

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-316
UNIT 2
DATE 12-4-78
COMPLETED BY W. T. Gillett
TELEPHONE 616-465-5901

MONTH November 1978

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	837
2	639
3	723
4	579
5	545
6	565
7	770
8	815
9	724
10	---
11	---
12	---
13	---
14	---
15	---
16	---

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	---
18	---
19	---
20	---
21	---
22	---
23	---
24	---
25	18
26	525
27	368
28	885
29	1,021
30	909
31	---

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)

7812200205

OPERATING DATA REPORT

DOCKET NO. 50-316
 DATE 12-4-78
 COMPLETED BY W. T. Gillett
 TELEPHONE 616-465-5901

OPERATING STATUS

1. Unit Name: Donald C. Cook 2
2. Reporting Period: November 1978
3. Licensed Thermal Power (MWt): 3,391
4. Nameplate Rating (Gross MWe): 1,133
5. Design Electrical Rating (Net MWe): 1,100
6. Maximum Dependable Capacity (Gross MWe): 1,118
7. Maximum Dependable Capacity (Net MWe): 1,082
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):

10. Reasons For Restrictions, If Any:

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	720	8,016	8,016
12. Number Of Hours Reactor Was Critical	355	4,486.7	4,486.7
13. Reactor Reserve Shutdown Hours	0	0	0
14. Hours Generator On-Line	323.6	3,983.6	3,983.6
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	848,234	10,629,051	10,629,051
17. Gross Electrical Energy Generated (MWH)	250,370	3,165,820	3,165,820
18. Net Electrical Energy Generated (MWH)	238,358	3,022,104	3,022,104
19. Unit Service Factor	44.9	72.6	72.6
20. Unit Availability Factor	44.9	72.6	72.6
21. Unit Capacity Factor (Using MDC Net)	30.6	58.6	58.6
22. Unit Capacity Factor (Using DER Net)	30.1	57.7	57.7
23. Unit Forced Outage Rate	3.3	8.7	8.7
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

3/1/78

3/10/78

INITIAL ELECTRICITY

3/15/78

3/22/78

COMMERCIAL OPERATION

6/1/78

7/1/78

UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH November, 1978

DOCKET NO. 50-316
 UNIT NAME D.C. Cook-Unit 2
 DATE 12-14-78
 COMPLETED BY B.A. Svensson
 TELEPHONE 616 - 465-5901
 - PAGE 1 OF 2 -

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
39	781101	F	0	B	4	N/A	HH	HTEXCH	Reactor power reduced to 75% to re- move "B" H.P. Heater String from service to repair heater tube leaks. Power reduction continued to 60% to permit removal of West Main Feed Pump from service to repair leak. Power increased to 80% 781103. Reactor power reduced to 60% to re- move "A" L.P. Heater String from service to repair heater tube leak. Power increased to 80% 781106. Unit removed from service to perform modifications to Moisture Separator Reheaters. Reactor coolant system brought to cold shutdown. Unit re- turned to service 781126. Power ascension to 100% terminated and power returned to 75% to remove "A" H.P. Heater String from service for suspected tube leak.
40	781104	F	0	B	4	N/A	HH	HTEXCH	
41	781109	S	385.2	B	1	N/A	ZZ	ZZZZZZ	

¹
 F: Forced
 S: Scheduled

²
 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)

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

INSTRUCTIONS

This report should describe all plant shutdowns during the report period. In addition, it should be the source of explanation of significant dips in average power levels. Each significant reduction in power level (greater than 20% reduction in average daily power level for the preceding 24 hours) should be noted, even though the unit may not have been shut down completely¹. For such reductions in power level, the duration should be listed as zero, the method of reduction should be listed as 4 (Other), and the Cause and Corrective Action to Prevent Recurrence column should explain. The Cause and Corrective Action to Prevent Recurrence column should be used to provide any needed explanation to fully describe the circumstances of the outage or power reduction.

NUMBER. This column should indicate the sequential number assigned to each shutdown or significant reduction in power for that calendar year. When a shutdown or significant power reduction begins in one report period and ends in another, an entry should be made for both report periods to be sure all shutdowns or significant power reductions are reported. Until a unit has achieved its first power generation, no number should be assigned to each entry.

DATE. This column should indicate the date of the start of each shutdown or significant power reduction. Report as year, month, and day. August 14, 1977 would be reported as 770814. When a shutdown or significant power reduction begins in one report period and ends in another, an entry should be made for both report periods to be sure all shutdowns or significant power reductions are reported.

TYPE. Use "F" or "S" to indicate either "Forced" or "Scheduled," respectively, for each shutdown or significant power reduction. Forced shutdowns include those required to be initiated by no later than the weekend following discovery of an off-normal condition. It is recognized that some judgment is required in categorizing shutdowns in this way. In general, a forced shutdown is one that would not have been completed in the absence of the condition for which corrective action was taken.

DURATION. Self-explanatory. When a shutdown extends beyond the end of a report period, count only the time to the end of the report period and pick up the ensuing down time in the following report periods. Report duration of outages rounded to the nearest tenth of an hour to facilitate summation. The sum of the total outage hours plus the hours the generator was on line should equal the gross hours in the reporting period.

REASON. Categorize by letter designation in accordance with the table appearing on the report form. If category H must be used, supply brief comments.

METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER. Categorize by number designation

¹Note that this differs from the Edison Electric Institute (EEI) definitions of "Forced Partial Outage" and "Scheduled Partial Outage." For these terms, EEI uses a change of 30 MW as the break point. For larger power reactors, 30 MW is too small a change to warrant explanation.

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LICENSEE EVENT REPORT =. Reference the applicable reportable occurrence pertaining to the outage or power reduction. Enter the first four parts (event year, sequential report number, occurrence code and report type) of the five part designation as described in Item 17 of Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161). This information may not be immediately evident for all such shutdowns, of course, since further investigation may be required to ascertain whether or not a reportable occurrence was involved.) If the outage or power reduction will not result in a reportable occurrence, the positive indication of this lack of correlation should be noted as not applicable (N/A).

SYSTEM CODE. The system in which the outage or power reduction originated should be noted by the two digit code of Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161).

Systems that do not fit any existing code should be designated XX. The code ZZ should be used for those events where a system is not applicable.

COMPONENT CODE. Select the most appropriate component from Exhibit I - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161), using the following criteria:

- A. If a component failed, use the component directly involved.
- B. If not a component failure, use the related component: e.g., wrong valve operated through error; list valve as component.
- C. If a chain of failures occurs, the first component to malfunction should be listed. The sequence of events, including the other components which fail, should be described under the Cause and Corrective Action to Prevent Recurrence column.

Components that do not fit any existing code should be designated XXXXXX. The code ZZZZZZ should be used for events where a component designation is not applicable.

CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE. Use the column in a narrative fashion to amplify or explain the circumstances of the shutdown or power reduction. The column should include the specific cause for each shutdown or significant power reduction and the immediate and contemplated long term corrective action taken, if appropriate. This column should also be used for a description of the major safety-related corrective maintenance performed during the outage or power reduction including an identification of the critical path activity and a report of any single release of radioactivity or single radiation exposure specifically associated with the outage which accounts for more than 10 percent of the allowable annual values.

For long textual reports continue narrative on separate paper and reference the shutdown or power reduction for this narrative.

UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH November, 1978

DOCKET NO. 50-316
 UNIT NAME D.C. Cook-Unit 2
 DATE 12-14-78
 COMPLETED BY B.A. Svensson
 TELEPHONE 616 - 465-5901
 - PAGE 2 OF 2 -

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
42	781126	F	11.2	A	3	N/A	HH	TURBIN	Turbine/Reactor trip due to trip of East Main Feed Pump Turbine. Unit returned to service 781127 and reactor power at 100% 781129. Reactor power reduced to 55% due to problems created by induced currents in piping below main generator. Reactor power returned to 90% the same day.
43	781130	F	0	H	4	N/A	ZZ	ZZZZZZ	

1
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2
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 C-Refueling
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(9/77)

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Docket No.: 50-316
Unit Name: D. C. Cook Unit #2
Completed By: R. S. Keith
Telephone: (616) 465-5901
Date: December 13, 1978

OPERATING EXPERIENCE -- NOVEMBER, 1978

Highlights

The Unit was removed from service at 2125 hours November 9, 1978 for a planned outage for repairs to the Moisture Separator Reheaters. The outage was completed and the Unit paralleled with the system at 2235 hours November 25, 1978.

Summary

11/01/78 -- The Unit entered this reporting period at 90% power and 870 megawatts electrical.

At 1630 hours power was reduced to 80% as a conservation effort to keep the reheaters operating until the scheduled outage for repairs.

Power was reduced to 75% at 1830 hours to remove the "B" string of high pressure heaters from service for repairs to 5-B feedwater heater.

11/02/78 -- Power was reduced to 60% to remove the West Main Feed Pump from service to repair a leak on the warming line.

Radiation Monitors R-31 and R-32 were out of service for one hour for preventive maintenance.

11/03/78 -- The West Main Feed Pump was returned to service and the Unit was returned to 80% power starting at 0310 hours.

The "B" string of high pressure heaters was returned to service at 2155 hours.

11/04/78 -- The Unit was reduced to 75% power to remove the "A" string of low pressure feedwater heaters from service because of an indicated tube leak.

11/05/78 -- The Unit was reduced to 50% power and the "A" string of high pressure heaters was removed from service due to an indicated tube leak.

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11/06/78 -- The "A" string of low pressure heaters was returned to service at 1940 hours. The Unit was returned to 80% power starting at 1930 hours.

The Turbine Driven Auxiliary Feed Pump was inoperable from 0830 to 2205 hours because the turbine would not reset. The trouble was traced to a shorted diode in the electrical overspeed trip circuit.

11/07/78 -- The "A" string of high pressure heaters was returned to service at 1810 hours. The Unit was loaded to 85% power.

11/09/78 -- At 1917 hours started increasing toward 100% power in preparation for a Generator trip from 100%. At 2020 hours it was found that the belts on both bus duct cooling fans were broken. At 2051 hours the Unit was started down from 92%. The Unit was tripped off the line at 2125 hours.

11/10/78 -- The cooldown to Mode 5 was started at 1305 hours. The Unit entered Mode 4 at 1850 hours.

11/11/78 -- The Unit entered Mode 5 at 0056 hours.

11/13/78 -- At about 1025 hours we experienced a hydrogen fire under the #2 Generator. Water was used to keep the area cool while the Generator was degassed and then refilled with CO₂. The fire was out at 1100 hours. Due to the quick actions of many people there was only minor damage as a result of the fire.

11/21/78 -- While raising the Reactor Coolant System pressure to 400 lbs. and with the temperature at 180°F, we experienced leakage from the containment spray header into the upper volume of the containment. The leakage was caused by RH-104-W not being completely closed.

11/23/78 -- The Unit entered Mode 4 at 0002 hours and Mode 3 at 1240 hours.

11/24/78 -- At 0745 the main steam lines had been pressurized and the steam generator stop valves were opened.

At 0820 hours the Steam Generator stop valves were closed and the steam lines repressurized to repair 3 steam leaks. At 0838 started pulling the shutdown banks. At 1035 the shutdown banks were inserted because every time the bank selector switch was repositioned, the step counters counted a step and the rods did not move.

Docket No.: 50-316
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Page: (3)

The rod control system was repaired and the shutdown rods were pulled. The approach to criticality took from 1656 to 2106 hours because the control rods were stopped at many positions to permit measuring rod position indication voltages. At 2145 the main Turbine was rolled with a vacuum of 25.5 inches. At 2300 hours the Unit entered Mode 1.

11/25/78 - 0031 hours -- Reactor tripped due to low-low level in #3 Steam Generator.

0140 hours -- Pulled the shutdown banks.

0148 hours -- Reactor was critical.

0458 hours -- Started the West Main Feed Pump.

0558 hours -- Main Turbine was rolled with a vacuum of 25.5 inches. Vacuum decreased to 24 inches while bringing the Turbine up to speed.

0607 hours -- The Main Turbine tripped on high level in #4 Steam Generator.

0835 hours -- Unit reentered Mode 1.

1343 hours -- Tested the Main Turbine overspeed trips. The 112% overspeed trip did not trip at the required value and the Main Turbine was shut down.

1817 hours -- Rolled the Main Turbine with 25 inches of vacuum.

1941 hours -- Main Turbine overspeed trips were tested satisfactorily.

2235 hours -- The Unit was paralleled with the system.

11/26/78 - 1745 hours -- The Reactor was at 98% power and about 1115 megawatts electrical.

1804 hours -- Started decreasing power to 75% because of a suspected leak in 5-A feedwater heater.

1913 hours -- Reactor was at 75% power and 770 megawatts electrical.

1957 hours -- The East Main Feed Pump tripped off the line.

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2002 hours -- The Unit tripped on low-low level in #4 Steam Generator.

2130 hours -- The Reactor was critical.

2159 hours -- The Main Turbine could not be rolled by steam because differential expansion was too high.

11/27/78 - 0611 hours -- Rolled the Main Turbine with steam when it was found that the differential expansion alarm was incorrectly adjusted.

0712 hours -- The Unit was in parallel with the system.

1630 hours -- Started increasing load from 50% power.

2200 hours -- The Unit was at 83% power with the "A" string of high pressure heaters still out of service.

At this power level, with the high pressure heater bypass fully open, it was calculated that the flow to the "B" string of high pressure heaters was 120% of normal.

11/28/78 - 1600 hours -- The Unit was loaded to 90% power.

11/29/78 - 0710 hours -- The "A" string of high pressure heaters was returned to service.

1200 hours -- The Unit was at 100% power.

Radiation Monitors R-25 and R-26 were placed out of service at 2215 hours because of a failed pump.

11/30/78 - 1330 hours -- Power reduction to 90% was started to remove the "A" string of high pressure heaters from service.

1345 hours -- Load reduction was accelerated when a pipe hanger from the Hydrogen line to the Generator was found red hot.

1440 hours -- The Unit was settled out at 55%.

1710 thru

2400 hours -- A power increase from 55% to 90% was made.

DOCKET NO.	50 - 316
UNIT NAME	<u>D. C. COOK - UNIT NO. 2</u>
DATE	<u>12-14-78</u>
COMPLETED BY	<u>B. A. Svensson</u>
TELEPHONE	<u>(616) 465-5901</u>

MAJOR SAFETY-RELATED MAINTENANCE

NOVEMBER, 1978

- M-1 No. 3 front bank cylinder of 2CD emergency diesel engine temperature indicated high relative to other cylinders. "Pull card" readings were taken and the fuel rack on #3FB adjusted to balance temperatures.
- M-2 Replaced pivot pin bushing and bonnet gasket on non-essential service water containment isolation check valve. Bluing check of seat satisfactory.
- M-3 No. 2 steam generator stop valve, MRV-220, had hydraulic line leakage. Replaced "O" rings and reassembled. Operational check was satisfactory.
- M-4 CTS-120E and CTS-120W, containment spray check valves, indicated leakage during testing. Valve internals cleaned and valves retested.
- M-5 Hydraulic snubber, 2-GCS-S637, fluid reservoir was leaking. Replaced cracked reservoir.
- M-6 NLP-153, pressurizer level transmitter equalizing valve was leaking. A new bonnet was installed.
- M-7 RC-122 and RC-123, pressurizer spray control valve bypass valves had stem leakage. Line was freeze plugged and the valve bonnet diaphragms were replaced.
- M-8 CCW-244-72, CCW cooling to east main steam line penetration was not functioning. The seat and plug were replaced and valve retested satisfactorily.
- M-9 MS-136-4 and MS-136-1, steam generator stop valve body drains, bonnets were steam cut. Valves were replaced.
- M-10 MS-136-2 and MS-136-3, #2 and #3 steam generator stop valve body drains were steam cut. The valves were replaced.
- M-11 Main steam sample connection root valve for #1 steam generator was leaking. Replaced valve.
- M-12 Main steam sample connection root valve for #4 steam generator was leaking. Replaced valve.

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MAJOR SAFETY-RELATED MAINTENANCE

NOVEMBER, 1978

- M-13 Containment spray heater check valves, CTS-127E and CTS-127W would not pass flow. Found valves installed backward. Removed valves and reinstalled properly.
- M-14 Containment spray eductor check valve, CTS-120E was leaking. The disc was cleaned and repositioned. Retest was satisfactory.
- C&I-1 The turbine driven auxiliary feedpump would not reset. The input zener diode of the electronic tachometer required replacement. Calibration of the tachometer was performed and operability verified.
- C&I-2 Flux mapping system detector A would not withdraw. The reversing relay required replacement.
- C&I-3 Rod position indication for control bank D rod H-8, indicated 13 steps from demand. The secondary coil voltage was measured at 16.49 VAC which indicated the correct rod position of 207 steps as indicated on the step counter. The signal conditioning module was respanned to the correct calibration. The correct indication returned to the panel meter.
- C&I-4 The step counter for shutdown bank C stopped counting at 46 steps. The capacitor across contacts 5 and 6 of K19 relay in the logic cabinet required replacement. Correct operation of the step counter was verified.
- C&I-5 Nuclear instrumentation system channel N31 source range indication was erratic. The connectors of the high voltage and signal cable were cleaned and the channel returned to service.
- C&I-6 The rod position indication system for control bank "D" rod H-8, rod bottom light extinguished while the panel meter indicated 25 steps. The zero potentiometer of the signal conditioning module was adjusted. The panel meter's indication returned to zero.

