

304/13/78

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PLANT NAME: BROWNS FERRY - UNIT 1  
BROWNS FERRY - UNIT 2  
BROWNS FERRY - UNIT 3

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TENNESSEE VALLEY AUTHORITY

Browns Ferry Nuclear Plant

P. O. Box 2000

Decatur, Alabama 35602

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APR 7 1978

Nuclear Regulatory Commission  
Office of Management Information  
and Program Control  
Washington, D. C. 20555

Gentlemen:

Enclosed is the March 1978 Monthly Operating Report for  
Browns Ferry Nuclear Plant Units 1, 2, and 3.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. G. Dewease  
Plant Superintendent

Enclosure

cc: Director, Region II  
Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
230 Peachtree Street, NW  
Suite 818  
Atlanta, GA 30303

Director, Office of Inspection  
and Enforcement  
Nuclear Regulatory Commission  
Washington, D. C. 20555

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A003  
5/10

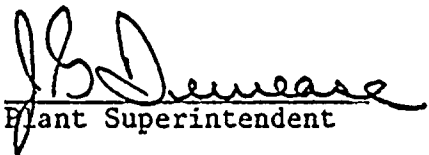


TENNESSEE VALLEY AUTHORITY  
DIVISION OF POWER PRODUCTION  
BROWNS FERRY NUCLEAR PLANT

MONTHLY OPERATING REPORT  
March 1, 1978 - March 31, 1978

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

Submitted by

  
Plant Superintendent



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### Operations Summary

The following summary describes the significant operational activities during the reporting period. In support of this summary, a chronologically ordered log of significant events is included in this report and begins on page 5.

There were 7 Reportable Occurrences reported to the NRC during the month of March.

#### Unit 1

Significant operational events for unit 1 are tabulated by date and time beginning on page 5.

The unit did not scram during the month of March.

A summary of maintenance work is shown on pages 22 through 30.

#### Unit 2

Significant operational events for unit 2 are tabulated by date and time beginning on page 8.

The unit scrambled once during the month of March. On March 18 the reactor was manually scrambled due to high unidentified leakage in the drywell. The leakage was due to a valve packing leak. While the unit was down it was decided to commence the refueling outage, one week ahead of schedule.

A summary of maintenance work is shown on pages 22 through 30.

Operations Summary (Continued)Unit 3

Significant operational events for unit 3 are tabulated by date and time beginning on page 10.

There was one scram on the unit in March. On March 16 the reactor was manually scrammed to accomodate maintenance to those types of drywell electrical penetrations which had failed laboratory testing of LOCA conditions.

A summary of maintenance work is shown on pages 22 through 30.

Common Systems

The radwaste system performed as designed without significant problems. Approximately  $6.93\text{E}+5$  gallons of waste containing 1.02 curies of activity were discharged during the month.

Operational Data

The average daily unit power level for units 1, 2, and 3 is shown on pages 13 through 15.

The operating data reports for all three units are shown on pages 16 through 18.

Unit shutdowns and power reductions for all three units are shown on pages 19 through 21.

Maintenance

Major electrical, mechanical, and instrument maintenance activities during the month are described on pages 22 through 30. Refueling outage activities for unit 2 are described on page 31.



Refueling InformationUnit 1

Unit 1 is scheduled for its second refueling beginning on November 3, 1978, with a restart date of December 15, 1978. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits. Present scheduling is to submit licensing information in support of these changes by August 31, 1978. This refueling will load additional 8 X 8 fuel assemblies into the core, replacing presently loaded 7 X 7 fuel.

There are 764 fuel assemblies in the core. The spent fuel storage pool presently contains 168 assemblies. The present storage capacity of the spent fuel pool is 1080 assemblies. Present planning is to increase that capacity to 3471 assemblies. With present capacity, the refueling later in 1978 would be the last refueling that could be discharged to the spent fuel storage pool without exceeding that capacity and maintaining full core discharge capability in the pool.

Unit 2

Unit 2 began its first refueling on March 18, 1978, with a scheduled restart date of June 12, 1978. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits and increased setpoints for the main steam relief valves. Licensing information in support of these changes was submitted on March 10, 1978. This refueling involves replacing some of the present 7 X 7 fuel assemblies with 8 X 8 assemblies, modifying the main steam relief valves to increase simmer margin, and installing a new recirculation pump trip (RPT) System.



Refueling Information (Continued)Unit 2 (Continued)

At the end of March there were 164 Cycle 1 fuel assemblies in the core. There are presently 168 new 8 X 8 fuel assemblies in the spent fuel storage pool, 132 of which are awaiting transfer to the core during refueling, and 600 Cycle 1 fuel assemblies also in the spent fuel storage pool. The present storage capacity of the spent fuel pool is 1080 assemblies. Present planning is to increase that capacity to 3471 assemblies. With present capacity, the 1979 refueling would be 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.

Unit 3

Unit 3 is scheduled for its first refueling beginning on August 13, 1978, with a restart date of October 22, 1978. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits. Present scheduling is to submit licensing information in support of these changes in May 1978. This refueling will involve replacing some of the present 8 X 8 fuel assemblies with 8 X 8 retrofit assemblies, modifying the main steam relief valves to increase simmer margin, and installing a new recirculation pump trip (RPT) system.

There are 764 fuel assemblies in the core. There are no fuel assemblies present in the spent fuel storage pool. The present storage capacity of the spent fuel pool is 1080 assemblies. Present planning is to increase that capacity to 3471 assemblies. With present capacity, the 1979 refueling would be 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.

Significant Operational Events

<u>Date</u>	<u>Time</u>	<u>Event</u>
		<u>Unit 1</u>
3/1	0000	Reactor thermal power at 97%, sequence A, steady state.
3/3	2302	Reduced thermal power from 97% to 70% for turbine C.V. tests and SI's.
3/4	0210	Turbine C.V. tests and SI's completed, commenced power ascension.
	0950	Commenced control rod insertion for critical power ratio (CPR) from 75% thermal power.
	1515	Reactor thermal power at 65%, holding for establishing target rod pattern.
	2000	Target rod pattern established, commenced PCIOMR from 65% thermal power.
3/5	1500	Reactor thermal power at 78%, PCIOMR.
3/7	1005	Reduced thermal power from 90% to 85% due to recirculation pump run back when transferring shut down board power supply.
	1140	Commenced PCIOMR from 85% thermal power.
3/8	1630	Reactor thermal power at 98%, steady state.
3/12	0001	Reduced power from 98% to 70% for turbine C.V. tests and SI's.
	0235	Turbine C.V. tests and SI's completed, commenced power ascension.
	1100	Commenced PCIOMR from 90% thermal power.
	1815	Reactor thermal power at 98%, steady state.
	1926	Scrammed control rod No. 22-27 from Auxiliary Instrument Room when rod could not be withdrawn.

Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
<u>Unit 1 (Continued)</u>		
3/13	1000	Reduced thermal power from 98% to 78% for testing control rod no. 22-27 as required after being inoperable.
	1027	Control rod no. 22-27 tests completed, commenced power ascension.
	1105	Commenced PCIOMR from 90% thermal power.
3/14	0001	Reactor thermal power at 98%, steady state.
3/16	0700	Reactor thermal power at 97%, steady state.
3/17	2320	Reduced thermal power from 97% to 70% for turbine C. V. tests and SI's.
3/18	0040	Turbine C. V. tests and SI's completed, commenced power ascension.
	0130	Commenced PCIOMR from 90% thermal power.
	0700	Reactor thermal power at 97%, steady state.
3/24	2235	Reduced thermal power from 97% to 60% for removal of "A" recirculation pump from service for brush replacement.
	2350	Commenced turbine C. V. tests and SI's.
3/25	0150	Turbine C. V. tests and SI's completed.
	0152	Brush replacement on "A" recirculation pump completed, reduced thermal power from 60% to 50% for returning "A" recirculation pump to service.
	0202	Commenced power ascension

Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
<u>Unit 1 (Continued)</u>		
3/25	0600	Commenced PCIOMR from 90% thermal power.
	1830	Reactor thermal power at 98%, steady state.
3/27	1500	Reactor thermal power at 97%, steady state.
3/28	1610	Thermal power was reduced from 97% to 80% when "A" recirculation pump run back occurred (loose relay wire).
	1615	Commenced power ascension from 80% thermal power.
	1630	Commenced PCIOMR from 95% thermal power.
	2110	Reactor thermal power at 97%, steady state.
3/31	2200	Reduced thermal power from 97% to 50% for control rod sequence exchange from "A" to "B".
	2400	Reactor thermal power at 50% with control rod sequence exchange in progress.

Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
		<u>Unit 2</u>
3/1	0000	Reactor thermal power at 89%, sequence A, steady state.
3/4	2247	Reduced thermal power from 86% to 70% for turbine C.V. tests and SI's.
3/5	0001	Turbine C.V. tests and SI's completed, commenced power ascension.
	0015	Reactor thermal power at 77%, holding due to "A" recirculation pump scoop tube lock occurrence.
	0340	"A" recirculation pump scoop tube reset commenced power ascension.
	1500	Reactor thermal power at 86%, steady state.
3/7	0700	Reactor thermal power at 85%, steady state.
3/8	0700	Reactor thermal power at 84%, steady state.
3/10	2310	Reduced thermal power from 84% to 70% for turbine C.V. tests and SI's.
3/11	0045	Turbine C.V. tests and SI's completed, reduced thermal power from 70% to 60% for control rod target pattern improvement.
	0655	New rod target pattern established, commenced power ascension.
	1300	Commenced PCIOMR from 70% thermal power.
3/12	1500	Reactor thermal power at 80%, PCIOMR.

Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
		<u>Unit 2 (Continued)</u>
3/13	2300	Reactor thermal power at 89%, steady state.
3/15	2300	Reactor thermal power at 88%, steady state.
3/17	0700	Reactor thermal power at 87%, steady state.
3/18	0220	Reduced thermal power from 87% to 80% for control rod exercise SI.
	0655	Commenced reducing thermal power from 80% for shutdown due to excessive unidentified drywell leakage.
	1100	Reactor scram no. 61 (manual) to accommodate maintenance.
	2200	Commenced bringing reactor to cold shutdown for initial refueling outage.
3/31	2400	Unit at cold shutdown with the initial refueling outage in progress. (600 fuel assemblies removed from the reactor.)

End of Month



Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
		<u>Unit 3</u>
3/1	0000	Reactor thermal power at 96%, sequence B, steady state.
3/3	0050	Reduced thermal power from 96% to 90% for isolation of "A" string low pressure heaters for maintenance.
3/4	1030	"A" string low pressure heaters placed in service, commenced PCIOMR.
3/5	0001	Reduced thermal power from 96% to 70% for turbine C.V. tests and SI's.
	0205	Turbine C.V. tests and SI's completed, commenced power ascension.
	1500	Reactor thermal power at 96%, steady state.
3/6	1220	Reduced thermal power from 96% to 73% for removal of "C" reactor feed pump from service for maintenance (oil leak).
	1530	Maintenance to "C" reactor feed pump completed.
	1608	"C" reactor feed pump placed in service, commenced power ascension from 73% thermal power.
	2104	Commenced PCIOMR from 92% thermal power.
3/7	0700	Reactor thermal power at 96%, steady state.
3/12	0240	Reduced thermal power from 96% to 70% for turbine C.V. tests and SI's.
	0452	Turbine C.V. tests and SI's completed, commenced power ascension.
	0700	Commenced PCIOMR from 90% thermal power.
	2030	Reactor thermal power at 98%, steady state.
	2045	Reduced thermal power from 98% to 95% due to EHC high vibration.



Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
<u>Unit 3 (Continued)</u>		
3/15	1940	Commenced reducing thermal power from 95% for shutdown (scheduled maintenance).
3/16	0007	Reactor scram no. 52 from 36% thermal power (manual) to accommodate maintenance to electrical penetrations.
3/20	2230	Maintenance to electrical penetrations completed "commenced" rod withdrawal.
	2336	Reactor critical no. 60 and holding at 3% thermal power for venting O <sub>2</sub> and to establish stable operations.
3/21	0500	Reduced thermal power from 3% to 0 to bring the reactor subcritical.
	0830	Resumed rod withdrawal for startup.
	0855	Reactor critical no. 61.
	1430	Reactor thermal power at 3% and holding for maintenance to "D" TIP indexer.
	2135	Maintenance to "D" TIP indexer completed, resumed startup.
3/22	0105	Rolled T/G.
	0212	Synchronized generator, commenced power ascension.
3/23	2230	Reduced thermal power from 80% to 70% for turbine C. V. tests and SI's.
3/24	0030	Turbine C. V. Tests and SI's completed, holding for removal of "C" condensate booster pump from service for maintenance (oil leak).

Significant Operational Events (Continued)

<u>Date</u>	<u>Time</u>	<u>Event</u>
		<u>Unit 3 (continued)</u>
3/24	0845	"C" condensate booster pump oil leak fixed, commenced power ascension.
	1230	Commenced PCIOMR from 75% thermal power.
3/27	0345	Reactor thermal power at 96%, holding due to EHC high vibration.
3/29	0330	Increased reactor thermal power from 96% to 97% steady state.
3/31	2400	Reactor thermal power at 97%, steady state.

## AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-259  
 UNIT Browns Ferry I  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

MONTH March 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>1046</u>
2	<u>1055</u>
3	<u>1057</u>
4	<u>686</u>
5	<u>810</u>
6	<u>867</u>
7	<u>964</u>
8	<u>1051</u>
9	<u>1050</u>
10	<u>1064</u>
11	<u>1061</u>
12	<u>995</u>
13	<u>1033</u>
14	<u>1061</u>
15	<u>1053</u>
16	<u>1062</u>

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	<u>1035</u>
18	<u>1043</u>
19	<u>1073</u>
20	<u>1054</u>
21	<u>1054</u>
22	<u>1057</u>
23	<u>1048</u>
24	<u>1031</u>
25	<u>998</u>
26	<u>1056</u>
27	<u>1053</u>
28	<u>1052</u>
29	<u>1051</u>
30	<u>1066</u>
31	<u>1047</u>

## INSTRUCTIONS

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

## AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-260  
 UNIT Browns Ferry II  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-8316

MONTH March 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	915
2	922
3	924
4	905
5	895
6	886
7	891
8	899
9	878
10	884
11	688
12	814
13	911
14	931
15	923
16	926

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	924
18	358
19	-10
20	-6
21	-6
22	-5
23	-4
24	-2
25	-2
26	-2
27	-2
28	-2
29	-2
30	-2
31	-2

## INSTRUCTIONS

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

## AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-296  
 UNIT Browns Ferry III  
 DATE 4-5-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

MONTH March 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>1014</u>
2	<u>1023</u>
3	<u>983</u>
4	<u>1002</u>
5	<u>989</u>
6	<u>938</u>
7	<u>999</u>
8	<u>1002</u>
9	<u>982</u>
10	<u>994</u>
11	<u>988</u>
12	<u>970</u>
13	<u>1013</u>
14	<u>1009</u>
15	<u>958</u>
16	<u>-10</u>

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	<u>-10</u>
18	<u>-9</u>
19	<u>-9</u>
20	<u>-9</u>
21	<u>-13</u>
22	<u>446</u>
23	<u>789</u>
24	<u>742</u>
25	<u>858</u>
26	<u>992</u>
27	<u>1013</u>
28	<u>1023</u>
29	<u>1021</u>
30	<u>1029</u>
31	<u>1028</u>

## INSTRUCTIONS

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

## OPERATING DATA REPORT

DOCKET NO. 50-259  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry I  
 2. Reporting Period: March, 1978  
 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  
 7. Maximum Dependable Capacity (Net MWe): 1065  
 8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

Notes

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

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	<u>744</u>	<u>2,160</u>	<u>32,138</u>
12. Number Of Hours Reactor Was Critical	<u>744</u>	<u>1861.56</u>	<u>14841.44</u>
13. Reactor Reserve Shutdown Hours	<u>0</u>	<u>0</u>	<u>4046.8</u>
14. Hours Generator On-Line	<u>744</u>	<u>1723.97</u>	<u>14370.1</u>
15. Unit Reserve Shutdown Hours	<u>0</u>	<u>0</u>	<u>0</u>
16. Gross Thermal Energy Generated (MWH)	<u>2,308,025</u>	<u>4,680,264</u>	<u>37,053,493</u>
17. Gross Electrical Energy Generated (MWH)	<u>778,100</u>	<u>1,564,760</u>	<u>12,382,780</u>
18. Net Electrical Energy Generated (MWH)	<u>759,222</u>	<u>1,520,591</u>	<u>12,008,938</u>
19. Unit Service Factor	<u>100</u>	<u>79.8</u>	<u>44.7</u>
20. Unit Availability Factor	<u>100</u>	<u>79.8</u>	<u>44.7</u>
21. Unit Capacity Factor (Using MDC Net)	<u>95.8</u>	<u>76.7</u>	<u>35.1</u>
22. Unit Capacity Factor (Using DER Net)	<u>95.8</u>	<u>76.7</u>	<u>35.1</u>
23. Unit Forced Outage Rate	<u>0</u>	<u>0.9</u>	<u>47.1</u>
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:

26. Units In Test Status (Prior to Commercial Operation):

Forecast

Achieved

INITIAL CRITICALITY

INITIAL ELECTRICITY

COMMERCIAL OPERATION

(9/77)





## OPERATING DATA REPORT

DOCKET NO. 50-260  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

## OPERATING STATUS

1. Unit Name: Browns Ferry II  
 2. Reporting Period: March, 1978  
 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  
 7. Maximum Dependable Capacity (Net MWe): 1065  
 8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

Notes

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

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	744	2160	27,049
12. Number Of Hours Reactor Was Critical	419	1757.87	12326.10
13. Reactor Reserve Shutdown Hours	54.5	131.63	11,331.40
14. Hours Generator On-Line	419	1723.67	11,757.03
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	1,146,713	4,810,169	30,983,306
17. Gross Electrical Energy Generated (MWH)	381,600	1,569,110	10,166,060
18. Net Electrical Energy Generated (MWH)	370,225	1,525,116	9,867,920
19. Unit Service Factor	56.3	79.8	43.5
20. Unit Availability Factor	56.3	79.8	43.5
21. Unit Capacity Factor (Using MDC Net)	46.7	66.3	34.3
22. Unit Capacity Factor (Using DER Net)	46.7	66.3	34.3
23. Unit Forced Outage Rate	2.6	6.6	53.3
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, 1978  
 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 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry III  
 2. Reporting Period: March 1978  
 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  
 7. Maximum Dependable Capacity (Net MWe): 1065  
 8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

Notes

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

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	744	2,160	9504
12. Number Of Hours Reactor Was Critical	620.6	1,998.25	8693.92
13. Reactor Reserve Shutdown Hours	116.32	123.95	712.36
14. Hours Generator On-Line	597.92	1,967.63	8466.94
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	1,775,040	5,812,310	24,454,004
17. Gross Electrical Energy Generated (MWH)	585,990	1,934,940	7,968,810
18. Net Electrical Energy Generated (MWH)	569,898	1,884,096	7,735,002
19. Unit Service Factor	80.4	91.1	89.1
20. Unit Availability Factor	80.4	91.1	89.1
21. Unit Capacity Factor (Using MDC Net)	71.9	81.9	76.4
22. Unit Capacity Factor (Using DER Net)	71.9	81.9	76.4
23. Unit Forced Outage Rate	19.6	7.3	9.3

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):

REFUEL OUTAGE AUGUST, 1978.

25. If Shut Down At End Of Report Period, Estimated Date of Startup:

26. Units In Test Status (Prior to Commercial Operation):

Forecast

Achieved

INITIAL CRITICALITY  
 INITIAL ELECTRICITY  
 COMMERCIAL OPERATION

# UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH March

DOCKET NO. 50-259  
 UNIT NAME Brown's Ferry I  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

No.	Date	Type <sup>1</sup>	Duration (Hours)	Reason <sup>2</sup>	Method of Shutting Down Reactor <sup>3</sup>	Licensee Event Report #	System Code <sup>4</sup>	Component Code <sup>5</sup>	Cause & Corrective Action to Prevent Recurrence

<sup>1</sup>  
 F: Forced  
 S: Scheduled

<sup>2</sup>  
 Reason:  
 A-Equipment Failure (Explain)  
 B-Maintenance of Test  
 C-Refueling  
 D-Regulatory Restriction  
 E-Operator Training & License Examination  
 F-Administrative  
 G-Operational Error (Explain)  
 H-Other (Explain)

<sup>3</sup>  
 Method:  
 1-Manual  
 2-Manual Scram.  
 3-Automatic Scram.  
 4-Other (Explain)

<sup>4</sup>  
 Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

<sup>5</sup>  
 Exhibit I - Same Source

(9/77)

# UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH March

DOCKET NO. 50-260  
 UNIT NAME Browns Ferry II  
 DATE 4-4-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-8316

No.	Date	Type <sup>1</sup>	Duration (Hours)	Reason <sup>2</sup>	Method of Shutting Down Reactor <sup>3</sup>	Licensee Event Report #	System Code <sup>4</sup>	Component Code <sup>5</sup>	Cause & Corrective Action to Prevent Recurrence
45	780318	F	11	A	2				EXCESSIVE LEAKAGE INTO DRYWELL SUMP DUE TO RECIRC. DISCHARGE LINE EQUALIZER VALVE PACKING LEAK.
46	780318	S	314	C	4				REACTOR WAS ALREADY DOWN FOR EXCESSIVE DRYWELL LEAKAGE PROBLEM.

<sup>1</sup>  
 F: Forced  
 S: Scheduled

<sup>2</sup>  
 Reason:  
 A-Equipment Failure (Explain)  
 B-Maintenance of Test  
 C-Refueling  
 D-Regulatory Restriction  
 E-Operator Training & License Examination  
 F-Administrative  
 G-Operational Error (Explain)  
 H-Other (Explain)

<sup>3</sup>  
 Method:  
 1-Manual  
 2-Manual Scram.  
 3-Automatic Scram.  
 4-Other (Explain)

<sup>4</sup>  
 Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

<sup>5</sup>  
 Exhibit I - Same Source

(9/77)



# UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH March

DOCKET NO. 50-296  
 UNIT NAME Browns Ferry III  
 DATE 4-5-78  
 COMPLETED BY Don Green  
 TELEPHONE 205/729-6846

No.	Date	Type <sup>1</sup>	Duration (Hours)	Reason <sup>2</sup>	Method of Shutting Down Reactor <sup>3</sup>	Licensee Event Report #	System Code <sup>4</sup>	Component Code <sup>5</sup>	Cause & Corrective Action to Prevent Recurrence
31	780316	F	134.38	A	2	BFR0-50-296/784			SIMULATED OFFSITE TESTS ON IDENTICAL ELECTRICAL PENETRATIONS SHOWED THAT THE PENETRATIONS WOULD FAIL DURING LOCA. PENETRATIONS WERE REPLACED. MAINTENANCE TO "D" TIP INDEXER.
32	780321	F	11.70	A					

<sup>1</sup> F: Forced  
S: Scheduled

<sup>2</sup> Reason:  
A-Equipment Failure (Explain)  
B-Maintenance of Test  
C-Refueling  
D-Regulatory Restriction  
E-Operator Training & License Examination  
F-Administrative  
G-Operational Error (Explain)  
H-Other (Explain)

<sup>3</sup> Method:  
1-Manual  
2-Manual Scram  
3-Automatic Scram  
4-Other (Explain)

<sup>4</sup> Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

<sup>5</sup> Exhibit I - Same Source





CSSC EQUIPMENT

## MECHANICAL MAINTENANCE SUMMARY

For the Month of March 1978

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
3/1	Diesel Generator	1 and 2 Diesel Generators	Dirty Oil	None	Operation	None	Changed oil
3/6	RHR Service Water	Pumps A1, 2, 3, B1, 2, 3, C1, 2, 3, and D1, 2, 3	Packing leaks	None	Worn or loose packing	None	Adjusted and repacked
3/9	Diesel Generator	3C, 3B, 3D Diesel	Low oil level	None	Unknown	None	Added oil
3/14	Intake	Door	Dragging at the bottom	None	Worn Hinges	None	Shimmed hinges of door
3/21	Fuel Pool Cooling	0-78-720	Steam leaking around packing	None	Loose packing	None	Tightened packing

## CSSC EQUIPMENT

## MECHANICAL MAINTENANCE SUMMARY

For the Month of March 19 78

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
3/1	Reactor Water Recirc	1A and B MG Set	High oil vapor content	None	No filter in the system	None	Placed filters in the oil mist eliminator
3/4	RCIC	Turbine	Low oil in-board bearing	None	Unknown	None	Added oil
3/8	EECW	1-67-50	Will not operate	None	Dirty filter	None	Replaced filter
3/13	CRD	Control Rod 22-27	Stuck in position 46	None	Bad directional valves and clogged filters	None	Replaced valves and filters
3/14	Reactor Water Recirc	1A MG Set	Oil leak at flange gasket on supply line	None	Loose flange	None	Tightened flange
3/21	CRD	1B Pump	High $\Delta p$ across discharge filter	None	Dirty filter	None	Changed filter
3/23	Air Cond.	1B control bay chiller	Tube leaks	None	Unknown	None	Plugged 20 tubes
3/25	CRD	Module 38-31	Leaking piston	None	Operation "O" ring broken	None	Installed rebuilt accumulator
3/27	CRD	Module 42-31	Leaking N <sub>2</sub> isolation valve	None	Worn "O" ring and packing	None	Changed packing and "O" ring
3/29	Ventilation	1B Reactor Zone exhaust fan	Air leak by dampers	None	Bushing on the control arm is worn	Allow B fan to turn backwards	Replaced bushing
3/29	Ventilation	FCV 64-14	Broken diaphragm	None	Operation	None	Change operator
3/31	CRD	1B pump disch valve 85-8-B	Leaking Seal	None	Packing gland loose	None	Tightened packing gland

## CSSC EQUIPMENT

## MECHANICAL MAINTENANCE SUMMARY

For the Month of March 1978

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
3/6	Reactor Water Cleanup	2B Reactor water cleanup pump	Blown seal	None	Bad Bearing	None	Replaced bearings and set new seal
3/18	HPCI	Booster pump	Cooling line leaking	None	Loose union on 2-1/2 line	None	Tightened union
3/18	Ventilation	2B Refuel Exhaust fan	Excessive noise and vibration	None	Bad bearings	None	Installed new bearing
3/18	Core Spray Isolation Cooling	2B core spray pump drain valve 75-527B	Packing leak	None	Loose packing	None	Tightened packing gland
3/21	Standby Liquid Cooling	Valve 63-518	Packing leak	None	Loose packing	None	Tightened packing gland
3/21	RCIC	RCIC Pump	Oil level low-inboard bearing	None	Oil leak	None	Added oil
3/23	Reactor Water Cleanup	2B Reactor Water Cleanup Pump	Blown Seal	None	Bad bearings	None	Replaced bearing shaft, sleeve and set mechanical seal
3/25	CRD	1A Discharge filter	High Ap	None	Operation dirty filter	None	Installed new filter



CSSC EQUIPMENT

## MECHANICAL MAINTENANCE SUMMARY

For the Month of March 19 78

DATE	SYSTEM	COMPONENT	NATURE OF MAINTENANCE	EFFECT ON SAFE OPERATION OF THE REACTOR	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	ACTION TAKEN TO PRECLUDE RECURRENCE
3/14	Air Cond.	3B Control Bay Chiller	Clogged Cooling Valve	None	Unknown	None	Replaced with new valve
3/16	TIP	Channel 10	Probe stops at indexer output	None	Loose fitting	None	Tightened fitting
3/16	CRD	A Discharge filter	High $\Delta p$	None	Clogged up	None	Replaced filter
3/18	Standby Liquid Cooling	A and B discharge relief valves	Opening at too low of pressure	None	Unknown	None	Disassembled valve and lapped disc and plug, reset at 1420 psi
3/20	RHR	Loop I	Leak on Charging water line	None	Weld crack on 1/2" line coming off charging water line	None	Rewelded crack
3/20	Doors	Personnel access to drywell	Unable to hold pressure	None	Bad "O" ring	None	Replaced "O" ring
3/20	Ventilation	Supply damper to diesel Generator 3C	Will not open	None	Slipped linkage on damper	None	Adjusted linkage
3/20	CRD	FCV 85-39A Module 30-11	Seal ring disk busted	None	Unknown	None	Replaced seal ring disk and body gasket

CSSC EQUIPMENT

## ELECTRICAL MAINTENANCE SUMMARY

For the Month of March 19 78

ate	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
3/1	Reactor Bldg. Ventilation	Refuel zone SBTG Pressure limit lockout relay	Relay won't seal in	None	Relay contacts bad	Relay wouldn't seal in	Replaced lock out relay. TR 55639
3/2	Fire Protection	Control card assembly	Replace control card assembly	None	Control card assembly bad	Heat detector zone inoperable	Replaced control card assembly in pan TR 86345
3/16	Fire Protection	Smoke Detector	Replace smoke detector	None	Smoke detector bad	Alarm wouldn't clear	Replaced smoke detector TR 86378. BFRO 259/789
3/22	Control Rod Drive	1B CRD Pump disch. MOV green light	Replace transfer switch XS 85-8A	None	Contacts not making up on XS 85-8A	No green light on 1B CRD pump disch. valve	Replaced CS 85-8A TR 86440 and 86339

BROWNS FERRY NUCLEAR PLANT UNIT IICSSC EQUIPMENT

## ELECTRICAL MAINTENANCE SUMMARY

For the Month of March 19 78

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
3/3	RHR Service Water	HS-23-8A	Hand switch won't start pump	None	Contacts on switch burned and not making up	HS-23-8A wouldn't start RHRSW pumps	Replaced switch. TR's 85867 and 85871
3/3	RBCCW	Surge tank level switch	Adj. switch mechanism	None	Float hanging in chamber	Surge tank low level alarm wasn't coming in	Adjusted float switch mechanism. TR 85866
3/13	Air part. radiation monitoring	RE 90-256	Check power source	None	Motor was dirty and pump was locking up	Motor was tripping on overload and blowing fuses	Cleaned motor up and machinists changed out pump. TR 85819
3/15	Control Bay HVAC	2A and 2B battery room exhaust fans	Replace bearings in both fan motors	None	Bad bearing in both exhaust fan motors	Excessive noise when fans were running	Pulled motors and replaced bearings. TR 85855 27
3/19	250V D.C.	250V D.C. station battery	Clear ground on 250V station battery	None	Carbon post in tach-generator causing ground	120V positive ground on 250V station batteries	Dismantled and clean tach-generator to clear ground. TR 85
3/27	RHR	Testable Check Vlv 74-54	No disc position light.	None	Limit switch out of adjustment on disc position	Valve 74-54 had no disc position light	Adjusted limit switch for disc position. TR 82006



BROWNS FERRY NUCLEAR PLANT UNIT IIICSSC EQUIPMENT

## ELECTRICAL MAINTENANCE SUMMARY

For the Month of March 1978

ate	System	Component	Nature of Maintenance	Effect on Safe Operation of The Reactor	Cause of Malfunction	Results of Malfunction	Action Taken To Preclude Recurrence
3/7	Control Rod Drive	CRD accumulator level switches	Clean switches and verify operability	None	Dirt on switch front	Accumulator level switches wouldn't alarm	Cleaned switches and verified operability BFRO 296/785
3/8	Diesel Generator	D/G D	Replace isolation diodes in annunciator relays	None	Isolation diodes on annunciator relays short circuited	D/G D started when local annunciator test button pushes	Replaced isolation diodes in annunciator relays. TR 6651
3/18	Reactor Building Closed Cooling Water	FCO 70-82 FCO 70-87 Indicating lights	Adjust indicating light limit switches	None	Limit switches out of adjustment	FCO 70-82 and FCO 70-87 had no indicating lights	Adjusted indicating light limit switches. TR's 52887, 86136 and 86043

## BROWNS FERRY NUCLEAR PLANT UNIT 0, 1 &amp; 2

## INSTRUMENT MAINTENANCE SUMMARY

FOR THE MONTH OF March, 1978

SSC EQUIPMENT

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 Common -29	Fire Protection	PI-26-46	Maintenance	None	Gage Damage	Indicated pressure 10 psig low	None
Unit 1 -17	Reactor Water Clean-Up	TS-69-30F	Maintenance	None	Faulty Contacts	Switch Contact operated Intermittently	None
-27	Rad. Monitor	RM-90-272B 273B	Calibration	None	Instrument Drift	Down Scale Alarm (Reading is in "R")	None
-27	Rad. Monitor	RM-90-139D	Calibration	None	Voltage Drift	Low Indication on Meter and Recorder	None
Unit 2 -8	Reactor Water Clean-Up	PdI-69-58	Calibration	None	Instrument Drift	No Flow Indication.	None
-14	Rod Position Information	Rod-38-43	Maintenance	None	Probe Shorted	Drift Alarm And Superimposed Numbers	None

BROWNS FERRY NUCLEAR PLANT UNIT 3  
 INSTRUMENT MAINTENANCE SUMMARY  
 FOR THE MONTH OF March, 1978

SSC EQUIPMENT

Date	System	Component	Nature of Maintenance	Effect on Safe Operation of the reactor	Cause of Malfunction	Results of Malfunction	Action Taken to preclude recurrence
19/78	CRD	PIC-85-66 PIC-85-67	Calibration	None	Setpoint drift	False low pressure alarm	None
21/78	Primary Containment	PR-64-50	Maintenance	None	Loose slidewire contact	False low pressure indication	None
27/78	Rad. Monitor	RM-90-256	Calibration	None	Setpoint drift	False high indication	None
28/78	Primary Containment	TM-64-52	Calibration	None	Instrument drift	Did not agree with TI-64-52A	None



March 1978

UNIT 2

Outage work accomplished or in progress includes: Reactor disassembly, fuel unloading, inspection of hydraulic shock arrestors, inspection of suppression chamber by underwater divers, inspection and repair of instrument snubbers, electrical test and cleaning of motors, ground fault protection modification to CRD platform, feedwater and condenser leak checks, and probolog inspection and cleaning of electrical boards, TIP indexer maintenance and modifications, EHC modifications, recorder maintenance, feedwater system instrument calibrations, and raw cooling water system cooler cleaning. Primary containment isolation valve local leak rate testing has been in progress and approximately 30 percent of the valves tested failed. MSIV's A, B, and D (in board) and D (out board) have failed to meet leakage criteria. MSRV's have been removed and sent to Wyle and the Power Service Shop for modification, repair and set point calibration. Work is under way to open, inspect and repair as necessary the A low pressure turbine, A reactor feedpump turbine, control valve and A1, A2 combined intercept valves.