Public IE-01

Duane Arnold Energy Center
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Palo, IA 52324
Telephone 319 851 7611
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IES UTILITIES

PRIORITY ROUTING

First		Second	
RA		RC	
DRA		EIC	
DRP		SGA	
DRS		OI	
DNMS		PAO	
DRMA			

FILE

April 15, 1998

NG 98-0650

Mr. A. Bill Beach
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Subject: Duane Arnold Energy Center
Docket No: 50-331
Operating License: DPR-49
March 1998 Monthly Operating Report
File: A-118d

Dear Mr. Beach:

Please find enclosed the Duane Arnold Energy Center Monthly Operating Report for March 1998. 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 6.11.1.c.

Very truly yours,

Gary Van Middlesworth

Gary VanMiddlesworth
Plant Manager-Nuclear

GDV/RBW

Enclosures

1/1

IE24

APR 15 1998

cc:

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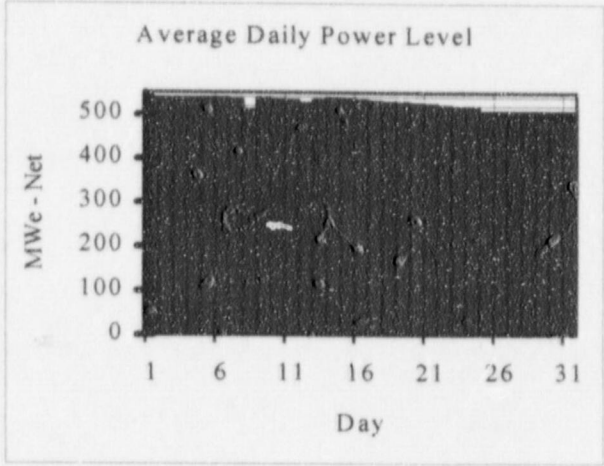
DOCU

NRC Resident Inspector

OPERATING DATA REPORT

DOCKET NO: 50-0331
DATE: 04/15/98
Unit: Duane Arnold Energy Center
COMPLETED BY: Richard W. Woodward
TELEPHONE: (319) 851-7318

OPERATING STATUS



1. Unit Name: Duane Arnold Energy Center
2. Reporting Period: March 1998
3. Licensed Thermal Power (MW_{th}): 1658
4. Nameplate Rating (Gross MW_e DER): 565.7 (Turbine)
5. Design Electrical Rating (Net MW_e DER): 538
6. Maximum Dependable Capacity (Gross MW_e MDC): 550
7. Maximum Dependable Capacity (Net MW_e MDC): 520
8. If Changes Occur in Capacity Ratings (Items Number 3 through 7) since the last report, Give Reasons: Not Applicable
9. Power Level to Which Restricted, If Any (Net Mw_e): March 16 - 31, decreased from 100% to 94% thermal power
10. Reasons for Restrictions, If Any: End of fuel-cycle-15 coast-down

		March-98	1998	Cumulative
11.	Hours in Reporting Period	744.0	2,160.0	203,040.0
12.	Number of Hours Reactor Was Critical	744.0	2,160.0	156,926.5
13.	Reactor Reserve Shutdown Hours	0.0	0.0	192.8
14.	Hours Generator On-Line	744.0	2,160.0	153,309.1
15.	Unit Reserve Shutdown Hours	0.0	0.0	0.0
16.	Gross Thermal Energy Generated (MWH)	1,210,552.8	3,542,558.4	218,248,600.6
17.	Gross Electrical Energy Generated (MWH)	411,759.0	1,208,205.0	73,200,891.6
18.	Net Electrical Energy Generated (MWH)	388,360.7	1,140,377.2	68,711,465.4
19.	Unit Service Factor	100.0%	100.0%	75.5%
20.	Unit Availability Factor	100.0%	100.0%	75.5%
21.	Unit Capacity Factor (Using MDC Net)	100.4%	101.5%	71.2%
22.	Unit Capacity Factor (Using DER Net)	97.0%	98.1%	68.2%
23	Unit Forced Outage Rate	0.0%	0.0%	9.7%

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of each):
Refueling, April 3, 1998 03:55, 45 days

25. If Shutdown at End of Report Period, Estimated Date of Startup: May 17, 1998

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO: 50-0331
DATE: 04/15/98
Unit: Duane Arnold Energy Center
COMPLETED BY: Richard Woodward
TELEPHONE: (319) 851-7318

MONTH March1998

Day	Average Daily Power Level (MWe-Net)
1	536.7
2	534.9
3	534.9
4	534.6
5	536.8
6	536.6
7	533.6
8	510.0
9	535.3
10	532.8
11	532.4
12	525.3
13	533.8
14	536.9
15	534.0
16	532.4
17	529.8
18	527.9
19	527.8
20	524.2
21	522.8
22	519.6
23	517.0
24	515.8
25	506.0
26	498.9
27	498.0
28	500.1
29	493.0
30	489.1
31	490.9

REFUELING INFORMATION

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DATE: 04/15/98
Unit: Duane Arnold Energy Center
COMPLETED BY: Richard Woodward
TELEPHONE: (319) 851-7318

1. **Name of facility.** Duane Arnold Energy Center

2. **Scheduled date for next refueling shutdown.** April 2, 1998 (actual: April 3, 1998, 03:55)

3. **Scheduled date for restart following refueling.** May 17, 1998

4. **Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?** Yes

   RTS 296 proposes fuel discharge as early as 60 hours after shutdown (versus current 120 hour requirement).
   RTS 298 proposes reducing restrictions for Standby Liquid Control System Operability requirements.
   RTS 299 proposes allowing performance of Reactor Vessel Hydro without changing reactor mode.

5. **Scheduled date(s) for submitting proposed licensing action and supporting information.**

   RTS 296, "Refueling Operations", *approved* April 2, 1997.
   RTS 298, "Standby Liquid Control Operability Requirements", *approved* March 31, 1998.
   RTS 299, "Vessel Hydrostatic Pressure and Leak Testing Operability Requirements", *approved* March 31, 1998.

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 and projected 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 in reactor core	368	n/a
Fresh fuel to be installed into the core during April 1998 refueling	120	n/a
Previously discharged from core to Spent Fuel Storage Pool	1528	n/a
Discharged from core to Spent Fuel Storage Pool following April 1998 refueling	1648	n/a
Installed Capacity of Spent Fuel Storage Pool	2411	2001
Licensed Capacity of Spent Fuel Storage Pool (with reracking)	2829	2006
Licensed Capacity of Spent Fuel Storage Pool and Cask Pool (with reracking)	3152	2010

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UNIT SHUTDOWNS AND POWER REDUCTIONS
REPORT MONTH: March1998
(There were no average daily power reductions >20% during the month.)

No.	Date	Type (1)	Duration (Hours)	Reason (2)	Method of Shutting Down Reactor (3)	Licensee Event Report #	Cause

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 March 1998

The DAEC averaged 97.8% capacity, operating at or near its 1658 MW_{th} full-thermal-power licensed limit, except for the following capacity losses:

- 03/04 01:00 - 05:30, reduced recirculation flow to pull control rods and increase load-line (rod-pull), 0.1 FPH_{eq}
- 03/07 23:00 - 03/08 03:24, rod-pull, turbine control valve testing, hold at request of load dispatcher, 1.0 FPH_{eq}
- 03/12 01:00 - 13:00, rod-pull, 0.6 FPH_{eq}
- 03/16 11:00 (end of full-power capability) - 03/31 24:00, Cycle 15 coast-down, 12.6 FPH_{eq}

At 11:00 on March 16, having fully withdrawn all control rods and operating at full recirculation flow, the reactor reached the end of full power capability for the current fuel cycle. This commenced the end-of-cycle coast-down in thermal power (12.6 FPH_{eq}) that would continue until the shutdown for Refuel Outage 15.

Despite unseasonably warm (70° - 80°) daily peak temperatures March 26 - 31, average weather-related *gains* in output (seasonal boosts related to lower winter-time condenser inlet temperatures) still accounted for 1.3 FPH_{eq} of *negative* losses. Metering discrepancy (counted as an efficiency loss) and maintenance of margin between *actual* and *license-limited* thermal power (1658 MW_{th}) accounted for the residual remaining 3.1 FPH_{eq} of lost production. Total losses (netting in the weather-related *gains* in plant output) equaled 16.1 FPH_{eq} out of the available 744 clock-hours during the month.

On April 2 at 14:00, as the plant commenced an orderly shutdown, maximum available reactor power had decreased to 94%. At 03:55 on April 3, the generator was removed from the grid, and a manual scram was inserted at 05:34. At the end of Cycle 15, the DAEC had continuously operated 201 days, 1 hour, 4 minutes, its sixth longest operational run.

Allocation of Production & Losses:	Electrical Output MWe	Capacity Factor % of 565.7 MWe (Design Rating)	Full Power Equivalent Hours (FPH_{eq})
Actual Metered Net Electric Output	522.0	92.3%	686.5
Actual Metered Plant Electric Loads	31.5	5.6%	41.4
Off-Line **Capacity** Losses:	0.0	0.0%	0.0
On-Line *Unplanned* **Capacity** Losses:	0.0	0.0%	0.0
Normal **Capacity** Losses (Avg."*Full Power*" MWth < 1658)	0.4	0.1%	0.5
On-Line *Planned* **Capacity** Losses	1.3	0.2%	1.7
(neg.) Weather losses -- condenser pressure <2.75 In Hg / Circ Water Temp < 74.5 °F	-1.1	-0.3%	-1.3
Unplanned Efficiency Losses (*Weather-Norm-Full-Power-MWe* > 565.7 Design)	0.0	0.0%	0.0
Metering (Avg *indicated power* MWe - Avg *metered energy* MWHe)	2.0	0.4%	2.6
Excluded losses (coast-down, lack of grid demand, etc.)	9.6	1.7%	12.6
Design Gross Electric Output	565.7	10[illegible]%	744.0

(There were no Licensee Event Reports.)

Licensing Action Summary:

Plant Availability:	100.0%	Unplanned Auto Scrams (while/critical) this month:	0
Number of reportable events:	0	Unplanned Auto Scrams (while/critical) last 12 months:	0
		Safety Relief Valve Challenges:	0