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MANUFACTURING SECTION
SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1967)

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MANUFACTURING SECTION
SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1967)

By

D. L. DeNeal
Manufacturing Section

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MANUFACTURING SECTION
SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1967)

INTRODUCTION

In this fifth semiannual issue, the reactor and power data are shown for the six-month period July through December, 1967, together with data for the three preceding six-month periods. Data for D Reactor, which was deactivated on June 26, 1967, is omitted. For comparison purpose, the two years of experience will continue to be shown by dropping and adding a six-month period with each semiannual issue.

STATISTICAL SUMMARY

The most significant statistics for the two six-month periods during CY-1967, shown by individual reactors on the attached pages, are summarized on pages 3 and 4 for the B-C Reactors and the K reactors (KE-KW).

Graphs showing the "Reactor Availability" for CY-1967 appear on pages 17 and 18.

Achievements during the period July through December, 1967 are shown below:

The C and KE Reactors operated the entire month of August, 1967 for a 100 percent time operated efficiency.

The C Reactor experienced no fuel element failures during the period of December 8, 1966 through October 27, 1967.

The KW Reactor experienced an uninterrupted operation at 4400 megawatts in November, 1967 which resulted in a K reactor production record for a 30-day month.

D. L. DeNeal

D. L. DeNeal, Specialist
Production Reports and Administration

DLD:bm

Reactor Statistical Summary

	<u>Jan-Jun</u> <u>1967</u>	<u>Jul-Dec</u> <u>1967</u>
<u>Production (Input)</u>		
<u>Plutonium - KMWDs</u>		
B-C	660.0	578.8
Ks (KE & KW)	1,285.7	1,303.9
Combined	1,945.7	1,882.7
<u>Plutonium - Kgs</u>		
B-C	523.0	408.8
Ks	1,107.7	1,042.4
Combined	1,630.7	1,451.2
<u>Uranium (U-233) - Grams</u>		
B-C	12,085	10,159
Ks	13,174	12,203
Combined	25,259	22,362
<u>Power Level</u>		
<u>Maximum - Average - MW</u>		
B	2,148	1,977
C	2,398	2,161
KE & KW	4,400	4,375
<u>Average Operating - MW</u>		
B	2,061	1,828
C	2,330	2,086
KE & KW	4,342	4,279
<u>Time Operating Efficiency - (TOE %)</u>		
B-C	83.2	80.4
Ks	81.8	82.8
Combined	82.5	81.6
<u>Reactor Outages - No.</u>		
	<u>B-C</u> <u>Ks</u> <u>Total</u>	<u>B-C</u> <u>Ks</u> <u>Total</u>
Scheduled	10 10 20	2 4 6
Unscheduled	10 3 13	15 11 26
Scrams	6 15 21	4 17 21
<u>Process Tubes Replaced</u>		
B-C	59	57
Ks	17	6
Total	76	63

Reactor Statistical Summary - Contd.

	<u>Jan-Jun</u> <u>1967</u>			<u>Jul-Dec</u> <u>1967</u>		
<u>Process Tube Leaks (Incl. V.S.)</u>						
B-C	14			14		
Ks	3			2		
Total	17			16		
<u>Fuel Element Failures</u>						
	<u>B-C</u>	<u>Ks</u>	<u>Total</u>	<u>B-C</u>	<u>Ks</u>	<u>Total</u>
I&E Natural U.	3	0	3	9	4	13
I&E Enriched U.	0	1	1	2	6	8
Other	0	0	0	0	0	0
<u>Helium Usage - CFD</u>						
B-C	18,260			12,795		
Ks	14,613			13,270		
Total	32,873			26,065		
<u>Outage Work - % Time Allocation</u>						
	<u>B-C</u>	<u>Ks</u>	<u>Total</u>	<u>B-C</u>	<u>Ks</u>	<u>Total</u>
Charge-Discharge	7.3	6.7	7.0	4.8	6.8	5.8
Rupture Removal	0.4	0.2	0.3	3.9	1.1	2.5
Tube Leaks	1.7	1.3	1.5	2.1	0.6	1.4
Tube Replacement	1.2	0.1	0.6	1.3	0.1	0.6
Other Maintenance	4.4	3.9	4.2	3.4	4.0	3.7
Standard Checks (incl. Equip. Maint. Standard)	0.8	0.6	0.7	0.8	1.1	1.0
Production Test	0.7	5.1	2.9	1.6	2.6	2.1
Project Work	0.2	0	0.1	0.7	0.1	0.4
Other	0.1	0.3	0.2	1.0	0.8	0.9
Total	16.8	18.2	17.5	19.6	17.2	18.4

REACTOR STATISTICS

	B			C		
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967
PRODUCTION (Input Basis)						
KMWD - In Nat. U	227.7	144.3	261.4	231.4	207.7	223.8
KMWD - In Enr. U	64.0	41.2	59.0	40.3	132.4	83.3
KMWD - Total	291.7	185.5	320.4	271.7	340.1	307.1
KMWD - % of Forecast	114.9	105.2	110.4	99.8	111.4	95.2
Pu (kg) - In Nat. U	191.0	121.7	210.8	168.7	178.9	161.9
Pu (kg) - In Enr. U	44.3	28.4	40.6	24.1	92.3	54.1
Pu (kg) - Total	235.3	150.1	251.4	192.8	271.2	216.0
Conv. Ratio - In Nat. U	0.839	0.843	0.806	0.729	0.861	0.723
Conv. Ratio - In Enr. U	0.692	0.689	0.688	0.598	0.697	0.649
Polonium - Curies	2,968	0	0	0	9,733	0
Uranium-233 - Grams	7,389	5,668	6,639	5,284	9,540	4,875
OPERATING EFFECTIVENESS (a)						
Power Level, Max - MW	2,034	1,917	2,148	1,977	2,423	2,161
Power Level, Avg - MW	1,942	1,835	2,061	1,828	2,329	2,086
Level Efficiency - %	95.5	95.7	95.9	92.5	96.1	96.5
Time Oper. Effic. - %	83.0	(79.8)(b)	85.9	80.8	80.7	80.0
Production Effic. - %	79.3	54.9	82.4	74.7	77.6	77.2
Effective Cent. Tubes	1,485	1,523	1,505	1,454	1,587	1,584
Non-Eq. Loss/Startup	0.30	0.33	0.30	0.15	0.30	0.15

(a) Max. PL is Avg. of Monthly Maximums; LE = Avg. PL ÷ Max. PL; PE = LE X TOE.
 ECT = Equil. PL ÷ Avg. Power of 10 Most Productive Tubes. NE Loss/Startup is
 Expressed as Days of Equilibrium Operation (Derived by R&E):

(b) TOE excluding the loss due to work stoppage.

REACTOR STATISTICS

	KE			KW			TOTAL		
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun
	1966	1967	1967	1966	1967	1967	1966	1966	1967
PRODUCTION (Input Basis)									
KMWD - In Nat. U	396.9	343.4	324.6	334.9	347.6	358.5	321.7	328.8	1,179.9
KMWD - In Enr. U	248.0	104.7	317.0	317.3	194.3	109.6	322.4	322.9	638.7
KMWD - Total	644.9	448.1	641.6	652.2	541.9	468.1	644.1	651.7	1,818.6
KMWD - % of Forecast	105.2	111.9	101.7	102.7	103.8	96.0	101.6	102.3	107.3
Pu (kg) - In Nat. U	363.1	311.2	314.2	287.9	316.5	321.8	308.6	282.5	1,049.5
Pu (kg) - In Enr. U	179.2	77.7	241.0	233.9	141.2	80.6	243.9	238.1	457.0
Pu (kg) - Total	542.3	388.9	555.2	521.8	457.7	402.4	552.5	520.6	1,506.5
Conv. Ratio - In Nat. U	0.915	0.906	0.968	0.860	0.911	0.898	0.959	0.859	0.889
Conv. Ratio - In Enr. U	0.723	0.742	0.760	0.737	0.727	0.735	0.757	0.737	0.716
Polonium - Curies	0	0	0	0	0	0	0	0	12,701
Uranium-233 - Grams	29,197	7,824	5,783	5,374	22,509	7,902	7,391	6,829	68,635
OPERATING EFFECTIVENESS (a)									
Power Level, Max - MW	4,400	4,365	4,400	4,367	4,400	4,385	4,400	4,382	13,257
Power Level, Avg - MW	4,341	4,289	4,350	4,258	4,282	4,297	4,333	4,300	12,894
Level Efficiency - %	98.7	98.3	98.9	97.5	97.3	98.0	98.5	98.1	97.3
Time Oper. Effic. - %	82.1	56.8	81.5	83.2	69.9	59.2	82.1	82.4	78.9
Production Effic. - %	81.0	55.8	80.6	81.1	68.0	58.0	80.9	80.8	76.8
Effective Cent. Tubes	2,247	2,385	2,221	2,176	2,191	2,366	2,139	2,150	-
Non-Eq. Loss/Startup	0.14	0.17	0.10	0.09	0.15	0.18	0.09	0.18	0.22
		(81.7)	(b)			(84.7)	(b)	(83.1)	-
									0.21
									0.16
									0.14

(a) Max. PL is Avg. of Monthly Maximums; LE = Avg PL ÷ Max. PL; PE = LE X TOE.
 ECT = Equil. PL ÷ Avg. Power of 10 Most Productive Tubes. NE Loss/Startup is
 Expressed as Days of Equilibrium Operation (Derived by R&E).

(b) TOE excluding the loss due to work stoppage.

REACTOR STATISTICS

	B				C			
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967
<u>REACTOR OUTAGES (Number, by Cause)</u>								
Charge-Discharge	6	1	2	1	4	4	7	1
Tube Replacement	-	-	-	-	-	-	-	-
Fuel Ruptures	-	-	3	7	2	1	-	3
Tube Leaks (Incl. Van S)	-	-	-	1	1	2	2	2
Project Work	-	-	-	-	1	-	-	-
Production Tests	-	-	-	-	-	-	-	-
Front Face Leaks	1	-	-	-	-	-	-	-
Rear Face Leaks	2	1	-	-	-	-	-	-
Rods - Horiz. & Vert.	1	-	-	-	-	-	1	-
Reactor Hardware	2	2	1	1	1	-	2	-
Panelit System	-	-	1	-	5	-	2	4
Other Instrumentation	1	1	-	-	-	-	-	-
Electric Power	1	1	-	-	1	-	-	-
Water Flow (105 Bldg.)	-	-	-	-	-	-	-	-
190 Building	2	-	1	-	-	1	-	-
Reactivity Control	-	-	1	1	-	-	-	-
Temperature Control	-	-	1	-	-	-	-	-
Work Stoppage	-	1	-	-	-	1	-	-
Other	-	2	-	-	-	-	2	-
Total Outages	16	9	10	11	15	9	16	10
Outage Recap: (a)								
Scheduled Outages	6	2	3	1	5	4	7	1
Unsched. Shutdowns	3	4	4	10	3	4	6	5
Scrams	7	3	3	0	7	1	3	4

(a) Excluding those which followed scrams or unscheduled outages.

REACTOR STATISTICS

	KE			KW			TOTAL			
	Jan-1966	Jun-1966	Dec-1967	Jan-1966	Jun-1966	Dec-1967	Jan-1966	Jun-1966	Dec-1967	Jan-1967
REACTOR OUTAGES (Number, by Cause)										
Charge-Discharge	4	2	1	4	2	3	16	10	17	6
Tube Replacement	-	-	-	-	-	-	-	-	-	-
Fuel Ruptures	1	3	2	-	3	2	6	6	4	18
Tube Leaks (Incl. Van S.)	-	-	2	-	1	-	2	2	3	5
Project Work	-	-	-	-	-	-	1	-	-	-
Production Tests	-	-	1	2	-	-	-	-	3	1
Front Face Leaks	1	-	-	-	1	-	3	-	1	-
Rear Face Leaks	-	-	-	-	-	-	2	1	-	-
Rods - Horiz. & Vert.	-	-	-	-	-	-	3	-	1	-
Reactor Hardware	2	1	2	1	3	-	8	3	5	4
Panellit System	3	1	5	4	7	3	15	4	10	12
Other Instrumentation	-	-	2	-	-	-	1	1	3	2
Electric Power	-	-	1	-	1	-	3	1	-	2
Water Flow (105 Bldg.)	1	-	-	-	-	-	1	-	-	-
190 Building	-	-	-	-	-	1	2	1	1	1
165 Building	-	-	-	1	-	-	-	1	1	-
Reactivity Control	-	-	1	-	-	-	-	-	2	2
Temperature Control	-	-	-	-	1	-	1	-	1	-
Work Stoppage	-	-	-	-	-	1	-	3	-	-
Other	1	1	-	-	2	-	3	3	2	-
Total Outages	13	8	17	12	23	10	67	36	54	53
Outage Recap: (a)										
Scheduled Outages	5	3	1	5	2	3	18	12	20	6
Unsched. Shutdowns	4	4	5	0	12	3	22	15	13	26
Scrams	4	1	11	7	9	4	27	9	21	21

(a) Excluding those which followed scrams or unscheduled outages.

REACTOR STATISTICS

	B				C			
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967
<u>OUTAGE WORK</u> (% Time Allocation, Including Cooling Time and Startup Preparation) (a)								
Charge-Discharge	7.5	2.6	5.8	3.5	7.9	5.7	8.7	6.1
Rupture Removal	-	-	0.8	0.7	0.5	0.1	-	7.1
Tube Leaks (Inc. Van S.)	1.7	1.0	1.8	2.7	0.4	1.3	1.5	1.5
Tube Replacement	1.6	1.4	1.2	2.1	0.9	1.1	1.3	0.4
Other Maintenance	3.8	10.7	2.6	5.4	3.8	3.8	6.2	1.4
Standard Check	0.7	0.5	0.6	0.8	0.4	1.3	0.9	0.8
Production Test	0.2	1.1	1.1	1.8	1.2	0.3	0.4	1.4
Project Work	-	1.6	-	1.1	3.3	0.1	0.4	0.3
Work Stoppage	-	24.9	-	-	-	24.6	-	-
Other	1.5	1.3	0.2	1.1	0.9	-	0.1	1.0
Total	17.0	45.1	14.1	19.2	19.3	38.3	19.5	20.0

SCRAMS (Number, by Cause)

Reactor Operations: (b)								
Equip. Failure - 105	3	-	1	-	1	-	1	-
" - 190	1	-	1	-	-	1	-	-
Improp. Proced. - 105	-	1	1	-	-	-	-	1
" - 190	-	-	-	-	-	-	-	-
Unexplained Trips	-	-	-	-	4	-	2	3
Other Inst. Trips	1	1	-	-	-	-	-	-
Manual Trips	-	-	-	-	1	-	-	-
Subtotal	5	2	3	0	6	1	3	4
Test Facilities	-	-	-	-	-	-	-	-
Elect. Power Supply	2	1	-	-	1	-	-	-
Total Scrams	7	3	3	0	7	1	3	4

(a) Allocation per standard "Reactor Outage Time Reporting Procedure."
 (b) Excluding scrams due to fuel failures and process tube leaks.

REACTOR STATISTICS

	KE			KW			TOTAL		
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967
	1966	1966	1967	1966	1966	1967	1966	1966	1967
<u>OUTAGE WORK (% Time Allocation, Including Cooling Time and Startup Preparation)</u> ^(a)									
Charge-Discharge	9.1	4.6	7.6	6.1	8.4	6.6	5.8	7.4	8.2
Rupture Removal	0.3	1.3	-	0.9	0.7	1.1	0.4	1.4	0.4
Tube Leaks (Incl. Van S.)	-	-	-	1.1	1.5	-	2.7	0.2	0.9
Tube Replacement	0.4	-	0.1	0.2	0.4	1.2	-	-	0.8
Other Maintenance	3.5	9.2	3.9	3.4	14.8	3.6	3.9	4.6	6.5
Standard Check	0.8	0.8	0.8	0.7	0.9	0.4	0.5	1.4	0.7
Production Test	1.2	1.6	5.6	3.0	2.2	1.1	4.5	2.3	1.2
Project Work	-	-	-	0.1	-	0.3	-	0.1	0.8
Work Stoppage	-	24.9	-	-	-	25.5	-	-	-
Other	2.6	0.8	0.5	1.3	1.2	1.0	0.1	0.2	1.6
Total	17.9	43.2	18.5	16.8	30.1	40.8	17.9	17.6	21.1
									41.9
									17.5
									18.4

SCRAMS (Number, by Cause)

Reactor Operations:		(b)		(d)		(c)		(a)	
Equip. Failure	-	-	2	-	-	1	1	4	-
"	-	-	-	-	-	-	-	1	1
Improp. Proced.	1	-	1	1	1	-	-	2	2
"	-	-	-	-	-	-	-	-	1
Unexplained Trips	3	-	2	4	6	4	4	13	2
Other Inst. Trips	-	-	-	2	-	2	-	1	1
Manual Trips	-	-	1	-	1	1	-	2	-
Subtotal	4	-	6	10	8	8	5	23	7
Test Facilities	-	1	1	-	-	-	-	-	1
Elect. Power Supply	-	-	-	1	1	-	-	4	1
Total Scrams	4	1	7	11	9	8	6	27	9
									21
									19
									10
									2
									-
									20
									1
									-
									21

(a) Allocation per standard "Reactor Outage Time Reporting Procedure."

(b) Excluding scrams due to fuel failures and process tube leaks.

(c) High speed scanning system.

(d) Includes scrams caused by venturi screen plugging.

REACTOR STATISTICS

B				
Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	

OUTAGE TIMES (Hours, Average)

Charged to Scrams	10.2	18.6	4.0	0
Cooling Time	6.3	6.5	2.4	2.6
Startup Preparation	4.0	4.3	4.9	5.4

OTHER STATISTICS

Equil. Recov.. Time (a)	2	2	2	0
Charge-Disch. Rate (b)	18.7	20.9	18.8	11.4
Tubes Replaced - Total	31	38	31	48
Water Leaks:				
Process Tube	0	2	2	2
Van Stone Flange	8	3	9	6
Water Coll. - Gallons	399	359	719	236
" - Days >10 gal	19	17	25	
Failures - I&E Nat. U	0	0	3	7
Failures - I&E Enr. U	0	0	0	1
Failures - Other	0	0	0	0

Disch. Expos.: (c)

Nat. U - Weapons (c)	625	582	550	594
Nat. U - Nondefense (c)	0	0	920	1,462
Enr. U - Weapons (c)	844	790	851	923
Enr. U - Nondefense (c)	0	0	0	1,873

- (a) Minutes, average, as defined and reported by Research & Engineering.
 (b) Tubes/hour, average for standard charging of regular fuel as defined in the "Reactor Outage Time Reporting Procedure."
 (c) MWD/T.

C				
Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	

8.1	15.6	8.0	10.7
5.7	5.4	3.2	3.4
3.9	4.1	6.0	6.5
21	21	21	0
13.2	13.9	12.1	7.5
8	22	28	9
1	5	1	1
1	0	2	5
2,645	2,369	782	3,357
53	59	30	
2	1	0	2
0	0	0	1
0	0	0	0
610	597	601	721
0	0	0	1,650
836	826	842	909
0	0	0	1,737

REACTOR STATISTICS

	KE			KW			TOTAL		
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun
	1966	1966	1967	1966	1966	1967	1966	1966	1967
<u>OUTAGE TIMES (Hours, Average)</u>									
Charged to Scrams	11.7	0.5	11.1	7.8	3.4	6.8	8.1	7.3	8.2
Cooling Time	5.3	5.5	4.3	4.4	3.3	5.1	4.3	4.2	3.6
Startup Preparation	6.9	7.3	6.7	4.9	4.0	5.3	5.0	7.4	6.0
<u>OTHER STATISTICS</u>									
Equil. Recov. Time (a)	0	0	0	0	0	0	0	0	0
Charge-Disch. Rate (b)	21.7	26.7	18.8	19.3	16.8	20.0	17.5	13.6	12.9
Tubes Replaced - Total	5	4	8	5	9	6	9	1	63
Water Leaks:									
Process Tube	0	0	0	1	1	0	2	0	4
Van Stone Flange	0	0	0	1	1	0	1	0	12
Water Coll. - Gallons	0	0	42	1,384	1,551	178	3,489	729	5,706
" - Days >10 gal	0	0	1	48	48	6	57		
Failures - I&E Nat. U	0	2	0	1	1	1	0	3	13
Failures - I&E Enr. U	0	0	0	3	2	0	1	3	8
Failures - Other	1	1	0	0	0	1	0	0	0
Disch. Expos.: (c)									
Nat. U - Weapons (c)	659	649	645	656	710	663	599	652	656
Nat. U - Nondefense (c)	0	0	943	1,469	0	0	1,024	1,374	1,490
Enr. U - Weapons (c)	976	907	827	820	899	897	863	819	825
Enr. U - Nondefense (c)	0	0	0	1,370	0	0	0	1,110	1,594

- (a) Minutes, average, as defined and reported by Research & Engineering.
 (b) Tubes/hour, average for standard charging of regular fuel as defined in the "Reactor Outage Time Reporting Procedure."
 (c) MWD/T.

REACTOR STATISTICS

	B				C			
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967
OTHER STATISTICS - contd.								
Helium Loss/CF/Day	7,835	4,221	10,358	7,539	12,085	6,540	7,902	5,256
Fuel Charge: (At End of Period)								
Tons Nat. U	154.4	155.4	178.0	177.4	127.6	152.4	165.1	154.7
" Enr. U	53.9	54.0	39.5	39.6	75.9	61.2	49.5	57.5
Tube Loadings: (At End of Period)								
Nat. U Elems/Tube	31	31	31	31	31	31	31	31
Enr. U Els/Tube (Sh)	33	33	33	33	34	34	34	34
Enr. U Els/Tube (lg)	43	43	43	43	42	42	42	42
Mixers/Tube	1	1	1	1	1	1	1	1
Dry Channels	2	2	2	2	4	4	4	5
Water Tubes	7	1	1	0	4	4	5	7
Graph. Stringers	8	8	8	9	10	10	10	10
Non-Fuel Productive Tubes:								
In Blanket	168	168	112	112	167	84	84	84
Elsewhere	-	-	-	-	-	-	-	-

REACTOR STATISTICS

	KE			KW			TOTAL					
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1967
OTHER STATISTICS - contd.												
Helium Loss/CF/Day	12,493	6,138	8,699	8,370	9,816	4,771	5,914	4,900	42,229	21,670	32,873	26,065
Fuel Charge: (At End of Period)			(a)	(b)			(a)	(b)			(a)	
Tons Nat. U	330.3	325.4	243.6	282.2	334.0	353.6	231.9	274.8	946.3	986.8	818.6	889.1
" Enr. U	101.2	105.6	194.0	162.0	97.1	84.3	202.7	166.6	328.1	305.1	485.7	425.7
Tube Loadings: (At End of Period)												
Nat. U Elems/Tube	38	38	38	38	38	38	38	38	-	-	-	-
Enr. U Els/Tube (Sh)	46	46	46	46	46	46	46	46	-	-	-	-
Enr. U Els/Tube (Lg)	49	51	51	51	49	51	51	51	-	-	-	-
Mixers/Tube	1	1	1	1	1	1	1	1	-	-	-	-
Dry Channels	2	3	3	3	2	5	7	8	10	14	16	18
Water Tubes	5	6	6	4	5	5	5	4	21	16	17	15
Graph. Stringers	7	6	6	6	7	.7	7	7	32	31	31	32
Non-Fuel Productive Tubes:												
In Blanket	193	192	77	77	193	.80	83	79	721	524	356	352
Elsewhere	-	-	5	-	-	6	15	-	-	6	20	-

(a) Includes 45.2 tons of special depleted uranium in each of the KE and KW Reactor E-D loadings (PITA-048).

(b) Includes the 46.0 tons at KE and 46.2 tons at KW of special depleted uranium in the E-D loadings (PITA-048).

DECLASSIFIED
WATER PLANT STATISTICS

	B		
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967

WATER PLANT OPERATIONS

River Water Pumped-MMG
Water Exported-MMG
Water Treated-MMG

53,452 40,790 53,841 53,291
3,989 3,036 3,165 3,626
19,844 13,480 20,716 20,093

Chem. Consumption-ppm:

Alum
Bauxite
Chlorine
Sulfuric Acid
Filter Conditioner

0.043 0.154 0.140 0.183
4.701 4.532 4.681 3.926
0.713 0.702 0.699 0.704
24.610 23.000 27.390 23.210
0.024 0.016 0.024 0.012

Process Water-MMG
Proc. Water-GPM, Normal
Process Water Analysis:

Turbidity-ppm
pH
Cl Residual-ppm
Dichromate-ppm

20,521 14,119 21,698 20,897
89,500 90,600 94,800 95,000
0.004 .004 .005 .004
6.65 6.67 6.58 6.60
.18 .17 .18 .09
.97 1.00 .85 .75

STEAM PLANT OPERATIONS

Generation-MMM Lbs.
Gener.-lbs/Hr., Max.
" -lbs/Hr., Avg

341.7 331.7 365.9 352.2
103,700 139,000 97,500 96,800
79,300 74,700 84,700 79,900

Lbs. Steam/Lb. Coal

9.04 9.33 9.17 8.82

	C		
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967

(Included with B)
- - -
29,594 24,122 29,931 29,438

0 0.050 0.450 0.105
4,869 4.193 4.654 4.354
0.613 0.751 0.763 0.810
24,991 23.190 25.300 25.500
0.013 0.010 0.014 0.007

22,935 19,183 23,805 23,560
106,900 107,800 105,800 103,700

.004 .004 .005 .003
6.65 6.68 6.59 6.49
.23 .13 .16 .12
.97 1.00 .98 .70

(Included with B)

" " " "
" " " "
" " " "

DECLASSIFIED

DECLASSIFIED
WATER PLANT STATISTICS

	KE			KW			TOTAL		
	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967
WATER PLANT OPERATIONS									
River Water Pumped-MMG	50,054	39,689	50,326	51,792	46,742	42,869	51,208	52,902	150,248
Water Exported-MMG	-	-	-	-	-	-	-	-	3,989
Water Treated-MMG	50,013	39,658	50,276	51,738	46,742	42,869	51,208	52,902	146,193
Chem. Consumption-ppm:									(a) (a)
Alum	15.769	11.853	3.772	1.518	10.078	13.348	3.700	0.845	13.039
Bauxite	-	.531	3.287	3.963	-	-	3.288	4.125	4.801b)
Chlorine	0.803	.871	0.833	1.009	0.802	0.884	0.856	1.035	0.752
Sulfuric Acid	16.879	15.020	21.350	24.220	19.350	14.090	22.664	25.460	20.374
Filter Conditioner	0.025	0.019	0.023	0.021	0.019	0.015	0.020	0.016	0.020
Process Water-MMG	46,551	36,456	46,266	48,192	41,253	37,702	46,601	48,978	131,260
Proc. Water-GPM, Normal	212,800	215,000	212,200	127,000	213,500	215,100	215,900	215,600	622,700
Process Water Analysis:									
Turbidity-ppm	.004	.005	.008	.004	.005	.005	.010	.006	-
pH	6.66	6.82	6.67	6.60	6.79	6.81	6.63	6.61	6.69
Cl Residual-ppm	.19	.17	.20	.20	.19	.18	.20	.21	-
Dichromate-ppm	.90	.90	.90	.90	.90	.91	.90	.90	.93
STEAM PLANT OPERATIONS									
Generation-MMM Lbs.	224.6	135.8	139.6	148.8	186.4	131.0	133.9	136.5	752.7
Gener.-Lbs/Hr., Max.	69,700	61,200	46,300	45,300	64,200	43,700	38,300	46,450	237,600
" -Lbs/Hr., Avg.	52,200	32,400	32,300	33,750	43,400	29,500	31,000	30,930	164,900
Lbs. Steam/Gal. Oil	104.8	100.9	100.8	100.1	100.0	102.2	101.1	101.1	102.5
Lbs. Steam/Lbs. Coal	-	-	-	-	-	-	-	-	9.04
(a) K Reactors only.									9.33
(b) B-C Reactors only.									9.17

DECLASSIFIED

REACTOR AVAILABILITY

(PERCENT OF TIME REACTORS OPERATED PLUS
SCHEDULED SHUTDOWN TIME)

CY - 1967

B - REACTOR

CY - 1967

C - REACTOR

REACTOR AVAILABILITY

(PERCENT OF TIME REACTORS OPERATED PLUS
SCHEDULED SHUTDOWN TIME)

**DATE
FILMED**

6 / 7 / 93