

# OPERATING DATA REPORT

DOCKET NO. 50-316  
DATE 7-3-80  
COMPLETED BY W. T. Gillett  
TELEPHONE 616-465-5901

## OPERATING STATUS

1. Unit Name: Donald C. Cook 2  
2. Reporting Period: June 1980  
3. Licensed Thermal Power (MWe): 3391  
4. Nameplate Rating (Gross MWe): 1133  
5. Design Electrical Rating (Net MWe): 1100  
6. Maximum Dependable Capacity (Gross MWe): 1118  
7. Maximum Dependable Capacity (Net MWe): 1082  
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	4,367	21,887
12. Number Of Hours Reactor Was Critical	647.1	3,828.6	14,908.5
13. Reactor Reserve Shutdown Hours	0	0	0
14. Hours Generator On-Line	647.1	3,743.4	14,245.3
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,187,611	12,194,027	44,418,407
17. Gross Electrical Energy Generated (MWH)	706,460	3,999,020	14,153,430
18. Net Electrical Energy Generated (MWE)	682,148	3,858,710	13,626,122
19. Unit Service Factor	89.9	85.7	73.7
20. Unit Availability Factor	89.9	85.7	73.7
21. Unit Capacity Factor (Using MDC Net)	87.6	81.7	68.1
22. Unit Capacity Factor (Using DER Net)	86.1	80.3	67.0
23. Unit Forced Outage Rate	0	1.5	10.6

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

# AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO: 50-316

UNIT 2

DATE 7-3-80

COMPLETED BY W. T. Gillett

TELEPHONE 616-465-5901

MONTH June 1980

DAY AVERAGE DAILY POWER LEVEL  
(MWE-Net)

1	<u>1059</u>
2	<u>1056</u>
3	<u>1064</u>
4	<u>1064</u>
5	<u>1065</u>
6	<u>1062</u>
7	<u>1062</u>
8	<u>1063</u>
9	<u>1062</u>
10	<u>1065</u>
11	<u>1064</u>
12	<u>1061</u>
13	<u>1057</u>
14	<u>1057</u>
15	<u>1060</u>
16	<u>1063</u>

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

17	<u>1058</u>
18	<u>1055</u>
19	<u>1057</u>
20	<u>1053</u>
21	<u>1052</u>
22	<u>1050</u>
23	<u>1048</u>
24	<u>1049</u>
25	<u>1050</u>
26	<u>1044</u>
27	<u>922</u>
28	<u>----</u>
29	<u>----</u>
30	<u>----</u>
31	<u>----</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.

## UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH June, 1980DOCKET NO. 50-316UNIT NAME D.C. Cook-Unit 2DATE 7-9-80COMPLETED BY B.A. SvenssonTELEPHONE (616) 465-5901

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
78	800627	S	72.9	H	1	N.A.	ZZ	ZZZZZZ	Unit removed from service for scheduled outage. The primary purpose for the outage is to complete the auxiliary feedwater system modification which will give each unit its independent auxiliary feedwater system.

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)

## 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 completely<sup>1</sup>. 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

<sup>1</sup>Note 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.

in accordance with the table appearing on the report form. If category 4 must be used, supply brief comments.

**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.

Docket No.: 50-316  
Unit Name: D. C. Cook Unit #2  
Completed By: R. S. Lease  
Telephone: (616) 465-5901  
Date: July 8, 1980  
Page: 1 of 2

**MONTHLY OPERATING ACTIVITIES -- JUNE, 1980**

**Highlights :**

The Unit operated at 100% power except as detailed in the Summary.

The Unit was removed from service for a scheduled outage 6/27/80. The Unit was unloaded over a 2 hour ramp starting at 2100 hours.

Total electrical generation for the month was 706,460.mwh.

**Summary :**

- 6/3/80 -- The motor for Engineered Safety Feature Ventilation Fan 2-HV-AES-1 failed at 2302 hours. The motor was replaced and the fan was again operable at 0225 hours 6/5/80.
- 6/9/80 -- Containment Radiation Monitors R-11 & R-12 were inoperable for a 3 hour period due to low sample flow.
- 6/12/80 -- Vent Stack Radiation Monitor R-25 was inoperable for a 7 hour period for necessary repairs.
- 6/13/80 -- Vent Stack Radiation Monitor R-25 was again inoperable for a 7.75 hour period for additional repairs.
- 6/14/80 -- The motor for Engineered Safety Feature Ventilation Fan 2-HV-AES-2 failed at 1012 hours. The motor was replaced and the fan was again operable at 1843 hours the same day.
- 6/27/80 -- The Unit was removed from service for a scheduled outage at 2305 hours. The reactor was tripped at 2307 hours.
- 6/28/80 -- An inadvertent automatic safety injection occurred at 0044 hours. The initiation was due to failure to block the low pressurizer pressure actuation signal as the reactor coolant system was being cooled down and depressurized.

The Unit was cooled down into Mode 5 by 0925 hours.



[The text in this section is extremely faint and illegible. It appears to be a list or a series of entries, possibly names and dates, but the characters are too light to transcribe accurately.]

Docket No.: 50-316  
Unit Name: D. C. Cook Unit #2  
Completed By: R. S. Lease  
Telephone: (616) 465-5901  
Date: July 8, 1980  
Page: 2 of 2

The primary purpose for the outage is to permit completion of the auxiliary feedwater system modification which will give each unit it's independent auxiliary feedwater system.





DOCKET NO.	50 - 316
UNIT NAME	<u>D. C. Cook - Unit No. 2</u>
DATE	<u>7-9-80</u>
COMPLETED BY	<u>B. A. Svensson</u>
TELEPHONE	<u>(616) 465-5901</u>
PAGE	<u>1 of 1</u>

MAJOR SAFETY-RELATED MAINTENANCE

JUNE, 1980

- M-1 Engineered safety feature ventilation fan 2-HV-AES-1 breaker tripped on thermal overload. Motor leads and end of power supply cable were found burned up. Replaced motor and had ventilation unit tested.
- M-2 Engineered safety feature ventilation fan HV-AES-2 motor power leads burned up at the junction box. The motor was replaced and new power cable installed. The unit tested satisfactorily following replacement.
- C&I-1 A ground condition was indicated on the AB battery when a steam dump signal was applied to the steam dump valve. The problem was caused by worn insulation at solenoid valve URV-132. The worn insulation was replaced to eliminate the ground fault.
- C&I-2 No. 4 accumulator hi-low level alarm was in, with the level indicators showing normal level. Investigation disclosed that the low alarm ILA-140 was out of calibration. The Unit was recalibrated and the level alarm cleared.



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Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were incubated in the presence of 100 mg/ml of gentamicin and 100 mg/ml of rifampicin. The concentration of the *Agrobacterium* suspension was 10<sup>6</sup> cells/ml. The transformation efficiency was determined by the number of transformants per 10<sup>6</sup> cells. The data are the mean  $\pm$  SD of three independent experiments.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in the YEA medium for 24 h at 28 °C. The cell concentration of the strains was adjusted to 1.0 × 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results were expressed as the mean ± SD of three independent experiments.