



Duane Arnold Energy Center  
3277 DAEC Road  
Palo, IA 52324-9785

Operated by Nuclear Management Company, LLC

October 15, 2002

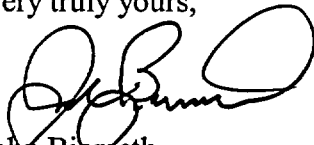
NG-02-0926

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
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Washington, DC 20555-0001

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Operating License: DPR-49  
September 2002 Monthly Operating Report  
File: A-118d

Please find enclosed the Duane Arnold Energy Center Monthly Operating Report. The report has been prepared in accordance with the guidelines of NRC Generic Letter 97-02: Revised Contents Of The Monthly Operating Report, and distribution has been made in accordance with DAEC Technical Specifications, Section 5.6.4.

Very truly yours,



10/11/02

John Bjorseth  
Plant Manager-Nuclear

JKB/RBW

Enclosures

10/15/02 10:00 AM [mirrored text]

IE24

October 15, 2002

NG-02-0926

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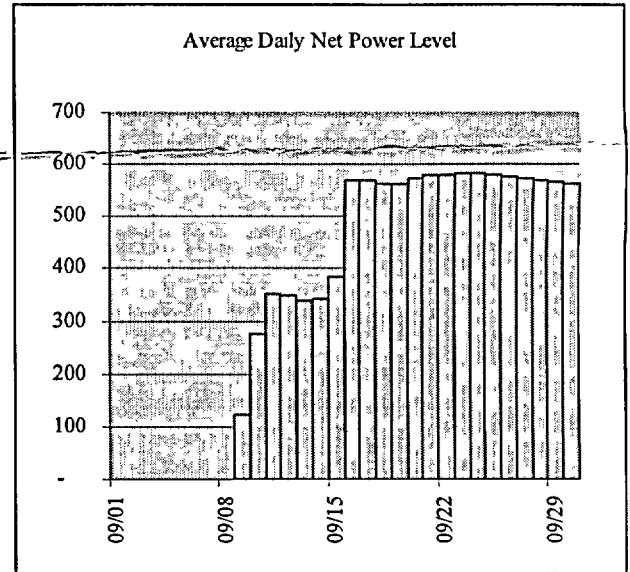
DOCU  
NRC Resident Inspector  
CTS Project

## OPERATING DATA REPORT

DOCKET NO. 50-331  
 DATE: 10-15-2002  
 Unit: Duane Arnold Energy Center  
 COMPLETED BY: Richard Woodward  
 TELEPHONE: (319) 851-7318

### OPERATING STATUS

1. Unit Name: Duane Arnold Energy Center
2. Reporting Period: September 2002
3. Licensed Thermal Power ( $MW_{th}$ ): 1912  
*Tech Spec. Amendment 243 and TSCR for extended power uprate was implemented November 7, 2001. Current operating thermal power, as limited by balance-of-plant equipment, is 1790*
4. Nameplate Rating (Gross  $MW_e$  DER): 676.425  
*Current rated output, adjusted for as-built balance-of-plant conditions is 614.0.*
5. Design Electrical Rating (Net  $MW_e$  DER): 581.4
6. Maximum Dependable Capacity (Gross  $MW_e$  MDC): 593.1
7. Maximum Dependable Capacity (Net  $MW_e$  MDC): 565.5
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  $MW_e$ ): N/A
10. Reasons for Restrictions, If Any: N/A



	Sep-02	2002	Cumulative
11. Hours in Reporting Period	720.0	6,551.0	242,495.0
12. Number of Hours Reactor Was Critical	575.5	6,056.2	192,036.8
13. Reactor Reserve Shutdown Hours	0.0	0.0	192.8
14. Hours Generator On-Line	523.5	5,939.4	187,864.3
15. Unit Reserve Shutdown Hours	0.0	0.0	0.0
16. Gross Thermal Energy Generated (MWH)	832,632.5	10,318,655.9	274,817,285.7
17. Gross Electrical Energy Generated (MWH)	273,512.0	3,509,803.0	92,244,020.6
18. Net Electrical Energy Generated (MWH)	258,427.5	3,321,831.8	86,697,457.8
19. Unit Service Factor	72.7%	90.7%	77.5%
20. Unit Availability Factor	73.0%	90.7%	77.5%
21. Unit Capacity Factor (Using MDC Net)	63.5%	90.0%	70.4%
22. Unit Capacity Factor (Using DER Net)	61.7%	87.5%	68.3%
23. Unit Forced Outage Rate	0.0%	2.4%	8.4%

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of each): Refueling, March 24, 2003, 22 days
25. If Shutdown at End of Report Period, Estimated Date of Startup: N/A

AVERAGE DAILY UNIT POWER LEVEL

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MONTH September 2002

Day	Average Daily Power Level (MWe-Net)
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	124
10	277
11	351
12	348
13	338
14	340
15	384
16	572
17	570
18	564
19	564
20	573
21	581
22	581
23	584
24	585
25	579
26	577
27	575
28	571
29	566
30	563
#N/A	#N/A

## REFUELING INFORMATION

DOCKET NO: 50-331  
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1. Name of facility. Duane Arnold Energy Center
2. Scheduled date for next refueling shutdown. March 24, 2003
3. Scheduled date for restart following refueling. April 15, 2003
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment? No
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. **Current fuel assemblies inventory**

	Number of Fuel Assemblies	Projected date of last refueling that can be discharged (after allowing margin for maintenance of continuous full-core discharge capability)
Installed into reactor core	368	
Discharged from core to Spent Fuel Storage Pool	1912	
Scheduled for transfer to Dry Fuel Storage November 2003	610	
Installed capacity of Spent Fuel Storage Pool	2411	2008
Licensed capacity of Spent Fuel Storage Pool (with re-racking)	2829	2014
Licensed capacity of Spent Fuel Storage Pool and Cask Pool (with reracking)	3152	

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UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH: September 2002

No.	Date	Type (1)	Duration (Hours)	Reason (2)	Method of Shutting Down Reactor (3)	Licensee Event Report #	Cause
8	09/01-09	S	196.53 (268.08 Effective-Full-Power-Hours)	B	4	2002-003	Identify and repair source of drywell leakage; repair RCIC Lube Oil System; Repair support columns on "B" Cooling Tower

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)
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### Monthly Operational Overview for September 2002

The DAEC was shutdown at the beginning of September, having been taken off-line August 30<sup>th</sup> at 05:57 to perform repairs on drywell coolers. The coolers had exhibited an increasing rate of leakage since August 20<sup>th</sup>. The timing of the outage had been set to utilize a window of reduced grid demand during the long holiday weekend. Startup following the cooler repairs commenced at 10:59 September 1<sup>st</sup> and the reactor was taken critical at 12:35 September 1<sup>st</sup>.

Also during August, on the 21<sup>st</sup>, following planned post-maintenance testing of Reactor Core Isolation Cooling (RCIC) relief valves, a low oil pressure alarm was received and RCIC was declared inoperable. It was subsequently determined that entrapped air in the lube oil system had resulted in an oil system leak. System piping and orifices were inspected, and a vent cap was installed on the outboard turbine bearing housing, but subsequent operation of the RCIC turbine revealed that the lube oil problem had not been corrected. Troubleshooting continued during the (unrelated) plant shutdown that had begun August 30<sup>th</sup> to repair the drywell coolers.

On September 2<sup>nd</sup> at 21:00, continued RCIC lube oil problems prompted plant management to halt the startup following the drywell cooler repair. A manual scram was inserted at 22:05 from 8% power, without the generator having been synchronized to the grid. The reactor shutdown commenced an unplanned extension of the planned drywell leakage outage. On September 6<sup>th</sup> and 7<sup>th</sup>, the RCIC Main Lube Oil Pump Discharge Relief Valve was replaced, the RCIC Turbine Steam Supply Drain Trap repair was completed, and a new 3 inch equalizing header was installed. These modifications tested satisfactorily on September 7<sup>th</sup>, RCIC was declared operable, and reactor startup recommenced. (LER# 2002-003, pending.)

On September 8<sup>th</sup> at 10:33, the reactor was taken critical, and the generator synchronized to the grid on September 9<sup>th</sup> at 04:32. Power ascension was held to approximately 65% (limited by condenser vacuum) from September 10 at 06:35 until 17:00 on September 15<sup>th</sup> because the "B" Cooling Tower had been removed from service to perform repairs on three damaged columns supporting the distribution header. Following restoration of the cooling tower to service on September 15<sup>th</sup>, full power was achieved on September 16<sup>th</sup> at 05:45.

Except for three brief (less than one hour) power reductions to 85% on the 16<sup>th</sup>, 17<sup>th</sup>, and 22<sup>nd</sup> to adjust control rods, the DAEC operated at full thermal power throughout the remainder of the month.

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Following is the allocation of production and losses:	Electrical Output MWe	Capacity Factor % of 614 MWe (Target Output)	Full Power Hours Equivalent (FPHeq)
<b>Net Electric Output</b>	<b>358.94</b>	<b>58.46%</b>	<b>420.89</b>
<b>Plant House Loads (while on-line)</b>	<b>+20.32</b>	<b>+3.31%</b>	<b>23.85</b>
<b>Subtotal: Gross Electric Output</b>	<b>379.27</b>	<b>61.77%</b>	<b>444.74</b>
<b>Capacity Losses (departures from full thermal power):</b>	23.62	3.85%	27.70
Rampup from Drywell Leakage Repair 09/09 04:32 - 09/11 00.00 & 09/15 16.30 - 09/16 05:45			
CRD Adjustments 09/16 09.00 - 09.50, 09/17 00:00 - 01:00 & 09/22 00:20 - 01:14	0.04	0.01%	0.05
Cooling Tower Unplanned Outage Extension 09/11 00.00 - 09/15 16:30	37.39	6.09%	43.85
Maintain Margin to 1790 Administrative MWth Limit	0.24	0.04%	0.28
<b>Efficiency Losses (occur even at full thermal power):</b> Unidentified (residual)	1.14	0.18%	1.36
-/+ Seasonal Effects ( i.e., hot weather decrease)	4.67	0.76%	5.49
<b>Subtotal: On-line Losses (Capacity, Efficiency, and Weather):</b>	<b>67.10</b>	<b>10.93%</b>	<b>78.73</b>
<b>Off-Line Losses</b>	<b>54.65</b>	<b>8.90%</b>	<b>64.06</b>
Drywell Leakage Repair 09/01 00:00 - 09/02 22:05 & 09/08 10:33 - 09/09 04:32			
RCIC unplanned extension: 09/02 22:05 - 09/08 10:33	112.98	18.40%	132.47
<b>Total: Target Electric Output, %, # of clock-hours</b>	<b>614.00</b>	<b>100.00%</b>	<b>720.00</b>

Licensing Action Summary:

Plant Availability:	73%	Unplanned Auto Scrams (while critical) this month:	0
Number of reportable events:	1	Unplanned Auto Scrams (while critical) last 12 months:	0
		Main Steam Safety/Relief Valve Challenges this month:	0