

OPERATING DATA REPORT

DOCKET NO. 050-0331
DATE 11-15-90
COMPLETED BY Hai Tran
TELEPHONE (319) 851-7491

OPERATING STATUS

Notes

1. Unit Name: Duane Arnold Energy Center
2. Reporting Period: October 1990
3. Licensed Thermal Power (MWt): 1658
4. Nameplate Rating (Gross MWe): 565 (Turbine)
5. Design Electrical Rating (Net MWe): 538
6. Maximum Dependable Capacity (Gross MWe): 565
7. Maximum Dependable Capacity (Net MWe): 538
8. If Changes Occur in Capacity Ratings (Items Number 3 through 7) Since the Last Report, Give Reasons: N/A

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

	This Month	Yr-to-Date	Cumulative
11. Hours in Reporting Period	<u>744.0</u>	<u>7295.0</u>	<u>138047.0</u>
12. Number of Hours Reactor Was Critical	<u>695.0</u>	<u>5295.5</u>	<u>99165.1</u>
13. Reactor Reserve Shutdown Hours	<u>.0</u>	<u>.0</u>	<u>192.8</u>
14. Hours Generator On-Line	<u>688.0</u>	<u>5181.4</u>	<u>96389.4</u>
15. Unit Reserve Shutdown Hours	<u>.0</u>	<u>.0</u>	<u>.0</u>
16. Gross Thermal Energy Generated (MWN)	<u>845964.0</u>	<u>7516152.0</u>	<u>127596986.8</u>
17. Gross Electrical Energy Generated (MWH)	<u>279447.0</u>	<u>2500641.0</u>	<u>42836161.0</u>
18. Net Electrical Energy Generated (MWH)	<u>259739.9</u>	<u>2337286.2</u>	<u>40143415.8</u>
19. Unit Service Factor	<u>92.5</u>	<u>71.0</u>	<u>69.8</u>
20. Unit Availability Factor	<u>92.5</u>	<u>71.0</u>	<u>70.0</u>
21. Unit Capacity Factor (Using MDC Net)	<u>64.9</u>	<u>59.6</u>	<u>56.2</u>
22. Unit Capacity Factor (Using DER Net)	<u>64.9</u>	<u>59.6</u>	<u>54.1</u>
23. Unit Forced Outage Rate	<u>7.5</u>	<u>6.4</u>	<u>14.0</u>
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of each: <u>N/A</u>)			
25. If Shutdown at End of Report Period, Est. Date of Startup: <u>N/A</u>			

(9/77)

9011210220 901115
PDR ADOCK 05000331
R PDC

AVERAGE DAILY UNIT POWER LEVEL

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MONTH October 1990

DAY AVERAGE DAILY POWER LEVEL
(MWe-Net)

1	368.0
2	204.0
3	250.0
4	318.0
5	324.0
6	324.0
7	328.0
8	335.0
9	335.0
10	335.0
11	292.0
12	334.0
13	335.0
14	332.0
15	335.0

DAY AVERAGE DAILY POWER LEVEL
(MWe-Net)

16	329.0
17	328.0
18	337.0
19	311.0
20	0.0
21	0.0
22	151.0
23	435.0
24	509.0
25	509.0
26	529.0
27	526.0
28	519.0
29	525.0
30	518.0
31	520.0

REFUELING INFORMATION

DOCKET NO. 50-0331
DATE 11-15-90
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1. Name of facility.
 - a. Duane Arnold Energy Center
2. Scheduled date for next refueling shutdown.
 - a. March 1, 1992
3. Scheduled date for restart following refueling.
 - a. May 1, 1992
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?

N/A
5. Scheduled date(s) for submitting proposed licensing action and supporting information.

N/A
6. Important licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures.

N/A
7. The number of fuel assemblies (a) in the core and (b) in the spent fuel storage pool.
 - a. 368
 - b. 1048
8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned, in number of fuel assemblies.
 - a. 2050 - Licensed Capacity or
 - b. 1898 under the presently installed storage rack capacity.
9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity.
 - a. 2000 - Licensed Capacity or
 - b. 1997 under the presently installed storage rack capacity.

UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH: October 1990

Docket No.: 050-0331

Unit: Duane Arnold Energy Center

Date: 11-15-90

Completed By: Hai Tran

Telephone: (319) 851-7491

No.	Date	Type(1)	Duration (Hours)	Reason(2)	Method of Shutting (3) Down Reactor	Licensee Event Report #	System Code (4)	Comp. Code (5)	Cause
1	10-01-90	F	0.0	A	5	N/A	AD	MO	The "B" recirculation pump tripped due to a short in its MG set drive motor. The plant entered single loop operation.
2	10-19-90	F	56.0	B	3	90-19	N/A	N/A	While installing the drive motor, a potential transformer was pulled from its cabinet resulting in the loss of an essential electrical bus. This eventually resulted in a reactor scram on low vessel level.

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-Continued
5-Reduced Load
9-Other (Explain)

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

5 - Exhibit 1-
Same Source

MAJOR/SAFETY RELATED MAINTENANCE

Docket No.: 050-0331
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DATE	SYSTEM	COMPONENT	DESCRIPTION
10-12-90	Emergency Diesel Generator	Diesel Driven Air Compressor	The battery did not pass required preventive maintenance checks and was replaced with a new one.
10-19-90	Containment Atmosphere Control System (CACS)	"B" H2O2 Analyzer	H2 reagent solenoid valve was inoperable and replaced with a new one.
10-22-90	Recirculation Pump System	"B" MG Set Drive Motor	The shorted drive motor was repaired and returned to service.
10-22-90	Reactor Core Isolation Cooling (RCIC) System	Oil Line for Inboard Bearing	The 1 inch oil line was broken during preventive maintenance. The line was repaired.
10-29-90	Residual Heat Removal (RHR) System	Limiterorque Operator	Limiterorque operators for several valves in the RHR system were overhauled as preventive maintenance activities.

NARRATIVE SUMMARY OF OPERATING EXPERIENCE

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- 10-01-90 At the beginning of the month the plant was operating at 74.6% of rated thermal power delivering 368.0 MWe to the grid. There were two 10 CFR 50.73 reportable events during the month.
- 10-01-90 At 1401 hours, the "B" recirculation motor generator (MG) set tripped due to a short in its drive motor. The plant entered Single Recirculation Loop Operation and limited power to approximately 45% as a result of this event.
- 10-03-90 The plant was operating in Single Recirculation Loop Operation (SLO) following a trip of the "B" recirculation pump on October 1. Following an increase of core flow, an unexpected load line change was observed by Operations personnel and an investigation initiated. A review of all core flow data has since indicated that the actual total core flow prior to the adjustment was lower than the value previously determined. Therefore, prior to the core flow increase, the DAEC had been operating in a region of the Power-to-Flow operating map where reactor instabilities are possible. No such instabilities were noted during the event. The most probable cause of the erroneous core flow indication was the design characteristics of the idle loop flow instrumentation, and a recent change in their calibration setpoints. Administrative controls failed to compensate for inherent inaccuracies at very low flows. As an immediate corrective action, Operations personnel were informed of the inaccuracies. The surveillance test used to determine reactor operating limits during SLO has been modified to incorporate an additional factor of conservatism, including recommendations regarding reactor load line. Additional testing of the instrumentation loop will be performed to obtain data on loop performance. The surveillance will be revised as appropriate based on further investigation. An update to the LER will be submitted detailing this information.
- LER 90-018
- 10-09-90 At 2213 hours, during the installation of the repaired "B" MG set drive motor, two electricians troubleshooting a tripped breaker pulled a potential transformer from its cabinet resulting in the loss of an essential electrical bus (1A4). The event eventually resulted in a reactor scram on low reactor vessel level and resulted in the plant exceeding its 100 degree per hour heatup rate. Further investigations are on-going.
- LER 90-019 (pending)
- 10-21-90 At 2205 hours, reactor startup commenced. The reactor was taken critical at 2317 hours. The main generator was placed on the grid at 0617 hours on 10-22-90.
- 10-31-90 At the end of the month the plant was operating at approximately 98.9% of rated thermal power delivering 520.0 MWe to the grid.