TENNESSEE VALLEY AUTHORITY

DIVISION OF POWER PRODUCTION

BROWNS FERRY NUCLEAR PLANT

MONTHLY OPERATING REPORT

December 1, 1978 - December 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 chronological log of significant events is included in this report and begins on page 5.

There were 10 Reportable Occurrences reported to the NRC during the month of December.

Unit I

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

The unit was shutdown for scheduled refueling the entire month.

A summary of maintenance work is shown on pages 21 through 31.

Unit 2

Significant operational events for Unit 2 are tabulated by date and time beginning on page 5.

The unit did not scram during the month.

A summary of maintenance work is shown on pages 21 through 29.

Unit 3

Significant operational events for Unit 3 are tabulated by date and time beginning on page 9.

The unit did not scram during the month.

A summary of maintenance work is shown on pages 21 through 29.

Operations Summary (continued)

Fatigue Usage Evaluation

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

Location	Usage Factor		
	Unit 1	Unit 2	Unit 3
Shell at Water Line	0.00377	0.00259	0.00237
Feedwater nozzle	0.17304	0.11409	0.09383
Closure studs	0.16449	0.09806	0.07206

Note: This accumulated monthly information will satisfy technical specification section 6.6.A.17.b(3) reporting requirements.

Common Systems

Approximately 8.11E+5 gallons of waste liquid were discharged containing approximately 8.6E-1 curies of activity.

Cooling towers 4 and 5 were operational this month for two lift pump operations. Tower 6 was operational for one lift pump operation. Modifications by the tower vendor were continued on Tower 3 and Tower 2 and began on Tower 1. None of the towers had significant operational problems.

Operational Data

The average daily unit power level for units 1, 2 and 3 is shown on pages 12 through 14.

The operating data reports for all three units are shown on pages 15 through 17.

Unit shutdowns and power reductions for all three units are shown on pages 18 through 20.

Operations Summary (continued)

Maintenance

Major electrical, mechanical, and instrument maintenance activities during the month are described on pages 21 through 29. Refueling outage activities for Unit 1 are summarized on pages 30 and 31.

Refueling Information

Unit 1

Unit 1 began its second refueling on November 26, 1978, with a restart date of January 16, 1979. Resumption of operation on that date will require a change in technical specifications pertaining to the core thermal limits. Licensing information in support of these changes was submitted in August 1978. This refueling will load additional 8 X 8R (retrofit) fuel assemblies into the core, replacing presently loaded 7X7 fuel and will involve installing a new recirculation pump trip (RPT) system.

There are 764 fuel assemblies in the core. The spent fuel storage pool presently contains 322 spent 7X7 fuel assemblies and two 8 X 8R fuel 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 present refueling is 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 is scheduled for its second refueling beginning on April 22, 1979, with a restart date of July 1, 1979. 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

Operations Summary (continued)

Unit 2 (continued)

support of these changes before the refueling. This refueling will involve replacing some more 7 X 7 fuel assemblies with 8 X 8R (retrofit) assemblies.

There are 764 fuel assemblies in the core. At the end of the month there were 132 discharged cycle 1 7X7 fuel assemblies in the spent fuel storage pool. There are presently 36 new 8 X 8 fuel assemblies in the spent fuel storage pool which were not loaded into the core during this cycle. 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 next refuel outage beginning on August 30, 1979. This refueling will involve loading additional 8 X 8R (retrofit) assemblies into the core. Resumption of operation following refueling will require changes in technical specifications pertaining to the core thermal limits. Licensing information in support of these changes will be submitted before the refueling.

There are 764 fuel assemblies presently in the core. There are 208 fuel assemblies in the spent fuel storage pool. The present licensed storage capacity of the spent fuel pool is 1132 assemblies.

Significant Operational Events

Unit 1

Date	Time	Event
12/1	0000	Reactor shutdown for reload 2, cycle 3 refueling outage
12/3	1015	Commenced shuffling and sipping fuel
		End of Month

Unit 2

12/1	0000	Reactor thermal power at 98%, steady state
12/2	0112	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	0231	Turbine C.V. tests and SI's completed, commenced power ascension
	0700	Reactor thermal power at 98%, steady state
12/3	0745	Reduced thermal power from 98% to 72% for removal of "C" reactor feed pump from service for maintenance (flange leaks)
	1230	Repairs to "C" reactor feed pump completed and pump placed in service
	1240	Commenced power ascension from 72% thermal power
	2300	Reactor thermal power at 98%, steady state
12/4	1212	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibration
12/5	1400	Repairs to "A" reactor feed pump completed and pump placed in service
	1530	Commenced power ascension from 72% thermal power
	2000	Commenced PCIOMR from 90% thermal power
12/6	0400	Reactor thermal power at 98%, steady state
	0850	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibrations
	1016	Repairs to "A" reactor feed pump completed and pump placed in service

Significant Operational Events

Unit 2

Date	Time	Event
12/6	1040	Commenced power ascension from 72% thermal power
	1200	Commenced PCIOMR from 95% thermal power
	2300	Reactor thermal power at 98%, steady state
12/7	1404	Reduced thermal power from 98% to 72% for removal of "A" reactor feed pump from service due to high vibration
	1730	Repairs to "A" reactor feed pump completed and pump placed in service
	1745	Commenced power ascension from 72% thermal power
	2100	Commenced PCIOMR from 95% thermal power
12/8	0700	Reactor thermal power at 98%, steady state
	2300	Reduced thermal power from 98% to 56% for maintenance to "C" reactor feed pump leaks and turbine C.V. tests and SI's
12/9	0106	Reduced thermal power from 56% to 40% for control rod sequence exchange from "A" to "B"
	0300	Control rod sequence exchange from "A" to "B"completed, commenced power ascension
	0600	Commenced PCIOMR from 60% thermal power
	2300	Reactor thermal power at 73%, holding for "A" reactor feed pump vibration problems
12/11	1250	"A" reactor feed pump maintenance completed, commenced power ascension
	1500	Commenced PCIOMR from 80% thermal power
12/12	2105	Reactor thermal power at 98% steady state
12/15	2125	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	2225	Turbine C.V. tests and SI's completed, commenced power ascension
12/16	0700	Reactor thermal power at 98%, steady state

Significant Operational Events

Unit 2

Date	Time	Event
12/19	2225	Commenced thermal power reduction to 60% for "A" recirculation pump MG set brush replacement and "B" reactor feed pump vibration checks
	2355	"A" recirculation pump MG set brush replacement completed and pump placed in service and "B" recirculation pump MG set removed from service for brush replacement. "B" reactor feed pump vibration checks completed
12/20	0250	"B" recirculation pump MG set brush replacement completed, commenced power ascension from 60% thermal power
	0600	Commenced PCIOMR from 90% thermal power
	1000	Reactor thermal power at 98%, steady state
12/23	2225	Reduced thermal power from 98% to 70% for turbine CV tests and SI's
12/24	0150	Turbine C.V. tests and SI's completed, commenced power ascension
	0700	Commenced PCIOMR from 75% thermal power
12/25	1430	Reactor thermal power at 98%, steady state
12/27	1310	Reduced thermal power from 98% to 95% due to a valve leak in "F" condensate demineralizer vessel
	1357	Valve leak in "F" condensate demineralizer vessel fixed, commenced power ascension
	2300	Reactor thermal power at 98%, steady state
12/29	0230	Reduced thermal power from 98% to 85% for removal of "G" condensate demineralizer from service for back washing and precoating
	0450	"G" condensate demineralizer placed in service, commenced power ascension
	0700	Reactor thermal power at 98%, steady state
12/30	0020	Reduced thermal power from 98% to 85% for turbine C.V. tests and SI's
	0238	Turbine C.V. tests and SI's completed, commenced power ascension

Significant Operational Events

Unit 2

Date	Time	Event
12/30	0300	Commenced PCIOMR from 95% thermal power
	0700	Reactor thermal power at 98%, steady state
	1525	Reduced thermal power from 98% to 85% for removal of "C" reactor feed pump from service due to high vibration
	1848	"C" reactor feed pump placed in service, commenced power ascension from 85% thermal power
12/31	1922	Reactor thermal power at 98%, steady state for the remainder of the month

Significant Operational Events

Unit 3

Date	Time	Event
12/1	0000	Reactor critical with startup in progress
	0230	Rolled T/G
	0306	Synchronized generator, commenced power ascension (Sequence "B")
12/3	0255	Commenced PCIOMR from 60% thermal power
12/5	0138	"A" reactor feed pump trip (cause unknown) reducing thermal power from 90% to 70%
	0150	"A" reactor feed pump trip reset and pump placed in service, commenced power ascension
	0225	Commenced PCIOMR from 87% thermal power
	0700	Reactor thermal power at 92%, holding due to core flow limits
	1700	Reduced thermal power from 92% to 72% for removal of "C" reactor feed pump from service for maintenance (pump discharge flange leakage)
12/6	1200	Maintenance completed on "C" reactor feed pump and pump placed in service
	1830	Reduced thermal power from 72% to 65% for FW testing (RTI-23A)
12/7	0158	RTI-23A completed, commenced power ascension
	0330	Commenced PCIOMR from 85% thermal power
	1500	Reactor thermal power at 92%, steady state, core flow limited
	1826	Commenced reducing thermal power from 92% to 35% for recirculation pumps flow tests (RTI-32A)
12/8	0518	Recirculation pumps flow tests completed, commenced power ascension for recirculation pumps trip tests (RTI-27)
	0525	Reactor thermal power at 70%, holding for RTI-27

Significant Operational Events

Unit 3

Date	Time	Event
12/8	0550	RTI-27 discontinued due to system load demand, commenced power ascension
	0830	Reduced thermal power from 85% to 70% for resuming RTI-27
	0925	Both recirculation pumps tripped, thermal power to 35%
	0936	Both recirculation pumps in service, commenced power ascension
	1210	Reactor thermal power at 40% holding for control rod sequence exchange from "B" to "A"
	1428	Control rod sequence exchange from "B" to "A" completed, commenced power ascension in control rod sequence "A"
12/9	0020	Reduced thermal power from 78% to 70% for turbine C.V. tests and SI's
	0357	Turbine C.V. tests and SI's completed, commenced power ascension
	1505	Commenced PCIOMR from 80% thermal power
12/11	1500	Reactor thermal power at 97%, steady state
12/12	0025	Reduced thermal power from 97% to 90% for removal of "B" string high pressure heaters from service for maintenance (leakage)
	0300	Commenced PCIOMR from 90% thermal power
	2300	Reactor thermal power at 95%, core flow limited
12/15	2330	Reduced thermal power from 95% to 60% for "B" recirculation pump MG set brush replacement
12/16	0225	"B" recirculation pump MG set brush replacement completed, commenced power ascension
	0700	Commenced PCIOMR from 75% thermal power
12/17	2000	Reactor thermal power at 99%, steady state
12/22	2115	Reduced thermal power from 99% to 90% for turbine C.V. tests and SI's

Significant Operational Events

Unit 3

Date	Time	Event
12/23	0230	Turbine C.V. tests and SI's completed, commenced PCIOMR from 90% thermal power
	0930	Reactor thermal power at 98%, steady state
12/24	1425	Reduced thermal power from 98% to 80% for removal of "B" reactor feed pump from service due to high vibrations
12/26	1500	Reactor thermal power at 80%, holding for "B" reactor feed pump maintenance
12/27	0405	"B" reactor feed pump maintenance completed and placed in service
	0430	Commenced power ascension from 80% thermal power
	0820	Reduced thermal power from 93% to 80% for removal of "B" reactor feed pump from service due to high vibrations. Reactor thermal power held at 80% the remainder of the month

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-259
UNIT Browns Ferry I
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December, 1978

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

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 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	262	17	1011
2	469	18	1067
3	711	19	1073
4	891	20	1073
5	908	21	1070
6	790	22	1079
7	827	23	1049
8	647	24	971
9	777	25	838
10	921	26	837
11	1040	27	857
12	991	28	830
13	1032	29	836
14	1010	30	858
15	1020	31	821
16	770		

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 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

MONTH December

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	1056	17	1081
2	1074	18	1070
3	988	19	1056
4	930	20	977
5	870	21	1072
6	1031	22	1085
7	999	23	1033
8	1065	24	832
9	708	25	1032
10	810	26	1072
11	822	27	1077
12	976	28	1071
13	1084	29	1065
14	1063	30	1088
15	1068	31	1006
16	1066		

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.

(9/77)

OPERATING DATA REPORT

DOCKET NO. 50-259
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry I
2. Reporting Period: December 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): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

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	8760	38,738
12. Number Of Hours Reactor Was Critical	0	7251.71	20,231.59
13. Reactor Reserve Shutdown Hours	0	352.33	4,399.13
14. Hours Generator On-Line	0	7045.21	19,691.34
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	0	18,399,443	50,772,672
17. Gross Electrical Energy Generated (MWH)	0	5,999,980	16,818,000
18. Net Electrical Energy Generated (MWH)	0	5,817,873	16,306,220
19. Unit Service Factor	0	80.4	50.8
20. Unit Availability Factor	0	80.4	50.8
21. Unit Capacity Factor (Using MDC Net)	0	62.4	39.5
22. Unit Capacity Factor (Using DER Net)	0	62.4	39.5
23. Unit Forced Outage Rate	0	6.0	40.2

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: January 1978

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

	Forecast	Achieved
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

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OPERATING DATA REPORT

DOCKET NO. 50-260
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry II
2. Reporting Period: December 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): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

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	8,760	33,649
12. Number Of Hours Reactor Was Critical	744	6,150.06	16,718.29
13. Reactor Reserve Shutdown Hours	0	276.94	11,476.71
14. Hours Generator On-Line	744	6,034.50	16,067.86
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,272,498	17,278,651	43,451,788
17. Gross Electrical Energy Generated (MWH)	768,240	57,716,838	14,313,788
18. Net Electrical Energy Generated (MWH)	749,325	5,547,360	13,890,164
19. Unit Service Factor	100	68.9	47.8
20. Unit Availability Factor	100	68.9	47.8
21. Unit Capacity Factor (Using MDC Net)	94.6	59.5	38.8
22. Unit Capacity Factor (Using DER Net)	94.6	59.5	38.8
23. Unit Forced Outage Rate	0	4.4	45.8

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):
Refuel outage April, 1979

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. 50-296
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

OPERATING STATUS

1. Unit Name: Browns Ferry III
2. Reporting Period: December 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): 1098.4
7. Maximum Dependable Capacity (Net MWe): 1065
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

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	8,760	16,104
12. Number Of Hours Reactor Was Critical	744	6,395.53	13,091.20
13. Reactor Reserve Shutdown Hours	0	517.00	1105.41
14. Hours Generator On-Line	740.90	6,230.67	12,729.98
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,013,518	17,509,688	36,151,382
17. Gross Electrical Energy Generated (MWH)	672,650	5,733,630	11,767,500
18. Net Electrical Energy Generated (MWH)	656,104	5,554,282	11,405,188
19. Unit Service Factor	99.6	71.1	79.0
20. Unit Availability Factor	99.6	71.1	79.0
21. Unit Capacity Factor (Using MDC Net)	82.8	59.5	66.5
22. Unit Capacity Factor (Using DER Net)	82.8	59.5	66.5
23. Unit Forced Outage Rate	.4	9.0	9.5

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		

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UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-259
UNIT NAME Browns Ferry I
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

REPORT MONTH ~~December~~

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
55	78 11 26	5	744	C	2				Refueling

1 F: 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 Licensee Event Report (LER) File (NUREG-0161)

5 Exhibit I - Same Source

(9/77)

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-260
UNIT NAME Browns Ferry II
DATE 01-05-79
COMPLETED BY Don Green
TELEPHONE 205/729-6846

REPORT MONTH December

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
68	78 12 03	F		A					Derated when "C" Rx feed pump flange leaked
69	78 12 04	F		A					Derated when "A" Rx feed pump had high vibration
70	78 12 06	F		A					Derated when "A" Rx feed pump had high vibration
71	78 12 07	F		A					Derated when "A" Rx feed pump had high vibration
72	78 12 09	F		A					Derated when "C" Rx feed pump flange leaked
73	78 12 19	F		B					Derated to replace brushes in both recirc pump M.G. sets
74	78 12 23	S		B					Derated for turbine control valve test and SI's

1 2 3 4

F: Forced
S: Scheduled

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)

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

Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-296
UNIT NAME Browns Ferry III
DATE 01-05-79
COMPLETED BY W Don Green
TELEPHONE 205/729-6846

REPORT MONTH December

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
67	78 12 01	F	3.10	A	2				LPRM connections were improperly installed
68	78 12 05	F		A					Derated when "A" Rx feed pump tripped
69	78 12 05	F		A					Derated when "C" Rx feed pump tripped
70	78 12 07	F		B					Derated to perform recirc pump flow test
71	78 12 08	F		B					Derated to perform recirc pump trip test
72	78 12 15	F		B					Derated to replace brushes in recirc pump MG set

1
F: 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 Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 1

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 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
12/1	RHR	FCV 74-68	Packing leak	None	Unknown	None	Repacked valve with graphoil
12/12	CRD	CRD Module 10-23	Leaking star valve	None	Operation	None	Replaced packing seat and body o-ring
12/13	Ventilation	1A Refuel zone exhaust fan	Expansion joint worn out	None	Operation	None	Replaced joint and lubricated dampers
12/13	CRD	CRD module 06-27, valve 229	Valve leaking	None	Operation	None	Replaced stem packing
12/29	CRD	HCV's 85-229	Packing leak	None	Operation	None	Repack cartridge valve

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 2

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 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
12/11	HPCI	Booster pump	Outboard Bearing oil reservoir needs oil	None	Unknown	None	Added oil to bearing reservoir
12/13	RCIC	Turbine	Turb, inboard bearing oil reservoir low on oil	None	Low oil level	None	Added oil
12/11	RCIC	Turbine	Inboard turb. bearing needs oil	None	Oil Low	None	Added oil

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 3

MECHANICAL MAINTENANCE SUMMARY

For the Month of December 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
12/6	CRD	Exhaust filter	Filter "B" need cleaning filter is isolated, vented, and drained	None	Filter was dirty	None	Replaced dirty filter with new one.
12/16	SLC	3A pump relief valve	Valve operating at 1150 psi T.S. 4.4.A-2	None	Valve lifting at 1150 psi	None	Re-run S.I. work o.k.

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 1

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 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
12/1	All with CR120A relays	CR 120A relay contact arm retainer	Change all CR 120A relay contact arm retainers per EMI 53	None	Contact arm retainers not of valoz	Possible fire hazard	Change out all contact arm retainers not made of Veloz per EMI 53. TR 99508, 99503, 99507, 99520, 99509, 99567, 99512, 99518, 99524, 99516, 99513, 99517, 99511, 99515, 99514, 99528, 99505, 99527, 99506, 99525, 99501, 99523, 99502, 99519, 99504, 99526, and 99522
12/1	Diesel Generator	D/G 1 C & D	STOL1 relay on C and annun. relay on D failed to operate properly per SI 4.9.A.1.d	None	STOLI relay on "C" D/G ann. relay bad on "D" D/G	Did not meet criteria of SI 4.9.A.1.d	Changed both relay. Met all criteria of SI 4.9.A.1.d. Checked ok. TR 87915
12/1	RHR	HCV 74-44	Open limit switch still made up with valve closed	None	Limit switch was bad	Incorrect annunicator	Changed out limit switch. Checked ok TR 107190
12/2	Control Air	FCV 32-62	Limit switch on FCV 32-62 will not pick up	None	Limit switch arm bent and out of adjustment	Incorrect ann.	Straightened limit switch arm adjusted limit switch. Checked ok. TR 109622
12/2	RCIC	Steam line condensate level switch	Bad level switch	None	Bad level switch	Improper Ann.	Replaced level switch Ran EMI 56. Checked ok. TR 106412

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 1

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 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
12/4	250V DC	No. 1 battery charger for No. 1 battery board	Not operating correctly	None	Bad control transformer	Not operating correctly	Replaced transformer Checked ok. TR 115522
12/6	4-kV SD. Board	Breaker 1624	Breaker will not rack in	None	Jack nut and screw bad damaged threads	Breaker would not rack in	Repair jack nut and screw. Checke ok. TR 115621
12/6	250V DC	Battery charger No. 1	Charger will not hold voltage and tripped nor K.C. supply bkr.	None	Blown fuse	Battery charger not operational	Replaced blown fuse with new one. Checked ok. TR 116609
12/20	RHR	HCV 74-55	Red light is on with valve closed	None	Limit switch stuck	Red light on with valve closed	Freed limit switch and lubricated. Checked ok. TR 116259
12/24	Diesel Generator	Power failure alarm for D/G A	Power failure alarm will not close	None	Coil burned out on D/G control panel	Power failure alarm would not clear	Replaced coil and cleared alarm. TR 34115

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 2

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 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
12/6	Air. Cond.	Battery room supply fan 2B	Bearing noisy	None	Bad motor bearings	Bearings noisy	Replaced motor bearings (2) Checked ok TR 116567
12/7	HPCI	FCV 73-26	No indicating lights in control room	None	Wire burned from JB 2217 to FCV 73-26	No indicating lights	PUlled new wire. Replaced flex conduit Performed EMI 18. Checked ok. TR 116544
12/9	250V DC	250V batt. bd. No. 2	Bd. No. 2 has 230V pos. ground	None	Limit switches on FSV 3-92 were grounded due to water and corrosion	Bd. No. had 230V pos. ground	Replaced limit switche Checked ok. TR 114765
12/11	RHR Service	Limit switch on HCV 23-43	No red indicating light in control room	None	Limit switch out of adjustment	No red indicating light in control room	Adjusted limit switch Checked ok. TR 116531
12/14	250V Rx. MOV Bd 2C	2A-K61A relay	Relay bad	None	Coil open	Relay inperable	Replaced coil. Checked ok. TR 115310
12/30	HPCI	HPCI trip solenoid	HPCI failed to trip during performance of SI	None	Bad solenoid coil resistor, and diode	HPCI would not trip by trip solenoid	Replaced solenoid, resistor, and diode. Ran SI 4.5.E.1.B Meet all criteria. TR 37512

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 3

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 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
12/1	HPCI	Gland seal Exhauster	Runs for about 2 min. and then thermals out	None	Al lead contact clip on breaker was loose	Motor thermals out	Tightened clip to breaker finger exhauster running correctly. TR 116306
12/1	Neutron Monitoring	D - SRM	"D" SRM has both in-out lights and will not move	None	Coil bad in relay 7CK7K	"D" SRM will not move	Replaced coil in rel 7CK7K. Checked ok TR 116398
12/1	Air Cond.	Emergency chiller for 3A and 3B Rx. MOV boards	Chiller has leak	None	Break in suction line and sight glass	Chiller was leaking	Replaced sight glass Repaired leak. Checked ok. TR 110028
12/1	Diesel Gen.	Press. switch AP2 D/G 3D	Diaphragm blown out on AP2	None	AP2 - Press switch bad	Press switch inoperable. Alarm in	Replaced press. switch Alarm cleared. TR 110084
12/1	RHR	FCV 74-1	Valve will not operate by motor	None	Motor bad	Valve cannot be motor operated	Replaced motor. Ran EMI 18. Checked ok TR 114330
12/5	Fire Protection	Smoked Detector 39-19A	Detector alarmed for no reason	None	Bad detector	False alarm	Change model FT-200 to model 1212 detector Ran SI 4.1.1.C.1&.5 TR 115870
12/1	Core Spray	Seal in contact	Seal in contact would not pick up	None	Close contacts not sealing in seal in contact bent	Valve would stop travelling when hand switch was released	Repaired and adjusted contact. Checked ok. TR 110098

CSSC EQUIPMENT

BROWNS FERRY NUCLEAR PLANT UNIT 3

ELECTRICAL MAINTENANCE SUMMARY

For the Month of December 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
12/7	HPCI	HCV 73-23 limit switch	Limit switch out of place	None	Limit switch actuator loose	Limit switch would not give full open position	Repositioned and tightened actuator limit switch checked ok. TR 116407
12/1	CRD	HS 85-48	Control switch stop is broke	None	Hand switch broke	HS 85-48 not operating	Replaced stop plate on HS 85-48. Check ok. TR 114353

BROWNS FERRY NUCLEAR PLANT UNITS 1, 2 & 3

INSTRUMENT MAINTENANCE SUMMARY

For the Month of December 1978

CSSC 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 1							
12/8	RPIS	Probe 58-35	Replace	None	Bad reed switch	No "00" indication	None
	RPIS	Probe 26-03	Replace	None	Bad reed switch	No fuel in indication	None
12/13	Main steam	TI-1-40D	Replace	None	Switch broken during outage	Caused half isolation	None
12/14	Rad Monit	RI-90-8A	Maintenance	None	Transistor faulty	Alarm would not test	None
12/30	SLC	LI-63-1B	Calibration	None	Zero shift	Did not agree within 1% of stick measurement	None
UNIT 2							
12/15	Feedwater	PI-3-79	Calibration	None	Transmitter zero shift	Indicated high reactor pressure	None
12/19	CRD	PDS-85-63, 64	Replace	None	Gages damaged	Indicate DP when none existed	None
UNIT 3							
12/4	SLC Feedwater	LT-3-53	Calibrate	None	Zero shift on transmitter	Indicated 4" low	None
12/5	Primary Containment	LI-64-54, A, B	Calibrate	None	Slight zero shift	Two indicators did not agree	None

OUTAGE SECTION MONTHLY REPORT

December 1978

During the entire month of December, Unit 1 was down for a refueling outage.

The refueling sequence progressed from reactor vessel disassembly through fuel shuffling and sipping. In addition to normal refueling activities, major maintenance items accomplished during this time included changeout of eight CRD's and nine LPRM's; leak rate testing and repair of all containment isolation valves including the eight MSIV's; changeout and testing of 11 MSRV's; replacement of the two MSSV's with two new MSRV's and the routing of tailpipes for these valves; leak checking and probolog of feedwater heaters and condenser waterboxes, CRD HCU maintenance; inspection and repair of "C" LP turbine which included discovery by non-destructive examination of 273 cracked pins on generator side and 195 on the turbine side requiring the spindle to be pulled; furmaniting of RWCU regenative heat exchanger; motor testing was completed with drywell blower 1A1 requiring replacement; approximately 80% of the electrical board maintenance was completed during this month.

Several unforeseen problems occurred which have placed the outage behind the original outage schedule. One of these was the decision to sip all 8 X 8 fuel bundles instead of just the 440 (7 X 7) reload bundles originally planned. Another problem occurred when several items were dropped into the vessel during jet pump plug installation. This necessitated a prolonged time for search and retrieval, and one item, a tube of versilube lubricant, has not been found.

OUTAGE SECTION MONTHLY REPORT (Con't)

December 1978

- Recirculation valve maintenance included disassembly of valves 68-3 and 68-33 which required the jet pumps to be plugged and the loop drained. After disassembly, it was found that both valves had broken stems and these were replaced. All recirculation loop isolation valves had their bonnets seal welded.

Major modifications worked this month were the recirculation pump trip modification, HPCI modifications, security modifications, generator field ground modification, addition of two new MSRV's and routing of tailpipes, second level undervoltage protection, generator monitor modification, and RHR vent piping modification.