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HW-7-4004 Del [redacted]

OP-59 REVISED

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PROJECT 9536

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Route List
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REPOSITORY PNL

COLLECTION Atmospheric Releases

BOX No. N/A

FOLDER N/A

Date May 9, 1946

Subject Monthly Report - April 1946

To R. M. Evans

From D. A. Miller

Copy No. [redacted] 1

BEFORE READING THIS DOCUMENT, SIGN AND DATE BELOW:

120209

HW- 7-4004-Del [redacted]

Copy #3 - The Area Engineer

This Document consists of
91 Pages No. 1
[redacted]

May 9, 1946

HANFORD ENGINEER WORKS

MONTHLY REPORT

APRIL 1946

[redacted]

TABLE OF CONTENTS

GENERAL SUMMARY

The 100 D and 100 F Areas operated throughout the month without unusual incident. Scheduled shutdowns for metal discharge were made in each Area. Power levels were maintained at 250 MW and 200 MW respectively. Overall operating time efficiency was 93%. The lay-up of 100 B Area was rapidly nearing completion at month end.

Separations plant operations were normal with a total of 63 charges started through the Canyon Buildings and 66 charges delivered from the Isolation Building.

Reduction of the plant force resulting from the shutdown of one area has proceeded about as planned. The net reduction during the month totalled 144 and included 18 monthly salaried and 126 weekly personnel. Total force at month end was 4518. Additions to the roll were limited primarily to Military Service reinstates.

Safety performance throughout the plant continued quite satisfactory. Several Areas which had completed a year or more without a time losing injury were recognized by an appropriate ceremony and awarded a distinctive plaque.

STAFF

MANAGER	D. A. MILLER
ASSISTANT MANAGER	T. M. STAPLETON
PRODUCTION SUPERINTENDENT	N. H. SMITH
TECHNICAL SUPERINTENDENT	W. C. KAY
WORKS ENGINEER	ROSS HARE
P DEPARTMENT SUPERINTENDENT	C. M. GROSS
S DEPARTMENT SUPERINTENDENT	F. B. VAUGHAN
POWER SUPERINTENDENT	F. M. ACKER
MAINTENANCE SUPERINTENDENT	A. J. SCHWERTFEGER
ELECTRICAL SUPERINTENDENT	H. A. CARLBERG
INSTRUMENT SUPERINTENDENT	W. P. OVERBECK
SERVICE SUPERINTENDENT	W. T. CLOUD
TRANSPORTATION SUPERINTENDENT	R. T. COOKE
MEDICAL SUPERINTENDENT	W. D. NORWOOD
CHIEF ACCOUNTANT	S. D. EWING

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FORCE REPORT

DEPARTMENT	NON-EXEMPT 3/25/46	NON-EXEMPT 4/25/46	EXEMPT 3/25/46	EXEMPT 4/25/46	T O T A L 3/25/46	T O T A L 4/25/46
Management	-	-	4	4	4	4
P	217	198	59	56	276	254
S	272	270	64	65	336	335
Technical	188	170	75	72	263	242
Power	408	388	89	89	497	477
Maintenance	446	438	91	88	537	526
Electrical	175	166	38	37	213	203
Instrument	117	112	30	29	147	141
Protection	409	377	76	72	485	449
Service	191	194	64	64	255	258
Transportation	551	542	63	62	614	604
Medical	271	265	106	103	377	368
Accounting	641	640	17	17	658	657
TOTAL	3886	3760	776	758	4662	4518

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PERSONNEL DISTRIBUTION

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	TOTALS
P DEPARTMENT									
Supervisors	7	15	16	-	-	14	-	4	56
Operators	11	39	44	-	-	104	-	-	198
Total	18	54	60	-	-	118	-	4	254
S DEPARTMENT									
Supervisors	-	-	-	21	31	-	1	2	55
Operators	-	-	-	108	151	-	11	-	270
Others	-	-	-	-	3	-	7	-	10
Total	-	-	-	129	185	-	19	2	335
TECHNICAL DEPARTMENT									
Supervisors	-	5	3	4	10	7	-	4	33
Chemists, Engineers & Physicists	3	9	3	10	24	36	-	8	93
Analytical Personnel	3	15	7	21	37	21	-	-	104
Others	1	-	-	4	5	2	-	-	12
Total	7	29	13	39	76	66	-	12	242
POWER DEPARTMENT									
Supervisors	15	25	23	5	8	-	3	10	89
Operators	48	103	99	23	35	10	-	38	356
Others	5	6	6	1	7	3	-	4	32
Total	68	134	128	29	50	13	3	52	477
MAINTENANCE DEPARTMENT									
Supervisors	2	6	17	8	13	4	-	19	69
Engineers	1	-	-	-	4	-	-	14	19
Mechanics	15	25	68	40	69	28	-	145	390
Others	1	1	1	5	7	2	-	31	48
Total	19	32	86	53	93	34	-	209	526

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	TOTALS
ELECTRICAL DEPARTMENT									
Supervisors	2	3	2	3	4	1	11	6	32
Electricians	9	16	13	15	14	7	52	24	150
Others	1	3	1	1	3	-	11	1	21
Total	12	22	16	19	21	8	74	31	203
INSTRUMENT DEPARTMENT									
Supervisors	3	4	4	3	3	4	-	4	25
Engineers	-	-	-	-	-	-	-	4	4
Mechanics	7	17	17	16	17	17	-	6	97
Others	-	1	1	-	-	6	-	7	15
Total	10	22	22	19	20	27	-	21	141
PROTECTION DEPARTMENT									
Supervisors	6	6	6	10	7	5	1	31	72
Patrolmen	25	49	48	86	70	24	7	57	366
Others	1	-	-	-	-	-	-	10	11
Total	32	55	54	96	77	29	8	98	449
SERVICE DEPARTMENT									
Supervisors	4	-	-	-	1	5	7	41	58
Firemen	14	-	-	-	-	10	-	48	72
Laundry Operators	-	-	-	-	1	-	-	1	2
Inspectors	5	4	4	4	4	1	1	1	24
Janitors	2	5	5	6	9	7	2	35	71
Others	-	-	-	-	9	1	5	16	31
Total	25	9	9	10	24	24	15	142	258
TRANSPORTATION DEPARTMENT									
Supervisors	2	2	2	1	2	1	9	43	62
Drivers (Based on Areas Served)	25	29	28	30	40	20	32	34	238
Mechanics	1	1	1	1	2	-	8	50	64
Trainmen	4	4	4	2	2	-	2	4	22
Laborers	3	3	4	3	3	-	3	35	54
Others	11	11	11	5	11	4	14	97	164
Total	46	50	50	42	60	25	68	263	604

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	TOTALS
MEDICAL DEPARTMENT									
Physicians	-	-	-	-	-	-	7	11	18
Dentists	-	-	-	-	-	-	-	8	8
Nurses	←	5	→	3	3	1	7	80	99
M. I. Specialists	5	8	8	26	38	26	25	7	143
Technicians	1	1	1	1	1	1	-	18	24
Others	-	-	-	-	-	-	-	76	76
Total	6	14	9	30	42	28	39	200	368
ACCOUNTING DEPARTMENT									
Supervisors	-	-	-	-	-	-	-	17	17
Clerks	2	9	11	8	21	11	-	265	327
Telephone & Teletype Operators	-	-	-	4	4	-	-	29	37
Others	2	3	-	8	10	9	-	244	276
Total	4	12	11	20	35	20	-	555	657
MANAGEMENT	-	-	-	-	-	-	-	4	4
GRAND TOTALS	247	433	458	486	683	392	226	1593	4518

4/25/46

HW-7-4004-Dal

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EXEMPT PERSONNEL ARRIVALS AND DEPARTURES - APRIL 1946

ARRIVALS

Name	Department	Physical Arrival	Origin
S. G. Smolen	S	April 15	Re-instate - Military Service
L. P. Bornwasser	Technical	" 3	Re-instate - Military Service
R. H. Beaton	"	" 24	Re-employ
R. W. Hatfield	Service	" 1	Re-instate - Military Service

DEPARTURES

Name	Department	Physical Departure	Reason
I. R. Smith	P	April 8	Trans.-Grasselli, Sales, Wilmington
W. B. Winter	"	" 8	Trans.-Grasselli, Sales, Wilmington
J. R. Dahl	"	" 19	Trans.-Ammonia, Belle Works, Charleston, W. Va.
J. A. Byers	"	" 19	Trans.-Rayon, Waynesboro, Va.
T. B. H. Anderson	"	" 25	Trans.-Ammonia, Belle Works, Charleston, W. Va.
E. C. Morris	Technical	" 10	Trans.-Ammonia, Sabine River Works, Orange, Texas
L. G. Anderson	"	" 25	Trans.-Rayon, Wilmington
D. M. Paige	Maintenance	March 29	Trans.-Rayon, Yerkes Works, Buffalo, N.Y.
D. D. Sivils	"	" 29	Resignation
V. C. Langford	"	" 29	Resignation
R. H. Lee	Electrical	" 29	Trans.-Engr., Design, Wilmington
C. G. Allen	"	April 19	Completion of Assignment
R. C. Limburg	Instrument	" 17	Trans.-Rayon, Yerkes Works, Buffalo, N.Y.
W. F. Polk	Protection	March 26	Resignation
R. O. Beard	"	April 1	Completion of Assignment
A. G. Mainland	"	" 4	Completion of Assignment
W. A. Welch	"	" 22	Completion of Assignment
J. B. Daniel	Service	" 9	Trans.-Electrochem., Niagara Falls, N.Y.
R. R. O'Leary	Transportation	" 1	Resignation
G. L. Beyer, M.D.	Medical	March 29	Completion of Assignment
P. E. Lindvig	"	" 29	Completion of Assignment
W. H. Durum	"	" 29	Completion of Assignment

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	HIJ			
	HI	HJ	HK	HL
JC	1,659	114	28,763	1,985
JD	-	-	77,857	1,485
JE	1,659	114	106,620	3,470
JF	1,552	99	26,615	1,682
JG	28,715	113	539,638	2,128
JH	3,771	15	229,866	895
JI	1,000	4	16,514	66
JJ	20,307	79	748,427	2,938
JK	22,972	90	515,422	2,023
JL	-	20	-	514
JM	-	17	-	496
JN	-	1	-	56
JO	-	3	-	47
JP	-	19	-	539
JQ	-	88	-	463
JR	-	1	-	54
JS	-	-	-	41
JT	-	5	-	-
JU	-	32	-	-
JV	-	2	-	-
JW	-	6	-	-
JX	1	.0	153,468	601.7
JY	11,712	46.0	170,274	668.3
JZ	7,392	29.0	144,333	565.8
KA	19,105	75.0	468,075	1,835.8
KB	1	.0	97,400	382.4
KC	11,784	46.3	105,704	415.7
KD	7,600	29.8	79,507	311.7
KE	19,385	76.1	282,611	1,109.8
KF	11,760	46.2	119,959	470.9
KG	11,760	46.2	119,260	468.1
KH	-	-	-	-
KI	23,520	92.4	239,219	939.0
KJ	12,141	47.7	117,238(a)	460.2(b)
KK	-	-	95,816	376.1
KL	12,621	49.5	20,889	81.9
KM	24,762	97.2	233,943	918.2

	HM	HN	HO	HP
KN	1,778	121	1,883	129
KO	963	61	352	21
KP	9,589	37	21,634	85
KQ	19,317	76	13,813	54
KR	25,196	99	29,044	114
KS	20,993	83	19,993	79
KT	-	4	-	1
KU	-	27	-	27
KV	56,068	220	56,068	220
KW	64,642	254	64,570	253
KX	65,034	255	64,826	254
KY	185,744	729	185,464	727
KZ	49,398	193.9	45,263	177.7
LA	-	25.6	-	20.7
LB	-	821.0	-	918.2

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	HQ	HR
LC	-	98,107
LD	7,084	114,663
LE	5,789	93,254
LF	12,873	306,024
LG	-	77,984
LH	9,620	87,151
LI	6,093	67,241
LJ	15,713	232,376

	HS	HT	HU	HV	HW
LK	9,121,000	9,108,000	-	18,229,000	193,895,000
LL	8,386,000	8,120,000	-	16,506,000	179,434,000
LM	647,000	459,000	-	1,106,000	11,743,000
LN	9,471,000	8,247,000	-	17,718,000	170,409,000
LO	-	706,000	-	706,000	6,716,000
LP	9,471,000	7,541,000	-	17,012,000	163,693,000
LQ	2,965,000	4,920,000	-	7,885,000	-
LR	-	-	-	3,379,000	-
LS	-	-	-	17,949,000	163,989,160

(a) Includes 18,736 units at C
(b) Includes 73.5 units at C

F DEPARTMENT

APRIL 1946

PILE SUMMARY

	Pile B	Pile D	Pile F
Time Operated (%)	—	92.1	93.9
*Power Level (MW)	—	250	200
*Inlet Water Temperature (°C)	—	9.0	8.8
*Outlet Water Temperature (°C) (Maximum °C, 10 tubes, 0.240 zone)	—	46.9	39.9
Number of Scrams	—	1	2
Number of Purges	—	1	1
Helium Consumption (cubic feet)	53,349	25,302	32,510
Metal Discharged (tons)	—	46.2	29.7
Inhours Gained (this month)	—	-12	0
*Inhours Poisoned	—	315	341
*Inhours in Rods	—	50	48

* Month-end figures

PILE BUILDINGS

General

The program of placing Pile B in standby condition was practically completed this month. Operation of Pile D and Pile F was continued at levels previously established.

Date of Outage	Outage Cause		Length of Outage (Hours)
	Metal Discharge	"Scrams"	
3-26-46	D		14.5
4-2-46	F		14.3
4-9-46	D	D	15.8
4-11-46	F		14.3
4-13-46		F	.3
4-16-46	D		15.1
4-18-46	F		15.8
4-25-46		F	.5

Operating Experience

Pile D was operated at 250 MW and Pile F was operated at 200 MW for the entire month.

The scram of Pile D on April 9 occurred during start-up and was caused by turning off the high voltage to the proportional counter causing a voltage surge in the Beckman controllers. The Pile F scram on April 13 was caused by faulty emergency alternator testing procedure. The Pile F scram on April 25 was caused by failure of a tube in the #1 Beckman controller. The Pile D high tanks were tested on March 25, and April 9. On April 9 the unit was purged

for one hour with Super-Cel. The Pile F high tanks were tested on April 2. On April 18 the unit was purged for one hour with Super-Cel.

During the month, all normal and high concentration material from Pile B was transferred to the processing area. At month end four pieces remained in the area, papoose pieces which up to that time it had been impossible to break. All usable dummy pieces were transferred to Pile D, and the unusable pieces were disposed of at the burial ground. All graphite samples were removed from the experimental holes, and were transferred to D Area.

The process water flow at Pile B was reduced to 6000 gpm on March 27, and to 4000 gpm on April 23.

Mechanical Performance

Vertical rod thimble #27 of Pile B was replaced on March 26. On April 4 transit surveys were made to establish base points as part of the study of graphite expansion. All equipment mechanical, electrical, and electronic has been placed in lay-away condition except one supply ventilating fan in 105 and one in 115 building, the necessary radiation instruments needed to insure safety, and the pressure and temperature equipment needed to maintain the pile in standby condition. All motive power on horizontal and vertical rods is being maintained in operating condition.

During the start-up on March 26 difficulty was experienced in the operation of #9 shim rod in Pile D. Borescope inspection indicated gradual upward bowing which prevented insertion of the borescope beyond 15 feet into the pile. The rod will remain out of operation until the condition can be investigated and corrected. Improved devices for measuring graphite expansion were installed during the month. All vertical safety rod thimbles were pneumatically tested on April 16 and 23. Three thimbles gave indeterminate results, and will be retested. The remaining thimbles yielded satisfactory results. One damaged mattress plate was replaced on April 9. A leak developed on the export water line at the sectionalizing valve to the 105 Building. Repairs were made in 18 hours.

A test blowout patch was installed on an inspection plate on top of the downcomer at Pile F on April 2. Tests of the vertical rod thimbles were made on April 11. Four thimbles indicated loss of air, attributed to leaks around the thimble derbies. They will be retested later. The rest were satisfactory.

Motion indicating equipment was installed during April, in conjunction with the study of graphite expansion.

GAS PURIFICATION BUILDINGS

The purification units, purge blowers, and steam ventilating fans, were placed in lay-away condition at Pile B. One car of gas was unloaded directly to the high pressure storage without purification.

RETENTION BASIN

The defective section in Pile B retention basin was repaired. Both expansion joints were recaulked and asphalted. The basin was refilled on April 10, and the loss was found to be reduced from 450 gpm to 180 gpm. Subsequently it was found that 80 gpm was leaking directly from the basin into the discharge flume. Further work and study is being continued on this problem.

FISH LABORATORY

The chinook salmon experiment continues on schedule and results obtained during the past month agree in general with those found previously. There is a marked difference between the condition of the fish held in troughs Nos. 1 through 8 and those held in troughs Nos. 9 through 20. Where the effluent water is diluted with fifty or more parts of river water the rough data do not indicate that the condition, mortality and action of the fish is different from that of the controls. However, in undiluted area effluent water or where it is diluted with only three or ten parts of river water the fish are obviously inferior to those held in straight river water.

The stocks of fish in troughs Nos. 1 through 6 were reestablished on February 27, 1946. Since that time the groups in troughs Nos. 1 and 2 have suffered a mortality of about 75 per cent; those in troughs Nos. 3 and 4 a mortality of about 25 per cent; and those in Nos. 5 and 6 a mortality of about 15 per cent. Since February 27, 1946 the mortality in troughs Nos. 7 and 8 has also been about 15 per cent. In the same period of time the mortality in the river water control lots has been only two per cent.

The total weights of the fish in troughs Nos. 9 through 20 are about the same and are higher than those of the fish in troughs with greater concentrations of area effluent water. In sequence then come troughs 7 and 8, 5 and 6, 1 and 2, and finally the smallest fish are in troughs Nos. 3 and 4.

During the past month the weights of the fish in troughs Nos. 9 through 20 have increased about 25 per cent. In troughs Nos. 1 and 2 the weight has increased about 14 per cent; in Nos. 3 and 4 about 6 per cent; in Nos. 5 and 6 about 7 per cent; and in Nos. 7 and 8 about 45 per cent. These figures are somewhat misleading, however, since the heavy mortalities in troughs Nos. 1 and 2 have left only the largest and strongest individuals alive. Again, in troughs Nos. 7 and 8 there is a great variation in the size of the fish, some individuals growing very well, others not at all and dying; since the continuing mortality has eliminated most of the small emaciated individuals there is an apparent rapid growth which is not actually the case.

The infestation of the intestinal parasite, Octomitus, in troughs Nos. 7 and 8 has been cleared up. However, as stated above, the mortality in these lots continues.

Several more specimens of the salmon were exposed to various water conditions in the laboratory for fixed periods of time and then turned over to the H.I. Department for measurement of activity.

300 AREA — METAL FABRICATION

Extrusion, Outgassing, Machining, and Chip Recovery

Extrusion, machining, and combined yield were as follows:

	% Yield		
	March	April	To Date 1946
Extrusion	92.3	92.8	92.1
Machining	79.4	80.3	78.1
Combined	73.3	74.5	71.9

Extrusion ran six shifts this period, with a new production record of 405 rods extruded in one shift on April 25, 1946.

Seventy-five rods were extruded on March 29, 1946, using an extrusion die with a diameter of 1.250", which produced rods with a nominal diameter of 1.200". These rods will be machined into slugs in accordance with Special Request 24 for Clinton.

The machining of the 1.200" diameter rods was begun on April 23, 1946. One lathe has been set up for turning the slug to diameter, and one other lathe has been equipped to face the ends and turn the radius on one end of the slug. Equipment is on hand for setting up additional lathes for both the above operations.

The Chip Recovery yield was as follows:

	% Yield		
	March	April	To Date 1946
Chip Recovery	89.2	92.1	91.8

The Chip Recovery Process went on a three-shift basis on April 1, 1946, and returned to a two-shift basis on April 22, 1946.

The uranium chips which were shipped to H.E.W. from Site Y were started in process the latter part of the month. These chips contain considerable extraneous material necessitating extreme care in sorting and cleaning. The chips are much finer than those made at H.E.W.; consequently, the fire hazard is much greater. This is borne out by the fire frequency in processing the two types of chips. The frequency for H.E.W. chips was 0.02 per ton, as compared to 5.00 per ton for Y material. Damage in all cases was very minor as the fires were quickly brought under control by the use of argon gas. Work is being carried on by the Technical Department and Operations in an effort to reduce the frequency of fires in both types of chips.

A maximum production of 16,316 pounds for three shifts was attained on April 15, 1946. The maximum production for one shift was 6,062 pounds.

Canning Operation

A new all-time high yield of 90.7% classifiable slugs was established. The previous high was 87.9% in July, 1945.

Metal Slug — types canned and yields obtained were as follows:

	% Canned		% Yield	
	April	To Date 1946	April	To Date 1946
New Machined — A's	0.2	14.6	82.2	78.7
New Machined — A's (Cast)	0.6	1.1	87.9	78.8
New Machined — MZ's	79.2	65.0	90.5	83.0
Recovered — Z's	8.7	11.6	92.0	84.3
Recovered — X's	11.3	7.7	91.5	88.7
Total	100.0	100.0	90.7	82.3

322 Bismuth slugs and Special Requests 6, 7, 8, 10A, 12B, 13, 15, 16I, 16II, were canned this period.

Canning rejects, by cause, were:

	% of Total Canned		
	March	April	To Date 1946
Non-seating	1.9	1.1	2.7
Wrinkled Cans	1.9	1.3	2.2
Marred Surface	5.4	3.5	4.4
Al Si on Outside of Can	.2	.5	.3
Air Pockets	.2	.1	.1
Frost Test Rejects	1.4	1.1	1.3
Bad Welds	.4	.4	.5
Warp	.1	.4	.2
Miscellaneous Causes	1.1	.9	5.5
Total	12.6	9.3	17.2

Recovery Operation

	% Recovered		Average Weight — Lb.	
	April	To Date 1946	April	To Date 1946
X Slugs	50.6	59.5	7.796	7.809
X Slugs	43.8	35.6	7.721	7.726
Rejects	5.6	4.9	—	—
Total	100.0	100.0		

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P Department

One thousand unbonded slugs were processed through the caustic bath of the Recovery operation during this month to remove the aluminum cans.

Inspection and Testing

Autoclave rejects were as follows:

	March	April	To Date 1946
New Machined — A's	0.00/M	0.00/M	0.00/M
New Machined — A's (Cast)	0.00	0.00	0.00
New Machined — MZ's	0.00	0.11	0.05
Recovered — Z's	0.00	0.00	0.00
Recovered — X's	0.00	0.00	0.00
	0.00/M	0.08/M	0.03/M

The "as received" quality of cans, caps, and sleeves was as follows:

	% Useable		
	March	April	To Date 1946
Aluminum Cans	81.3	83.7	78.5
Aluminum Caps	97.7	97.0	97.2
Steel Sleeves	79.4	82.1	73.5

The aluminum can supply has continued to improve until there are approximately 80,000 cans on hand. Series 7 is now being used in Canning. The cans in this series are yielding approximately 84% useable. Sample boxes of cans from all series received to date have been inspected, indicating a yield of around 85% useable cans. It should be noted, however, that 37% of the cans inspected during this period have not met specifications as to surface even though they were classed as usable. The major defects causing cans to be placed in this category were gall marks and small dents on the outside surface. Sample cans with these defects have been submitted for presentation to the vendor.

300 AREA — TEST PILE

This unit operated six 8-hour days, making 90 routine tests on uranium slugs.

PRODUCTION SUMMARY

Sixty-three batches were started in the Canyon Buildings during the month and sixty-six were processed through the Concentration Buildings. Sixty-six were delivered by the Isolation Building. The average purity was 98.8%.

The normal processing experience for the month is reflected in the low percentage of starting product in wastes. Average yields, decontamination factors and waste losses are shown in the following tables.

Production Performance Data (3/26/46 – 4/25/46, Inclusive)

	B Plant	T Plant	Combined
Number of charges started	32	31	63
Number of charges completed	37	29	66
For completed charges:			
Percentage of starting product in waste			
This month	6.4	5.6 (a)	6.1
Last month	6.2	6.7 (b)	6.4
Cumulative to date	6.7	7.0 (c)	6.8
Percentage of starting product recovered			
This month	94.0	94.3	94.1
Last month	97.0	96.5	96.8
Cumulative to date	95.2	95.5	95.4
Percentage of starting product accounted for			
This month	100.4	99.9	100.2
Last month	103.2	103.2	103.2
Cumulative to date	101.9	102.5	102.2
G Decontamination Factor (Log)			
This month	7.64	7.51	7.58
Last month	7.54	7.25	7.42
Cumulative to date	7.30	7.23	7.26

(a), (b), (c): Includes waste from processing recycle. The recycle wastes are estimated as: (a) 0.11%, (b) 0.16%, and (c) 0.22%.

Isolation Building Performance Data (3/26/46 – 4/25/46, Inclusive)

	% of Incoming Product			
	Prepared for Shipment	Recycle	Losses	Material Balance
Average for April	96.3	4.0	0.06	100.4
Average for March	94.7	3.8	0.15	98.7
Average to Date	97.1	3.9	0.19	101.3

PRODUCTION PERFORMANCE

T and B Plants

There were no unusual or off-standard process occurrences in the Canyon or Concentration Buildings during the month.

Laboratory investigation following an extraction waste loss of 4.0% on batch B6-03-7-34 indicates that the sample was probably not representative of the discarded waste. The sampler cup had received a periodic decontamination prior to the taking of this sample, and it is believed that incomplete flushing of the residual acid resulted.

The T Canyon has skimmed the cake of the first decontamination cycle by-product precipitate in the Section 13 centrifuge to a residual volume of 10 gallons instead of the standard 30 gallons on an experimental basis for six batches. The by-product waste losses have averaged 1.0% for these six batches as compared with an average of 1.6% for skimming to 30 gallons. No decrease in overall decontamination is observable. Should further tests confirm these results, it is proposed to standardize on skimming to 10 gallons.

The T Concentration Building has started a Production Test to evaluate the product savings which may be obtained by reduction in the quantity of potassium hydroxide used in the metathesis operation of Cell F. Reduction in potassium hydroxide content of the slurry will increase the difference in specific gravity between the precipitate and the supernatant with predicted improvement in centrifuging efficiency. Results to date are shown below.

Previous average	0.65% loss
10% reduction of KOH (4 batches)	0.58% "
20% reduction of KOH (5 batches)	0.49% "

The Production Test is being continued to determine the optimum weight of potassium hydroxide to be used.

Isolation Building

Operations in the Isolation Building were generally satisfactory during the month.

The normally discarded wastes from oxalate treatment of recycle were reworked on a number of batches early in the month when the waste analyses exceeded the limits for disposal. To avoid impairment of the production schedule by repeated rework of wastes, the use of the oxalate method was temporarily discontinued while laboratory investigations were made. No processing abnormalities were discovered but additional evidence of the difficulties of taking a representative sample of the waste was disclosed. The feasibility of installation of a tank to permit acidification to dissolve suspended solids prior to sampling is under study.

The filters in Cells #3 and #4 were leached during the month. Recovered product was recycled to the T concentration Building.

Mechanical Performance

The B Canyon was down for four days late in the month when gradually increasing product content of water accumulated in the Cell 5 collection tank indicated a process leak. After a series of Cell inspections and flushings, the leak was found to be at a badly disintegrated blue asbestos gasket at the jet discharge flange of one of the precipitator to centrifuge transfer assemblies in Section 17. Inspection of all gaskets on this and the parallel assembly revealed that four were in similarly poor condition. The recent gasket failures of this type in both canyons indicate that additional trouble from this source may be expected.

A cracked weld on the heating and cooling jacket of the Section 17 precipitator was discovered while replacing the transfer line gaskets. A similar leak in Section 17 of the T Canyon was rewelded during the month.

Failure of the skimmer in the centrifuge of Section 14 of B Canyon in February was paralled by failure at this location in T Canyon this month. The replacement centrifuge is equipped with two reinforced skimmers. Both Concentration Buildings took advantage of inactive time to install similar skimmers in the Cell A centrifuges where failures were expected.

The motor and drive head of the Cell 3 centrifuge of the B Concentration Building were replaced following excessive noise and vibration. Inspection revealed that the motor fan had broken and that the drive fork had slipped causing damage to neoprene cushion rings in the coupling between the motor and the drive head.

WASTE DISPOSAL

The plug in the first cycle waste line between the T and U Waste Areas was successfully removed by applying water under pressure from the U Area end of the line. The heat transferred from the adjacent metal waste line during the past several weeks probably assisted in thawing the frozen portion. Subsequent testing has revealed that the entire line is now open.

The first cycle waste line and adjacent soil between the B and C Waste Areas was heated from 11°C to 30°C by jetting hot water thru the line for several weeks prior to diverting first cycle waste to the C Area on 4-24-46.

The metal waste from Batch T-6-04-F6 could not be jetted from the neutralization tank into the waste lines to the U waste storage area. A check of gage board facilities and replacement of the cell transfer assembly indicated that there was a restriction in the waste lines. Laboratory tests by the Technical Department showed that a precipitate separated from the neutralized waste, that precipitation was promoted by high temperature and that the precipitate was readily dissolved by sodium bicarbonate solution. Having meanwhile determined by transfer of water under pressure that the lines were partially open, the lines were flushed with 20,000 lbs. of 10% sodium bicarbonate solution. Jetting performance has since been normal. The tie lines in both areas have none-the-less been given a precautionary flush of 10,000 lbs. of 10% sodium bicarbonate and all wastes are being cooled to 35°C prior to transfer. Meanwhile, the Technical Department is investigating waste compositions to determine conditions that will give a minimum of precipitation.

The capacity of the underground cribs handling the wastes from the Isolation Building has gradually decreased due to blockage of drainage. A temporary under-

ground crib has been installed and is being held in readiness for use while a project is being prepared to provide additional permanent waste disposal cribs in more favorable soil.

The status of the Waste Storage Areas is shown in the following table:

Bldg. 241 Tanks	Type Waste	% Full				Reserve Capacity in Batches to Process				
		B	T	C	U	B	T	C	U	Total
X-101,2,3	Metal	100	100	19.1	20.0	0	0	217	215	
X-104,5,6	Metal	—	—			—	—	269	269	1118
X-201,2,3,4	Metal					37	37	37	37	
X-107,8,9	1st Cycle	100	100	0.1		0	0	337	338	
X-110,1,2	1st Cycle					—	—	338	—	1307
X-104,5,6	1st Cycle		12.9			—	294	—	—	
X-104,5,6	2nd Cycle		—	—	—	454	—	—	—	1095
X-110,1,2	2nd Cycle	72.3	86.1	—		125	62	—	454	

SPECIAL HAZARDS

Over tolerance contamination of the air in the B Canyon and crane cab occurred when the cell cover blocks were removed from Section 13 to permit an inspection for process leaks by means of the crane optical device. Processing was suspended and unprotected access to the Canyon and crane cab prohibited for several hours until the condition was cleaned up by the normal air flow through the building to the process stack. As cell inspection and equipment replacement must be done from the crane cab the possibility of installing a filter in the crane cab inlet air duct to remove unforeseen contamination in the air drawn in from the Canyon is being investigated.

Product contamination was spread on the floor of Cell B in the T Concentration Building from a leaking flange in the line from the centrifuge to the catch tank. Cleaning of the contaminated area was started immediately and considerable progress has been made in reducing the amount of product present.

METEOROLOGICAL SECTION

Ninety pre-dissolving forecasts were furnished to the T and B Plants, and six high wind warnings were issued to the Electrical Department.

General weather conditions for the month are shown in the following table:

Maximum average hourly wind velocity at 200'	35 mph
Minimum average hourly wind velocity at 200'	1 mph
Maximum average hourly wind velocity at 50'	25 mph
Minimum average hourly wind velocity at 50'	1 mph
Prevailing wind direction	WNW
Prevailing wind quadrant	W
Maximum soil temperature	112
Minimum soil temperature	34

S Department

Maximum air temperature (4 feet)	89
Minimum air temperature (4 feet)	30
Number of days with precipitation and/or fog occurred	8
Numberof days precipitation occurred	8
Number of days fog occurred	0
Greatest duration of precipitation	3.5 hours

TECHNICAL DEPARTMENT

APRIL 1946

100 AREAS

Physics

Analysis of data obtained during the runs at 150 MW and 0.5 MW which preceded the extended shutdown of the B Pile (Production Test 105-54-P) has yielded values of the power coefficients which are somewhat greater than those previously obtained. These differences are attributed largely to the fact that the present data are based on a calibration of Rod A by periods. This calibration indicates that this rod is 18% more effective than shown by previous calibrations based on the xenon equations. Calibrations of eight of the horizontal rods were obtained periods and by the requirement that the data must be consistent with a smooth variation of reactivity after the shutdown. It was found impossible to represent the variation of reactivity during the 0.5 MW run by a set of exponential terms involving the accepted disintegration constants; consequently it has not been possible to evaluate small effects such as those produced by samarium or illinium.

The reactivity of the B Pile under shutdown conditions is being investigated under Production Test 105-58-P. An empty tube, No. 1363, has been found three times as effective as the B Test Hole for the activation of indium foils. At present, the foils appear to be more satisfactory monitors of the neutron flux than a proportional counter which was tried. The relation between neutron flux and pile reactivity is under theoretical investigation.

An expansion of the poisoning pattern of the D Pile produced little or no change in the shadowing correction, and changed the temperature distribution in good agreement with predictions. The temperature distribution of the F Pile was shown to be definitely affected by the presence of bismuth columns, but the effect is smaller than that produced by poison columns.

Those parts of the Special Irradiations Program which were active during the month may be summarized as follows:

Request No. 3 (Production Test 105-49-P): Thirty-three pieces were charged into the D Pile on March 26 for an exposure of approximately three months. The resulting reactivity loss of 38 inhours was in close agreement with that predicted on the basis of experiments in the 305 Test Pile (Production Test 305-9-P).

Request No. 6 (Production Test 105-57-P): This special slug was loaded into the F Pile on April 2 for an exposure of approximately one year.

Request No. 8 (Production Test 105-56-P): This slug was exposed in the F Pile from April 2 to April 18, and is to be shipped on May 2.

Request No. 12-B (Production Test 105-59-P): This slug was charged into the F Pile on April 18 for an exposure of approximately eight months.

Request No. 15 (Production Test 105-55-P): Three slugs were exposed in the F Pile from April 2 to April 18, and are to be shipped on May 2. Reac-

tivity absorption in the pile was in agreement with 305 Test Pile results (Production Test 305-10-P).

Request No. 16-2 (Production Test 105-59-P): This material was charged into the F Pile on April 18 for an exposure of approximately eight months.

Request No. 18 A lead-cadmium poison slug which had received an exposure equivalent to 487 MW-days/C.T. in a 3L-1P column of the D Pile was selected by radiation measurements and prepared for shipment on May 2.

A simplified container design was developed to facilitate the handling of these requests.

Graphite Monitoring (Production Test 105-1-P)

The transfer of graphite samples from the test hole of the B Pile to the D and F Piles was completed during the month, and cooling water was supplied to the B Test Hole at the F Pile. The transfer of capsule samples from the B Pile will be completed during the coming month.

Capsule graphite of 616 MW-days/C.T. exposure showed a minimum transverse expansion of 1.3%. This graphite had to exert pressure of at least 3000 lbs./sq.in. to deform the aluminum capsule enough to permit this expansion. A permanent contraction of less than 0.03% was obtained when 836 MW-days/C.T. transverse test hole graphite, expanded 0.2%, was subjected to 1500 lbs./sq.in. for 28 days at room temperature. It therefore appears that ordinary pressures are unlikely to limit graphite expansion.

With increasing exposure, a slight downward trend has been observed in the crushing strength of test hole samples. A single experiment on parallel-cut capsule graphite of 618 MW-days/C.T. exposure showed that the crushing strength was only 1.3 times the initial value, in contrast to the value of 2.3 observed on test hole graphite of 640 MW-days/C.T. Crushing strength data therefore appear to be of increasing importance in the monitoring program.

Activity of Pile Discharge Water (Production Test 105-2-P Supplement A)

On March 28 and April 1, small amounts of manganese and iron salts were added to the water entering a single process tube of the F Pile. Analysis of the resulting activities demonstrated (a) that manganese is adsorbed on the film in such a way that its time of transit through the tube, and hence its extent of activation, is approximately 25 times longer than the transit time of the water itself; (b) the amount of manganese activity produced by (n,p) reaction on iron is less than 2% of the manganese activity normally observed.

Pneumatic Test of Vertical Thimbles (Production Test 105-51-P Supplement A)

All vertical thimbles at all areas were tested at 85-90 lbs./sq.in. during the month. The test was satisfactory on all except five thimbles of the B Pile, three at D, and four at F, where the results were obscured by extraneous leaks. Improvement of the apparatus for sealing off these leaks is continuing.

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[redacted]

Water, Corrosion and Engineering

Process Water Control and Purging Studies

The iron content in process water at B was higher than normal, probably due to iron pick-up from the water system at the flow rate in this area. A reduction from 25 to 20 ppm of coagulant feed at D resulted in an increase in iron content of the filtered water and it was necessary to resume the higher coagulant dosage. A report reviewing film formation studies in all areas has been prepared.

The D and F Piles were purged during the month and pressure drop reductions were about normal. There was no indication of any cross-header screen plugging.

Corrosion Studies

A total of 300 blistered or swollen slugs were found upon examination of the slugs discharged from 52 overage tubes at B the latter part of March. The maximum in any one tube was 17. Activity measurements indicated the blistered slugs came principally from the center of the tubes where product concentration was highest.

Fifteen tubes at F and eleven tubes at D were charged on April 2 and 9, respectively with cast slugs to compare their performance to extruded slugs.

Four process tubes at F and three at D were charged on April 2 and 9, respectively with extruded slugs that were carefully selected for a high degree of solidity and perfection of bonding to determine whether these slugs are less susceptible to blistering on long exposure in the piles.

An interim report on Production Test 105-9-P, "Corrosion of Slugs and Tubes" has been prepared.

Graphite Expansion

Overall sidewise expansion of the B Pile has been estimated to be about 1.8 inches at the level of tube rows 22 to 25. Distribution with respect to the vertical midplane has not been determined satisfactorily.

The neoprene seal at the top of the far side at D increased in width about 0.3 inches during a recent 3-month period. Subsequent shrinkage following a shutdown was only 0.03 inches. Comparable expansion rates for the corresponding seal at B were observed just prior to the extended shutdown.

Tube 3671 at B which was damaged by a swollen slug last December was replaced on April 15. Mercury-filled traverse equipment was used to determine vertical bowing of this tube prior to replacement. Borescopic inspection after tube removal showed the gun barrels to be free of corrosion. The graphite appeared to be in good condition with no evidence of breaking or cracking although a small amount of graphite dust was found at the bottom of the hole. Five of the blocks parallel to the tube have become uniformly separated by about 3/16 inch at each joint. This is evidently caused by expansion of the blocks laid at right angles to the tubes.

It was found during the March 26 shutdown at D that No. 9 Control Rod could not be inserted while the pile was down. A borescopic inspection of this thimble

indicated more abrasion than appeared on a previous inspection. The cross section of the thimble appeared wider and the vertical height appeared to have been reduced. To determine whether this condition was typical of all horizontal thimbles the mercury-filled traverse equipment and boroscope were used on No. 2 and 9 thimbles at B. Although analysis of the data has not been completed, it is evident that a unique situation exists in No. 9 thimble at B which is not indicated in the B thimbles.

Additional instrumentation for following changes in the outside dimensions of the piles are to be installed at all areas by May 1.

Carbon Dioxide Blanketing System for Horizontal Rod Thimbles at 100 F Area

Revisions have been proposed for the carbon dioxide purging system for the horizontal rod thimbles at F Area. These revisions modify the system so that the thimbles will be blanketed with carbon dioxide at all times, thereby eliminating all moisture and air. The operation is to be controlled automatically by solenoid valves. After installation, F can serve as a basis for comparison of the effect of the presence or absence of moisture and air on thimble corrosion.

River Temperature Survey

A further survey is in progress to determine more fully how fast and in what fashion the heat of the effluent water is dissipated in the Columbia River. Preliminary data obtained to date confirm the general conclusions of the survey of September 1945.

200 AREAS

General

Material Balance

Preliminary figures for the month of April indicate that the overall 200 Area material balance will be about 99.4%. It is interesting to note that the material balance through the Concentration Building is about 100.2 and the material balance through Isolation Building is approximately 99.2%.

Product Shipped - Accounting

On April 17, representatives from Y visited H.E.W. to discuss the discrepancies which have existed in the accounting of product between the two locations. It was agreed that the weight figures between the two locations were in excellent accord, because a comparison of weights showed only 0.125% difference; H.E.W. weights being the higher. A spot check involving a comparison of ten tare weights showed that in each case the Y tare weight was higher than H.E.W. by an average of 3.85 grams. Since the tare weight enters into the net weights reported by the two facilities (gross weight - tare weight = net weight) a correction for the higher tare weights at Y would reduce the weight discrepancies of 0.125% even further.

A direct comparison of the analytical procedures used between Y and H.E.W., both of which were run by representatives of each place, checked extremely well. These direct comparisons were made on plant solutions and the largest difference on all duplicate runs was 0.14%. The analytical methods appear to be exact equivalents.

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In order to permit a direct check on the analytical procedures, Y will attempt to prepare a product containing solution which will be analyzed and then a known quantity of the same solution will be sent to H.E.W. The assay made at H.E.W. will then be compared to the value assessed at Y.

In addition, it has been agreed that both locations will set up as a goal the attainment of a common analytical procedure. This goal necessarily will require an appreciable time interval because new or modified equipment will be necessary.

The representatives from Y intend to investigate thoroughly the method of sampling which they employ after redissolution of the product. They are at the present time also considering more positive means of agitation (inserting agitator into the can) in contrast to the reciprocating motion now given to the can to obtain dissolution of the product syrup.

Canyon Building

Reduction in Phosphoric Acid (B and T)

The phosphoric acid concentration in the second cycle product step in B Canyon was reduced from 0.4M to 0.3M beginning with Run B-6-04-B-6. Preliminary results indicate that the average waste loss (7-3-W) will not be substantially higher than those prevailing when 0.4M was used.

In order to obtain a more reliable comparison of the effect of 0.3M vs 0.6M phosphoric acid in the extraction step on the subsequent waste loss, the conditions at B and T Canyons have been reversed. The change at B Canyon yielded waste losses of the same order of magnitude (0.3M vs 0.6M). At T Plant, however, preliminary results show an increase of 0.2% when 0.3M phosphoric was used. The reason for the apparent increase in loss is not apparent at this time.

Waste Tie Lines (B and T)

The first cycle (and coating) waste line from T to U which had been plugged was opened by applying water pressure. The unplugged line permitted the flow of 50 gallons/minute of water at 70 lbs./sq.in. pressure. The jetting of metal waste at 65°C had heated up the adjacent first cycle waste line (as judged by temperature measurements made in the still unused first cycle waste line from B to C) to a temperature of about 15°C. This temperature is about midway between the point where the first cycle wastes set up solidly and where crystallization starts to occur.

The discharging of the metal wastes at the elevated temperature (65°C) resulted in sufficient precipitation of metal compound in the relatively flat T to U line to interfere with normal jet operation. Based on analyses made at Clinton Laboratories, the compound precipitated corresponds to the formula $UO_2CO_3 \cdot 2Na_2CO_3$ and is soluble in $NaHCO_3$. The solubility of the material from a synthetic waste was confirmed in the laboratory and the metal waste line was then flushed with 20,000 lbs. of 10% $NaHCO_3$ at 45°C. This resulted in a successful purge of the metal waste line from T Canyon to U Waste Area. Plans have been made to flush the metal waste lines in both areas pending the procurement of additional laboratory information directed to a metal waste neutralization which will not permit any precipitation during normal processing.

A return to the former practice of jetting neutralized metal waste at 35°C at both B and T Canyons has been made.

High Extraction Loss (B)

The waste sample (7-3-W) from Run B-6-03-F-3¼ was green in color and apparently contained an unusually high amount of product. Laboratory analyses indicated that this apparent high loss was caused by iron interference, the iron resulting from rather severe corrosion. Likewise, chlorides appeared to be present in the 7-3-W sample. The presence of chlorides has remained unexplained. Wastes from runs subsequent to B-6-03-F-3¼ were normal and there has been no recurrence of high losses in the extraction wastes.

Reduction in Skimming Heel (T)

Because of the large volume (approximately 20 gal.) of the scavenger by-product cake, skimming this centrifuge (13-2) to only 30 gallons was adopted as standard practice. Recent tests involving skimming to 10 gal. instead of to 30 gal. heels has resulted in significant product savings (approximately 0.8%) at a cost of about 0.10 canyon decontamination units (arithmetic factor of 1.3). The greater than theoretical reduction in product loss combined with the slight loss in canyon decontamination factor suggests that some of the scavenger precipitate is being skimmed into the product effluent. Six runs involving skimming to a 10-gal. heel show an average product loss (13.4 BP) of 1.0% and a decontamination factor of 5.03, whereas 11 interspersed runs using 30 gal. skimming show an average product loss of 1.8% and a decontamination factor of 5.13. Many more runs skimming to 10 gal. will be made in order to establish definitely the effects of this practice on product loss and decontamination.

Concentration Building

E-3-W (LaF_3 Product) Waste Losses (B and T)

Recently E-3-W (waste losses) in the B Plant have been sufficiently high at times to require a third centrifugation. In order to obviate the occasional need for the third centrifugation, the skimming operation was carried out at 870 rev./min. in place of the normal 650 rev./min. Although this change was accompanied by an abnormal increase in the waste loss of 0.3% above the average when skimming at 650 rev./min. the losses were of such order that need for a third centrifugation no longer arose. A similar change at T Plant was accompanied by an increase of only 0.1% as compared to skimming at 650 rev./min. The abnormal increase in waste loss at B Plant would indicate that vibration during centrifugation prevents complete LaF_3 separation. Recently (Technical Progress Letter No. 93) the E-2 centrifuge drive motor in B Plant was replaced by the B-2 centrifuge drive. Further run-in of this equipment may result in smoother operation and a further testing program is contemplated in order to determine relative losses at various centrifugation speeds.

Reduced KOH Metathesis Volume (T)

Reductions of 10 to 20% in KOH volume have been made and further volume reduction is contemplated. Four runs at a 20% reduced volume show a waste loss of 0.48% as compared with a loss of 0.61% for the previous 20 runs made at "normal" conditions. As set forth in Production Test SK-22¼-T-PA-9, the limiting factor in the amount of volume reduction which can be effected is the necessity for complete cake

[redacted]

removal from the E-2 centrifuge (the KOH solution being used for removal of this cake). Therefore, tests will be made continuing the reduction in KOH volume until such time that the product cake from E-2 can no longer be completely removed.

Isolation Building

Oxalate Method of Handling Recycles

After a few runs in which the losses from the wastes appeared to be unduly high causing temporary readoption of the old nitrite method, the oxalate method was again put into use. For no apparent reason, the wastes following resumption of the oxalate method have appeared to be unusually low. This experience seems to indicate that present equipment does not permit the routine procurement of satisfactory samples, with the attendant result that the waste figures are not too reliable. The installation of an additional tank which is presently under consideration and which will permit acidification of the solution, should permit taking better samples and should relieve the unsatisfactory control now existing.

Equipment installation for use of the oxalate method in Cell 1 has been completed. This installation is similar to that in Cell 3.

Waste from Sump Tank

Difficulty has been encountered in jetting the wastes to the cribs located outside the 231 Building (Isolation). A temporary waste disposal crib has been prepared for use if the present cribs plug completely. This temporary crib permits sufficient flow of wastes to take care of the constant overflow of unneutralized wastes from the building. Plans have been drawn for a new system of disposal using a perforated pipe extending at a slight grade into a long crib surrounded by gravel.

Settling Time in Peroxide Precipitations

At the start up of operations, a 9-hour settling time was specified after peroxide precipitation. Gradually, this period was shortened as cycles were reduced until the standard was set at 2 hours. On some occasions, a settling for a greater period of time appears desirable. Consequently, a minimum settling time of two hours has been retained, but additional time for settling (up to a maximum of 16 hours) will be used if it is possible to do so without slowing down production.

300 AREA

Extrusion

Billet groupings were prepared for the April billet shipment, and one billet was rejected.

One supplier's billets in the March billet shipment, type F, were found to contain abnormal casting fins, and some difficulty was encountered in extruding this material.

75 billets were extruded as 1.200-inch diameter rods to be machined into slugs for Clinton. No difficulties were encountered in extruding the rods or machining a limited number of slugs.

Cast Slugs

A shipment of NBS cast rods received in February have been processed in machining and canning as A size (1.360-inch diameter) slugs. Canning yields of this material were inferior to Ames cast slugs and extruded MX size slugs but comparable to extruded A size slugs.

Chip Recovery

The quality of briquettes obtained during the month from the chip recovery operation has been excellent.

A lot of 9,000 lb. of turnings received from Site Y for briquetting at H.E.W. have been found to be contaminated with ferrous and non-ferrous tramp metal. A slight change in the composition of the cleaning bath solution has been made to remove satisfactorily the residual oil from these chips.

Several small fires which have occurred in the centrifuge basket have been effectively extinguished by blanketing with argon and cooling with water.

Canning

Substitution of Helium for Argon in Welding

Owing to a threatened shortage of argon, tests were made to determine the feasibility of using helium as a substitute in welding. Results, using 99.5% pure helium, were inferior to those obtained with argon, and it appears that helium cannot be satisfactorily substituted for argon - at least without making extensive changes in present welding equipment.

Welding Argon from Alternate Vendor

A sample cylinder of argon from the Linde Air Products Company of Chicago was tested to determine its suitability for use in welding. Heretofore the sole source of argon supply has been the Air Reduction Sales Company of New York. The sample cylinder was found to be entirely satisfactory and it was recommended that ten more cylinders of equal purity (99.8%) be obtained from the Linde Company and given a thorough trial before deciding whether to place this product on the acceptable list.

Salvaged Stained Aluminum Cans

The Aluminum Company of America submitted eleven samples of salvaged cans which had been rejected because of internal stains, but supposedly had been renovated by pickling in sulfuric-chromic acid. These cans were given a thorough test to determine their suitability for use, and from the unsatisfactory results of these tests, it was concluded that cans renovated by the method employed will not be suitable for use in the canning operation.

Variable Loss of Uranium During Dipping and Canning

A program is in progress to determine if possible, the causes of variable uranium losses during the bronze-dip, and as a secondary, but probably important objective, to determine the effect of various flux impurities upon uranium wetting.

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Results to date indicate that impurities in flux have an important bearing on variations in uranium loss and that some impurities have a much more pronounced effect than others.

Special Requests

During the past month, Request Nos. 6, 8, 12-B, 16-2 and three of the four samples of No. 15 were satisfactorily canned and welded and were delivered to the 100 Areas for loading into the piles. The eight pieces of Request No. 13, and 7, 10A and 16-1 have also been canned. Request No. 9, which includes 24 pieces, is causing some difficulty, since these samples are to be canned without use of the sizing die or press. Work on this item is now in progress.

Bronze Bath Sampling

Many of the troubles in obtaining adequate bronze "pancake" samples for chemical analysis have been overcome by using a heavy gray cast-iron mold covered by a graphite block which serves both as a cover and as a funnel.

Solution Rate of Uranium in Bronze vs Tin Content of Bronze

Recent attempts to obtain quantitative comparisons for the purpose of tracing irregular slug weight losses have been more successful by vibrating the specimen to obtain improved control of the relative velocities of bath and specimen.

Control of Canning Bath Composition

Reproducibility of results of thermal analyses under controlled variations of conditions indicates that familiarity with the shape of the cooling curve to be expected is of major importance. With equipment in order, adherence to an arbitrary set of standards results in dependable analyses.

Autoclave Failures

One of two failures during the month was caused by a large, easily visible can defect over a bonding layer void. The other failure was caused by mechanical puncturing of the can wall, during canning, by a hard, metallic agglomerate - probably uranium compound floating in the canning bath.

Solution Rate of Al in Al-Si

General

A number of complex tools and machine parts were heat treated for plant use.

Welds of heavy 25-12 stainless plate were evaluated for 200 Area agitator construction.

LABORATORIES

The following tabulation indicates the source of 19,450 control samples (37,420 determinations) on which analyses were completed. A comparison is made with the previous month.

	March	April
Routine Control, 200 Area	1,690	1,830
Routine Control, 300 Area	455	500
Water Control, 100, 700 Areas	13,600	14,600
Process Reagents, 200 Area	810	875
Essential Materials	200	210
Special Samples	1,765	1,435
	18,520	19,450

Separations and Isolation Process Control

Routine measurements to evaluate the geometry (accepted value is 50.5%) of the methane proportional alpha counting instruments in the Control Laboratories indicate the following values. Comparison is made with the previous month.

	March		April	
Laboratory	Geometry	No. Tests	Geometry	No. Tests
222-B	50.51	134	50.50	126
222-T	50.46	215	50.47	202
231	50.50	62	50.52	91

The difficulty in preparing and maintaining at a constant value a 20-25% solution of pure plutonium nitrate to be used as a standard in checking the accuracy of the chemical titration procedure has led to the use of a standard iron solution of known concentration for this purpose. An iron solution can be accurately evaluated by gravimetric methods and it is a stable solution. The "breaks" in the potentiometric titration of iron are similar in range to those of plutonium. A testing schedule is maintained whereby each analyst makes duplicate determinations once a week on this iron solution. During the month the results indicated a precision of the same order as that normally encountered in the routine assay of plutonium samples by this method. Since the value of the iron solution is accurately known and is constant, the use of this standard is helpful in determining, and following up for correction, variance in any individual analyst's technique.

In conjunction with a recent conference held at H.E.W. with representatives of the consumer, the chemical titration procedures used for plutonium assay were closely scrutinized. The procedures are the same from a chemical standpoint, namely: the reduction of plutonium sulfate to the +3 valence state and titration with ceric sulfate as a standard oxidant, the titration being followed potentiometrically. The two methods differ in details of operation - size of initial sample, type of reducing agent; electrical system for measuring changes in potential and concentration of ceric sulfate, to mention the more important differences. Close study of all these points failed to indicate wherein the methods should give results which were not in agreement. To check this conclusion, some laboratory experiments were performed. A representative of the consumer from Site Y, using his own apparatus

and procedure, analyzed in duplicate two plutonium nitrate solutions representative of the final solution from the Isolation Process. An H.E.W. analyst made similar measurements using the standard equipment and procedure normally employed in routine control. The analyses were performed simultaneously with the following results:

Sample	Test	Site Y	Site W
1	1	259.26	259.52
	2	259.75	260.07
	Average	259.51	259.80
	% Diff.		+0.11
2	1	292.06	292.37
	2	293.50	292.37
	Average	292.78	292.37
	% Diff.		-0.11

As an additional check the two analysts changed position so that each was using the other's apparatus and procedure. One sample was checked with the following results:

Sample	Test	Y-Method	W-Method
1	1	260.55	260.47
	2	259.94	(not made)
	Average	260.24	260.47
	% Diff.		+0.09

From these results it would appear that differences in method details were of no significance when the procedures are applied to the same sample of plutonium nitrate. The exchange of information was mutually profitable and did indicate that the precision of the W method could be improved if a larger initial sample were used and the concentration of ceric sulfate decreased. These points had been previously recognized and will necessitate some change in apparatus. A program has been planned whereby changes will be made to incorporate these points.

Essential Material and Water Control

To determine the precision with which uranium chips could be sampled and analyzed for uranium content, the following test was made. A composite sample of chips was taken over each entire shifts operation, the sampling ratio being about 1 part for every 80 parts processed. Each sample was carefully mixed and reduced by quartering to a convenient size for handling in the laboratory. Samples so taken and prepared were collected from 15 consecutive eight-hour shifts. Two portions were taken from each sample and each portion was analyzed in duplicate for uranium. The results indicated the following precision on the basis of duplicate determinations:

Error	Precision (± %)
Analytical	0.2
Sampling	0.1
Total	0.3

The average uranium content of all the samples was 99.56% with maximum and minimum values of 100.18% and 98.98%.

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POWER DEPARTMENT

APRIL 1946

GENERAL

The Power Department force was reduced approximately 4.0% due to transfers and terminations.

100 AREAS

The lay-up program in B is in progress and covers the placing of unneeded equipment in stand-by condition, with adequate protection directed toward possible corrosion of mechanical parts or deterioration of electrical equipment. A large part of the program has been completed.

On April 6, No. 4 boiler in the D Area was out of service for eleven minutes when a coal feeder unit jammed and caused the main drive shaft to stop. The steam pressure dropped 5 psi during this period.

On April 12 and 13 the export water system in D Area was out of service while repairs were made to a leaking bell and spigot joint. Other areas were not affected.

On April 17 a connection was made to the Fire and Sanitary system from the emergency power house supply line in F Area, so that either clearwell might be taken out of service without interruption to the various water supplies. Its immediate need was in connection with a water leakage survey of the clearwells.

On April 15 the emergency generator in F Area failed on test. The solenoid attachment to the Ruggles-Klingerman valve was found to be ineffective. Repairs were made and subsequent tests indicated the starting to be satisfactory.

On April 20 a faulty rotor valve mechanism on No. 3 export pump in D Area caused an excessive flow of oil to by-pass into the hydraulic accumulator system and to overflow the oil reservoir. The export system pumping was transferred to the B Area for several hours while the oil system was being restored to normal.

A mechanical interlock has been installed on the Redler conveyor system at the Filter Plant, F Area. The interlock is designed to shut down successive conveyor units in the event of shear pin failure on any one of the drives, and conforms with a similar installation previously made in D Area.

The Fire and Sanitary water system in D Area is now bing chlorinated from the main filter plant chlorinator through a branch connection, eliminating the operation and maintenance of one chlorinator.

The Syntron vibrators originally installed on the Filter Plant lime storage hoppers in D Area have been relocated at the lime feed hoppers. This conforms with a similar alteration previously made in B Area.

200 AREAS

Between 8:45 A.M. and 3:30 P.M. on April 5, at the request of the S Department, steam pressure was reduced to zero on lines supplying the Canyon and Concentration Building B Plant. During this period, various small leaks and valve repacking repairs were made.

On April 9 and April 15 there were interruptions in the ventilating and humidifying equipment supplying the Building 271 part of Canyon Building, B Plant. Failure of motor bearings was the cause of the outage. There were no adverse effects on operations incidental to the outage.

The boiler feed water heat exchanger in the West Area Power House was inspected. The hot water side of the tubes was found in good condition; the cold water side had a considerable deposit of sludge composed principally of iron and sulphate; some pitting was found in the metal when the sludge was removed. The pitting is not considered serious at this time, but will be observed in the future.

New Cartridge-type dehydrators were installed in the refrigeration systems of the B and T Plant Control Laboratories as a protection against moisture carry-over in the freon used in the refrigeration systems.

In the Isolation Building a pipe connection was installed to permit chilled water from the ammonia refrigeration system to be used on the freon refrigeration system when the freon compressor is out of service and when there is an excess of chilled water in the ammonia system.

300 AREA

No. 2 boiler was removed from service because of seasonal decreased steam demand.

Repairs were made to the lead lining of the strong acid tank for the H_2Z softener.

700 AREA

Operations were normal.

1100 AREA

All motor-driven pumps in the Consumers' Pump House were out of service from 8:30 A.M. to 9:30 A.M. on March 28, due to an electrical inspection of the sub-station supplying the pumps. Water pressure was maintained on the Village lines during the outage by use of the gasoline-engine-driven emergency pumps.

A new 500' section of 6" pipe was installed in the Fire and Sanitary line just north of the Kadlec Hospital, replacing corroded spiral welded light weight pipe.

The bio-filter, Sewage Disposal Plant, was removed from service on March 28 for an inspection of the bearings and mercury seal of the distributor head. The equipment was found in excellent condition.

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Power Department

There were 9,000 gallons of digested sludge removed from the Sewage Disposal Plant by the outside contractor during the month.

The six irrigation water pump houses were put into operation between April 4 and April 12 for the 1946 season.

POWER DEPARTMENT STATISTICS

(March 26 through April 25, Inclusive)

	Unit	100 Areas		
		100-B	100-D	100-F
River Pump House (Building 181)				
River Stage	Ft. above sea level	(max. 393.7 (min. 386.6 (ave. 389.3	384.7 378.9 381.3	371.1 365.3 367.7
River Temperature	Ave. ° F	43.7	43.9	42.8
Water Pumped to Reservoir	gpm ave. rate	12,004	41,466	38,790
Water Pumped to Refrigeration Plant (condenser water)	gpm ave. rate	0	111	0
Reservoir (Building 182)				
Water Pumped to Filter Plant	gpm ave. rate	9,078	35,366	34,991
Water Pumped to Export System	gpm ave. rate	2,030	2,127	542
Water Pumped to Condenser System	gpm ave. rate	896	3,973	3,257
Chlorine Added at No. 1 Inlet	lb.	0	0	1,345
Water Pumped to Export System	gpm normal flow	4,699	4,699	4,699
Filter Plant (Building 183)				
Filtered Water to Power House	gpm ave. rate	118	295	289
Filtered Water to Process	gpm ave. rate	6,760	31,378	30,708
Filtered Water to Fire and Sanitary	gpm ave. rate	108	148	177
Chlorine Used in Water Treatment	lb.	3,484	7,000	8,835
	ppm ave.	1.03	.53	.67
Lime Used in Water Treatment	lb.	29,092	78,000	72,550
	ppm ave.	8.6	5.92	5.58
Ferrifloc Used in Water Treatment	lb.	105,090	316,000	316,690
	ppm ave.	31.1	24.0	24.4
Carbon Used in Water Treatment	lb.	8,270	0	0
	ppm ave.	2.45	0	0
Raw Water Analysis	pH ave.	8.04	8.04	8.05
Finished Water Analysis	pH ave.	7.35	7.37	7.33
Alkalinity - M. O. Raw	ppm ave.	62	60	64
Alkalinity - M. O. Finished	ppm ave.	57	50	58
Residual Chlorine - Settled	ppm ave.	.48	.15	.337
Residual Chlorine - Finished	ppm ave.	.04	.10	.059
Iron - Raw	ppm ave.	.30	.28	.342
Iron - N. Clearwell	ppm ave.	.02	.01	.010
Iron - S. Clearwell	ppm ave.	.03	.01	.011
Chlorides - Filtered Water	ppm ave.	1.4	1.09	1.19
Hardness - Finished Water	ppm ave.	78	72	78.0
Turbidity - Raw Water	ppm ave.	12.6	11.0	13.9
Turbidity - Filtered Water	ppm ave.	.22	0	0

1201247

Power Department Statistics (continued)

	Unit	100 Areas		
		100-B	100-D	100-F
Power House (Building 184)				
Steam Generated - Total	M lb.	39,978	106,555	96,943
Steam Generated - Ave. Rate	lb./hr.	53,806	143,411	130,124
225# Steam to Plant (est.)	M lb.	33,948	90,083	82,401
15# Steam to Plant (est.)	M lb.	33	488	220
Coal Consumed	Tons	2,940	8,196	7,289
Coal in Storage (est.)	Tons	19,308	19,982	16,101
Deaerator Plant (Building 185)				
Water Flow (ave.)	gpm	6,510	31,628	30,458
Chemicals Consumed:				
Dichromate	lb.	3,730	24,800	24,500
Sodium Silicate	lb.	73,594	310,220	335,260
Chemical Analysis:				
pH	pH	7.65	7.65	7.65
Dichromate	ppm	2.0	2.1	1.9
Silica	ppm	8.6	7.2	7.3
Dissolved Iron	ppm	.02	.096	.01
Process Pump Room (Building 190)				
Total Water Pumped	gpm ave.	6,500	30,029	30,311
Water Temperature	ave. ° F	48.0	46.4	45.86
Total Water Pumped	gpm normal flow	7,737	32,149	31,032
Valve Pit (Building 105)				
Chemicals Consumed:				
Lime	lb.	0	0	0
Hydrogen Peroxide	lb.	0	0	0
Oxalic Acid	lb.	0	0	0
Solids	lb.	4,225	2,000	1,800
Chemical Analysis:				
A, B, C & D Headers Standard Limits				
pH 7.5-7.8		(max. 7.75	7.70	7.70
		(min. 7.60	7.55	7.60
		(ave. 7.67	7.63	7.63
SiO_2	ppm	(max. 10.9	8.5	9.5
		(min. 6.5	6.5	6.0
		(ave. 8.7	7.4	7.3
$Na_2Cr_2O_7 \cdot 2H_2O$ 1.8-2.2	ppm	(max. 2.3	2.2	2.2
		(min. 1.8	1.9	1.8
		(ave. 2.15	2.1	2.0
Iron	ppm	(max. .11	.02	.04
		(min. .011	.005	.00
		(ave. .03	.01	.01
Free Chlorine as Cl_2	ppm ave.	.08	.10	.15

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	Unit	200 Areas	
		200-E	200-W
Reservoir Building (282)			
Raw Water Pumped	gpm ave. rate	2,370	2,324
Filter Plant (Building 283)			
Filtered Water Pumped	gpm ave. rate	501	404
Chlorine Consumed	lb.	259	273
Alum Consumed	lb.	3,800	3,100
Chlorine Residual-Sanitary Water	ppm.	.38	.57
Power House (Building 284)			
Steam Generated - Total	M lb.	20,300	24,663
Steam Generated - Ave. Rate	lb./hr.	27,285	33,149
Coal Consumed (est.)	tons	1,415	1,774
Coal in Storage (est.)	tons	4,368	4,482

		300-700-1100 Areas		
		300	700	1100
Power House (Buildings 384 & 784)				
Steam Generated - Total	M lb.	8,291	17,367	
Steam Generated - Ave Rate	lb./hr.	11,144	23,343	
Coal Consumed - Total (est.)	tons	693	1,388	
Coal in Storage (est.)	tons	4,450	1,247	
Sanitary and Fire System (1100)				
Well Water Pumped - Total	gal.			108,371,000
Well Water Per Day	gal.			3,496,000
Well Water	gpm ave. rate			2,427
Chlorine Residual	ppm			0.2
Sewage Treatment Plant (1100)				
Total Treated	gal.			40,200,000
Treated Per Day	gal.			1,297,000
Ave. Rate	gal.			901

Note: Only water and steam flows metered are (1) Water to Filter Plants, (2) Water to Piles, and (3) Steam from Boilers. Other figures are best estimates.

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MAINTENANCE DEPARTMENT

APRIL 1946

GENERAL

The backlog of maintenance work has decreased approximately 8% during the month. The total force was decreased approximately 2%. The crews have been adjusted so as to take care of the expanded paint schedule in the Village Area.

Work Order Summary:

Area	Work on Hand Mar. 25 No. of Orders	Work on Hand Mar. 25 Estimated Man Days	Work Completed in Apr. No. of Orders	Work Completed in Apr. Estimated Man Days	Work on Hand Apr. 25 No. of Orders	Work on Hand Apr. 25 Estimated Man Days
100-B	96	304	115	513	180	364
100-D	80	308	337	744	36	188
100-F	91	281	217	516	95	226
100 Shops	121	795	202	1132	79	609
200-E	297	582	634	981	167	585
200-W	355	750	729	1716	272	990
300	140	453	274	689	137	476
700-1100	976	3066	1135	4320	937	2596
Totals	2126	6537	3643	10611	1903	6034

100 AREAS

The No. 27 vertical thimble in the B Pile Unit which showed considerable leakage on test, was removed and a new thimble installed. All vertical thimbles in the D Pile Unit were tested with air and found to be satisfactory with the possible exception of No. 13. Additional tests are to be made on No. 13 to determine if replacement is necessary. All vertical thimbles in the F Pile Unit were tested under air pressure and no leaks were found.

The new cab periscope was removed from the B Pile Building and taken to D Area for installation. The old periscope is to be replaced in the B cab.

The original horizontal tube No. 3671 in B Pile Unit was removed and a new one installed. This was done in connection with Technical Department's study of packing material. The tube was pushed by hand, using a small mandrel and lengths of one-half inch pipe.

The installation of the downcomer ladder in the B Pile Building has been completed. Examination of the B downcomer revealed two cracks in the welds near the top connection. Proper method of repair is being studied.

The Project Engineering Section is developing a tube cutter that utilizes a welding blow pipe. Preliminary tests have been performed during removal of tube No. 3671, but additional minor adjustments are necessary.

Maintenance Department

The supply and exhaust fans in the B Pile Building that have been designated to be "laid away" have been thoroughly cleaned, inspected and coated with preservative. All small parts necessary for operation have been fastened direct to the piece of equipment to which they belong.

Necessary brackets and tight wire have been installed on the D and F Pile Units for the measurement of any further movement. In the F Pile Building additional carbon dioxide supply lines were installed to the horizontal rods for more complete purging.

Work in connection with the sealing of the expansion joints in the B Retention Basin has been completed and leakage tests are being run at the present time.

In the B Chemical Mixing Building the storage acid pumps, lime pumps, oxalic acid pumps, Omega lime feeders and the Redler conveyor have been cleaned and put in "lay-away" condition.

In the B Gas Purification Building the No. 2 steam-driven inlet fan, No. 2 purification air compressor and the Stokes vacuum pumps were cleaned, lubricated and put in "lay-away" condition.

The No. 5 electric-driven air compressor in the D Process Pump House developed a knock. Inspection revealed that the wrist pin was frozen in the connecting rod. A new assembly was installed and equipment is now operating satisfactorily.

In the D Area Demineralization Plant, over-flow lines from the tubs were blanked off. This was done to prevent further seepage and floor settlement which had been observed last month.

The following equipment in the B Deseration Building was cleaned, lubricated and put in "lay-away" condition; acid unloading and transfer pumps, acid dilution pumps, dichromate and silicate feeders.

The scheduled overhaul of the No. 2 boiler in B Power House was started and completed this period. Extensive repairs were made to the stoker shaft clutches and drive, as well as complete re-building of the refractory bridge wall. The bridge wall in No. 1 boiler in the D Power House is at the present time being replaced.

Scheduled overhaul of No. 2 and No. 5 boiler feed pumps was completed in F Power House. New bearings and packing sleeves were installed on No. 2 pump. No. 5 turbine was realigned, and complete sets of carbon rings were installed. A scheduled overhaul of No. 3 boiler was completed. Considerable repairs were made to the stoker, and the rear refractory wall was rebuilt.

In the F Area Filter Plant, scheduled overhauls were completed on No. 1 back wash pump and No. 3 and No. 4 fire and sanitary pumps. The usual amount of cleaning and repairs were necessary. A four inch cross over line was installed between the emergency Power House supply line and the fire and sanitary header. This was done so that pressure can be maintained on the fire and sanitary system from the east clearwell during the time the west clearwell was emptied for repairs.

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A filtered water supply line was installed to furnish filtered water instead of raw water to the water seals on four condenser pumps and seven filter supply pumps in the F Reservoir Pump House.

The overhaul of No. 12 Pomona pump in the F River Pump House was completed. Brass liners were screwed to both the first and second stage bowls. New bearings were also installed. During the overhaul of No. 16 turbine-driven Pomona pump, considerable internal rusting was found in the gear reduction housing, apparently caused by condensation.

200 AREAS

No. 14-2 centrifuge in the T Canyon Building was removed from service on March 28 due to skimmer failure. It was placed in Cell 11-R and a spare unit installed.

A new centrifuge was installed in Cell 8-2 in B Canyon Building. New connectors, No. 55 and No. 56 were fabricated and installed in place of originals which did not face up properly. This centrifuge replaces the one previously moved from Cell 8 to Cell 14.

A second failure occurred in the pipe trench in the B Canyon Building when a leak developed in line No. 6 leading from Cell No. 17 to the trench. Pipe details were fabricated and are to be installed so that a spare line can be substituted for line No. 6.

A gasket in the waste line from A-2 to A-3 in the T Concentration Building failed and was replaced. The flanges appeared to be warped preventing a good joint.

New design skimmers were installed in A-2 centrifuge in T Concentration Building to replace a plow of the original skimmer which had failed.

The drive head failed on B-2 centrifuge in the B Concentration Building. A complete motor and drive head was moved from B-2 to B-2. Inspection revealed the fork drive coupling had slipped on the motor shaft and drive pins were badly worn. This head will be re-conditioned.

Excessive vibration in the A-2 centrifuge skimmer handle at T Concentration Building was eliminated by installing a new design skimmer in both positions.

Stainless steel sink traps in the Isolation Building are being replaced with Duriron as they fail.

The waste disposal system at the Isolation Building failed and a new crib was installed to temporarily alleviate production difficulties.

The obstruction in the new tie-line between T and U Tank Farms was removed by injecting water through a temporary piping arrangement installed at U Waste Storage. Temporary connectors were made in the new tie-line between C and B Tank Farms to permit flushing this tie-line with hot water prior to using it for process waste.

Safety hand rails are being installed on the 30-ton cranes in North Area to safeguard patrol mechanics doing lubrication work.

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300 AREA

Routine overhauls were made on 18 furnaces in the Metal Fabrication Building during the past month. New crucibles were installed in seven, new stainless steel rings in one, new pedestals in three, and a new brick top in one furnace.

In addition to regular maintenance on the Gisholt lathes in the Metal Fabrication Building, conversion was made on lathes and other equipment that are to handle smaller material.

700-1100 AREAS

The usual repairs of replacing grates, broken doors and fire brick were made on 70 furnaces in Village houses during the past month.

There were 93 houses renovated during the period and there are 82 orders on hand at the present time.

To-date there have been 744 prefabs spray-painted, of which 327 have been completed with trimming. Fifty-two prefab roofs have been painted. Exterior painting on 20 permanent type houses has been completed.

A new shaft, new bearings and new turbine have been installed on No. 15 well pump. A water lubrication line to the pump shaft has been provided.

Repairs were made to 191 irrigation outlets and the entire irrigation system checked before being placed in operation. Additional work is being done in order to provide a greater number of convenient outlets so that consumption of sanitary water might be reduced.

A new spray system in the digester in the Sewage Disposal Plant has been completed. This has been installed in order to improve the operation of the digester.

Work has been completed on the repairing of the 52 inch and 48 inch wood irrigation lines.

PROJECT ENGINEERING

Projects - Work Completed in April

Proj. No.	Title	Estimated Cost
C-15	Steam Control Vlaves for Turbine Driven Fans Buildings 105 and 115	$3,200
C-41	Dismantling T.C. Electrical Building - 100-B Area	700
C-61	Bus Maintenance Garage Alterations and Additions	5,850
C-68	Shielding for Exhaust Unit Fan Houses-Bldgs. 291-T-B	4,900
C-71	500 Additional Sample Cans and Cases	87,500
C-74	Replacement Skimmers for Centrifuge Cells D & E - Buildings 224-T and B	2,000
C-83	Building 19-X (Grange Hall) Fire Damage Repair - Parts I and II	4,830
	Total -	$108,980

Projects Authorized and Under Construction

Project No.	Title	Percent Complete	Date Authorized	Estimated Cost
100 Areas				
C-21	Additional Freon Receiver-York Unit-Building 189-D	99	8-1-45	$ 1,950
C-29	Third Safety Device-Valve Replacement-Buildings 105-B, D, F	40	6-25-45	7,500
C-64	Installation of Strainers in High Tank Water Lines to Bldgs. 105-B,D,F	0	9-20-45	11,100
C-75	Improved Cab Periscope-Building 105-B	95	12-17-45	1,350
C-76	Pneumatic Charging Machines-Buildings 105-B, D, F	80	12-17-45	3,300
	Total			$ 25,500
200 Areas				
C-40	Additional Laundry Facilities-Building 2723-W	10	4-12-45	2,750
C-65	Sampler Clean-up Sink and Dryer-Buildings 222-T-U-B	65	9-28-45	9,900
C-59	230 KV By-Pass for 251 Sub-Station	75	10-12-45	6,400
C-65	Alterations to 300 Sample Cans and Cases-Building 231	95	11-7-45	3,750
C-67	Dismantle T.C. Extra Machinery Storage 200-W and T.C. Pipe Warehouse 200-E	2	11-26-45	3,000
C-69	Section 12-R Jumpers-Bldgs. 221-T & B	65	11-27-45	2,100
C-73	Process Waste Tie Lines from 241-T to 241-U and from 241-B to 241-C	98	12-17-45	22,350
C-77	Relocation of Monitoring Stations, 200-E and W	85	12-17-45	1,950
C-80	Recycle Treatment-Bldgs. 224-TUB, 231-W	65	1-16-46	4,200
C-85	Additional Headtanks, Cells 1,2,3,4	0	4-4-46	1,400
	Total			$ 57,800
300 Area				
C-70	Chip Reclamation Facilities-Bldg. 313	95	12-20-45	28,000
	Total			$ 28,000
700-1100 Areas				
C-79	Braces for Laundry Trays	80	1-16-46	4,800
C-82	Columbia High School Transformer Relocation	0	2-28-46	725
C-84	Prefabricated House,1118 Willard Fire Damage Repair	0	3-15-46	800
C-86	Warehouse #6 Washroom Facilities	15	4-2-46	900
C-87	Telephone Cable-Moisture Proofing	0	4-22-46	1,950
	Total			$ 9,175

Project No.	Title	Percent Complete	Date Authorized	Estimated Cost
Plant General				
C-78	Outside Electric Lines #603-Installation of Wood Strain Insulators	5	1-16-46	$ 1,425
	Total			$ 1,425
Grand Total - Work in Progress				$222,430

Engineering Studies

The following studies were completed and reports were issued:

Stores Stock Adjustment - Transportation Department
Stores Stock and Spare Parts - Caption 903-11
Stores Stock Adjustment - Janitor and Laundry Supplies-Caption 903-14
Maintenance Department Historical Record - July1, 1945-December 25, 1945
Stores Stock Adjustment - Belts, Packing, Gasket and Hose-Caption 903-5

Studies in progress at month-end were:

BY Tandem Telephone Building - Ventilation Revisions
Pomona Pump Study
Downcomer Surge Study
Graphite Expansion Committee Study
Plumb Bob Installations - 105-F
Additional Solution Preparation Facilities
Repair Equipment for 291 Fans
Replacement Equipment for 291 Fans
Investigate Drive on 200-E Crane
Additional Waste Disposal Facilities 231 Building
Paint Standards
Transportation Department - JI Sheets Heavy Equipment
Field Lubrication Work Sheets - 700-1100 Areas
Procedure for Control and Distribution of Gas Cylinders
Assist Technical Department in River Temperature Survey
JI Sheets - Test and Inspection of Unfired Pressure Vessels
Record of Work Performed in 100-B Area
Reduce Head Developed by Irrigation Pumps at low Out-Put
Maintenance Department - Safety Meeting Topics
Consolidation of Transportation Facilities
Temporary School Facilities
Review Maintenance Department Spare Parts including Bearings, Packing, Gaskets and Belting and Suggested Spare Parts for 700-1100 Areas Power Equipment
Curtail Stocks - Fire and Safety Supplies - Caption 903-13
Curtail Stocks - Personal Protective Clothing and Equipment - Caption 903-7

ELECTRICAL DEPARTMENT

APRIL 1946

GENERAL

Work Order Summary:

Area	Work on Hand Mar. 25		Work Completed in April		Work on Hand April 25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	30	184	63	341	41	128
100-D	38	188	77	383	45	201
100-F	42	145	65	337	34	153
200-E	83	225	120	292	72	229
200-W	66	203	132	351	87	346
300	33	96	66	159	31	92
700-1100	44	188	94	308	59	210
Distribution	114	659	150	987	123	588
Totals	450	1886	787	3158	492	1947

100 AREAS

The lay-away work in the B Area is now approximately 75% complete. It is expected that this work will be completed during the following month. Reference to the attached power report will indicate that energy consumption in the B Area has been reduced approximately 67% and the power demand has been reduced approximately 56%. Further reduction in demand will become evident as the operation is stabilized.

Revised maintenance schedules have been prepared for the B Area equipment, and indications are that this work will be performed by one-third of the previous force required.

The two 800 HP motors that failed during the month of March were rewound in the D Area Shop and have been returned to service.

General maintenance work was continued in all 100 Areas, and such work is up-to-date in accordance with the maintenance schedule.

Arrangements have been made whereby shift coverage for the B Area is provided from the D Area in the event of equipment emergency or electrical outage. Sub-station coverage at 151-B primary sub-station was eliminated on April 10, and the 230 KV by-pass permanently closed. Readjustment of relay settings and carrier frequency has been made both at sub-station 151-B and at Midway.

In D Area, an electrical interruption occurred to the River Pump House at 8:50 A.M. on April 12. Service was restored in fifteen minutes. No apparent cause has been established for this interruption. An interruption occurred at 8:25 A.M. on April 11 in the F Area, involving partial service to the Reservoir, Filter Plant, Process Water and Pile Buildings. Plant process was shut down on this day; hence, no process interference was involved. Scheduled maintenance work in the area was delayed approximately one hour due to the interruption. Service was restored in twenty minutes.

The interruption was caused by personnel operating error on the part of the sub-station operator.

Routine inspection and operations checks of 13.8 and 230 KV breakers and disconnects was performed at the primary sub-station in the B, D and F Areas. A revision was made in the differential relay circuit to prevent power interruptions due to improper operations of the interlock system.

200 AREAS

Work in this area during the month consisted chiefly of preventive maintenance on all equipment according to the new maintenance program. On April 2, centrifuge E-2 in the B Concentration Building became noisy and started to vibrate. Inspection revealed the ventilating fan in the motor to be broken due to mechanical wear on the coupling and was causing vibration. The entire unit was replaced with one from cell B-2.

Electrical work on Project C-77 for relocation of monitoring stations is now 60% complete. No work has been performed on Projects C-40 and C-55.

Work on the project for construction of 230 KV by-pass on Station A-8 in the 251 Building is 80% complete.

The project for installation of wood strain insulators on the 230 KV dead end structures is 50% complete. A short section of 6900 Volt distribution line, constructed during plant construction for Construction purposes, was removed. Inspection of the poles on this line after removal indicated an excessive amount of rot from the ground line to the butt end of the pole. The poles have been in service approximately two years and apparently were not properly seasoned prior to installation. A spot check of poles in all lines, particularly the 230 KV lines, will be made to determine if this condition exists elsewhere.

300 AREA

On March 27 at 12:01 A.M., an arc developed in the rotary hearth furnace control cubicle in the Material Preparation Building. The heavy current flow caused the overhead 440 Volt conductors to whip together and develop a more serious short circuit that blew the 66,000 Volt primary fuses. The fault was not cleared by the 440 Volt switch gear since the relays were deliberately set high due to inadequate interruption capacity of these breakers. Since the primary fuses were blown requiring Distribution personnel from Richland to replace the fuses, the interruption lasted approximately ninety minutes. There was no loss of production due to this outage.

On April 18, a container heater on the extrusion press in the Material Preparation Building was damaged due to over-travel. A limit switch has been installed to prevent this, but the shape of the cam was not 100% effective. The cam is being redesigned. One furnace failure occurred during the month on a bronze unit due to terminal corrosion.

2

700-1100 AREAS

A radio interference survey has been started to locate cause of radio interference which has been a source of complaint from Village residents. A defective motor was found in the Recreation Building and also a defective pressure control switch in one of the drug stores.

No electrical work has been done on Projects C-84 and C-86.

During the month, 113 telephone instruments were installed in the Village and 96 instruments were removed. In the plant areas, 19 instruments were installed and 27 instruments removed. Drop wiring and protectors were removed from 50 excessed prefab houses, and removal of the excess telephone plant at Hanford was completed for the Government.

Work has been progressing on the establishment of a routine preventive maintenance procedure for telephone equipment and is now approximately 60% complete.

Line crews completed rebuilding transformer banks for the Irrigation Pump Station located on Lee Blvd.. Electrical services were removed from 91 prefabs. A new three-phase power bank was installed for the Government at the Richland Airport.

POWER SUPPLY INTERRUPTIONS

Date	Area	Circuit Affected	Time	Duration	Remarks
March 27	300	351-B sub-station	12:01 AM	1:34 AM	Blown primary fuse
April 11	100-F	13.8 KV Back Bus (151-F Bldg.)	8:25 AM	8:50 AM	Operator Accidentally opened OCB C6XR Back Bus
April 11	100-F	13.8 KV Line C6-L16 (151-F Bldg.)	Out for 15 sec.		Relayman tripped same while testing relays
April 21	100-F	Sub OCB E6X4	11:46 AM	12:15 PM	Tripped out due to starting fan #6

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POWER STATISTICS - ELECTRICAL DEPARTMENT - APRIL 1946

ITEM	ENERGY - MWHRS Mar.	ENERGY - MWHRS Apr.	MAX.DEMAND - KW Mar.	MAX.DEMAND - KW Apr.	LOAD FACTOR - % Mar.	LOAD FACTOR - % Apr.	INCREASE OR DECREASE - % ENERGY	INCREASE OR DECREASE - % MAX. DEMAND
230 KV SYSTEM								
151 B Out	5690	1840	11500	5000	73.6	49.5	67.7 (d)	56.5 (d)
151 D Out	7320	7960	12300	12800	88.6	83.6	8.7	4.1
151 F Out	6510	7160	11500	11100	81.7	86.7	15.5	3.5 (d)
251 Out	1950	2040	3600	3500	79.8	78.3	5.7	2.8 (d)
TOTAL OUT	21250	19000	**38900	**32400	-	-	10.6 (d)	16.7 (d)
MIDWAY IN	21973	19444	*36800	*30000	88.9	87.1	11.5 (d)	18.5 (d)
Transm. Loss	723	444	-	-	-	-	-	-
Percent Loss	3.3	2.3	-	-	-	-	-	-
66 KV SYSTEM								
1151 A Out	2347	2041	5100	4500	68.5	61.0	13.0 (d)	11.8 (d)
1151 B Out	1960	1782	4600	4300	63.4	55.7	9.1 (d)	6.5 (d)
751 A Out	1728	1848	4046	3468	63.6	71.6	6.9	14.3
351 A Out	226	241	492	474	68.4	68.3	6.6	3.7 (d)
351 B Out	238	254	1280	1080	27.7	31.6	6.7	15.6 (d)
Hanford Out	201	232	500	500	59.8	62.4	15.4	0
TOTAL OUT	6700	6398	**16018	**14322	-	-	4.5 (d)	10.6 (d)
Hanford In	251	232	* 500	* 500	74.7	62.4	7.6 (d)	0
Pasco In	6483	6186	*14400	*13200	67.0	63.0	4.6 (d)	8.3 (d)
TOTAL IN	6734	6418	**14900	**13700	67.3	63.0	4.7 (d)	8.1 (d)
Transm. Loss	34	20	-	-	-	-	-	-
Percent Loss	0.5	0.3	-	-	-	-	-	-
PROJECT TOTAL								
230 KV (Item 5)	21250	19000	**38900	**32400	-	-	10.6 (d)	16.7 (d)
66 KV (Item 15)	6700	6398	**16018	**14322	-	-	4.5 (d)	10.6 (d)
TOTAL OUT	27950	26398	**54918	**46722	-	-	9.1 (d)	14.9 (d)
230 KV (Item 6)	21973	19444	*36800	*30000	88.9	87.1	11.5 (d)	18.5 (d)
66 KV (Item 18)	6734	6418	**14900	**13700	67.3	63.0	4.7 (d)	8.1 (d)
TOTAL IN	26707	25862	*50000	*41200	85.4	84.4	9.9 (d)	17.6 (d)
Transm. Loss	757	464	-	-	-	-	-	-
Percent Loss	2.6	1.8	-	-	-	-	-	-

* Coincidental Demand

** Non-Coincidental Demand

(d) Denotes decrease

Average Power Factor - 230 KV System ---- 99.8%

Average Power Factor - 66 KV System ---- 99.3%

INSTRUMENT DEPARTMENT

APRIL 1946

GENERAL

Work received in April was 3.6% greater than that received in March.

Work Order Summary:

Area	Work on Hand Mar.25		Work Completed in April		Work on Hand Apr.25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	45	78	113	213	29	41
100-D	50	144	106	405	48	131
100-F	65	105	107	354	53	138
200-E	58	154	206	344	67	125
200-W	57	99	291	344	69	91
300	87	414	119	421	73	279
700	58	82	106	198	48	117
Totals	420	1076	1048	2279	387	922

P and S Departments have accepted responsibility for operation of many of the fixed health monitoring instruments. This will result in a shift of instrument maintenance costs from medical to operating accounts.

100 AREAS

Shutdown in the B Area has required little modification or addition to instrumentation other than conversion of a few pressure monitor gauges to low pressure range and insertion of ionization chambers near the effective center of the Pile. A large portion of the radiation measuring equipment has been taken out of service and it appears that instrument maintenance for this area can soon be handled from D Area on a part-time basis.

In D and F Areas, additional equipment to indicate Pile movements was installed and includes horizontal tight wires on near and far sides, a gauging bracket on top center of the near side, gauging brackets above and below the Inner Rod Room floor and a plumb-bob hanging from the center of the near side.

Refrigeration Plant instruments in the F Area were made ready for summer operation. In D Area, it was necessary to add manometers to indicate condenser water flow on the refrigeration units, replacing Ring Balance meters which were needed elsewhere.

200 AREAS

A five inch ionization chamber, a thermocouple, and a resistance thermometer have been installed on a pipe line leading to the waste tanks in the East Area. These instruments are to assist in avoiding the possibility of having the line plugged with radio-active materials.

Ionization measurements on the B-2 tank of the Concentration Building in the East Area became so low as to give a poor reading when the tank was empty. This was overcome by using a larger ionization chamber at double atmospheric pressure. A similar change is planned in the West Area.

Breakdown of high voltage transformers has occurred in many proportional alpha counters in 200 Area counting rooms during the past few weeks. It is believed that the trouble was partly due to a shipment of high voltage rectifier tubes of inferior quality and partly due to weak transformer design. The faulty transformers are being replaced by a type which has given better performance in other counting equipment.

Additional proportional alpha counters were moved into the Isolation Building counting room for use in correlation of standard samples in the various laboratories.

300 AREA

Ten "Poppy" and five "Zeuto" survey instruments were received from Clinton Laboratories and were prepared for use at this plant.

Special collets and extension control handles are being made for a South Bend lathe which is used to machine slugs containing samples that have been irradiated in the 100 Area Piles. These special accessories will reduce exposure of personnel who do the machine work.

700 AREA

In cooperation with the Power Department, modifications and minor improvements have been made in instrumentation in the Sewage Disposal Plant, the 700 Area Power Plant and at the Well Houses.

Fifty thin walled glass G-M tubes have been received in which the conventional glass side arm is eliminated. These are being processed for portable survey applications where the side arm has always prevented simple, compact, assembly.

PROTECTION DEPARTMENT

APRIL 1946

PATROL DIVISION

General

Labor turnover in the Patrol Division was 0.2% during April.

Plant Areas

Ten Special Duty escorts were handled.

Requests handled totalled 828, mainly consisting of escorts, opening doors and gates for employees of other departments.

A total of 207 Unusual Incident Reports was received, which consisted mainly of unlocked and open doors, windows and files, and traffic violations.

The working hours in all areas except the 300 Area (which had previously made the change), were changed on April 1, to conform with the hours observed by other departments, as follows:

11:48	P.M.	to	8:18 A.M.
7:48	A.M.	to	4:18 P.M.
3:48	P.M.	to	12:18 A.M.

A thirty minute rest period will be observed.

A practice evacuation was held in the 100-D Area on April 3, 100-B Area on April 17 and in the 100-F Area on April 22.

A new "Between Shift Register" was placed in effect on April 15. This register is maintained in each badge house and is signed by all employees leaving the area at times other than at regular shift changes.

Training

Advanced training at the Patrol Small Arms Range was continued, and qualifications in Army "L" Course firing were as follows:

	March		April	
	No.	Percent	No.	Percent
Unqualified	29	9	33	9
Marksman	133	42	119	34
Sharpshooter	63	20	70	20
Expert	91	29	130	37
Totals	316	100	352	100

Protection Department

The Sub-Machine Gun Course was eliminated during the month of April.

Awards were given to the 200-West Area for High Team Average, High Area Average and High Individual Score. The second High Individual award resulted in a tie between members of the 200-West and the Richland Areas and will be shot off at a later date.

Richland Area

	March	April
Check on absentees	2	1
*Persons assisted	223	217
Doors and windows found open in commercial facilities	23	18
Lost children found	12	15
Ambulance runs	44	46
Lost dogs reported	2	8
Dog and cat complaints	17	39
Totals	323	344

*Includes: Escorts from Cashier Office and Bus Terminal to Bank; persons admitted to residence; transportation for nurses and technicians to Hospital on special night calls; delivery of messages to residents who have no telephone; and opening Trailer Parking Lot for individuals.

Traffic and Offense Statistics

These are presented in separate tables at the end of this departmental report. A comparison of Richland Offense Statistics with outside averages also is presented.

SECURITY DIVISION

General

A survey of all protective and security measures is presently in progress in the 300 Area.

Security Education

New security posters were distributed throughout the plant, administration and village areas on April 8.

During the period March 26 to April 25, inclusive, a total of 317 Security Meetings were held. These meetings were attended by 4,488 employees throughout the entire plant and administration areas.

Protection Department

Plant Visitors

Name-Organization Wilmington Office Personnel	Purpose of Visit	Access to Areas Classified	 Unclassified
J. N. Tilley, Assistant Manager TNX Division Explosives Department E. I. du Pont de Nemours & Co. Wilmington, Delaware	General inspection and consultation with Plant Manager.	X	
Allied Project Personnel			
E. R. Jette Metallurgical Laboratory University of Chicago Chicago, Illinois	Consultation on production and health problems.	X	
F. K. Pittman Metallurgical Laboratory University of Chicago Chicago, Illinois	Consultation on production and health problems.	X	
C. F. Metz Metallurgical Laboratory University of Chicago Chicago, Illinois	Consultation on production and health problems.	X	
Lt. Royce D. Tebbet U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation on health problems.	X	
Lt. Meredith Mallory U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation on health problems.	X	
Lt. Melvin A. Block U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation on health problems.	X	
Lt. James H. Coleman U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation on health problems.	X	
Lt. Grover C. Carter U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation on health problems.	X	

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Protection Department

Name-Organization	Purpose of Visit	Access to Areas: Classified	Access to Areas: Unclassified
Outside Service Personnel			
W. B. Bennett Baldwin Locomotive Works San Francisco, California	Inspection of Diesel Locomotives.		X
R. A. Sullivan Baldwin Locomotive Works San Francisco, California	Inspection of Diesel Locomotives.		X
W. T. Eiffert Wash. State Board of Health Olympia, Washington	Inspection sewage disposal.		X
R. L. Stockman Wash. State Board of Health Olympia, Washington	Inspection sewage disposal.		X
Lee VanDerlinden Director of Research Division C. H. Lilly Company Seattle, Washington	Inspection sewage disposal.		X
General			
Dr. L. R. Donaldson University of Washington Seattle, Washington	Inspection and consultation.	X	

Statistical Summary

	March	April
Number of employees cleared for classified information	57	25
Number of visitors cleared for classified information	0	0
Number of authorization cards issued to employees	24	17

Number of employees having access to each classified area as of month-end were (A, B and C denote type of clearance):

	March				April			
Area	A	B	C	Total	A	B	C	Total
100-B	671	517	318	1506	498	563	316	1377
100-D	681	539	391	1581	665	535	366	1566
100-F	683	483	401	1567	703	478	375	1556
200-E	704	722	365	1791	715	711	355	1781
200-W	898	657	326	1881	905	645	329	1879
200-H	52	405	182	639	61	404	179	644
300	586	546	182	1314	585	539	182	1306

Area	Temporary Access March	Temporary Access April
100-B	14	14
100-D	13	15
100-F	24	16
200-E	12	10
200-W	21	17
200-N	13	7
300	38	28
Total	135	107

INVESTIGATION DIVISION

Investigation

The following summary reflects the work of this Division:

	March	April
Cases pending at beginning of month	145	235
Cases received during month	335	361
Cases closed during month	265	373
Cases pending at end of month	235	223
Number of employees approved for clearance	57	25
Construction personnel files reviewed for transfers	77	59
Number found satisfactory for employment	63	55
Number found unsatisfactory for employment	1	0
Number of Personnel Security Questionnaires concerning concessionaire employees processed and forwarded to Military Intelligence Office without investigation	42	118

[redacted]

PATROL DIVISION - RICHLAND OFFENSES

Classification of Offenses	Offenses Known or Reported to Patrol	Offenses Unfounded	Actual Offenses March	Actual Offenses April	Offenses Cleared By Arrest	Offenses Cleared By Other Action	Perpetrators Involved
Assault	0	0	1	0	0	0	0
Attempted Suicide	1	0	0	1	0	1	1
Burglary-Breaking and/or Entering	0	0	0	0	0	0	0
Larceny-Theft (except auto & bike):							
(a) - $50.00 and over value	1	0	1	1	0	0	0
(b) - Under $50.00 value	5	0	9	5(a)	3	1	6
Auto Theft	3	0	2	3(b)	2	0	1
Bicycle Theft	1	0	2	1	0	0	0
Destruction of Government Property	3	0	3	3(c)	0	3	4
Destruction of Personal Property	2	0	0	2(d)	0	2	2
Disorderly Conduct	1	0	4	1	0	1	1
Drunkenness	3	0	2	3	3	0	3
Missing Persons	2	0	2	2(e)	0	1	2
Offenses against family and children	0	0	1	0	0	0	0
Prowlers	0	0	3	0	0	0	0
Rape	0	0	0	0	0	0	0
Sex Offenses	1	0	0	1	1	0	2
Vagrancy	0	0	0	0	0	0	0
Miscellaneous	2	0	3	2	0	1	1
Juveniles (other than reported above) Disorderly Conduct	10	0	5	10(f)	1	9	20
	35	0	38	35	10	19	43

(a) - Three of the offenses were perpetrated by four juveniles, of ages 15 through 17 years.
(b) - Two of the offenses were perpetrated by one juvenile, of age 16 years.
(c) - The three offenses were perpetrated by four juveniles, of ages 8, 10, 14 and 15 years.
(d) - The two offenses were perpetrated by two juveniles, of ages 4 and 13 years.
(e) - One of the offenses was perpetrated by a juvenile, of age 16 years. The other offense was perpetrated by the same juvenile of age 16 years, and a juvenile of age 14 years.
(f) - The ten offenses were perpetrated by twenty juveniles, of ages 5, 8, 10, 12 through 17 years. One of the juveniles of age 13 years is involved in two of the offenses, and the same juvenile of age 13 years cleared in item 'D'.

Value of property recovered from March 25 through April 25 was $3,394.00 (includes three autos and two bicycles).

PATROL DIVISION - COMPARISON CHART OF RICHLAND OFFENSES

Number of offenses known to Police per 10,000 inhabitants, in cities between 10,000 and 25,000 inhabitants:

Classification	Wash., Oregon & Calif. Six Months Average	Wash., Oregon & Calif. One Month Average	Richland Six Months (July-Dec. 1945)	Richland March	Richland April
Murder	0.225	0.037	0	0	0
Robbery	5.32	0.89	0	0	0
Aggravated Assault	2.49	0.515	0	0.66	0
Burglary	30.97	5.16	7.33	0	0
Larceny	86.08	14.34	63.33	9.0	4.66
Auto Theft	23.96	3.97	6.66	1.33	2.0

Number of offenses known to Police, per 10,000 inhabitants, regardless of whether offenses occurred in cities or rural districts:

Classification	State of Washington Six Months Average	State of Washington One Month Average	Richland Six Months (July-Dec. 1945)	Richland March	Richland April
Murder	0.215	0.036	0	0	0
Robbery	3.62	0.6	0	0	0
Aggravated Assault	1.17	0.19	0	0.66	0
Burglary	27.8	4.63	7.33	0	0
Larceny	81.22	13.53	63.33	9.0	4.66
Auto Theft	24.04	6.0	6.66	1.33	2.0

The portion of offenses committed by persons under the age of 25 years is shown by the following figures:

Classification	National Average (1945)	Richland Six Months (July-Dec. 1945)	Richland March	Richland April
Robbery	58.6%	0	0	0
Burglary	64.4	63%	0	0
Larceny	49.6	27	25%	43%
Auto Theft	80.3	20	50	66

Note: Statistics of juvenile offenses throughout the United States were taken from the Uniform Crime Report published by the Federal Bureau of Investigation, which states: "It should be remembered that the number of arrest records is doubtless incomplete in the lower age groups because of the practice of some jurisdictions not to finger-print youthful offenders."

In Richland every delinquent juvenile is entered in the records.

[redacted]

PATROL DIVISION - TRAFFIC CONTROL STATISTICS

Motor Vehicle Accidents

	Total Number	
	March	April
Plant	2	1
Richland	3	10
Totals	5	11

Fatalities

March	April
0	0
0	0
0	0

Major Injuries

March	April
0	0
1	0
1	0

Minor Injuries

March	April
0	0
1	2
1	2

Accident Causes

Negligent Driving

March	April
2	0
3	7
5	7

Failure to Yield Right-of-Way

March	April
0	0
0	2
0	2

Reckless & Drunken Driving

March	April
0	0
0	2
0	2

Miscellaneous Causes

March	April
0	1
1	1
1	2

Plant Warning Traffic Tickets Issued

Speeding

March	April
3	6
16	17
19	23

"Stop" Sign

March	April
0	1
16	21
16	22

Parking

March	April
0	0
92	215
92	215

Improper License

March	April
0	0
13	55
13	55

Defective Equip.

March	April
0	3
34	63
34	66

Totals

March	April
3	10
171	371
174	381

Court Citation Traffic Tickets Issued

Speeding

March	April
0	4
7	6
7	10

"Stop" Sign

March	April
0	1
4	6
4	7

Drunken Driving

March	April
0	0
1	2
1	2

Reckless Driving

March	April
0	0
0	1
0	1

Negligent Dr.

March	April
0	0
3	5
3	5

Other Violations

March	April
0	0
0	9
0	9

Totals

March	April
0	5
15	29
15	34

Traffic Volume

	March	April
Richland - Downtown Street (average count - 24-hour period)	8,645	10,237

SERVICE DEPARTMENT

APRIL 1946

PLANT SERVICE

PERSONNEL

Department	Roll Additions	Inter-Dept. Transfers In	Inter-Dept. Transfers Out	Roll Terminations	Net Roll Change
Management	-	-	-	-	-
P Department	2	-	-	24	- 22
S Department	1	-	-	2	- 1
Technical	2	-	1	22	- 21
Power	1	-	-	21	- 20
Maintenance	-	-	-	11	- 11
Electrical	1	-	-	11	- 10
Instrument	-	-	-	6	- 6
Protection	-	-	10	26	- 36
Service	5	-	-	2	+ 3
Transportation	3	-	-	13	- 10
Medical	4	1	-	14	- 9
Accounting	1	10	-	12	- 1
Totals	20	11	11	164	- 144

Roll Additions

	Exempt	Non-Exempt	Total
New Hires	-	9	9
Re-employs	3	-	3
Reinstates	-	6	6
Other Plant Transfers	-	-	-
Net Additions	3	15	18
Payroll Exchanges	2	-	2
Gross Additions	5	15	20

Terminations

Another Job	-	13	13
Family Illness	-	1	1
Getting Married	-	3	3
Pregnancy	-	5	5
Husband Leaving	-	6	6
Husband Returned from Service	-	1	1
Voluntary Unexplained Absence	-	1	1

Service Department

	Exempt	Non-Exempt	Total
Reduction of Force	7	95	102
Transfer to Other Plants	12	4	16
Other	4	10	14
Net Terminations	23	139	162
Payroll Exchanges	-	2	2
Gross Terminations	23	141	164

Approximately 16% of all terminations occurred in the Protection Department; 15% in P Department; and 14% in the Technical Department.

Personnel Turnover	March	April
Total Turnover	1.96%	3.53%

Plant Absenteeism (Non-Exempt)		
Male	2.30%	1.75%
Female	4.21%	3.15%
Plant Average	2.70%	2.03%

Non-Exempt Personnel - Interviews		
Accepted	26	8
Rejected	396	235
Others	195	250
Total Interviews	617	493

Non-Exempt Personnel - Placed on Roll		
Current Month Interviews	25	8
Previous Month Interviews	15	7
Total Placed on Roll	40	15

Military Service Personnel (World War II)	April	To Date
Employees Entering Military Service	-	151
Employees Returned from Military Service	6	32
Employees of Other du Pont Plants Added to Roll	2	38
Other Veterans Hired	5	399
Total	13	469

SELECTIVE SERVICE

Number of 4F, 2A(F) and 2B(F) Classifications	56
Number of 1C's	121
Number of male employees 18-25, excluding 4F, 2A(F), 2B(F) and 1C Classifications	37
Total number of male employees under 26	214

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CENTRAL FILES

	March	April
Classified Documents Received (In Mail)	163	187
Unclassified Documents Received (Total)	3,104	2,985
Classified Documents Issued	2,224	3,050
Inter-Area Transfer (Classified)	8,601	3,696
Documents Routed (Classified)	4,055	4,696
Requests - File Documents (Classified)	571	886
Requests - Technical Library	133	84

The distribution of new insertions as well as revisions for Sections A, B and C of the Hanford Technical Manual was approved as of April 1. Sections A and C were completely revised, whereas the revision to Section B was but partial.

SAFETY AND FIRE PROTECTION

Safety

Plant Safety Record - 105 Days

Injury Statistics

	March	April	Year to Date
Major Injuries	-	-	1
Non-Lab. Major Injuries	-	-	1
Sub-Major Injuries	-	1	9
Minor Injuries	236	251	993

Sub-Major Injury No. 60

March 26 - [redacted] (Maintenance Department, 700 Area), sustained a chip fracture and contusion and laceration to the terminal phalanx right great toe. Injured and four fellow employees were attempting to roll a reel of cable weighing 7,725 pounds into the rigger's loft over a 2½" rise at the entrance. Injured's right foot slipped and the reel rolled over his foot, pushing the safety cap of his shoe into his toe.

Minor Injuries

See charts appended to this departmental report.

A total of 654 Safety Meetings were held, with an attendance of 8,338.

A safety plaque and second year bar and a safety flag with two stars was awarded the 300 Area for completing two years without a lost-time injury. Individual pocket award cards were presented to all employees.

A bi-monthly Plant Safety publication will be issued to every employee beginning May 17. All news will slant toward safety and will contain pictures and items of local interest.

The monthly inspection of all schools was conducted on safety, health, housekeeping and fire. All schools were rated. Sacajawea School having the highest rating, was awarded the safety flag for the month.

All gas masks on the Plant have been inventoried and the Safety and Fire Protection Division has assumed custodianship of them. A new store stock request has been issued so an adequate supply of canisters will be on hand to service gas masks. A procedure for servicing and inspecting all gas masks was submitted for approval.

The safety sign board at the entrance to the 703 Building has been completed. A record is kept of the number of injury-free days by departments and the Plant as a whole.

Fire Protection

Fires

	Number of Fires		Estimated Damage	
	March	April	March	April
Village	5	10	$775.00	$54.95
Area	3	13	-	10.00
Miscellaneous	13	4	-	-
Totals	21	27	$775.00	$64.95

All of the fires reported were of minor significance. The approximate $54.95 damage as a result of Village fires involved fires caused from burning cigarettes, rubbish ignition from hot ashes and spontaneous combustion from accumulated lint on roof of Richland Laundry.

A test of the fire exit sirens and fire alarms in the Administration Building showed the sirens sounded and alarms received in Fire Station 4-2/5 seconds after the inspector's test was conducted at 5:15 p.m. on April 15.

Fire ladder racks were erected in the 700 Area and on the east side of Transient Quarters.

Patrol procedures covering response to fire alarms in all Plant areas were revised to conform with minor changes in Patrol and Fire Division personnel and equipment.

Arrangements have been completed to conduct a home inspection campaign for the purpose of eliminating any fire hazards that may exist in and around the homes in the Village.

The fire extinguishers on 115 motor vehicles out of Richland were inspected and 369 vehicles out of the various Plant areas.

The Fire Protection Division's inspection service has been extended to include an annual inspection of all Village dwellings by an authorized representative of the Fire Department.

INDUSTRIAL RELATIONS AND TRAINING

Contacts are summarized as follows:

	March	April
Policy	15	15
Military Service	-	1
Insurance	3	3
Housing	33	26
Personal	19	27
Income Tax	675	6
Miscellaneous	20	26
Total	765	104

GENERAL DIVISION

Laundering volumes were as follows:

Plant Laundry (Bldg. 2723)	March	April
Coveralls - Pieces	13,582	16,569
Towels - "	4,094	5,544
Miscellaneous Pieces	17,025	21,876
Total Pieces	34,701	43,989
Total Dry Weight - Lbs.	51,567	65,224

The project for one additional dryer and a stainless steel washer is approved and work is now under way.

The increase in weight of over 13,000 lbs. in April over March was due primarily to unusual maintenance work in the 221 Buildings in the 200-W Area requiring more uniforms.

700 Area Laundry (Bldg. 723)	March	April
Flatwork - Pieces	31,899	35,986
Rough Dry - Pieces	16,802	18,763
Finished - Pieces	2,008	2,217
Total Pieces	50,709	56,966

	March	April
Total Dry Weight	28,904	32,470

Two Janiters have been removed from the 100-B Area due to curtailment. This area is now covered by two Janitors.

VILLAGE ADMINISTRATION

HOUSING

Permanent Village Houses

	Family Occupancy Figures		
	Moved In	Moved Out	Month End
Du Pont	90	71	2166
Government	24	14	157
Totals	114	85	2323

Summary:

Houses occupied by family groups	2323
Houses utilized by Housing Section	2
Houses utilized by Medical Department (Public Health Section)	1
Houses assigned but unoccupied pending arrival and installation of furniture	11
Houses available for assignment	152
Government houses without lease in du Pont possession exclusive of authorized rent-free houses	11
Total Houses	2500

Prefabricated Houses

	Family Occupancy Figures		
	Moved In	Moved Out	Month End
Du Pont	4	75	1178
Government	22	7	66
Totals	26	82	1244

Summary:

Houses occupied by family groups		1244
Unoccupied pending installation of effects and arrival of families		-
Houses available for assignment		8
Government houses without lease in du Pont possession		2
Total Prefabs (active)		1254
Closed and available for excess		84
Turned over to excess	464	
Removed from Project	333	
Awaiting removal		131
Total Prefabs on Project		1469
Total Prefabs moved from Project during month		60

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Tract Houses

Occupied	63	(Includes occupancy by du Pont, Government, sub-contractors and concessionaires, in Richland and vicinity. Some of these houses will be sold and removed, or boarded up, when vacated.)
	9	(Includes occupancy by Bonneville Power in Priest Rapids and White Bluffs.)
	1	(Special - fumigation.)
Vacant	32	
Total	*105	(Includes Richland, Priest Rapids and White Bluffs.)

*Increase over previous month is due to transfer of additional units from Government records.

Dormitories

Occupied by men	5	
Occupied by women	7	
Assigned to Community Organizations	3	(1 to Teen-Age Club; 1 to Youth Council; 1 to Pre-School Nursery.)
Held as emergency additional hospital accommodations	1	
Vacant	9	
Total	25	

(Dormitory W-8 closed March 30, 1946.)

General

The following items of additional furniture were received from Government surplus stocks during the month:

Dressers	245
Beds, double/side rails and slats	384
Springs	695
Mattresses	511

Effective April 1, the renting of partially furnished dwellings was discontinued. Rental of completely furnished houses will be continued at the established rates with allowance of credits in the amount of 50 cents per $50.00 of valuation covering items of furnishings not available in present stocks.

COMMERCIAL FACILITIES

Operation

Progressive Cafeterias	March	April
Cafeteria Meal Customers	31,994	35,097
Total Dollar Sales	14,176	15,149
Per cent of room-day occupancy, Transient Quarters	89.30%	91.40%

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Carnation Company	March	April
Gallons of milk sold	45,553	50,731
Gallons of cream sold	1,208	1,371
Gallons of ice cream sold	2,527	2,168
Pounds of Cottage Cheese sold	1,165	1,590

"Richland" and "Village" Theaters		
Customer Count	42,994	42,622

Gasoline Sales	February	March
Total gallons, all stations	88,541.9	87,055.6

General

Facility operators are cooperating in the mosquito control program by stocking adequate supplies of DDT for sale and by painting their own screens with DDT.

The Richland Motor Company began sales of new cars during April. The partnership of Simonds & Jewell was dissolved and the business is now conducted by W. A. Simonds, Jr.

Arrangements have been made through the Office of Price Administration for renewal of Project allocation of sugar to manufacturers of ice cream and soft drinks. Commencing April 1, the allotment for these items manufactured for sale on this Project will be 105 per cent of the sugar so allocated during similar quarters of 1945.

COMMUNITY ACTIVITIES

Schools

At the request of the School Board, the Project Engineering Group has been asked to make a study and submit recommendations and estimates covering provision of temporary facilities to take care of estimated increase in Grade School enrollment of 170 pupils and estimated increase in High School of 111 pupils. These estimates are based on present enrollment statistics which indicate more pupils becoming eligible for instruction than will be lost by graduation in June, and on the assumption that there will be no substantial reduction in the number of families residing in the Village.

General

The Camp Fire Council of Richland joined the Columbia Council, made up of the towns between Richland and Pendleton, in order to carry on a broader program through combination of funds and personnel. This organization follows the plan now in effect for the Boy Scout Organizations.

The second and last city-wide collection of canned food and clothing for world relief was made on April 20.

On April 1, the Senior Outfit of Boy Scout Troop No. 28 moved into new quarters at 507 Barth. This tract house was rented to the Richland Chapter of the Blue Mountain Council of the Boy Scouts of America.

The Youth Council handicraft and other programs were moved from Dormitory W-17 to the new Youth Center (Dormitory W-16) on April 22.

Arrangements have been made to assign prior scheduling right to the Junior Chamber of Commerce for league play and exhibition games on the George Washington Way softball field in connection with the Junior Chamber's program for sponsorship of Village league play, with the understanding that unscheduled playing time will be made available to other Village groups. The Junior Chamber of Commerce has also been granted permission to erect fencing around the field and provide lighting for night play, these installations to be made at its expense, utilizing such excess Project equipment as may be made available for that purpose.

The Junior Chamber of Commerce has also been granted permission to erect fencing, at its own expense around the area adjacent to Dormitory W-17 (teen-age club) for the purpose of providing an enclosed space for outdoor teen-age activities.

A tap dancing and Ballet class has been started by Mrs. Jean Spiset on Saturdays at the Recreation Hall for children from four years of age and up.

VILLAGE - GENERAL

The planting of shrubs in the downtown area has been completed, including additional planting at the bank and post office buildings. The planting of grass in the Greenway and other unseeded areas in the downtown section, as well as the planting of certain unseeded areas around Marcus Whitman School, has been authorized.

The Government film entitled "The Atom Strikes" was released for special free showing to all Project employees and their families at the "Village" theater Wednesday, April 17 through Saturday, April 20.

Effective Saturday, April 13, the Village local busses were replaced by new and larger vehicles, and the operation of booster busses during peak periods was discontinued.

1201278

MONTHLY INJURY ANALYSIS

Period - March 26 through April 25, 1946

Minor Injuries

	Misc Burns	Abrasions	Contusions	Lacerations	Punctures	Splinters	Strains & Sprains	Foreign Body	Unclassified	TOTAL APRIL	TOTAL LAST MONTH
Production P	5	5	2	9	1	0	3	0	1	26	24
S	5	7	0	5	0	0	0	0	4	21	32
Technical	9	8	2	9	1	1	0	0	3	33	21
Power	1	1	1	4	0	0	1	1	0	9	11
Maintenance	7	15	11	10	6	4	5	1	6	65	60
Electrical	0	4	3	2	0	3	0	2	2	16	14
Instrument	1	4	0	9	1	1	0	0	0	16	13
Protection	0	3*	1	3*	0	1	1	0	2	11	6
Service	1	3	0	1	0	0	0	0	2	7	6
Transportation	1	4	5	3	2	4	0	3	1	23	14
Medical	1	4	1	0	1	1	0	1	1	10	21
Accounting	3	1	2	4	1	1	1	0	1	14	14
TOTAL	34	59	28	59	13	16	11	8	23	*251	236

*Two injuries in the Protection Department have been reclassified as personal making a total of 9, and a grand total of 249.

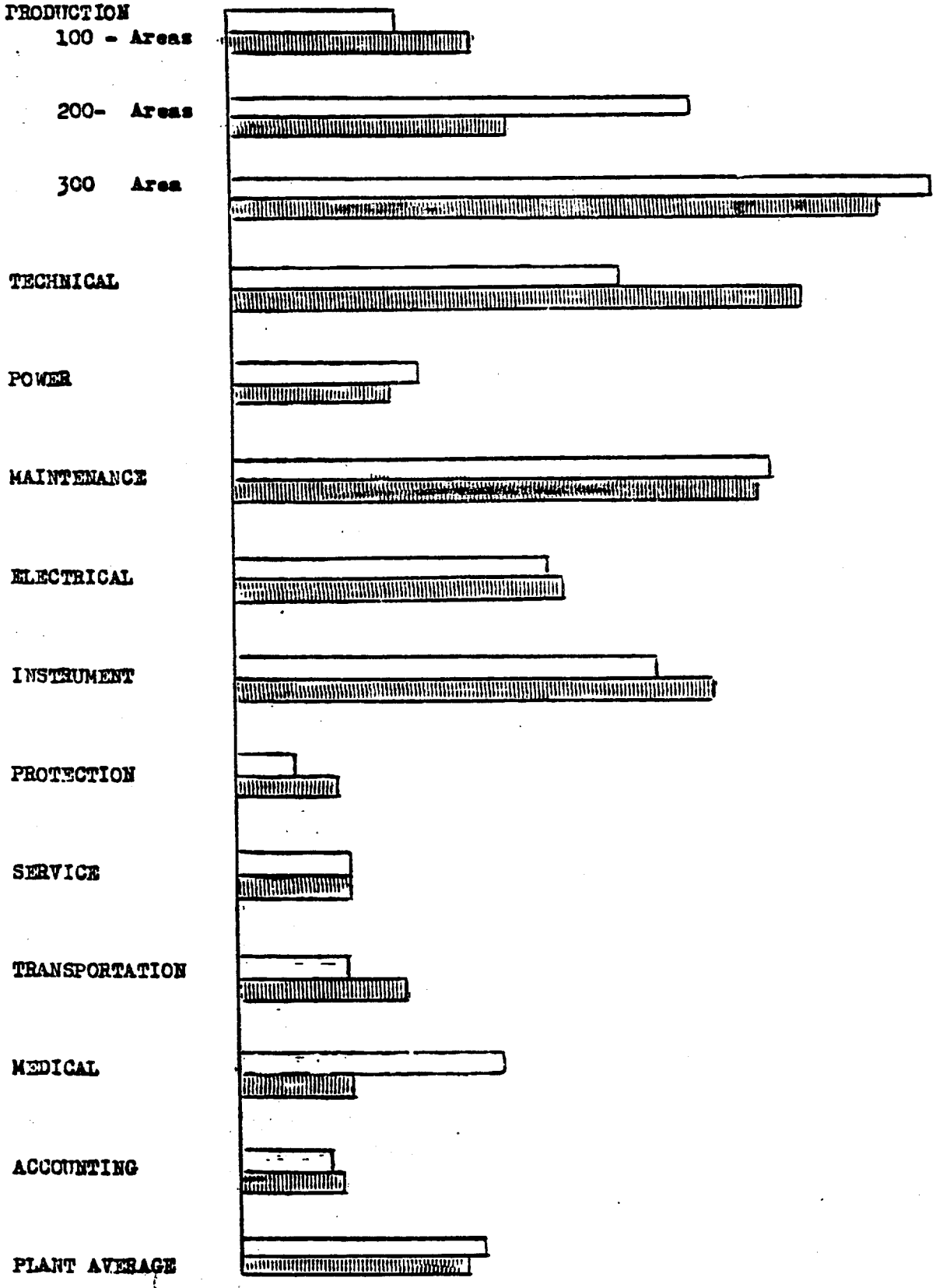
Last Month

This Month

APRIL

FREQUENCY RATE CHART

Minor Injuries



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TRANSPORTATION DEPARTMENT

APRIL 1946

RAILWAY AND AUTOMOTIVE OPERATIONS

Seventy-eight new thirty-seven passenger buses have been received with delivery completed this month. Nine of these buses were placed in Village Local service on April 15.

The initial group of twenty-three twenty-nine passenger buses were declared excess during the month. Under the program of disposing of and exchanging non-standard types of automotive units and replacing those worn beyond economical repair, 88 units have been exchanged since January 25, 1946.

Off-the-plant automobile trips (Company business and official visitors) totaled 39.

Comparative figures for plant bus trips are:

	Average Daily Trips	
	March	April
Passenger Buses - 100-B	13	13
Passenger Buses - 100-D	12	12
Passenger Buses - 100-F	13	13
Passenger Buses - 200-W	18	18
Passenger Buses - 200-K	13	13
Passenger Buses - 300	8	8
Inter-Area passenger service (stretchouts)	3	3
Inter-Area express serive (1 panel delivery)	1	1
Inter-Area mail service (1 panel delivery)	1	1

Significant daily averages for Village bus operation are:

	March	April
Total passenger handled, including transfers	2,376	2,270
Total bus trips	98	98
Total bus miles handled	564	564
Revenue	$116.55	$111.10

MECHANICAL AND LABOR

Work Order Summary:

	Work on Hand Mar. 25		Work Completed in Apr.		Work on Hand Apr. 25	
Areas	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
Labor:						
100,200,300	57	773	232	1359	110	639
700 & 1100	84	1566	290	2480	131	1638
Repairs:						
100,200,300	5	194	3	339	28	184
Riverland	6	351	4	280	55	551
700 & 1100	360	2925	356	1997	379	2372
Totals	510	5809	885	6455	703	5384

1201281

Bulk fuel plant statistics (in gallons):

	Gasoline	Diesel Fuel	Kerosene
Stock at start of month	32473	1515	660
Received during month	112400	22950	1630
Dispensed during month:			
du Pont	91212	18133	2240
Government	32861	2887	50
Totals	124073	21020	2290
Stock at end of month	20800	3443	0

Repair and Service statistics for du Pont-operated equipment are:

	March Totals	April 100 B	100 D	100 F	200 W	200 E	300	700-1100	Portable Units	Totals
Inspections (Preventive Maintenance)	1215	58	73	60	100	83	-	697	293	1364
Grease Jobs	1215	58	73	60	100	83	-	697	293	1364
Shop and Repair Orders	2222	-	-	-	-	-	-	2383	-	2452*
Gasoline Dispensed (Gallons)	80828	4516	4424	5053	7302	6356	1164	46758	8343	86968**
Kerosene Dispensed (Gallons)	726	158	3	-	-	-	15	10	794	980
Diesel Fuel Dispensed (Gallons)	14214	-	-	-	-	-	-	-	9194	18479****
Antifreeze Dispensed (Quarts)	1355	-	1	-	8	11	5	48	28	103***

* Includes 69 shop and repair orders at Riverland yard.
** Includes 3052 gallons disbursed from Morrison-Knudsen underground tanks.
*** Includes 2 quarts disbursed from Morrison-Knudsen tanks.
**** Includes 8285 gallons diesel fuel from Riverland Yard.

Labor work volume statistics are as follows:

1201282

Transportation Department

	March Totals	April 100 B	100 D	100 F	200 W	200 E	300	700-1100	Totals
Cars Coal Unloaded	726	53	94	135	30	24	4	36	376
Cars Other Materials Unloaded	46	-	5	6	7	5	7	-	30
Frt. Shipments Handled	52	-	3	16	-	-	-	4	23
Personal Effects Moved, Including Baggage	20	-	-	-	-	-	-	8	8

RICHLAND TRAFFIC OFFICE

Reduced rate on soda ash moving from Tacoma to Hanford became effective April 8 on interstate shipments and resulted in reduction in through rate on this commodity from Trona and Westend, California to Hanford. The previous rate of $ .93 per cwt. has been lowered to $ .72 per cwt. with resultant saving of approximately $210.00 per car.

Reduced rate on liquid caustic soda moving from Tacoma to Hanford became effective April 8 on interstate shipments and resulted in reduction in through rate on this commodity from Pittsburg, California to Hanford. The previous rate of $1.23 per cwt. has been lowered to $1.22 per cwt. with resultant saving of approximately $10.00 per car.

Reduced rate on liquid caustic soda moving from Henderson, Nevada to Hanford became effective April 1. The previous rate of $1.79 per cwt. has been lowered to $1.00 per cwt. with resultant saving of approximately $790.00 per car.

The work volume statistics are as follows:

Office Business	March	April
Household Goods Movements Arranged	18	24
Household Goods Movements Traced	1	3
Automobile Shipments Arranged	2	8
Automobile Shipments Traced	0	1
Rail Bills Approved	51	92
Truck Bills Approved	146	215
Express Bills Approved	79	79
Household Goods Claims Filed	22	19
Household Goods Claims Collected - Number	14	28
Household Goods Claims Collected - Amount	$221.91	$739.97
Work Orders Issued - RHG Repairs	28	74
Insurance Riders Issued	23	34
Insurance Bills Approved	82	30
Freight Claims Filed	8	5
Freight Claims Collected - Number	8	6
Freight Claims Collected - Amount	$264.62	$142.45
Requests for Billing	4	4

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Office Business (Continued)

	March	April
Rail Reservations Made	46	72
Air Reservations Made	32	61
Ticket Refund Claims Filed - Number	23	10
Ticket Refund Claims Filed - No. of Tickets	25	10
Ticket Refund Claims Collected - Number	27	20
Ticket Refund Claims Collected - Amount	$1,239.55	$997.64
Freight Shipments Traced	67	19
Express Shipments Traced	1	0
Carload Shipments Received	894	420
Carload Shipments Outbound	10	7
Hotel Reservations Made	15	31
Expense Accounts Checked	55	55
Freight Shipments Converted	866	752
Express Shipments Converted	10	21
Government Bills of Lading Accomplished	46	146
Freight Bill Pre-Audit Savings	$115.32	$487.03
Rates, Routings, Schedules Checked	963	819
Routing Instructions Issued	5	12

Household Effects

	March	April
Lots Shipped Out	18	24
Lots Pending	35	39
Automobiles Shipped Out	2	8
Household Lots Via Express	30	15
Household Lots Via L.C.L. Freight	4	2

Commodities Received - Carloads

	March	April
Aluminum Ingot and Bars	0	1
Ammonium Bicarbonate Fluoride	0	1
Ammonium Sulphate	0	1
Argon Gas	0	2
Buses	71	7
Caustic Potash	1	1
Caustic Soda	12	13
Chemicals	4	3
Chlorine	0	1
Coal	744	331
Cross Ties	0	1
Ferric Sulphate	15	6
Fire Brick	0	1
Helium	0	1
Hydrogen Peroxide	0	1
Lime	4	2
Lubricating Oil	1	1
Mattresses	0	2
Merchandise	5	11
Metal Beds	2	0
Nitrate Soda	1	0
Nitric Acid	11	12
Nitric and Sulphuric Acid	1	0
Phosphoric Acid	3	2

[redacted]

Commodities Recieved - Carloads (continued)	March	April
Salt	1	1
Sand	0	1
Soda Ash	4	2
Sodium Bichromate	3	1
Sodium Silicate	8	9
Steel Pipe	1	0
Sulphuric Acid	1	2
Wall Board	1	0
Tie Plates	0	3

5

1201285

MEDICAL DEPARTMENT

APRIL 1946

HEALTH INSTRUMENT SECTION

100 Areas

General

Graphite samples and other materials removed from the experimental holes and sections of a vertical thimble provided rather high radiation dosage-rates. The activity of gas in the Pile Buildings at the time of shutdowns has been increasing.

Work Permit Summary

Special Work Permits were processed as follows:

	March	April
100-B	414	372
100-D	335	510
100-F	329	434
Total	1078	1316

Retention Basin Effluent

The activity of water leaving the Retention Basins was as follows:

	100-B	100-D	100-F
Power level (MW)	0	250	200
Average beta dosage-rate (mrep/hr)		0.8	0.7
Average gamma dosage-rate (mr/hr)		1.6	1.8
Average total dosage-rate (mrep/hr)		2.4	2.5
Average integrated dose in 24 hrs. (mrep)		58	60
Maximum integrated dose in 24 hrs. (mrep)		62	65

The Columbia River water level has been rising, and it has now covered the shoreline springs in the 100-D and 100-F Areas. The maximum activity observed was 3×10^{-4} μc/liter. A sample taken from the 100-B Effluent Basin had 5×10^{-5} μc/liter, a level which is just barely detectable with the present sampling techniques.

Pile Buildings

A vertical rod thimble was removed from the 100-B Pile in sections which gave as much as 1800 mrep/hr at a distance of three inches. More graphite samples were removed from the 100-D Pile; radiation levels during this work were much the same as those reported last month. A thermocouple removed from the Pile gave 18,000 mrep/hr at a distance of one foot.

The amount of gas in the Pile Buildings at the time of shutdown has been increasing. Readings in the work areas have been as high as 50 mrep/hr for short periods of time. There has also been an increase in gas activity in the third safety headers following startup.

Buckets of active lead and aluminum dummy slugs have been taken to the burial grounds in each area. Some of the slugs were very active; a bucket giving a dosage-rate of 13,000 mrep/hr at a distance of one foot. As far as can be determined, no over-exposure to radiation resulted from these operations.

The number of fixed radiation monitors in use in the 100-B Area has been reduced as the Pile is being maintained in a standby condition. The integrons located near the Pile proper are being kept in service, but those in more remote sections of the building were stopped.

200 Areas - T and B Plants

General

The B Plant Canyon Building air was quite contaminated when cell blocks were lifted from an operating cell.

Survey Statistics

	March			April		
	T	B	Total	T	B	Total
Surveys for Special Work Permits	496	321	817	553	361	914
Other routine and special surveys	391	443	834	455	575	1030
Smear samples for alpha counts	884	560	1444	874	807	1681
Smear samples for beta counts	887	453	1340	992	807	1799
Air monitoring samples	378	442	820	461	456	917
Thyroid checks	344	225	569	399	239	638

Canyon Buildings

Product and fission-product contamination was introduced into the B Plant Canyon Building when the blocks were removed from Section 13 to observe the jetting operation. An air sparger and a centrifuge were also in operation part of the time. Air samples taken in the Canyon had up to $2 \times 10^{-3} \mu g$ Pu/cc, and $1.6 \times 10^{-4} \mu c$/liter of beta activity. Note: In the absence of detailed information on the composition of this activity, the tolerance concentration would be taken as $3.6 \times 10^{-5} \mu c$/liter. Two men in the crane cab were exposed to contaminated air for several hours. Urine samples from these two men had positive beta counts which indicate they may have between 0.01 and 0.5 μc in their bodies. The exact amounts retained in the body may be calculated when identification of the radioactive elements is made.

Several air samples in the operating galleries have indicated beta contamination of the air. No product has been found in any of the samples. The exact source of this contamination is not known but may be due to the suckbacks in some of the lines to the operating gallery.

Control Laboratories

Contamination and radiation hazards were at satisfactorily low levels most of the time. There were two spills involving fission products; one of which splashed on the legs of a laboratorian. After she had changed clothes and taken a shower, no contamination could be found.

Concentration Buildings

A leak in the E cell in the T Plant Concentration Building caused the spread of a large amount of product. Part of the floor in the cell was covered with paper to help control the contamination spread. The floor not covered by paper had about 200 μg Pu, so it is probable that the total amount spread around the cell is on the order of milligrams. Conditions at other times and locations were maintained under very good control.

200 Area Isolation Building

Air Monitoring

Seventy-nine long period air samples were taken, and the maximum level observed was 4×10^{-11} μg Pu/cc. Sixty-nine of the samples had less than the minimum detectable amount of 4×10^{-12} μg Pu/cc. There were 14 samples taken from the filtered hood air system, and the maximum level was 7×10^{-12} μg Pu/cc. There were 187 spot checks made and none of these had more than 10^{-11} μg Pu/cc.

Surface Contamination

There was a total of about 35 μg Pu found on the floors during the month, most of which was due to a tramp leak and to the dropping of two pipettes. About 18,000 items were checked for contamination and 518 non-regulated items were found to be contaminated. Twenty-eight of these non-regulated items had more than 0.5 μg Pu. The number of non-regulated items which are contaminated has been becoming smaller due to increased efforts and the availability of more instruments for checking for contamination.

Gamma Radiation

The maximum reading observed was 20 mr/hr on the side of a P.E. container.

300 Area

Metal Fabrication Plant

Twenty-six air samples were taken in the Press Building, and ten of these had more than 1.5×10^{-4} μg U/cc. The maximum was 3×10^{-3} μg U/cc. Ten air samples were taken near the Chip Recovery operation and two of these, both taken near the biscuit press, had more than 1.5×10^{-4} μg U/cc. The maximum was 3.3×10^{-3} μg U/cc. The operators in the Chip Recovery operation received slightly over the daily tolerance amounts of beta radiation for a period of about two weeks. After the men were rotated in their jobs, the radiation doses were then reduced to acceptable levels. Auxiliary shielding, longer handles on tools, heavier gloves, and the use of aprons, will also help reduce the hazard.

[redacted]

Separations Laboratories

There was a little work involving product solution which caused some contamination spread in one laboratory. Some high levels of contamination were found on equipment which was being checked as laboratories were being cleaned. Thirty-one air samples were taken, and all had less than 2×10^{-11} µg Pu/cc.

Special Machine Shop

Several jobs were done here on radioactive samples. The radiation levels were rather high and consequently working times were very short, only a few minutes each day. A carton of aluminum cuttings gave 2000 mrep/hr at a distance of three feet.

Plant General

Well and River Water Monitoring

Two hundred twenty-eight water samples were taken during the month. A sample from a 3000 Area well which had just been opened had 1.2×10^{-4} µc/liter. One sample from Spring 13 had 10^{-4} µc/liter. Two other samples from White Bluffs and Hanford had about 5×10^{-5} µc/liter. One sample from a Richland well had a slight alpha count, but a recheck had no positive result. The maximum on river water was 1.6×10^{-4} µc/liter on a sample taken near the Hanford Ferry.

Atmospheric Monitoring

The integrons and C Chambers indicated average dosage-rates as follows:

	Integrons (mr/24 hrs)		C Chambers (mrep/24 hrs)	
Location	March	April	March	April
100-H	0.5	0.7	0.3	0.3
100-B	0.1	0.2	0.3	0.3
100-F	0.8	0.4	0.4	0.3
200-W	0.5	1.1 **	0.4	0.4
200-E	2.5	2.1 *	0.7	0.7
Riverland	<0.1	0.6 *	—	—
Hanford	0.6	1.2 *	—	—
300 Area	0.9	0.6	0.6	0.8
Richland	<0.1 *	1.8 *	—	—
Benton City	0.4 *	0.2 *	—	—
Kennewick	0.2 *	0.4 *	—	—
Pasco	0.2	0.3	—	—

* mrep/24 hrs. because these chambers have been provided with thin windows.
** mrep/24 hrs. from 4-13-22

The constant iodine monitor in the SE corner of the 200-East Area indicated a concentration of 1.9×10^{-6} µc/liter during one entire 8-hour shift. Positive readings up to about 4×10^{-7} µc/liter were detected in the 300 and 700 Areas and in Benton City.

Vegetation Contamination

The contamination levels have increased in the vicinity of the 200 Areas. The maximum readings were 0.5 mrep/hr, 1000 feet East of the T Plant stack, and 0.2 mrep/hr, 1000 feet SE of the B Plant stack. The following average values of vegetation contamination were observed:

Location	μc/kg March	April
North of 200 Areas	0.39	0.23
Hanford	0.43	0.73
Near 200 Areas	1.9	3.86
South of 200 Areas	0.38	0.32
Richland	0.24	0.14
Benton City	0.27	0.20
Brunswick	0.21	0.24
Ritzville	0.14	0.17
Lewiston	<0.04	—

Positive readings up to 0.30 μc/kg were also obtained on the Ritzville to Kilgenburg road. Values up to 0.14 μc/kg were obtained on the road from Spokane to Grand Coulee; the maximum being about 30 miles from Spokane.

Laundry, Decontamination and Hand Counting

49,160 items were monitored in the Plant Laundry. This included 13,018 coveralls, 14,590 gloves, and 10,585 overshoes.

19,606 alpha hand counts and 24,129 beta hand counts were recorded. About 0.8% of the alpha counts and 0.6% of the beta counts were above the warning limits.

Calibration Service

Radium calibrations were:

Type	Instrument	Number of Calibrations March	April
Stationary:	Integron	395	404
	RM & GE Chamber	193	218
	Total	588 *	622 **
Portable:	Beckman Survey meter	164	193
	Lauritsen Electroscope	66	84
	Victoreen survey meter	123	140
	GE survey meter	34	44
	Miscellaneous	11	30
	Total	398	491
Personnel Meters:	Pencils	6024	7490
	Badges	960	960
	Total	6984	8550
Total Radium calibrations		7970	9663

* 350 furnished by Area M.I.
** 434 furnished by Area M.I.

1201290

X-ray and Intermediate energy gamma and beta calibrations:

Type	Instrument	Number of Calibrations March	April
Portable Instruments		2	6
Pencils		7592	6803
Miscellaneous Film		989	989
	Total	8583	7792
Grand Total		14,553	17,455

Miscellaneous

Two desert plants were put in a solution containing I^{131} for about one week. The outer stem tissues concentrated the activity by about a factor of ten. Plants exposed to iodine vapors in the laboratory showed no evidence of the absorption of iodine into plant tissue or sap within 48 hours after the exposure. Several animals which were killed on the roads of the Plant were checked for iodine. A pheasant found near 100-D Area had no measurable activity. Two rabbits had slight positive counts in the neck region.

Personnel Meters

Pencils

Summarized results by Areas were:

(MAM)	100-B	100-D	100-F	200	200-W	300	Total
Total Pencils read:	7,353	10,557	11,736	28,638	31,790	11,397	102,571
Number of Single readings: (100 to 200 mr)	25	33	33	109	167	45	412
Paired Readings: (100 to 200 mr)	0	2	1	3	5	1	12
Number of Single readings: (over 200 mr)	20	63	56	157	233	87	616
Number of Paired readings: (over 200 mr)	0	0	1	1	4	0	6

Badges

Total badges processed:	3,230	3,161	3,417	4,889	5,033	2,615	22,345
Number of readings: (100 to 300 mrep)	0	0	0	8	26	132	166
Number of readings: (300 to 600 mrep)	0	0	0	0	0	25	25
Number of readings: (600 to 900 mrep)	0	0	0	0	0	3	3
Number of film packets lost in processing:	1	0	3	3	5	0	12

None of the high pencil readings were confirmed by badge readings. The three high badge readings for the 300 Area represented beta-ray exposures from a condition which has since been corrected, as explained on Page 4.

PLANT MEDICAL SECTION

Physical Examinations	March	April	Year To Date
Pre-employment	33	24	264
Annual	804	359	1045
Sub-contractor (Food Handlers, etc.)	34	34	160
Rechecks	123	160	565
Interval Rechecks (Area)	949	1043	4150
Terminations and Transfers	90	164	411
Army and Government	43	52	140
Assist to Clinic, A & H Insurance, etc.	6	8	26
Total	1582	1844	6761

Laboratory Examinations

Clinic Laboratory

Pre-employment, terminations, transfers	945	1100	4487
Annual	1287	2341	6799
Rechecks (Area)	5001	5593	21529
First Aid	48	43	175
Plant Visitors	53	64	249
Clinic	2528	2155	9320
Hospital	1865	1829	7618
Public Health(Including Food Handlers)	103	263	588
Military	40	171	303
Total	11870	13559	51069

X-ray

Pre-employment, terminations, transfers	138	199	678
Annual	223	396	1141
First Aid	70	72	277
Clinic	258	246	1007
Hospital	107	78	387
Public Health(Including Food Handlers)	31	38	206
Military	13	28	65
Total	840	1057	3761

Electrocardiographs

Industrial	98	184	528
Clinic	9	15	43
Hospital	13	18	51
Military	2	5	7
Total	122	222	629

Allergy

Skin tests	4	2	29

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First Aid Treatments	March	April	Year To Date
Occupational Treatments	264	353	1213
Occupational Retreatments	789	817	3665
Non-occupational(Welfare)Treatments	3015	3209	13764
Total	4068	4379	18642

Absentee Investigation Report

Total number calls requested	66	81	408
Total number calls made	66	81	408
Number absent due to illness in family	4	4	26
Number not at home when call was made	5	6	28

General

A new Health Activities committee has been appointed and met for the first time April 25, 1946. The health topic for the month of April was Mosquito Control. A bulletin, "Winged Menace", explaining the control program was given plant-wide distribution.

Because of the outbreak of smallpox in the Seattle area, over 90% of the employees have been vaccinated during the month. Vaccinations were made available in all operating areas.

There has been, thus far, no evidence of occupational disease due to special or other chemical hazards of operation.

VILLAGE MEDICAL SERVICE

Clinic

Treatment Summary	Men	Women	Children	March	April	Year To Date
First Visits	230	210	158	596	598	2563
Retreatments	675	1565	820	2632	3060	11091
			Total	3228	3658	13654

Seen in Well-Baby Clinic	199	268	860

Immunizations

Smallpox	24	11321	11408
Diphtheria	11	36	99
Whooping Cough	14	37	105
Schick Test	13	10	37
Tetanus	19	39	124
Total	81	11443	11773

Clinic Visits

Medical	324	379	2301
Pediatrics	354	317	2260
Surgical	384	722	2411
Gynecologic	245	279	1152
Obstetric (New)	45	33	187

	March	April	Year To Date
Obstetric (Bedheck)	432	478	1636
Venereal Disease	82	85	331
Ear, Nose, and Throat	257	89	1013
Eye	270	236	985
Visits handled by nurses (hypodermics, dressings, etc)	317	368	1212
Night clinic visits		146	146
Total	3310	3532	13854

Home Visits

Doctors	127	218	712
Nurses	39	77	279
Total	166	295	991

Dental Health Center

Patients treated	1766	1864	6494

Endloe Memorial Section

General

There was an increase of 3.2 in the daily census of this month and 277 more patient days. There were also more deliveries this month than last. There was a slight decrease in the amount of surgery done.

Census	March	April	Year To Date
Admissions	314	322	1298
Discharges:			
Surgical	74	83	298
Medical	40	48	179
Obstetric & Gynecologic	63	60	249
Eye, Ear, Nose & Throat	38	45	218
Pediatrics:			
Children	33	38	198
Newborn	20	30	126
Total	310	304	1268
Patient Days	1641	1918	7898
Average Stay	5.2	6.3	6.4
Average Daily Census	58.6	61.3	65.8
Discharged against advice	1	2	3
One-day cases	64	61	174

Operations

Transfusions	34	14	90
Eye, Ear, Nose and Throat	43	27	135
Dental	2	2	7
Casts	12	9	47
Minors	31	31	354
Majors	22	31	105

9 1201294

Medical Department

	March	April	Year To Date
Deaths	2	2	10
Deliveries	21	39	127
Stillborns	1	0	2
Physiotherapy Treatments			
Clinic	50	145	284
Hospital	16	37	127
Army	26	30	71
Industrial:			
Plant	73	79	343
Personal	43	24	225
Total	208	315	1050
Pharmacy			
Number of prescriptions filled	1401	1577	6075
Patient Meals			
Regulars	1694	2169	8229
Lights	268	292	1413
Softs	860	1369	4545
Surgical Liquids	109	120	517
Tonsils and Adenoids	154	104	492
Specials	903	381	2224
Liquids	338	282	1394
Total	3926	4717	18814
Cafeteria Meals			
Noon	1291	1322	6384
Nights	214	175	1073
Total	1505	1497	7457
Nursing Personnel			
First Aid Nurses	24	24	
Clinic Nurses	11	11	
Public Health Nurses	7	7	
Hospital General Nurses	54	57	
Aides and Orderlies	42	41	
Total	138	140	

Public Health Section

General

The recent serious epidemic of smallpox in Seattle prompted us to carry on a very active and widespread vaccination campaign throughout the schools, working areas and the city of Richland. To date 11,321 persons have been vaccinated at one of the above locations. In addition, a number have been vaccinated elsewhere and many school children were done last fall and have

1201295

not as yet been revaccinated. No cases of the disease have developed in Richland or vicinity to date.

There has been a slight increase in the reported number of cases of measles and scarlet fever.

Communicable Diseases Reported

	March	April	Year To Date
Diphtheria	0	0	0
Chickenpox	16	8	62
German Measles	3	9	15
Measles	20	38	69
Mumps	1	13	16
Scarlet Fever	2	6	8
Pinkeye	1	1	3
Influenza	8	4	115
Impetigo	4	2	15
Ringworm	5	6	25
Scabies	5	7	21
Vincent's Infection	10	2	49
Syphilis	0	3	4
Gonorrhea	4	11	19
Tuberculosis	0	1	1
Total	79	111	422

Administration

Newspaper articles	2	5	11
Committee meetings	1	1	4
Attendance	17	15	58
Staff meetings	3	0	9
Lectures and talks	6	5	25
Attendance	130	120	499
Sanitation Inspections	180	163	568

With the advent of the Mosquito Control crew the first of the month, considerable time has been spent in organizing their activities. Larvicide control routes have been outlined and all areas accessible to the ground equipment have been sprayed twice with diesel oil. In addition, approximately 200 man-hours have been spent in clearing and burning accumulations from various drainage ditches in Richland which are conducive to mosquito breeding. Swamps and bodies of water within the sphere of control and inaccessible to the ground equipment have all been sprayed by plane, using a 1% DDT in oil. In collaboration with the health educator, the picture entitled WINGED SCOURGE is being shown to local service clubs and schools, followed by a brief summary of the mosquito abatement program in Richland.

Milk control activity has essentially been limited to inspection of producer farms during the past month, inasmuch as warmer weather is approaching and milk production is on the increase. Four new producers have been approved for shipping of milk to the pasteurizing plant.

The food-handling establishment sanitation is being maintained on a par with the standard of the past few months. One of the facilities which has experienced difficulty in maintaining standards comparable to the other establishments has made several improvements. The majority of the operators have completed the painting of their screens with a 5% DDT solution which will be a definite aid in fly and mosquito control.

The number of dog bite cases reported averages approximately two a week. None of the animals involved have demonstrated rabies to this date.

The sanitary aspect of the schools has been generally improved with the exception of one school. A program has been instigated by the Central Safety Council in which each school is graded according to fire, safety and public health standards. The school compiling the highest rating each month is awarded a flag of merit. Possibly this idea will stimulate a sense of competition among the schools and thereby generally improve them in all respects.

The sewage plant continues to be an efficient operation from a bacteriological standpoint. All samples analyzed indicated an acceptable effluent insofar as pollution is concerned.

Bacteriology Laboratory	March	April	Year To Date
G. C. Smear	57	47	215
G. C. Culture	52	39	199
Fungus Culture	12	15	43
Vincent's Examinations	63	25	128
Trichomonas's Examinations	30	26	131
Sputum for T. B. organisms	3	6	44
Bacterial Cultures	34	40	140
Examinations for Parasites	24	86	130
Throat Smear and Cultures	11	30	80
Blood Cultures	1	6	10
Stool Cultures	3	5	17
Eye Smears	5	5	16
Examinations for spermatozoa	0	2	6
Quantitative determination of blood alcohol	0	2	4
Type for pneumococcus	0	0	1
Treated water samples	73	70	306
Untreated (raw water) samples	85	90	346
Milk Samples (Milk, cream, ice cream)	51	76	307
Sewage Samples	8	12	38
Examination of Nasal Smears for Eosinophiles	3	3	6
Dark field examinations	0	3	3
Total	515	588	2170

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ACCOUNTING DEPARTMENT

APRIL 1946

GENERAL

The Advance Account remains at $6,000,000.00.

The average hourly rate for the Monthly and Weekly Salary Rolls was $2.33 and $1.60, respectively.

ACCOUNTING

Through April 30th, billings totaling $364,372,206.48, representing 10,416 public vouchers (Form 1034) have been submitted to the Government, of which the General Accounting Office has approved 10,219, with a total value of $362,416,320.71.

CLERICAL

At month-end, all but three of the Accounting personnel assigned to the 100-B Area had been reassigned elsewhere.

The Mail Room reduced their personnel by one employee during the month as a result of the curtailment of correspondence in connection with the Recruitment Advance program.

Beginning with the payroll for the period ending April 7, 1946, the Time Office started preparation of an abstracted payroll for all personnel charging 100% of their time to telephone operation. This abstracted payroll was requested by the Government so that they can bill the Signal Corps rather than the Corps of Engineers for the cost of telephone operation and maintenance.

New catalogs of captions 903-9 (tools), 903-3 (pipe fitting valves and plumbing supplies), 903-26 (radio parts), and 903-6 (electrical supplies) were prepared and issued by Stores during the month.

Material Control concluded during the month to restock locomotive parts in Stores. Parts to be restocked will be included in caption 903-11 (automotive and bicycle parts). Building 1410 (a small hutment), was assigned to Stores by the Transportation Department to provide the additional warehousing space necessary for storage of the locomotive parts.

Withdrawal of material on 903-6 (electrical supplies) from the Area Storerooms was completed during the month. On April 25th, all Area Storerooms were closed and personnel reassigned in Richland.

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STATISTICS

Accounting (calendar month basis)

	March		April	
	No.	Amount	No.	Amount
P.O.'s Received	1,219	—	1,083	—
MR's Received	2,614	—	2,795	—
APV's Entered	2,055	$ 1,707,181.14	2,388	$ 747,154.20
Checks Issued	1,615	1,814,480.29	1,784	980,870.14
Cancelled	63	—	92	—
PR Transfers	5	1,073,739.39	4	1,001,577.00
EB's Entered	387	3,432.76	317	5,125.37
1034's Issued	219	1,665,174.66	320	2,570,450.73
Reimbursed	240	2,523,247.05	289	1,282,329.48
Non-Payment Credits	0	—	0	—
War Bonds Issued (Maturity Value)	4,346	160,375.00	3,668	135,250.00

Purchasing

	March	April
PBX Purchase Orders Placed	1,237	964
Orders Placed by Government	141	49
Requisitions Received	1,798	1,486
Requisitions Placed	1,993	1,583
Requisitions on Hand (Unplaced at month-end)	560	463

Stores

Returnable Containers Received	506	3,639
Returnable Containers Returned	1,025	748
Balance on Hand (at month-end)	1,233	4,124
Shipments Made (CROM)	45	37
Receiving Reports Issued	2,426	2,308
Material Exception Reports Issued	71	94
Items Set-up in Stores Stock (at month-end)	41,415	41,414
Excess Material Shipped to Date	$ 2,488,257.06	$ 2,873,581.35
Value of Excess Material Inventory	1,431,465.17	1,499,044.21
Stores Disbursements	96,705.08	77,378.49
Spare Parts Disbursements	11,754.16	5,793.10
Value of Stores Stock (at calendar month-end)	1,064,087.22	1,031,323.29
Value of Spare Parts (at calendar month-end)	1,036,231.37	1,111,473.07
Value of Special Process Materials (at calendar month-end)	207,600.66	207,600.66

Essential Materials

Value of Materials Consumed during Month	$ 500,519.50	$ 387,818.71
Value of Materials in Stock (at calendar month-end)	1,100,270.29	1,021,768.09

Miscellaneous Clerical

Duplicating & Printing Orders Received	5,462	5,054
Duplicating & Printing Orders Completed	5,460	5,048
Mail Handled (Incoming)	26,617	23,230

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PROJECT AND RELATED PERSONNEL

	3/25/46		4/25/46	
Government Employees				
Civilian Personnel - Corps of Engineers	232		241	
" " - GAO	5		5	
Commissioned Officers (exclusive of MP's and MI)	15		17	
MP Company (including C.O.)	265		223	
MI Detachment (including C.O.)	14		25	
Special Detachments	7		5	
Military Personnel (other than above)	15		14	
Total		553		530
Prison Industries (total)		252		239
Mohawk Wrecking and Lumber Company . .		314		332
Richland Village Personnel				
Facilities	593		593	
Schools and Churches	182		177	
Total		775		770
Morrison-Knudsen Personnel		89		94
Du Pont Personnel		4662		4518
GRAND TOTALS		6648		6483