 8 X 8 R fuel assemblies, and one spent 8 X 8 R fuel assembly. Because of modification work to increase spent fuel pool capacity to 3471 assemblies, present available capacity is limited to 384 locations.

Unit 2

Unit 2 is scheduled for its fourth refueling beginning on or about March 26, 1982, with a scheduled restart date of August 13, 1982. This refueling outage will involve completing relief valve modifications, torus modifications, "A" low pressure turbine inspection, MG set installation for LPCI modification, and loading additional 8 X 8 R fuel assemblies into the core.

There are 764 fuel assemblies in the reactor vessel. At the end of the month, there were 132 discharged cycle 1 fuel assemblies, 156 discharged cycle 2 fuel assemblies, and 352 discharged cycle 3 fuel assemblies in the spent fuel

Operations Summary (Continued)

May 1981

Unit 2 (Continued)

storage pool. The present available capacity of the spent fuel pool is 160 storage locations. With present capacity, the 1979 refueling was the last refueling that could be discharged to the spent fuel pool without exceeding that capacity and maintaining full core discharge capability in the pool. However, 949 new high density storage locations have been installed, but cannot be used until Special Test 161 is completed.

Unit 3

Unit 3 is scheduled for its fourth refueling beginning on or about September 25, 1981, with a scheduled restart date of February 7, 1982. This refueling involves loading additional 8 X 8 R (retrofit) assemblies into the core, relief valve modification, turbine inspection, generator breaker and unit station transformer tie-in, and torus modifications.

There are 764 fuel assemblies presently in the reactor vessel. There are 124 discharged cycle 3 fuel assemblies, 144 discharged cycle 2 fuel assemblies, and 208 discharged cycle 1 fuel assemblies in the spent fuel storage pool. The present available storage capacity of the spent fuel pool is 1052 locations.

Significant Operational Events

Unit 1

<u>Date</u>	<u>Time</u>	<u>Event</u>
5/01/81	0001	End-of-cycle 4 refuel outage continues.
	1338	Core unload completed.
5/26/81	0345	Started fuel sipping.
5/31/81	2400	End-of-cycle 4 refuel outage continues.

Significant Operational Events

Unit 2

Date	Time	Event
5/01/81	2340	Commenced reducing thermal power from 99% for turbine control valve tests and SI's.
5/02/81	0010	Reactor thermal power at 77%, holding for turbine control valve tests and SI's.
	0030	Turbine control valve tests and SI's complete, commenced power ascension.
	0500	Reactor thermal power at 99%, maximum flow, rod limited.
	2126	Commenced reducing thermal power for MSIV tests.
	2140	Reactor thermal power at 82%, MSIV tests in progress.
	2144	MSIV tests complete, commenced power ascension.
	2200	Commenced PCIOMR from 93% thermal power (sequence "B").
	2330	Reactor thermal power at 99%, maximum flow, rod limited.
5/06/81	1848	Reactor Scram No. 118 ⁽¹⁾ from 99% thermal power when outage people were working on "B" 4-KV shutdown board. It appears that undervoltage relay 27TSB momentarily made-up causing normal feeder breaker 1616 to "B" 4-KV shutdown board to trip and immediately reclose. This interrupted power to "2A" 480V shutdown board. I & C bus "A" feeds off "2A" 480V shutdown board. The high water trips for the main turbine and reactor feed pump turbines - one channel feeds from an inverter off of the 250V unit battery; one channel off of unit preferred one channel off of "A" I & C bus. Battery discharge test was being performed on unit 2. The procedure gave operations the option to jumper the inverter supply "A" I & C bus. Operations elected to run on one single element control with one channel de-energized. This interruption of I & C bus feed on 480V shutdown board "A" caused another channel to drop out which tripped the main turbine and feedpump on false high water.
5/07/81	0342	Commenced rod withdrawal for startup.
	0638	Reactor Critical No. 131 (sequence "B").
	0925	Rolled T/G.
	0952	Synchronized generator, commenced power ascension.
	1350	Reduced thermal power from 53% to 39% for removal of "B" recirculation pump from service for recirculation pump MG set brush replacement.
	1415	A blown fuse in feedwater inverter "A" caused "A" recirculation pump to runback, reduced thermal power to 36%.
	1800	"B" recirculation pump MG set brush replacement complete, increased thermal power to 40%, holding for maintenance on "A" feedwater inverter.

Significant Operational Events

Unit 2

Date	Time	Event
5/07/81	2020	"A" feedwater inverter replaced, commenced power ascension from 40% thermal power.
5/08/81	0015	Commenced reducing thermal power from 63% for removal of "A" recirculation pump from service for MG set brush replacement.
	0040	"A" recirculation pump out of service, reactor power at 42%, holding for MG set brush replacement.
	0233	"A" recirculation pump back in service, commenced power ascension.
	1000	Commenced PCIOMR from 78% thermal power (sequence "B").
5/09/81	0700	Reduced thermal power from 85% to 81% due to problems with condensate demineralizers. (Radwaste at full capacity, condensate demineralizer on hold).
	1730	Commenced power ascension from 81% thermal power.
	2300	Reactor thermal power at 84%, holding (radwaste problems continued).
5/10/81	1205	Reduced thermal power to 75% for a control rod pattern adjustment.
	1500	Control rod pattern adjustment complete, commenced PCIOMR (sequence "B").
5/11/81	1000	Reactor thermal power at 99%, maximum flow, rod limited.
	2123	Reactor Scram No. 119 ⁽¹⁾ from 99% thermal power on reactor high water level. The trip was initiated when an undervoltage relay operated to transfer 4-KV shutdown bus. This transfer resulted in a momentary loss of voltage to the "D" 4-KV shutdown board which in turn resulted in a momentary interruption to the unit preferred power supply and the I & C Bus. This power interruption caused a lockout of reactor feed water pumps and a runback of the reactor recirculation pumps. This resulted in a reactor high water level which tripped the turbine and caused a reactor scram. Work was being performed in the shutdown board room "C" at the time of the scram.
5/12/81	0700	The unit remained down to replace a level switch on the scram discharge volume.
5/13/81	1122	Commenced rod withdrawal for startup.
	1324	Reactor Critical No. 132 (sequence "B").
	1728	Rolled T/G.
	1807	Synchronized generator, commenced power ascension.

Significant Operational Events

Unit 2

Date	Time	Event
5/14/81	1400	Commenced PCIOMR from 73% thermal power (sequence "B").
5/15/81	2300	Reactor thermal power at 90%, holding, computer out of service.
5/16/81	2205	Commenced reducing thermal power for a control rod pattern adjustment.
	2300	Reactor thermal power at 70%, control rod pattern adjustment in progress.
5/17/81	0045	Control rod pattern adjustment complete, commenced power ascension.
	0700	Reactor thermal power at 99%, maximum flow, rod limited.
5/20/81	2147	Commenced reducing thermal power for MSIV tests.
	2206	Reactor thermal power at 80%, holding for MSIV tests.
	2212	MSIV tests complete, commenced power ascension.
	2300	Reactor thermal power at 99%, maximum flow, rod limited.
5/23/81	2133	Commenced reducing thermal power for MSIV tests.
	2245	Reactor thermal power at 82%, holding for MSIV tests.
	2258	MSIV tests complete, commenced power ascension.
	2300	Reactor thermal power at 91%, holding for turbine control valve tests and SI's.
5/24/81	0130	Turbine control valve tests and SI's complete, commenced power ascension.
	0135	Commenced PCIOMR from 95% thermal power (sequence "B").
	0330	Reactor thermal power at 99%, maximum flow, rod limited.
5/27/81	1945	Commenced reducing thermal power for shutdown for a planned modification outage.
	2215	Reactor Scram (manual) No. 120 from 36% thermal power, to accommodate modifications to unit station service transformers.
5/31/81	2400	The unit remained down for modifications to unit station service transformers.

Significant Operational Events

Unit 3

Date	Time	Event
5/02/81	0040	Commenced reducing thermal power for turbine control valve tests.
	0055	Reactor thermal power at 88%, holding for turbine control valve tests.
	0100	Turbine control valve tests completed, commenced power ascension.
	0113	Reactor thermal power at 97%, holding for SI 4.1.A-10 main steam line high radiation monitoring and SI 4.3.A-2 control rod exercise.
	0310	SI's complete, commenced power ascension.
	0340	Reactor thermal power at 99%, maximum flow, rod limited.
5/06/81	1851	Reactor Scram No. 97 ⁽¹⁾ from 99% thermal power when unit 2 tripped at 1848 hours and the shutdown bus 2 transferred to start bus supply voltage. Apparently the transfer loaded the start bus causing a dip in voltage to be reflected through the common boards, lighting boards, plant preferred and non-preferred systems. The plant preferred attempted to transfer to the alternate source and was slow in transferring. When the plant preferred and non-preferred returned, the generator field ground relay on unit 3 operated resulting in turbine-generator load unbalance and control valve fast closure.
	2350	Commenced rod withdrawal for startup.
5/07/81	0438	Reactor Critical No. 109 (control cell core).
	0815	Rolled T/C.
	0844	Synchronized generator, commenced power ascension.
	1505	Commenced reducing thermal power from 67% for removal of "B" recirculation pump MG set from service for maintenance on control system (Bailey governor).
	1535	"B" recirculation pump out of service, reactor thermal power at 45%, holding for maintenance on MG set control system (Bailey governor).
	1555	"B" recirculation pump back in service, commenced power ascension.
	1930	Reactor thermal power at 51%, holding for maintenance on "B" recirculation pump MG set control system (Bailey governor).
	2230	"B" recirculation MG set maintenance complete, commenced power ascension.
5/08/81	0300	Commenced PCIOMR from 74% thermal power (control cell core).
	1300	Commenced reducing thermal power from 82% due to problems with demineralizers (radwaste at full capacity condensate demineralizer backwash on hold).

Significant Operational Events

Unit 3

Date	Time	Event
5/08/81	2300	Reactor thermal power at 78%, holding radwaste problems continued.
5/09/81	1930	Commenced power ascension from 78% thermal power.
	2200	Commenced PCIOMR from 90% thermal power (control cell core).
5/10/81	0320	Reduced thermal power from 94% to 89% thermal power due to continued radwaste problems (full).
	0450	Commenced power ascension from 89% thermal power.
	1500	Commenced power ascension from 97% thermal power, (control cell core).
	2100	Reactor thermal power at 99%, maximum flow, rod limited.
5/12/81	2350	Commenced reducing thermal power for removal of "B" string high pressure heaters for maintenance on down stream isolation valve (3-76).
5/13/81	0105	Reactor thermal power at 89%, holding for maintenance on "B" string high pressure heaters down stream isolation valve.
	1057	"B" string high pressure heaters in service, commenced power ascension.
	1130	Commenced PCIOMR from 96% thermal power, (control cell core).
	1430	Reactor thermal power at 99%, maximum flow, rod limited.
5/15/81	2250	Commenced reducing thermal power for turbine control valve tests and SI's.
5/16/81	0001	Reactor thermal power at 93%, holding for turbine control valve tests and SI's.
	0130	Turbine control valve tests and SI's complete, commenced power ascension.
	0200	Reactor thermal power at 99%, maximum flow, rod limited.
5/21/81	2345	Began experiencing rapid increase in drywell pressure.
5/22/81	0035	Commenced reducing thermal power for shutdown to investigate excessive drywell leakage.
	0123	Reactor Scram No. 98 ⁽²⁾ from 40% thermal power to investigate excessive drywell leakage. Remained down to repair blown packing on FCV-68-79 (Loop "S" recirculation pump discharge valve).

Significant Operational Events

Unit 3

Date	Time	Event
5/25/81	0320	Commenced rod withdrawal for startup.
	0445	Reactor Critical No. 110.
	0455	Reactor brought subcritical, problems with level instrumentation LI-3-53 and LI-3-206.
	0728	LI-3-53 and LI-3-206 restored to normal, commenced rod withdrawal for startup.
	0842	Stopped pulling rods due to a head gasket back on HPCI gland seal condenser.
	1835	HPCI maintenance complete, commenced rod withdrawal for startup.
	1937	Reactor Critical No. 111.
5/26/81	0344	Rolled T/G.
	0410	Synchronized generator, commenced power ascension.
	1736	Commenced PCIOMR from 82% thermal power, (Control cell core).
5/27/81	0530	Reactor thermal power at 86%, maximum flow, rod limited.
	0917	Commenced reducing thermal power for a control rod pattern adjustment.
	1000	Reactor thermal power at 77%, holding for control rod pattern adjustment.
	1300	Control rod pattern adjustment complete, commenced PCIOMR (control cell core).
	1700	Reactor thermal power at 99%, maximum flow, rod limited.
5/30/81	0030	Commenced reducing thermal power for turbine control valve tests and SI's.
	0130	Reactor thermal power at 84%, holding for turbine control valve tests and SI's.
	0205	Turbine control valve tests and SI's complete, commenced power ascension.
	0330	Commenced PCIOMR from 97% thermal power (control cell core).
	0530	Reactor thermal power at 99%, maximum flow, rod limited.
5/31/81	2400	Reactor thermal power at 99%, maximum flow, rod limited.

(1) Maintenance error.

(2) Equipment malfunction.

OPERATING DATA REPORT

DOCKET NO. 50-259
 DATE 6-1-81
 COMPLETED BY TPA Thompson
 TELEPHONE 205-222-6845

OPERATING STATUS

1. Unit Name: Browns Ferry - 1
2. Reporting Period: May 1981
3. Licensed Thermal Power (MWt): 3293
4. Nameplate Rating (Gross MWe): 1152
5. Design Electrical Rating (Net MWe): 1065
6. Maximum Dependable Capacity (Gross MWe): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:
NA

Notes

9. Power Level To Which Restricted, If Any (Net MWe): NA
10. Reasons For Restrictions, If Any: NA

	This Month	Year-to-Date	Cumulative
11. Hours In Reporting Period	744	3623	29,905
12. Number Of Hours Reactor Was Critical	0	3384.4	37,140.97
13. Reactor Reserve Shutdown Hours	0	16.42	5,115.24
14. Hours Generator On-Line	0	2380.77	36,373.59
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	0	7,425,495	100,717,835
17. Gross Electrical Energy Generated (MWH)	0	2,474,200	33,237,450
18. Net Electrical Energy Generated (MWH)	0	2,407,843	32,271,666
19. Unit Service Factor	0	65.7	60.7
20. Unit Availability Factor	0	65.7	60.7
21. Unit Capacity Factor (Using MDC Net)	0	62.4	50.6
22. Unit Capacity Factor (Using DFR Net)	0	62.4	50.6
23. Unit Forced Outage Rate	0	0.8	28.0
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each)			

25. If Shut Down At End Of Report Period, Estimated Date of Startup: August 13, 1981
26. Units In Test Status (Prior to Commercial Operation):

INITIAL CRITICALITY _____

INITIAL ELECTRICITY _____

COMMERCIAL OPERATION _____

Forecast

Achieved

OPERATING DATA REPORT

DOCKET NO. 50-260
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 205-729-5846

OPERATING STATUS

1. Unit Name: Browns Ferry - 2
2. Reporting Period: May 1981
3. Licensed Thermal Power (MWt): 3293
4. Nameplate Rating (Gross MWe): 1132
5. Design Electrical Rating (Net MWe): 1065
6. Maximum Dependable Capacity (Gross MWe): 1093.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:
NA

Notes

9. Power Level To Which Restricted, If Any (Net MWe): NA
10. Reasons For Restrictions, If Any: NA

	This Month	Yr-to-Date	Cumulative
11. Hours In Reporting Period	744	3,643	34,916
12. Number Of Hours Reactor Was Critical	394.40	3,408.61	34,152.22
13. Reactor Reserve Shutdown Hours	121.23	136.02	12,639.3
14. Hours Generator On-Line	386.45	3346.44	33,037.40
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	1,803,110	10,317,798	94,888,441
17. Gross Electrical Energy Generated (MWH)	596,480	3,447,620	31,134,808
18. Net Electrical Energy Generated (MWH)	577,197	3,351,619	30,301,928
19. Unit Service Factor	78.8	92.4	60.4
20. Unit Availability Factor	78.8	92.4	60.4
21. Unit Capacity Factor (Using MDC Net)	72.8	86.9	51.9
22. Unit Capacity Factor (Using DER Net)	72.8	86.9	51.9
23. Unit Forced Outage Rate	9.3	5.1	30.0
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each)			

25. If Shut Down At End Of Report Period, Estimated Date of Startup: June 13, 1981
26. Units In Test Status (Prior to Commercial Operation):

INITIAL CRITICALITY
 INITIAL ELECTRICITY
 COMMERCIAL OPERATION

Forecast

Achieved

OPERATING DATA REPORT

DOCKET NO. 50-296
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 203-722-6846

OPERATING STATUS

1. Unit Name: Browns Ferry - 3
 2. Reporting Period: May 1981
 3. Licensed Thermal Power (MWt): 3293
 4. Nameplate Rating (Gross MWe): 1152
 5. Design Electrical Rating (Net MWe): 1065
 6. Maximum Dependable Capacity (Gross MWe): 1098.4
 7. Maximum Dependable Capacity (Net MWe): 1065
 8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:
NA

Notes

9. Power Level To Which Restricted, If Any (Net MWe): NA
 10. Reasons For Restrictions, If Any: NA

	This Month	Yr-to-Date	Cumulative
11. Hours In Reporting Period	744	3,623	32,271
12. Number Of Hours Reactor Was Critical	644.15	2,973.61	28,944.88
13. Reactor Reserve Shutdown Hours	23.35	191.49	2,004.78
14. Hours Generator On-Line	621.33	2,383.65	23,273.65
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,005,721	8,649,207	83,014,235
17. Gross Electrical Energy Generated (MWH)	654,880	2,883,110	27,422,140
18. Net Electrical Energy Generated (MWH)	634,377	2,795,421	26,619,744
19. Unit Service Factor	84.9	79.6	75.9
20. Unit Availability Factor	84.9	79.6	75.9
21. Unit Capacity Factor (Using MDC Net)	80.1	72.4	67.1
22. Unit Capacity Factor (Using DER Net)	80.1	72.4	67.1
23. Unit Forced Outage Rate	15.1	9.2	9.8
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each)			
<u>Maintenance September 1981</u>			

25. If Shut Down At End Of Report Period, Estimated Date of Startup: _____
 26. Units In Test Status (Prior to Commercial Operation):

INITIAL CRITICALITY
 INITIAL ELECTRICITY
 COMMERCIAL OPERATION

Forecast

Achieved

15
AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-259
UNIT Browns Ferry - 1
DATE 6-1-81
COMPLETED BY Ted Thom
TELEPHONE 205-729-6846

MONTH May 1981

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>-6</u>	17	<u>-4</u>
2	<u>-7</u>	18	<u>-4</u>
3	<u>-7</u>	19	<u>-4</u>
4	<u>-6</u>	20	<u>-4</u>
5	<u>-6</u>	21	<u>-4</u>
6	<u>-6</u>	22	<u>-4</u>
7	<u>-7</u>	23	<u>-4</u>
8	<u>-7</u>	24	<u>-4</u>
9	<u>-6</u>	25	<u>-4</u>
10	<u>-6</u>	26	<u>-4</u>
11	<u>-3</u>	27	<u>-4</u>
12	<u>-4</u>	28	<u>-4</u>
13	<u>-4</u>	29	<u>-7</u>
14	<u>-4</u>	30	<u>-6</u>
15	<u>-4</u>	31	<u>-6</u>
16	<u>-4</u>		

INSTRUCTIONS

On this form, list the average daily unit power level in MWe-Net for each day in the reporting month, rounded to the nearest whole megawatt.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-260
 UNIT Browns Ferry - 2
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 205-729-6346

MONTH May 1981

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	1051	17	1009
2	1041	18	1036
3	1051	19	1050
4	1052	20	1034
5	1048	21	1061
6	816	22	1061
7	274	23	1036
8	816	24	1036
9	855	25	1038
10	910	26	1049
11	903	27	934
12	-8	28	-6
13	123	29	-7
14	799	30	-6
15	978	31	-6
16	978		

INSTRUCTIONS

On this form, list the average daily unit power level in MWe-Net for each day in the reporting period. Round off to the nearest whole megawatt.

17
AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-296
UNIT Browns Ferry - 3
DATE 6-1-81
COMPLETED BY Ied Thom
TELEPHONE 205-729-3646

MONTH May 1981

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>1063</u>
2	<u>1053</u>
3	<u>1059</u>
4	<u>1068</u>
5	<u>1054</u>
6	<u>323</u>
7	<u>330</u>
8	<u>816</u>
9	<u>833</u>
10	<u>1026</u>
11	<u>1010</u>
12	<u>1052</u>
13	<u>1008</u>
14	<u>1061</u>
15	<u>1062</u>
16	<u>1058</u>

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	<u>1069</u>
18	<u>1050</u>
19	<u>1053</u>
20	<u>1058</u>
21	<u>1059</u>
22	<u>33</u>
23	<u>-13</u>
24	<u>-13</u>
25	<u>-13</u>
26	<u>533</u>
27	<u>966</u>
28	<u>1063</u>
29	<u>1066</u>
30	<u>1046</u>
31	<u>1072</u>

INSTRUCTIONS

On this form, list the average daily unit power level in MWe-Net for each day in the reporting month. Round off to the nearest whole megawatt.

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-259
 UNIT NAME Browns Ferry - 1
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 205-729-6846

REPORT MONTH May

No.	Date	Type ¹	Duration (Hours)	Reason ²	Method of Shutting Down Reactor ³	Licensee Event Report #	System Code ⁴	Component Code ⁵	Cause & Corrective Action to Prevent Recurrence
172	5-1-81	S	744	C	2				EOC-4 Refuel Outage

1. Type of
Shutdown

2. Reason
 A Equipment Failure (Explain)
 B Maintenance or Test
 C Refueling
 D Regulatory Restriction
 E Operator Training & Technical Exemption
 F Administrative
 G Operational Error (Explain)
 H Other (Explain)

3. Method
 1 Manual
 2 Manual Scram
 3 Automatic Scram
 4 Other (Explain)

4. Exhibit G - Instructions
 for Preparation of Data
 Entry Sheet - Use Licensee
 Event Report (LER) or NUREG
 0161

Exhibit I - Source

UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH May

DOCKET NO. 50-260
 UNIT NAME Browns Ferry - 2
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 205-729-6846

No.	Date	Type ¹	Duration (Hours)	Reason ²	Method of Shutting Down Reactor ³	Licensee Event Report #	System Code ⁴	Component Code ⁵	Cause & Corrective Action to Prevent Recurrence
188	5-1-81	S		B					Turbine Control Valve Tests and SI's
189	5-6-81	F	15.07	H	3				Main turbine and reactor feed pumps tripped due to false high water level (maintenance-working on 4 KV shutdown board room).
190	5-11-81	F	44.73	H	3				Reactor high water level (personnel working in "C" shutdown board room) Unit remained down to replace a level switch on the scram discharge volume Began 0700 on 5/12/81.
191	5-16-81	S		B					Control rod pattern adjustment.
192	5-27-81	S		B	2				To accommodate modifications to unit station service transformers

1 Type
 F - Forced
 S - Scheduled

2 Reason
 A Equipment Failure (System)
 B Maintenance or Test
 C Refueling
 D Regulatory Restriction
 E Operator Training & License Examination
 F Administrative
 G Operational Error (Human)
 H Other (Specify)

3 Method
 1 Manual
 2 Manual Scram
 3 Automatic Scram
 4 Other (Specify)

4 Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NURIG 0101)

Exhibit F - Sign Source

UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH May

DOCKET NO. 50-296
 UNIT NAME Browns Ferry - 3
 DATE 6-1-81
 COMPLETED BY Ted Thom
 TELEPHONE 205-729-6846

No.	Date	Type ¹	Duration (Hours)	Reason ²	Method of Shutting Down Reactor ³	License Event Report #	System Code ⁴	Component Code ⁵	Cause & Corrective Action to Prevent Recurrence
75	5-6-81	F	13.88	H	3				Control valve fast closure due to generator unbalance when unit 2 scrammed.
76	5-22-81	F	98.78	A	3				Packingleak on FCV-68-79. Startup delayed due to reactor water level indicator problems and HPCI gland seal condenser problems.

1 Forced
 S Scheduled

2 Reason
 A Equipment Failure (Explain)
 B Maintenance or Test
 C Refueling
 D Regulatory Restriction
 E Operator Training & License Examination
 F Administrative
 G Operational Error (Explain)
 H Other (Explain)

3 Method
 1 Manual
 2 Manual Scram
 3 Automatic Scram
 4 Other (Explain)

4 Exhibit G - Instructions
 for Preparation of Data
 Entry Sheets for License
 Event Report (EE) File (NLRG,
 OLE)

5 Exhibit F - Sample

BROWNS FERRY NUCLEAR PLANT UNIT 1, 2, & 3

INSTRUMENT MAINTENANCE SUMMARY

CSSC EQUIPMENT

FOR THE MONTH OF May 1981

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
Unit 1	Reactor Feedwater	LIS-3-58A LITS-3-58B LIS-3-58C LITS-3-58D LIS-3-56A LIS-3-56B LIS-3-56C LIS-3-56D LITS-3-52 LITS-3-62 LIS-3-184 LIS-3-185	Repair	None	Replaced Switches With New Improved Type	N/A	N/A
	Neutron Monitoring	A,B,C & E LPRM Power Meters (panel 9-5)	Repair	None	Normal End of Life of Power Meter	Loss of Power Display on panel 9-5	None
		APRM-A	Repair	None	Faulty Power Test Potentiometer	Erratic Test Output	None
	Containment Air Dilution	LI-84-2B	Calibration	None	Instrument Loop Found in Tolerance	N/A	None
Unit 2	Reactor Protection System	3AK27	Replace	None	Faulty Relay	No Rod Block from 25 gal. switch on SDVT	None
Unit 3	Neutron Monitoring	APRM-D	Repair	None	Faulty Meter Function Switch	Sloppy Switch Action	None
		LPRM-D	Repair	None			

FOR THE MONTH OF May 19 81

FOR THE MONTH OF May 19 81

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BROWNS FERRY NUCLEAR PLANT UNIT 1 and Common

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 1981

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/1/81	Fire Protection	Fire pump auto-start logic	During post-modification tests on a new sprinkler system, the fire pump auto-start logic was found inoperable	None, manual start capability was operable.	Wiring was removed from terminal points in main relay panel 52, interrupting power to fire pump auto-start circuit, possibly while performing a modification in the panel.	Fire pump auto-start logic inoperable.	Replaced permanent wiring immediately. Precautions were added to the work plan requiring the electricians to consult with the cognizant engineer prior to removing any existing wiring. LER#BFRO-50-259/811.
5/1/81	RBCCW	FSV-70-32	FCV-70-32 inoperable	None	Bad solenoid coil on FSV-70-32	FCV-70-32 inoperable	Replaced solenoid coil, valve operated properly. TR #166304
5/4/81	Main steam	Automatic depressurization system logic timer relay.	During performance of SI4.2.B-44 relay 2E-K35 operated in 126.25 seconds	None, unit in cold shutdown	Relay was slightly out of acceptable calibration	Timer relay took too long to operate	The relay was calibrated to and successfully tested. TR #219347 LER#BFRO-50-259/811.
5/7/81	Core spray cooling	Auto-sequencing timer 14A-K19B and relay 14 A-K 122A	Scheduled maintenance SI4.2.B-39D	None, reactor vessel was unloaded.	Time delay relay (14A-K19B) was slightly out of calibration. Time delay on high dp spray header to core plate annunciator relay (14A-K122A) was found to be bad.	Relay (14A-K19B) took too long to operate. Time delay on high dp spray header to core plate annunciator inoperable.	Adjusted timer to within limits and replaced relay 14A-K122A. Core spray system logic relays operated properly. TR #219350 LER#BFRO-50-259/812.

BROWNS FERRY NUCLEAR PLANT UNIT 1 and CommonCSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 19 81

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/10/81	Fire protection	Cable tray heat detector TE-39-44C	Received false alarm in control room.	None	During refueling while pulling cables the cable tray heat detector was damaged.	False alarm received in control room	Replaced heat detector, applicable parts of SI4.5.11.C. 1 run, heat detector operated properly. TR #236764 LER#BFR0-50-259/812
5/13/81	Air Conditioning	"1B" control bay chiller	Chiller would not start	None	Oil pump motor shaft broken	Chiller inoperable	Replaced oil pump motor, chiller operated properly. The motor shaft broke 5/14/81, it was determined that the broken shafts was a result of a sticking oil relief valve. Mech. maint. replaced relief valve, the motor was replaced, oil added and the chiller operated properly. TR #236791 TR #208746
5/14/81	Core Spray Cooling	"1B" core spray pump breaker	Breaker would not rack fully in	None, reactor vessel was unloaded.	Jack nut tread were bad and mounting plate bent	Breaker would not rack in properly.	Replaced jack nut, straightened mounting plate, the breaker racked in properly. TR #203586

BROWNS FERRY NUCLEAR PLANT UNIT 1 and Common

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 19 81

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/14/81	Diesel Generator	"8" Diesel generator panel 9-23-7 governor control	Pnl 9-23-7 governor control would not work in lower direction in manual	None	Switch and control block retainer bolt missing.	Governor control switch would not make proper contact with control block.	Replaced bolt, ran D/G and governor control switch operated properly. TR #203590

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 19 81

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/5/81	HPCI	Relay 23AK51	During performance of SI4.2.B.27 relay 23AK51 failed to pick up	None	Bad relay (23AK51)	CSCS suppression chamber high level annunciator and relays were inoperable	Relay 23AK51 was replaced and tested successfully. TR #180927 LER#BFRO-50-260/8120
5/6/81	HPCI	LCV 73-8	Level control valve inoperable	None, HPCI was operable	Bad solenoid coil, blown fuse	Hot well LCV 73-8 inoperable	Replaced coil and blown fuse, level control valve operated properly. TR #225565
5/7/81	Reactor Feedwater Control	Feedwater inverter.	Inverter was not operating properly	None	Bad inverter	Automatic control inoperable, manual feedwater control was required	Replaced inverter, ^{NS} automatic feedwater control operated properly. TR #205837
5/9/81	Control rod drive	Hand switch 85-48	Hand switch inoperable	None	HS-85-48 broken	Hand switch inoperable	Replaced switch per EMI 23, new switch operated properly. TR #205842
5/14/81	Annunciator system	4kV shutdown board battery charger alarm circuitry	Received a abnormal alarm at panel 9-8	None	Bad alarm relay	4kV shutdown board battery charger alarm circuitry inoperable	Replaced the alarm relay, the alarm cleared and operated properly. TR #205605

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 19 81

Date	System	Component	Nature of Maintenance	Effect on Safe operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/14/81	Primary contain-ment	Relay (16A64A)	Refuel zone ventilation inboard and outboard isolated	None, relay coil failed the relay and logic circuitry in the safe direction	Bad relay coil	Refuel zone ventila-tion isolated	Natural end of coil life. Replaced relay coil, relay operated properly. TR #204427
5/17/81	RWCU	Relay 16AK26	RWC isolated	None, the logic circuitry is designed such that when this relay coil failed FCV 69-1 closed auto-matically.	Bad relay coil	Relay coil opened and dropped out relay 16AK26	Natural end of coil life. Replaced relay coil, relay operated properly TR #204432 2

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 19 81

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/1/81	HPCI	FCV 73-35	FCV 73-35 inoperable	None, valve failed in the (closed) safe position. The HPCI remained operable.	Valve motor grounded	FCV 73-35 inoperable	Replaced valve motor performed EMI 71 & EMI 18.1, valve operated properly TR #221357
5/5/81	RPS	Automatic scram actuator 5A-K14C in panel 9-15	When performing SJ4.1.A.5 on channel A, had problem with switch when resetting half scram	None, the malfunction of the auto scram actuator was in the safe direction	Auxiliary contact 9-10 (scram contactor) was binding	The actuator would sometimes de-energize again after the scram reset signal cleared	Freed contact, the contactor then operated properly. TR #221352
5/7/81	HPCI	Inlet drain line steam pot level switch	Grounded circuit on 250V Rx MOV board	None	Moisture in LS-71-5 caused short circuit at terminal lug	LS-71-5 was inoperable	Cleared ground, level switch returned to service TR #205913
5/8/81	Ventilation	3EB battery room fan "B" circuitry	Fan "B" was periodically tripping	None	Bal Thermal overload	Fan periodically tripped	Replaced overload, fan operated properly TR #205286 TR #205287

CSSC EQUIPMENT

ELECTRICAL MAINTENANCE SUMMARY

For the Month of May 1981

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
5/11/81	RHR	FCV 74-57	Valve thermalled out on opening and closing	RHR, loop 1 suppression pool cooling inoperable	The bolts which hold the valve motor together broke. This allowed the bell to come loose and the rotor to rest on the stator preventing the motor from running	FCV 74-57 inoperable	The motor bolts and bearings were replaced, the motor reinstalled, the valve operated properly. TR #223360 LER#BFRO-50-296/812
5/14/81	HPCI	EGR circuitry	During performance of SI4.5.E.1.d & e the HPCI tripped on overshoot during fast start test	HPCI inoperable	Loose cable connector from ECM box at the EGR actuator preventing proper EGR operation	HPCI tripped during fast start test	Loose connector was tightened and SI 4.5.E.1.d & e successfully completed. TR #205340 LER#BFRO-50-296/812
5/17/81	HPCI	LCV 73-8	Valve had an intermittent operation	None, HPCI was operable	Solenoid coil burned	Hotwell level control valve had intermittent operation	Replaced coil, valve operated properly. TR #205528
5/22/81	Primary containment	Relay 16AK65A	Purge valves 64-17, 30, 33 and 76-24 would not open	None	Bad relay coil	Purge valves 64-17, 30, 32 and 76-24 inoperable	Replaced relay coil, cleaned contacts and iron, relay operated properly. TR #225137

TEST EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of May 19 81

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRANCE
5-16-81	C&D	LS-85-45C	Sticking Valve	None	Needs lube job	Sticking Valve	Lube valve stem TR 181837
5-12-81	RRK Ser. Water	RRK HIX A SW	Leak	None	Unknown	Leak on gasket	Changed gasket TR 199030
5-15-81	HPCL	PRV-73-574	Changed Spring	None	Weak Spring	Unknown	Changed spring & check seat TR 101152
5-28-81	C&D	Module 34-39	Leaking Diaphragm	None	Service	Bad Diaphragm	Replaced diaphragm TR 143036
5-27-81	RRK	HCV 74-49	Damaged Bushing Threads	None	Damaged Bushing Threads	Bushing Threads Damaged	Repaired bushing threads on TR 203382
5-6-81	D/G	1" C" D/G North side air starter	Starter Malfunction	None	Starter Inoperable	Sticking Vane-Starter Motor Dirty	Replace (2) starter Clean valve & strain TR 219241
5-5-81	D/G	1 D D/G left back air starter	Faulty starter	None	Normal Wear on Starter	Starter wouldn't operate	Replaced both starters with spare starters TR 236786

CSSC EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of May 19 81

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
5-1-81	RBCCW	Drywell Air Compressor B	Fitting Broke	None	Broken Fitting	Leakage on outlet	Replaced flair fitting & 1/2 copper tubing 18" long TR 225573
4-27-81	CRD	2-85-554	Valve Leaking	None	Rust on seat	Leaking through	Cleaned valve seat & stem TR 208448
4-27-81	CRD	Module 42-55 Valve 2-85-588	Broken Handwheel	None	Unknown	Unknown	Replaced handwheel TR 225522
5-7-81	HPCI	Gland Seal Condenser	Bad gasket	None	Worn Gasket	Unknown	Replaced gasket TR 182072
4-21-81	Fuel Pool Cooling	2A Fuel Pool Cooling Pump	Pump noisy	None	Bad Outboard bearing	Noisy pump	Installed new bearing & adj. packing TR 204548
5-26-81	CRD	Discharge Filter	Dirty Filter	None	Dirty Filter Due to Service	Dirty Filter	Installed new filter TR 205867
5-30-81	RCIC	FCV-71-3	Packing Leak	None	Leaking Due to Service	In Service Packing Leak	Replaced packing TR 148048

CSSC EQUIPMENT

MECHANICAL MAINTENANCE SUMMARY

For the Month of May 1981

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
5-6-81	RX Feedwater	-3- LIS-203D	Bad Valve	None	Unknown	Bad equalizer Valve	Replaced Valve TR 240851
5-6-81	HPCI	Gland Seal Condenser E1519	Blown Gaskets	None	Unit Scram	Gaskets pushed out of position	Changed Gaskets TR 182046
5-7-81	HPCI	Gland Seal Condenser E1519	Blown Gaskets	None	Unit Scram	Gaskets pushed out of position	Changed Gaskets TR 182045
5-15-81	HPCI	Ball & Tappet Assembly	Overspeed Trip	None	Testing	Inspection, o.k.	Remove ball & tappet-inspected o.k. TR 234907
5-23-81	Rx Water Re-Cir	FCV-68-79	Blown Packing	None	Scored	Blown packing-Unit 3 Down	Repacked valve with grafoil packing TR 198860
5-10-81	D/G	3C D/G South Side Starter	Replace Starter	None	Sticking Vane	Sticking Vane: Due to motor being dirty	Replaced starter & Cleaned Valve TR 205289
5-25-81	HPCI	Gland Seal Condenser	Top Head Gasket Blown	None	Over-Pressured Condenser	Gasket pushed out of Position	Changed Gasket TR 205558
5-22-81	CRD	Accumulator 3Q-07 Charging H ₂ O Valve	Valve Stem Separated From Wedge	None	Unknown	Valve Stem separated From Wedge	Replaced Valve Wed. TR 205546
5-29-81	HPCI	FCV-73-5	Packing Leaking	None	Service & Pressure	Valve Packing Leaking	Repacked Valve
5-29-81	HPCI	3-73-201	Packing Leak	None	Worn Packing	Packing Leaking due to Service	Repacked Valve TR 221338
5-14-81	HPCI	FCV-73-35	Broken Stem Nut	None	Unknown	Stem Nut Broken Off At Flange	Replaced stem nut TR 182090

OUTAGE SUMMARY

May 1981

The Unit 1 cycle 4 refueling/torus outage continued through the month of May with major emphasis on the following:

1. Torus internal and external modifications.
2. LPRM changeouts (completed May 3, 1981).
3. In-vessel inspections.
4. HP turbine disassembly and sandblast for non-destructive tests.
5. CRD changeout.
6. Generator breaker modification (PO214) - Initial preparations.
7. 1B reactor feed pump disassembly.
8. Reactor vessel feedwater sparger changeout - Started May 13, 1981.
9. Local leak rate testing on selected valves.
10. Main steam isolation valve maintenance.
11. Main steam relief valve testing - done off site.
12. CCW tunnel inspection and repairs to inlet tunnel joints.
13. Fuel sipping.

In conjunction with the Unit 1 outage activities, preparations for the Unit 2 station service transformer modification (PO275) outage continued through May. Unit 2 was shutdown May 27, at 2217 hours to begin a scheduled 21 day outage. The principal efforts during this outage will be completion of the unit station transformer electrical and fire protection work, change-out of the H₂ and O₂ sample return pumps (ECN PO315), 161 kV capacitor bank modifications (ECN PO403) and reactor feed pump disassemblies (B and C).