

Docket No. 50-352
Attachment to Monthly
Operating Report for
November 1989

Limerick Generating Station
Unit 1
November 1 through November 30, 1989

I. Narrative Summary of Operating Experiences

Limerick Unit 1 began the month of November in Operational Condition (OPCON) 1 (power operation), at a nominal 100% of rated thermal power. On November 2, the '1A' Reactor Feed Pump (RFP) tripped when personnel working around the feed pump jarred a vibration probe. The feed pump trip resulted in a power reduction to 68%. The reactor was restored to 100% on November 4 following a control rod pattern adjustment. Later the same day, reactor power was reduced to 50% so that maintenance personnel could repair an Electro-hydraulic Control (EHC) System fluid leak on the #2 turbine control valve. During this load drop the '1B' circulating water box was drained and cleaned, scram time testing was performed on 26 control rods, and the control rod pattern was adjusted. Following successful repair of the EHC system fluid leak, power was restored to 100% on November 5. On November 16, reactor power was reduced to 95% to reduce main turbine back pressure. Later the same day, reactor power was reduced further to 85% in order to support a control rod pattern adjustment. Reactor power was restored to 100% on November 17. Limerick Unit 1 ended the month of November in OPCON 1 at a nominal 100% of rated thermal power.

Operational events that occurred during the month of November included:

- On November 2, the '1A' RFP tripped on high vibration when personnel working around the feed pump inadvertently jarred a vibration probe. A 75% recirculation pump run back was automatically initiated due to the RFP pump trip. The unit was stabilized at 68% reactor power.
- On November 19, the Reactor Water Cleanup (RWCU) system isolated when readings were being taken in the Auxiliary Equipment Room for the Daily Surveillance Log. A Division IV Steam Leak Detection Isolation signal was generated, which closed the outboard RWCU isolation valve and subsequently tripped the RWCU pump due to low flow. Instrument and Controls (I&C) personnel conducted an investigation of the problem and determined that the READ switch was defective. The faulty temperature switch was replaced and declared operable on November 20. The

isolation was caused by a faulty READ switch for the '1B' Nonregenerative Heat Exchanger area temperature.

- On November 20, during the start of the '1B' Residual Heat Removal pump, the "201-D12 Bs Breaker Control Power Undervoltage" status light illuminated. An investigation into the cause revealed that a fuse feeding the bus feeder undervoltage relays had blown. The '1B' RHR pump was subsequently restarted with no further incidences.
- On November 20, the Refuel Floor HVAC isolated due to a low differential pressure isolation signal. The Standby Gas Treatment System (SGTS) initiated and operated per design. The isolation was caused by high ambient wind conditions. The SGTS was secured when the high winds subsided.
- On November 23, the RWCU system isolated on high differential flow. An investigation revealed that a differential flow indicator indicated 52 gpm after the isolation. I & C repaired a flow switch and the corresponding channel was declared operable following satisfactory completion of a functional test. The RWCU isolation was reset and the system was returned to service.

II. Challenges to Main Steam Safety Relief Valves

There were no challenges to the Main Steam Relief Valves during the month of November.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50 - 352

UNIT LIMERICK UNIT 1

DATE DECEMBER 14, 1989

COMPANY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
 REPORTS SUPERVISOR
 PROJECTS DIVISION
 LIMERICK GENERATING STATION

TELEPHONE (215) 327-1200 EXTENSION 3752

MONTH NOVEMBER 1989

DAY	AVERAGE DAILY POWER LEVEL (MWE-NET)	DAY	AVERAGE DAILY POWER LEVEL (MWE-NET)
1	1035	17	1018
2	861	18	1040
3	1003	19	1062
4	801	20	1009
5	1029	21	1038
6	1031	22	1034
7	1033	23	1039
8	1036	24	1040
9	1021	25	1030
10	1037	26	1028
11	1037	27	1035
12	1017	28	1023
13	1028	29	1032
14	1014	30	966
15	1012		
16	1025		

3903012450

OPERATING DATA REPORT

DOCKET NO. 50 - 352

DATE DECEMBER 14, 1989

COMPLETED BY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
 REPORTS SUPERVISOR
 PROJECTS DIVISION
 LIMERICK GENERATING STATION

TELEPHONE (215) 327-1200 EXTENSION 3752

OPERATING STATUS

- 1. UNIT NAME: LIMERICK UNIT 1
- 2. REPORTING PERIOD: NOVEMBER, 1989
- 3. LICENSED THERMAL POWER(MWT): 3293
- 4. NAMEPLATE RATING (GROSS MWE): 1138
- 5. DESIGN ELECTRICAL RATING (NET MWE): 1055
- 6. MAXIMUM DEPENDABLE CAPACITY (GROSS MWE): 1092
- 7. MAXIMUM DEPENDABLE CAPACITY (NET MWE): 1055

NOTES: THERE WERE TWO LOAD
 REDUCTIONS GREATER THAN
 20%

- 8. IF CHANGES OCCUR IN CAPACITY RATINGS (ITEMS NUMBER 3 THROUGH 7) SINCE LAST REPORT, GIVE REASONS:
- 9. POWER LEVEL TO WHICH RESTRICTED, IF ANY (NET MWE):
- 10. REASONS FOR RESTRICTIONS, IF ANY:

	THIS MONTH	YR-TO-DATE	CUMULATIVE
11. HOURS IN REPORTING PERIOD	720	7,991	33,551
12. NUMBER OF HOURS REACTOR WAS CRITICAL	720.0	5,015.5	26,359.8
13. REACTOR RESERVE SHUTDOWN HOURS	0.0	0.0	0.0
14. HOURS GENERATOR ON-LINE	720.0	4,869.9	25,902.6
15. UNIT RESERVE SHUTDOWN HOURS	0.0	0.0	0.0
16. GROSS THERMAL ENERGY GENERATED (MWH)	2,328,667	14,517,173	75,314,930
17. GROSS ELECTRICAL ENERGY GENERATED (MWH)	757,440	4,673,900	24,355,570
18. NET ELECTRICAL ENERGY GENERATED (MWH)	729,984	4,413,651	23,256,139

OPERATING DATA REPORT (CONTINUED)

DOCKET NO. 50 - 352

DATE DECEMBER 14, 1989

	THIS MONTH	YR-TO-DATE	CUMULATIVE
19. UNIT SERVICE FACTOR	100.0	60.9	77.2
20. UNIT AVAILABILITY FACTOR	100.0	60.9	77.2
21. UNIT CAPACITY FACTOR (JSING MDC NET)	96.1	52.4	65.7
22. UNIT CAPACITY FACTOR (USING DER NET)	96.1	52.4	65.7
23. UNIT FORCED OUTAGE RATE	0.0	0.0	3.0
24. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):			

25. IF SHUTDOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP:

26. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION):	FORECAST	ACHIEVED
INITIAL CRITICALITY	12/19/84	12/22/84
INITIAL ELECTRICITY	MID APRIL 85	4/13/85
COMMERCIAL OPERATION	1ST QTR 86	2/01/86

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50 - 352

3903012450

UNIT NAME LIMERICK UNIT 1

DATE DECEMBER 14, 1989

REPORT MONTH NOVEMBER, 1989

COMPLETED BY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
 REPORTS SUPERVISOR
 PROJECTS DIVISION
 LIMERICK GENERATING STATION
 TELEPHONE (215) 327-1200 EXTENSION 3752

NO.	DATE	TYPE (1)	DURATION (HOURS) (2)	REASON (2)	METHOD OF SHUTTING DOWN REACTOR (3)	LICENSEE EVENT REPORT #	SYSTEM CODE (4)	COMPONENT CODE (5)	CAUSE AND CORRECTIVE ACTION TO PREVENT RECURRENCE
7	891102	F	000.0	H	4	N/A	CH	PUMPXX	THE 1A REACTOR FEED PUMP TRIPPED WHEN PERSONNEL DISTURBED A VIBRATION PROBE. IT CAUSED A 32% POWER REDUCTION. THE OPPORTUNITY WAS TAKEN TO PERFORM A CONTROL RGD PATTERN ADJUSTMENT.
8	891104	S	000.0	B	4	N/A	HB	ZZZZZ	REACTOR POWER WAS REDUCED 50% TO REPAIR AN EHC LEAK ON THE #2 TURBINE CONTROL VALVE.

(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

3903012450

Docket No. 50-353
Attachment to Monthly
Operating Report for
November 1989

Limerick Generating Station
Unit 2
November 1 through November 30, 1989

I. Narrative Summary of Operating Experiences

Limerick Unit 2 began the month of November in Operational Condition (OPCON) 1 (power operation) at a nominal 73% of rated thermal power. On November 10, the Unit 2 reactor automatically shut down following a generator lockout. The generator lockout was caused when the '1A' phase differential relay tripped at an incorrect setpoint. The phase differential relays were recalibrated, and the Unit subsequently entered OPCON 1 on November 14. On November 21, reactor power was sustained at 100% for the first time. On November 23, the '2B' reactor feed pump tripped and a subsequent reactor recirculation pump run back occurred resulting in a reduction to 60%. A defective vibration card was determined to be the cause and the '2B' reactor feed pump was returned to service. Reactor power was restored to 100% on November 23. Limerick Unit 2 ended the month of November in OPCON 1 at a nominal 100% of rated thermal power.

Operational events that occurred during the month of November included:

- On November 2, the '2A' and '2B' recirculation pumps were tripped in accordance with startup testing. There were no unexpected occurrences. Following completion of the test, the pumps were returned to service.
- On November 10, the Reactor Water Cleanup (RWCU) system isolated when steam leaking by the Regenerative Heat Exchanger safety relief valve tripped the Division IV steam leak detector. A second isolation occurred on differential flow when the system was placed in service to verify that the valve was leaking. The system was subsequently blocked for valve repair. The safety relief valve was removed and a blank flange was installed under a temporary modification.

The reactor automatically shut down following a generator lockout. The lockout was activated by the 'A' phase differential current relay. The setpoint on the differential current relays were incorrect due to an incorrect calculation. The relays were recalibrated and tested before the unit was returned to service.

- On November 11, the High Pressure Coolant Injection (HPCI) system was declared inoperable after the system operated erratically following an automatic reactor shut down. While operating on minimum flow, after the shutdown, HPCI tripped six times on overspeed within one minute before being secured by an operator. This cyclic operation was abnormal and could have caused a HPCI failure if it had been allowed to continue. Subsequently the HPCI ramp generator control loop was adjusted and HPCI tested. During HPCI testing a seal leak was observed on the booster pump. HPCI was blocked on November 15, and the seal leak was repaired. HPCI was subsequently tested satisfactorily at 200 pounds reactor pressure. HPCI was tested again satisfactorily at approximately 920 pounds reactor pressure.
- On November 23, the '2B' Reactor Feed Pump (RFP) tripped causing a reactor recirculation pump runback signal. The Test Engineers found the trip cause to be a defective card which receives inputs from the RFP's low pressure bearing vibration probe. A Temporary Circuit Alteration was installed to remove the high vibration trip function from the probe. The alarm functions still operate properly. The '2B' RFP was returned to service.
- On November 27, the '2C' RFP was tripped as part of the startup test program along with the subsequent reactor recirculation pump runback. Reactor level decreased from +35 inches to +27.5 inches in approximately 30 seconds. Following the reactor recirculation pump runback, peak reactor level was +42 inches and reactor power decreased to 70%. When all required data was obtained, the '2C' RFP was returned to service. The reactor recirculation pump runback signal was reset and a control rod adjustment was made. Reactor power was then returned to 100%.

II. Challenges to Main Steam Safety Relief Valves

There were no challenges to the Main Steam Relief Valves during the month of November.

3903012450

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50 - 352

UNIT LIMERICK UNIT 2

DATE DECEMBER 14, 1989

COMPANY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
REPORTS SUPERVISOR
PROJECTS DIVISION
LIMERICK GENERATING STATION

TELEPHONE (215) 327-1200 EXTENSION 3752

MONTH NOVEMBER 1989

DAY	AVERAGE DAILY POWER LEVEL (MWE-NET)	DAY	AVERAGE DAILY POWER LEVEL (MWE-NET)
1	727	17	716
2	525	18	1018
3	689	19	854
4	826	20	944
5	887	21	1040
6	1016	22	1066
7	1020	23	818
8	1041	24	1073
9	1023	25	1116
10	595	26	1032
11	0	27	1035
12	0	28	1063
13	0	29	1074
14	0	30	1070
15	0		
16	248		

3903012450

OPERATING DATA REPORT

DOCKET NO. 50 - 353

DATE December 14, 1989

COMPLETED BY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
 REPORTS SUPERVISOR
 PROJECTS DIVISION
 LIMERICK GENERATING STATION
 TELEPHONE (215) 327-1200 EXTENSION 3752

OPERATING STATUS

1. UNIT NAME: LIMERICK UNIT 2
 2. REPORTING PERIOD: November, 1989
 3. LICENSED THERMAL POWER(MWT): 3293
 4. NAMEPLATE RATING (GROSS MWE): 1138
 5. DESIGN ELECTRICAL RATING (NET MWE): 1055
 6. MAXIMUM DEPENDABLE CAPACITY (GROSS MWE): -
 7. MAXIMUM DEPENDABLE CAPACITY (NET MWE): -

NOTES: A FULL POWER LICENSE
 WAS ISSUED ON 8/25/89.
 THE STARTUP TESTING
 PROGRAM IS IN PROGRESS.
 COMMERCIAL OPERATION IS
 EXPECTED IN THE FIRST
 QUARTER OF 1990.

8. IF CHANGES OCCUR IN CAPACITY RATINGS (ITEMS NUMBER 3 THROUGH 7) SINCE LAST REPORT, GIVE REASONS:
 9. POWER LEVEL TO WHICH RESTRICTED, IF ANY (NET MWE):
 10. REASONS FOR RESTRICTIONS, IF ANY:

	THIS MONTH	YR-TO-DATE	CUMULATIVE
11. HOURS IN REPORTING PERIOD	<u>720</u>	<u>2,652.5</u>	<u>2,652.5</u>
12. NUMBER OF HOURS REACTOR WAS CRITICAL	<u>633.1</u>	<u>2,207.5</u>	<u>2,207.5</u>
13. REACTOR RESERVE SHUTDOWN HOURS	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
14. HOURS GENERATOR ON-LINE	<u>587.3</u>	<u>1,565.9</u>	<u>1,565.9</u>
15. UNIT RESERVE SHUTDOWN HOURS	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
16. GROSS THERMAL ENERGY GENERATED (MWH)	<u>1,678,742</u>	<u>3,129,686.4</u>	<u>3,129,686.4</u>
17. GROSS ELECTRICAL ENERGY GENERATED (MWH)	<u>561,260</u>	<u>983,150</u>	<u>983,150</u>
18. NET ELECTRICAL ENERGY GENERATED (MWH)	<u>539,079</u>	<u>937,361</u>	<u>937,361</u>

OPERATING DATA REPORT (CONTINUED)

DOCKET NO. 50 - 353

	DATE	THIS MONTH	VR-TO-DATE	CUMULATIVE
	December 14, 1989			
19. UNIT SERVICE FACTOR		81.6	59.0	59.0
20. UNIT AVAILABILITY FACTOR		*	*	*
21. UNIT CAPACITY FACTOR (USING MDC NET)		*	*	*
22. UNIT CAPACITY FACTOR (USING DER NET)		*	*	*
23. UNIT FORCED OUTAGE RATE		*	*	*
24. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):				
INITIAL POWER ASCENSION TESTING IS IN PROGRESS				
MAINTENANCE/SURVEILLANCE TEST OUTAGE, 12/01/89, 3 WEEKS				
25. IF SHUTDOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP:				
26. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION):		FORECAST	ACHIEVED	
INITIAL CRITICALITY		8/12/89	8/12/89	
INITIAL ELECTRICITY		9/01/89	9/01/89	
COMMERCIAL OPERATION		2/01/90		

* NOT APPLICABLE PRIOR TO COMMERCIAL OPERATION

3903012450

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50 - 353

UNIT NAME LIMERICK UNIT 2

DATE DECEMBER 14, 1989

REPORT MONTH NOVEMBER, 1989

COMPLETED BY PHILADELPHIA ELECTRIC COMPANY

J. J. MURPHY
 REPORTS SUPERVISOR
 PROJECTS DIVISION
 LIMERICK GENERATING STATION
 TELEPHONE (215) 327-1200 EXTENSION 3752

NO.	DATE	TYPE (1)	DURATION (HOURS)	REASON (2)	METHOD OF SHUTTING DOWN REACTOR (3)	LICENSEE EVENT REPORT #	SYSTEM CODE (4)	COMPONENT CODE (5)	CAUSE AND CORRECTIVE ACTION TO PREVENT RECURRENCE
9	891002	S	000.0	B	4	N/A	CB	PUMPXX	THE 2A AND 2B RECIRC PUMPS WERE TRIPPED CAUSING APPROX 25% LOAD REDUCTION AS PART OF THE STARTUP TEST PROGRAM.
10	891010	F	132.7	H	3	2-89-013	ED	RELAYS	THE REACTOR SCRAMMED FOLLOWING A GENERATOR LOCKOUT. IT WAS CAUSED BY INCORRECT SETPOINTS BEING USED ON THE DIFFERENTIAL CURRENT RELAY.
11	891019	S	000.0	B	4	N/A	CB	PUMPXX	A SINGLE RECIRC PUMP TRIP AND PROGRAM TESTING DURING POWER CHANGES WAS PERFORMED AS PART OF THE STARTUP TEST PROGRAM.
12	891023	F	000.0	A	4	N/A	CH	PUMPXX	2B REACTOR FEED PUMP TRIPPED DUE TO A DEFECTIVE VIBRATION CARD.
13	891027	S	000.0	B	4	N/A	CH	PUMPXX	THE 2C REACTOR FEED PUMP WAS TRIPPED AS PART OF THE STARTUP TEST PROGRAM.
			132.7						

(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