

05/18/78

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)  
DISTRIBUTION FOR INCOMING MATERIAL 50-331

REC: NRC ORG: HAMMOND E L DOCDATE: 05/12/78  
IA ELEC LIGHT & PWR DATE RCVD: 05/18/78

DOCTYPE: LETTER NOTARIZED: NO COPIES RECEIVED  
SUBJECT: LTR 1 ENCL 1  
FORWARDING SUBJECT FACILITY'S MONTHLY OPERATING REPT FOR THE MONTH OF APRIL,  
1978.

PLANT NAME: DUANE ARNOLD

REVIEWER INITIAL: XJM  
DISTRIBUTOR INITIAL: *mu*

\*\*\*\*\* DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS \*\*\*\*\*

MONTHLY OPERATING REPORT FOR GRAY BOOK PREPARATION.  
(DISTRIBUTION CODE A003)

FOR ACTION: BR CHIEF LEAR\*\*W/2 ENCL

INTERNAL: REG FILE\*\*W/ENCL NRC PDR\*\*W/ENCL  
~~MIPC FOR ACTION\*\*W/2 ENCL~~

EXTERNAL: LPDR'S  
CEDAR RAPIDS, IA\*\*W/ENCL  
TIC\*\*W/ENCL  
NSIC\*\*W/ENCL  
BNL(NATLAB)\*\*W/ENCL  
ACRS CAT B\*\*W/O ENCL

DISTRIBUTION: LTR 10 ENCL 10  
SIZE: 1P+11P

CONTROL NBR: 781380015

\*\*\*\*\* THE END \*\*\*\*\*

*MR*  
*SD*

# IOWA ELECTRIC LIGHT AND POWER COMPANY

DUANE ARNOLD ENERGY CENTER  
P. O. Box 351  
Cedar Rapids, Iowa 52406  
May 12, 1978  
DAEC - 78 - 253

FILE

Director, Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Subject: Monthly Operating Report

File: A-118d

US NRC  
REGULATORY SERVICES  
BRANCH

1978 MAY 24 14 10 47

U. S. NUCLEAR REGULATORY  
COMMISSION

Dear Sirs:

Please find enclosed 10 copies of the Duane Arnold Energy Center Monthly Operating Report for April. The report has been prepared in accordance with the requirements of Regulatory Guide 1.16 and distribution has been made in accordance with Regulatory Guide 10.1.

Very truly yours,

*EL Hammond*

Ellery L. Hammond  
Chief Engineer  
Duane Arnold Energy Center

ELH/JVS/nf

Encl.

cc: D. Arnold  
S. Tuthill  
J. Wallace  
J. Rehnstrom  
L. Root  
W. Bryant  
D. Mineck  
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Dennis Murdock  
George Toyne

Directorate of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137 (1)

Director, Office of Management Information  
and Program Control  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555 (2)

Acc 3  
5/10 MR  
60

# OPERATING DATA REPORT

DOCKET NO. 050-0331  
 DATE 5-12-78  
 COMPLETED BY J. Van Sickle  
 TELEPHONE 319-851-5611

## OPERATING STATUS

1. Unit Name: Duane Arnold Energy Center
2. Reporting Period: April
3. Licensed Thermal Power (MWt): 1658
- \* 4. Nameplate Rating (Gross MWe): 565 (Turbine Rating)
5. Design Electrical Rating (Net MWe): 538
6. Maximum Dependable Capacity (Gross MWe): 545
7. Maximum Dependable Capacity (Net MWe): 515
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	719	2879	28,439
12. Number Of Hours Reactor Was Critical	122.2	1933.5	22,487.5
13. Reactor Reserve Shutdown Hours	0	0	0
14. Hours Generator On-Line	85.6	1887.4	21,970.1
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	102,432	2,613,864	26,719,080
17. Gross Electrical Energy Generated (MWH)	13,269	868,656	8,898,760
18. Net Electrical Energy Generated (MWH)	11,705	816,515	8,305,254
19. Unit Service Factor	11.9%	65.6%	77.3%
20. Unit Availability Factor	11.9%	65.6%	77.3%
21. Unit Capacity Factor (Using MDC Net)	3.2%	55.1%	56.7%
22. Unit Capacity Factor (Using DER Net)	3.0%	52.7%	54.3%
23. Unit Forced Outage Rate	8.6%	1.7%	5.0%
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: N/A

\* Turbine Rating: 565.7 MWe  
 Generator Rating: 663.5 (MVA) x .90 (Power Factor) = 597 MWe

# AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 050-0331

UNIT Duane Arnold Energy  
Center

DATE 5-12-78

COMPLETED BY J. Van Sickel

TELEPHONE 319-851-5611

MONTH April

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>0</u>
2	<u>0</u>
3	<u>0</u>
4	<u>0</u>
5	<u>0</u>
6	<u>0</u>
7	<u>0</u>
8	<u>0</u>
9	<u>0</u>
10	<u>0</u>
11	<u>0</u>
12	<u>0</u>
13	<u>0</u>
14	<u>0</u>
15	<u>0</u>
16	<u>0</u>

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	<u>0</u>
18	<u>0</u>
19	<u>0</u>
20	<u>0</u>
21	<u>0</u>
22	<u>0</u>
23	<u>0</u>
24	<u>0</u>
25	<u>0</u>
26	<u>0</u>
27	<u>30</u>
28	<u>120</u>
29	<u>144</u>
30	<u>189</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 April

DOCKET NO. 050-0331  
 UNIT NAME Duane Arnold Energy Center  
 DATE 5-12-78  
 COMPLETED BY J. Van Sickel  
 TELEPHONE 319-851-5611

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
8.	780318	S	625.3	C	1				Continuation of Refueling Outage
9.	780427	F	8.1	A	1				Main turbine permanent magnet generator failed and had to be removed

<sup>1</sup>  
 F: Forced  
 S: Scheduled

<sup>2</sup>  
 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)

<sup>3</sup>  
 Method:  
 1-Manual  
 2-Manual Scram.  
 3-Automatic Scram.  
 4-Other (Explain)

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

<sup>5</sup>  
 Exhibit I - Same Source

Narrative Summary of Operating Experience

Docket No. 050-0331  
Unit Duane Arnold Energy  
Date 5-12-78  
Completed by J. Van Sickle  
Telephone 319-851-5611

- 4-1 At the beginning of the report period the plant was in cold shutdown for refueling and maintenance.
- 4-1 The reactor cavity was drained to the vessel flange.
- 4-1 During the performance of preventive maintenance two control rod drive hydraulic control unit water level switches would not respond to water level increases. The switches were replaced.

RO 78-021

- 4-2 The moisture separator and steam dryer were installed in the reactor vessel and the vessel head was set in place.
- 4-3 During annual surveillance testing of safety/relief valves, one safety valve and three relief valves were found to have out of specification as found setpoints. The valves were reworked as required.

RO 78-018

- 4-4 Control rod friction testing was begun.
- 4-5 During the annual surveillance of standby diesel generator 1G-31, the lower crankshaft main thrust bearing was found wiped on both the journal and thrust surfaces. The bearing was replaced.

RO 78-020

- 4-6 During surveillance testing two MSIV leakage control system outboard isolation valves did not close properly due to electrical problems which were corrected.

RO 78-022

- 4-7 Control rod friction testing was completed.
- 4-9 Repair work was begun on the reactor water cleanup system pipe crack which was found on 3/25/78.
- 4-10 The radioiodine level in milk samples exceeded ten times the control station value due to atmospheric nuclear weapons testing by the Peoples Republic of China.

ETSV 78-03

- 4-13 The reactor vessel head was retentioned.
- 4-14 The drywell head was reinstalled and torqued down.
- 4-15 The integrated leak rate test of the containment was begun.
- 4-16 The integrated leak rate test of the containment was completed with satisfactory results.

- 4-20 The annual inspection of 1G-31 standby diesel generator was completed.
- 4-20 The LOOP/LOCA testing was completed with satisfactory results.
- 4-23 A hydro of the reactor water cleanup system was completed with satisfactory results.
- 4-24 The mode switch was placed in the startup position. While attempting to start the recirculation pumps; the "B" recirc pump would start but then trip almost immediately. The reactor was taken critical briefly for testing.
- 4-25 The reactor was taken critical briefly several times for training.
- 4-25 The "B" recirc pump was successfully started. The problem had been with a time delay relay in the motor start circuit.
- 4-25 With the reactor at 150 PSI HPCI system and relief valve testing was done.
- 4-26 The reactor vessel and RWCU system pipe repair were hydrostatically tested satisfactorily.
- 4-26 The mode switch was placed in run and the main turbine was rolled.
- 4-27 After several unsuccessful attempts to get the turbine up to speed, the turbine was brought to rated speed and the main generator placed on the line at 0115 hours.
- 4-27 The unit was removed from the line at 1021 hours due to the failure of the turbine permanent magnet generator.
- 4-27 The PMG was removed and the unit placed on the line at 1831 hours.
- 4-28 The plant was operating at approximately 143 MWe and pulling rods to increase power as core thermal limits permit.
- 4-29 A control rod sequence exchange was completed followed by control rod scram time testing.
- 4-30 The plant was operating at 250 MWe with control rod withdrawals in progress.

Docket No. 050-0331  
Unit Duane Arnold Energy  
Date 5-12-78  
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MAJOR SAFETY RELATED MAINTENANCE

Date	System	Component	Description
4/1/78	Standby Diesel Generator 1G-31	IE-53-A Heat Exchanger	Opened, cleaned, inspected and reassembled heat exchanger.
4/1/78	HPCI System	V-22-7 Drain Valve	Replaced broken stem and repacked.
4/2/78	Control Rod Drive System	CRD 10-35	CRD 10-35 was replaced with a rebuilt drive.
4/2/78	Control Rod Drive System	CRD 14-39	CRD 14-39 was replaced with a rebuilt drive.
4/2/78	Control Rod Drive System	CRD 34-11	CRD 34-11 was replaced with a rebuilt drive.
4/5/78	Control Rod Drive System	CRD 34-19	CRD 34-19 was replaced with a rebuilt drive.
4/5/78	Control Rod Drive System	CRD 18-03	CRD 18-03 was replaced with a rebuilt drive
4/5/78	Control Rod Drive System	CRD 38-31	CRD 38-31 was replaced with a rebuilt drive.
4/5/78	Control Rod Drive System	CRD 18-19	CRD 18-19 was replaced with a rebuilt drive.



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MAJOR SAFETY RELATED MAINTENANCE

Date	System	Component	Description
4/5/78	Control Rod Drive System	CRD 26-11	CRD 26-11 was replaced with a rebuilt drive.
4/5/78	Control Rod Drive System	CRD 42-27	CRD 42-27 was replaced with a rebuilt drive.
4/5/78	Control Rod Drive System	CRD 38-19	CRD 38-19 was replaced with a rebuilt drive.
4/6/78	MSIV Leakage Control System	MOV 8402B	Replaced MOV motor starter contactor coil.
4/7/78	MSIV Leakage Control System	MOV 8402C	Cleaned torque switch contacts.
4/9/78	Containment Atmosphere Control System	CV 4309	Disassembled, inspected, lapped, reassembled and tested valve.
4/11/78	Containment Atmosphere Control System	CV4378A	Disassembled, inspected, lapped, reassembled and tested valve.
4/11/78	Containment Atmosphere Control System	CV 4378B	Disassembled, inspected, lapped, reassembled and tested valve.
4/12/78	Nuclear Boiler System	PSV 4402	Removed, tested, inspected and reinstalled valve.

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MAJOR SAFETY RELATED MAINTENANCE

Date	System	Component	Description
4/12/78	HPCI System	IE-203 Lube Oil Cooler	Cleaned, inspected and tested for leaks.
4/12/78	RCIC System	MOV 2510 Minimum Flow Valve	MOV Motor was rewound and reinstalled.
4/13/78	Control Rod Drive Hydraulic System	4-LDS 1845	HCU level switch was found inoperable and was replaced.
4/13/78	Control Rod Drive Hydraulic System	59-LDS 1845	HCU level switch was found inoperable and was replaced.
4/15/78	Nuclear Boiler System	PSV 4400	Removed, tested, inspected and reinstalled valve.
4/15/78	Nuclear Boiler System	PSV 4401	Removed, tested, inspected and reinstalled valve.
4/15/78	Nuclear Boiler System	PSV 4403	Removed, tested, inspected and reinstalled valve.
4/15/78	Nuclear Boiler System	PSV 4405	Removed, tested, inspected and reinstalled valve.
4/15/78	Nuclear Boiler System	PSV 4406	Removed, tested, inspected and reinstalled valve.
4/15/78	Nuclear Boiler System	PSV 4407	Removed, tested, inspected and reinstalled valve.

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MAJOR SAFETY RELATED MAINTENANCE

Date	System	Component	Description
4/17/78	Containment Atmosphere Monitoring System	RE 8102A	Installed new detector tube.
4/17/78	Nuclear Boiler System	PSV 4400	Replaced operator diaphragm.
4/17/78	Nuclear Boiler System	PSV 4401	Replaced operator diaphragm.
4/17/78	Nuclear Boiler System	PSV 4402	Replaced operator diaphragm.
4/17/78	Nuclear Boiler System	PSV 4405	Replaced operator diaphragm.
4/17/78	Nuclear Boiler System	PSV 4406	Replaced operator diaphragm.
4/17/78	Nuclear Boiler System	PSV 4407	Replaced operator diaphragm.
4/18/78	Nuclear Boiler System	CV 4421, MSIV	Replaced packing.
4/18/78	Nuclear Boiler System	CV 4413, MSIV	Replaced packing.
4/18/78	Nuclear Boiler System	CV 4419, MSIV	Replaced packing.
4/18/78	Nuclear Boiler System	CV 4416, MSIV	Replaced packing.
4/19/78	Nuclear Boiler System	CV 4420, MSIV	Replaced packing.
4/19/78	Nuclear Boiler System	CV 4418, MSIV	Replaced packing.
4/19/78	Standby Diesel Generator 1G-31	1G-31	Performed annual inspection.

Docket No. 050-0331  
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 Date 5-12-78  
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MAJOR SAFETY RELATED MAINTENANCE

Date	System	Component	Description
4/20/78	Nuclear Boiler System	CV 4412, MSIV	Replaced packing.
4/20/78	Nuclear Boiler System	CV 4415, MSIV	Replaced packing.
4/20/78	Reactor Protection System	LIS 4534	Rebuilt switch.
4/20/78	Reactor Building Closed Cooling Water System	MO 4841A	Replaced overload relay and rewound MOV motor.
4/21/78	"B" Core Spray System	MOV 2135	Changed MOV clutch housing.
4/22/78	Neutron Monitoring System	SRM 4573D	Replaced preregulator.
4/22/78	RHR System	MOV 1937	Replaced thermal overload, overload relay and rewound MOV motor.
4/24/78	HPCI System	Shaft Driven Oil Pump	Disassembled, inspected and reinstalled pump.
4/24/78	HPCI System	Pump and Turbine Bearings	Cleaned and inspected radial and thrust bearings and flushed oil system.
4/25/78	HPCI System	MOV 2315 Test Valve	Replaced stem yoke and adjusted limit switches.
4/26/78	Reactor Protection System	TIS 4443	Replaced a filter capacitor and recalibrated unit.

REFUELING INFORMATION

Docket No. 050-0331  
Date 5-12-78  
Completed by J. Van Sickle  
Telephone 319-851-5611

1. Name of facility.  
A. Duane Arnold Energy Center
2. Scheduled date for next refueling shutdown.  
A. March 1, 1979
3. Scheduled date for restart following refueling.  
A. June 1, 1979
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?  
A. Yes. MCPR and MAPLHGR operating limits as derived from transient and accident analyses.
5. Scheduled date(s) for submitting proposed licensing action and supporting information.  
A. January, 1979
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.  
A. The reload will consist of up to 100 8 x 8 2 water rod bundles.
7. The number of fuel assemblies (a) in the core and (b) in the spent fuel storage pool.  
A. a) 368 in core      b) 276
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. a) 480      b) 2050
9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity.  
A. 1980