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SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1966)

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MANUFACTURING SECTION
SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1966)

By

D. L. DeNeal
Manufacturing Section

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MANUFACTURING SECTION
SEMIANNUAL SUMMARY REPORT
(PERIOD ENDING DECEMBER 31, 1966)

INTRODUCTION

In this third semiannual issue, the reactor and power data are shown for the six-month period July through December, 1966, together with the two preceding six-month periods. Experience during the succeeding six-month period will be added in the next semiannual issue. For comparison purposes, the two years of experience will then continue to be shown by dropping and adding a six-month period with each semiannual issue.

STATISTICAL SUMMARY

The most significant statistics for the periods January through June, 1966 and July through December, 1966, shown by individual reactors on the attached pages, are summarized on pages 4 and 5 for the small reactors (B-C-D) and for the K Reactors (KE-KW). Achievements during the period July through December, 1966 are shown below.

During October and December, 1966, D Reactor achieved a monthly time operated efficiency of 100 percent for the first time since startup in December, 1944. A monthly input production record of 63.6 KMWDs was achieved by D Reactor in December, 1966, exceeding their own December, 1965 record by 9.1 percent and the previous record of any small Hanford reactor (excluding C Reactor) by 3.2 percent.

A new maximum power level record of 2145 megawatts was attained at B Reactor in December, 1966.

During CY 1966, C Reactor achieved a new production record of 591.0 KMWDs exceeding their CY 1964 record by 0.4 percent.

WORK STOPPAGE

Reactor and power operations were interrupted by a work stoppage during the period July 8, 1966 through August 23, 1966, because of strikes by the Hanford Atomic Metal Trades Council against two Hanford contractors (ITT/FSS and BNW).

During this work stoppage period, approximately 500 KMWDs of reactor input production were lost. The production loss at each reactor was as follows:

	<u>KMWD Loss</u>
B	63
C	78
D	60
KE	154
KW	<u>145</u>
	500

D. L. DeNeal, Specialist
Production Reports & Administration

DLD:bm

Reactor Statistical Summary

	<u>Jan-Jun</u> <u>1966</u>	<u>Jul-Dec</u> <u>1966</u>
<u>Production (Input)</u>		
<u>Plutonium - KMWDs</u>		
Small (B, C & D)	932.4	655.1
Ks (KE & KW)	1,186.8	916.2
Combined	2,119.2	1,571.3
<u>Plutonium - Kgs</u>		
Small	747.6	526.8
Ks	1,000.0	791.3
Combined	1,747.6	1,318.1
<u>Uranium U-233 - Grams</u>		
Small	25,014	19,472
Ks	51,706	15,726
Combined	76,720	35,198
<u>Polonium 210 - Curies</u>		
Small	29,745	5,501
Ks	0	0
<u>Power Level</u>		
<u>Maximum - (Average) - MW</u>		
B & D	2,010	1,930
C	2,423	2,257
KE & KW	4,400	4,375
<u>Average Operating - MW</u>		
B & D	1,986	1,865
C	2,329	2,209
KE & KW	4,312	4,293
<u>Time Operating Efficiency - (TOE %)</u>		
Small	81.8	59.8 (84.4) ¹
Ks	76.0	58.0 (83.2) ¹
Combined	79.5	59.1 (83.9) ¹
<u>Reactor Outages - No.</u>		
	<u>Small</u> <u>Ks</u> <u>Total</u>	<u>Small</u> <u>Ks</u> <u>Total</u>
Scheduled	13 7 20	8 6 14
Unscheduled	10 16 26	12 7 19
Scrams	20 13 33	9 5 14
<u>Process Tubes Replaced</u>		
Small	161	138
Ks	14	10
Total	175	148

¹Excluding TOE loss due to work stoppage.

Reactor Statistical Summary - Contd.

	Jan-Jun <u>1966</u>	Jul-Dec <u>1966</u>				
<u>Process Tube Leaks (Incl. V.S.)</u>						
Small	13	11				
Ks	2	0				
Total	15	11				
<u>Fuel Element Failures</u>	<u>Small</u>	<u>Ks</u>	<u>Total</u>	<u>Small</u>	<u>Ks</u>	<u>Total</u>
I&E Natural U.	3	1	4	2	3	5
I&E Enriched U.	2	2	4	1	0	1
Other	0	1	1	0	2	2
<u>Helium Usage - CFD</u>						
Small	26,964			14,541		
Ks	22,309			10,909		
Total	49,273			25,450		
<u>Outage Work - % Time Allocation</u>	<u>Small</u>	<u>Ks</u>	<u>Total</u>	<u>Small</u>	<u>Ks</u>	<u>Total</u>
Charge-Discharge	7.7	8.7	8.1	4.2	5.6	4.8
Rupture Removal	0.3	0.5	0.4	0.1	1.2	0.5
Tube Leaks	1.0	0.8	0.9	1.2	0	0.7
Tube Replacement	1.9	0.4	1.3	1.5	0.6	1.1
Other Maintenance	3.5	9.1	5.7	5.5	6.4	5.9
Standard Check	0.6	0.9	0.7	0.8	0.6	0.7
Production Test	1.1	1.7	1.3	0.9	1.3	1.1
Project Work	1.1	-	0.7	0.6	0.2	0.4
Work Stoppage	-	-	-	24.6	25.2	24.9
Other	1.0	1.9	1.4	0.8	0.9	0.8
Total	18.2	24.0	20.5	40.2	42.0	40.9

FOR STATISTICS

Max. PL; PL
tubes. NE
by R&E).

1

REACTOR STATISTICS

	KE			KW			TOTAL		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jan-Jun 1967

PRODUCTION (Input Basis)

KMWD - In Nat. U	422.8	396.9	343.4	369.9	347.6	358.5	1,340.6	1,400.1	1,165.1
KMWD - In Enr. U	220.4	248.0	104.7	196.1	194.3	109.6	656.2	719.1	406.2
KMWD - Total	643.2	644.9	448.1	566.0	541.9	468.1	1,996.8	2,119.2	1,571.3
KMWD - % of Forecast	104.9	105.2	111.9	90.3	103.8	96.0	97.7	107.1	105.5
Pu (kg) - In Nat. U	371.9	363.1	311.2	333.9	316.5	321.8	1,166.4	1,235.4	1,027.2
Pu (kg) - In Enr. U	166.4	179.2	77.7	148.8	141.2	80.6	481.2	512.2	290.9
Pu (kg) - Total	538.3	542.3	388.9	482.7	457.7	402.4	1,647.6	1,747.6	1,318.1
Conv. Ratio - In Nat. U	0.880	0.915	0.906	0.903	0.911	0.898	0.870	0.882	0.882
Conv. Ratio - In Enr. U	0.755	0.723	0.742	0.759	0.727	0.735	0.733	0.712	0.716
Polonium - Curies	0	0	0	0	0	0	53,000	29,745	5,501
Uranium-233 - Grams	25,465	29,197	7,824	24,479	22,509	7,902	73,858	76,720	35,198

OPERATING EFFECTIVENESS (a)

Power Level, Max - MW	4,362	4,400	4,365	4,334	4,400	4,385	14,597	15,353	14,866
Power Level, Avg - MW	4,260	4,341	4,289	4,190	4,282	4,297	14,026	14,924	14,526
Level Efficiency - %	97.7	98.7	98.3	96.7	97.3	98.0	96.1	97.2	97.7
Time Oper. Effic. - %	82.1	82.1	56.8	73.4	69.9	59.2	77.3	79.5	59.1
Production Effic. - %	80.2	81.0	55.8	71.0	68.0	58.0	74.3	77.3	57.7
Effective Cent. Tubes	2,341	2,247	2,385	2,237	2,191	2,366	-	-	-
Non-Eq. Loss/Startup	0.24	0.14	0.17	0.26	0.15	0.18	0.29	0.20	0.20

(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			D		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	
<u>REACTOR OUTAGES (Number, by Cause)</u>									
Charge-Discharge	4	6	1		-	4	4		
Tube Replacement	-	-	-		-	-	-		
Fuel Ruptures	4	-	-		12	2	1	2	
Tube Leaks (Incl. Van S)	-	-	-		2	1	2	1	
Project Work	-	-	-		-	1	-	1	
Production Tests	-	-	-		-	-	-	1	
Front Face Leaks	-	1	-		1	-	-	-	
Rear Face Leaks	-	2	1		-	-	-	-	
Rods - Horiz. & Vert.	-	1	-		1	-	-	-	
Reactor Hardware	-	2	2		1	1	-	1	
Panellit System	-	-	-		6	5	-	-	
Other Instrumentation	-	1	1		-	-	-	1	
Electric Power	-	1	1		-	1	-	-	
Water Flow (105 Bldg.)	-	-	-		-	-	-	-	
190 Building	-	2	-		-	-	1	2	
Reactivity Control	-	-	-		-	-	-	-	
Temperature Control	-	-	-		-	-	-	-	
Work Stoppage	-	-	1		-	-	1	1	
Other	-	-	2		-	-	-	-	
Total Outages	8	16	9	23	15	9	21	12	
Total Outages 11									
Outage Recap: (a)									
Scheduled Outages	4	6	2	1	5	4	2	2	
Unsched. Shutdowns	4	3	4	15	3	4	9	4	
Scrams	0	7	3	7	7	1	10	5	

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

REACTOR STATISTICS

	KE				KW				TOTAL			
	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun
	1965	1966	1966	1967	1965	1966	1966	1967	1965	1966	1966	1967
<u>REACTOR OUTAGES (Number, by Cause)</u>												
Charge-Discharge	2	4	2		1	2	3		8	18	12	
Tube Replacement	-	-	-		-	-	-		-	-	-	
Fuel Ruptures	6	1	3		5	3	2		34	8	7	
Tube Leaks (Incl. Van S)	-	-	-		2	1	-		5	3	3	
Project Work	-	-	-		-	-	-		-	1	-	
Production Tests	2	-	-		-	-	-		2	1	1	
Front Face Leaks	-	1	-		-	1	-		1	4	-	
Rear Face Leaks	-	-	-		-	-	-		-	2	1	
Rods - Horiz. & Vert.	-	-	-		-	2	-		1	3	-	
Reactor Hardware	-	2	1		1	3	-		4	11	3	
Panellit System	3	3	1		3	7	3		15	16	6	
Other Instrumentation	2	-	-		1	-	-		3	1	2	
Electric Power	-	-	-		-	1	-		-	4	1	
Water Flow (105 Bldg.)	-	1	-		-	-	-		-	1	-	
190 Building	-	-	-		-	-	-		1	2	3	
165 Building	-	-	-		1	-	1		1	-	1	
Reactivity Control	-	-	-		1	-	-		1	-	-	
Temperature Control	-	-	-		-	1	-		-	1	-	
Work Stoppage	-	-	-		-	-	1		-	-	4	
Other	5	1	1		3	2	-		14	3	3	
Total Outages	20	13	8		18	23	10		90	79	47	
Outage Recap:												
Scheduled Outages (a)	2	5	3		2	2	3		11	20	14	
Unsched. Shutdowns	8	4	4		8	12	3		44	26	19	
Scrams	10	4	1		8	9	4		35	33	14	

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

REACTOR STATISTICS

	B			C			D			
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967
<u>OUTAGE WORK (% Time Allocation, Including Cooling Time and Startup Preparation)</u> (a)										
Charge-Discharge	7.0	7.5	2.6		10.1	7.9	5.7	5.8	7.6	4.4
Rupture Removal	1.3	-	-		3.8	0.5	0.1	0.6	0.4	0.1
Tube Leaks (Inc. Van S)	1.4	1.7	1.0		1.5	0.4	1.3	2.8	1.2	1.4
Tube Replacement	2.1	1.6	1.4		1.5	0.9	1.1	1.4	3.1	1.8
Other Maintenance	3.2	3.8	10.7		8.7	3.8	3.8	8.1	2.8	2.0
Standard Check	0.7	0.7	0.5		1.1	0.4	1.3	0.6	0.7	0.7
Production Test	0.5	0.2	1.1		0.1	1.2	0.3	3.3	1.8	1.4
Project Work	-	-	1.6		0.1	3.3	0.1	0	0.1	-
Work Stoppage	-	-	24.9		-	-	24.6	-	-	24.4
Other	0.2	1.5	1.3		2.6	0.9	-	0.4	0.5	1.1
Total	16.4	17.0	45.1		29.5	19.3	38.3	23.0	18.2	37.3

SCRAMS (Number, by Cause)

	(b)			(c)		
Reactor Operations:						
Equip. Failure - 105	-	3	-	-	1	-
" - 190	-	1	-	-	-	1
Improp. Proced. - 105	-	-	1	-	-	-
" - 190	-	-	-	-	-	1
Unexplained Trips	-	-	-	-	-	2
Other Inst. Trips	-	1	1	-	-	1
Manual Trips	-	-	-	-	-	-
Subtotal	0	5	2	9	5	5
Test Facilities	-	-	-	-	-	-
Elect. Power Supply	-	2	1	-	1	-
Total Scrams	0	7	3	10	6	5

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

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

(c) Includes two scrams due to orifice screen plugging.

REACTOR STATISTICS

	KE				KW				TOTAL			
	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun
	1965	1966	1966	1967	1965	1966	1966	1967	1965	1966	1966	1967
OUTAGE WORK (% Time Allocation, Including Cooling Time and Startup Preparation) ^(a)												
Charge-Discharge	8.7	9.1	4.6		12.2	8.4	6.6		8.8	8.1	4.8	
Rupture Removal	1.2	0.3	1.3		1.8	0.7	1.1		1.7	0.4	0.5	
Tube Leaks (Incl. Van S)	-	-	-		1.9	1.5	-		1.5	0.9	0.7	
Tube Replacement	0.1	0.4	-		0.9	0.4	1.2		1.2	1.3	1.1	
Other Maintenance	3.6	3.5	9.2		4.9	14.8	3.6		5.7	5.7	5.9	
Standard Check	0.8	0.8	0.8		1.3	0.9	0.4		0.9	0.7	0.7	
Production Test	1.9	1.2	1.6		2.3	2.2	1.1		1.6	1.3	1.1	
Project Work	0.3	-	-		0.2	-	0.3		0.2	0.7	0.4	
Work Stoppage	-	-	24.9		-	-	25.5		-	-	24.9	
Other	1.3	2.6	0.8		1.1	1.2	1.0		1.1	1.4	0.8	
Total	17.9	17.9	43.2		26.6	30.1	40.8		22.7	20.5	40.9	

SCRAMS (Number, by Cause)

(b)												
Reactor Operations:												
Equip. Failure - 105	*1	-	-	-	-	-	-	-	5	7	-	-
" - 190	-	-	-	-	-	-	-	-	-	1	2	2
Improp. Proced. - 105	4	1	-	2	2	1	1	1	7	2	2	2
" - 190	-	-	-	-	-	-	1	1	-	-	2	2
Unexplained Trips	3	3	-	3	3	6	2	2	16	15	4	4
Other Inst. Trips	-	-	-	-	-	-	-	-	-	1	2	2
Manual Trips	-	-	-	3	3	1	-	-	4	2	-	-
Subtotal	8	4	-	8	8	8	4	4	32	28	12	12
Test Facilities	2	-	1	-	-	-	-	-	2	-	1	1
Elect. Power Supply	-	-	-	-	-	1	-	-	1	5	1	1
Total Scrams	10	4	1	8	8	9	4	4	35	33	14	14

*Plugged Venturi

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

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

REACTOR STATISTICS

	B			C			D		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966
<u>OUTAGE TIMES (Hours, Average)</u>									
Charged to Scrams	-	10.2	18.6	8.1	8.1	15.6	1.3	6.6	11.5
Cooling Time	8.2	6.3	6.5	4.9	5.7	5.4	4.3	5.0	4.9
Startup Preparation	6.2	4.0	4.3	4.1	3.9	4.1	3.2	3.8	5.6
<u>OTHER STATISTICS</u>									
Equil. Recov. Time (a)	14	2	2	23	21	21	11	1	1
Charge-Disch. Rate (b)	16.2	18.7	20.9	12.1	13.2	13.9	16.9	17.9	21.3
Tubes Replaced - Total	30	31	38	20	8	22	61	122	78
Water Leaks:									
Process Tube	1	0	2	2	1	5	7	2	1
Van Stone Flange	2	8	3	0	1	0	8	1	0
Water Coll. - Gallons	261	399	359	5,296	2,645	2,369	4,645	1,002	1,500
" - Days >10 gals	9	19	17	97	53	59	89	26	47
Failures - I&E Nat. U	3	0	0	8	2	1	1	1	1
Failures - I&E Enr. U	1	0	0	4	0	0	6	2	1
Failures - Other	-	-	0	1	-	0	-	-	0
Disch. Expos. - Nat. U ^(c)	617	625	582	605	610	597	634	599	579
" - Enr. U ^(c)	802	844	790	802	836	826	813	904	769

(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

	<u>KE</u>			<u>KW</u>			<u>TOTAL</u>		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1966	Jul-Dec 1965	Jan-Jun 1966	Jan-Jun 1967
<u>OUTAGE TIMES (Hours, Average)</u>									
Charged to Scrams	3.2	11.7	0.5	3.6	3.4	6.8	3.2	8.0	11.2
Cooling Time	4.3	5.3	5.5	4.0	3.3	5.1	5.1	5.1	5.5
Startup Preparation	4.8	6.9	7.3	4.0	4.0	5.3	4.5	4.5	5.3
<u>OTHER STATISTICS</u>									
Equil. Recov. Time (a)	16	0	0	16	0	0	-	-	-
Charge-Disch. Rate (b)	17.5	21.7	25.8	14.8	16.8	20.0	15.3	17.0	19.4
Tubes Replaced - Total	3	5	4	7	9	6	121	175	148
Water Leaks:									
Process Tube	0	0	0	0	1	0	10	4	8
Van Stone Flange	0	0	0	0	1	0	10	11	3
Water Coll. - Gallons	0	0	0	7,107	1,551	178	-	-	-
" - Days >10 gals	0	0	0	82	48	6	-	-	-
Failures - I&E Nat. U	3	0	2	2	1	1	17	4	5
Failures - I&E Enr. U	0	0	0	4	2	0	15	4	1
Failures - Other	3	1	1	-	-	1	4	1	2
Disch. Expos. - Nat. U ^(c)	747	659	649	641	710	663	660	643	625
Disch. Expos. - Enr. U ^(c)	947	976	907	1,009	899	897	903	914	853

(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			D		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jan-Jun 1967
<u>OTHER STATISTICS - contd.</u>									
Helium Loss-CF/Day	6,319	7,835	4,221	10,113	12,085	6,540	6,176	7,044	3,780
Fuel Charge: (At End of Period)									
Tons Nat. U	154.5	154.4	155.4	125.7	127.6	152.4	149.0	143.4	148.6
" Enr. U	53.7	53.9	54.0	76.7	75.9	61.2	57.7	61.5	57.9
Tube Loadings: (At End of Period)									
Nat. U Elms/Tube	31	31	31	31	31	31	31	31	31
Enr. U Els/Tube (Sh)	33	33	33	34	34	34	33	33	33
Enr. U Els/Tube (lg)	43	43	43	42	42	42	43	43	43
Mixers/Tube	1	1	1	1	1	1	1	1	1
Dry Channels	1	2	2	4	4	4	4	4	4
Water Tubes	7	7	1	11	4	4	12	6	7
Graph. Stringers	8	8	8	10	10	10	8	9	9
Non-Fuel Productive Tubes:									
In Blanket	168	168	168	167	167	84	168	167	167
Elsewhere	5	-	-	5	-	-	4	10	5

REACTOR STATISTICS

	KE			KW			TOTAL			
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967
<u>OTHER STATISTICS - contd.</u>										
Helium Loss/CF/day	8,211	12,493	6,138		8,420	9,816	4,771	39,239	49,273	25,450
Fuel Charge: (At End of Period)										
Tons Nat. U	115.8	330.3	325.4		117.4	334.0	353.6	662.4	1,089.7	1,135.4
" Enr. U	273.1	101.2	105.6		271.1	97.1	84.3	732.3	389.6	363.0
Tube Loadings: (At End of Period)										
Nat. U Elems/Tube	38	38	38		38	38	38	-	-	-
Enr. U Els/Tube (Sh)	46	46	46		46	46	46	-	-	-
Enr. U Els/Tube (Lg)	51	49	51		51	49	51	-	-	-
Mixers/Tube	1	1	1		1	1	1	-	-	-
Dry Channels	2	2	3		2	2	5	13	14	18
Water Tubes	6	5	6		5	5	5	41	27	23
Graph. Stringers	6	7	6		6	7	7	38	41	40
Non-Fuel Productive Tubes:										
In Blanket	192	193	192		193	193	80	888	888	691
Elsewhere	221	-	-		217	-	6	452	10	11

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WATER PLANT STATISTICS

	B			C			D		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1966	Jul-Dec 1966	Jan-Jun 1967

WATER PLANT OPERATIONS

River Water Pumped-MMG 52,214 53,452 40,790
 Water Exported-MMG 4,030 3,989 3,036
 Water Treated-MMG 19,205 19,844 13,480

Chem. Consumption-ppm:

Alum 0.463 0.043 0.154
 Bauxite 4.507 4.701 4.532
 Chlorine 0.886 0.713 0.702
 Sulfuric Acid 22.834 24.610 23.000
 Filter Conditioner 0.021 0.024 0.016

Process Water-MMG

Proc. Water-GPM, Normal 20,659 20,521 14,119
 89,600 89,500 90,600

Process Water Analysis:

Turbidity-ppm .004 .004 .004
 pH 6.62 6.65 6.67
 Cl Residual-ppm 0.09 .18 .17
 Dichromate-ppm 0.993 .97 1.00

STEAM PLANT OPERATIONS

Generation-MMG Lbs. 332.2 341.7 331.7
 Gener.-Lbs/Hr., Max. 89,000 103,700 139,000
 " -Lbs/Hr., Avg. 74,700 79,300 74,700

Lbs. Steam/Lb. Coal 9.08 9.04 9.33

(Included with B)

28,915 29,594 24,122
 21,630 22,561 18,935
 21,034 21,982 17,703

0.081 0 0.050
 4.911 4.869 4.193
 0.546 0.613 0.751
 22.045 24.991 23.190
 0.017 0.013 0.010

21,600 22,935 19,183
 103,750 106,900 107,800

.005 .004 .004
 6.66 6.65 6.68
 0.07 .23 .13
 0.991 .97 1.00

(Included with B)

207.3 207.9 180.3
 95,300 85,500 78,700
 46,000 47,900 40,500

8.53 8.28 8.10

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WATER PLANT STATISTICS

	KE			KW			TOTAL		
	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966	Jul-Dec 1965	Jan-Jun 1966	Jul-Dec 1966
WATER PLANT OPERATIONS									
River Water Pumped-MMG	51,155	50,054	39,689	47,491	46,742	42,869	172,490	172,809	142,280
Water Exported-MMG	-	-	-	-	-	-	4,030	3,989	3,827
Water Treated-MMG	51,119	50,013	39,658	47,491	46,742	42,869	167,764	168,175	137,832
Chem. Consumption-ppm:									
Alum	16.243	15.769	11.853	6.038	10.078	13.348	12.407 ^{a)}	13.023 ^{a)}	7.602 ^{b)}
Bauxite	-	-	.531	-	-	-	4,596	4,697	1,925 ^{b)}
Chlorine	0.941	0.803	.871	1.033	0.802	0.884	0.884	0.759	0.814
Sulfuric Acid	14.474	16.879	15.020	19.748	19.350	14.090	19,562	20,605	17,910
Filter Conditioner	0.012	0.025	0.019	0.005	0.019	0.015	0.013	0.020	0.016
Process Water-MMG									
Proc. Water-GPM, Normal	47,589	46,551	36,456	42,474	41,253	37,702	152,112	151,909	123,939
Process Water Analysis:	209,700	212,800	215,000	209,100	213,500	215,100	702,400	715,000	722,500
Turbidity-ppm	.005	.004	.005	.006	.005	.005	-	-	-
pH	6.67	6.66	6.82	6.67	6.79	6.81	6.65	6.67	6.73
Cl Residual-ppm	0.20	.19	.17	0.19	.19	.18	-	-	-
Dichromate-ppm	0.933	.90	.90	0.946	.90	.91	0.955	.95	.95
STEAM PLANT OPERATIONS									
Generation-MMG Lbs.	163.2	224.6	135.8	149.5	186.4	131.0	852.2	960.6	778.8
Gener.-Lbs/Hr., Max.	42,000	69,700	61,200	42,000	64,200	43,700	268,300	323,100	322,600
" -Lbs/Hr., Avg.	37,500	52,200	32,400	33,700	43,400	29,500	191,900	222,800	177,100
Lbs. Steam/Gal. Oil	114.6	104.8	100.9	107.2	100.0	102.2	110.9	102.5	101.6
Lbs. Steam/Lbs. Coal	-	-	-	-	-	-	8.80	8.66	8.86

a) K Reactors only.

b) Based on flows for all reactors.

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REACTOR OPERATED SIMULTANEOUSLY

REACTOR AVAILABILITY

(PERCENT OF TIME REACTORS OPERATED PLUS
SCHEDULED SHUTDOWN TIME)

B REACTOR

C REACTOR

D REACTOR

REACTOR AVAILABILITY

(PERCENT OF TIME REACTORS OPERATED PLUS
SCHEDULED SHUTDOWN TIME)

KE REACTOR

KW REACTOR

FIVE REACTOR AVERAGE

END

DATE
FILMED

7 / 8 / 93