HW-7-45425

IN-05257

Form: MII-110
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HANFORD ENGINEER WORKS

727825

DECLASSIFIED
WITH DELETIONS

PROJECT 9536

FILE _____

Route List

1.
2.
3.
4.
5.

DATE August 12, 1946

SUBJECT Monthly Report - July 1946

To R. M. Evans

FROM D. A. Miller

COPY NO. 1

REPOSITORY PNL

COLLECTION Atmospheric Releases

BOX No. N/A

FOLDER N/A

BEFORE READING THIS DOCUMENT, SIGN AND DATE BELOW:

F H Clarke 13 Aug
W H Parker 15 Aug 46
W Wantland 21 Aug 46
Sheean Hoppe 22 Aug 46
N. D. Stukus 23 Aug 46

1224387

Copy #3 - The Area Engineer

August 12, 1946

This Document consists of
88 Pages No. 1

HANFORD ENGINEER WORKS

MONTHLY REPORT

JULY 1946

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GENERAL SUMMARY

Operations in the 100 D and 100 F Areas were uneventful. Power levels were maintained at 250 and 200 MW respectively. Scheduled outage was taken in each area for metal discharge and for routine maintenance. Operating time efficiency was 90.0%.

The 200 E Area operated on a standard cycle throughout the month while the 200 W Area was scheduled on a reduced basis. No unusual difficulties were encountered during the month. Fifty-one charges were started through the Canyon Buildings and forty-four charges were delivered from the Isolation Building.

Safety performance was quite satisfactory and the sixth consecutive month was completed without a time losing injury. Interest and morale continue high. At month end 196 safe days had been accumulated with 4,700,308 exposure man hours.

Progress was made pointing toward the transfer of the operating contract to the General Electric Company on September 1, 1946. Preliminary organization charts for the various departments have been prepared and issued by the General Electric Company. Termination notices for both monthly and weekly employes have been distributed and a high percentage returned. Transfer schedules for personnel leaving the project have been arranged. Work in connection with contract assignments both with employes and facility operators is under way.

There was an appreciable increase in terminations during the month with a total of eighty separated from the roll. Plant force at month end was 4,270.

STAFF

MANAGER	D. A. MILLER
ASSISTANT MANAGER	T. N. STAPLETON
PRODUCTION SUPERINTENDENT	M. H. SMITH
TECHNICAL SUPERINTENDENT	W. C. KAY
WORKS ENGINEER	A. J. SCHWERTFEGER
P DEPARTMENT SUPERINTENDENT	C. N. GROSS
S DEPARTMENT SUPERINTENDENT	F. B. VAUGHAN
POWER SUPERINTENDENT	F. M. ACKER
MAINTENANCE SUPERINTENDENT	L. G. AHRENS
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 6/25/46	NON-EXEMPT 7/25/46	EXEMPT 6/25/46	EXEMPT 7/25/46	TOTAL 6/25/46	TOTAL 7/25/46
Management	-	-	4	4	4	4
P	183	183	48	46	231	229
S	264	261	59	58	323	319
Technical	135	130	75	74	210	204
Power	376	372	90	87	466	459
Maintenance	417	417	84	86	501	503
Electrical	161	158	36	36	197	194
Instrument	104	102	27	27	131	129
Protection	372	368	72	73	444	441
Service	193	195	65	65	258	260
Transportation	501	497	60	60	561	557
Medical	260	259	100	98	360	357
Accounting	600	597	17	17	617	614
TOTAL	3566	3539	737	731	4303	4270

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	5	13	12	-	-	12	-	4	46
Operators	12	37	42	-	-	92	-	-	183
Total	17	50	54	-	-	104	-	4	229
S DEPARTMENT									
Supervisors	-	-	-	20	30	-	1	3	54
Operators	-	-	-	107	141	-	13	-	261
Others	-	-	-	-	-	-	2	2	4
Total	-	-	-	127	171	-	16	5	319
TECHNICAL DEPARTMENT									
Supervisors	-	5	3	4	10	7	-	4	33
Chemists, Engineers & Physicists	3	9	3	10	22	24	-	8	79
Analytical Personnel	3	15	7	21	22	12	-	-	80
Others	1	-	-	4	5	2	-	-	12
Total	7	29	13	39	59	45	-	12	204
POWER DEPARTMENT									
Supervisors	12	25	23	6	9	-	3	9	87
Operators	37	102	101	25	31	10	-	36	342
Others	3	6	6	3	5	3	-	4	30
Total	52	133	130	34	45	13	3	49	459
MAINTENANCE DEPARTMENT									
Supervisors	1	6	15	8	13	4	-	20	67
Engineers	1	-	-	-	4	-	-	14	19
Mechanics	10	22	66	38	64	25	-	148	373
Others	1	1	1	5	7	1	-	28	44
Total	13	29	82	51	88	30	-	210	503

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	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	1	3	2	3	4	1	12	6	32
Electricians	3	16	12	16	12	7	51	26	143
Others	1	3	1	1	3	-	9	1	19
Total	5	22	15	20	19	8	72	33	194
INSTRUMENT DEPARTMENT									
Supervisors	-	3	5	3	3	4	-	4	22
Engineers	-	-	1	-	-	-	-	4	5
Mechanics	4	16	16	16	16	18	-	6	92
Others	-	1	1	-	-	3	-	5	10
Total	4	20	23	19	19	25	-	19	129
PROTECTION DEPARTMENT									
Supervisors	6	6	6	10	7	6	1	31	73
Patrolmen	22	50	49	81	70	24	8	58	362
Others	-	-	-	-	-	-	-	6	6
Total	28	56	55	91	77	30	9	95	441
SERVICE DEPARTMENT									
Supervisors	4	-	-	-	1	4	6	44	59
Firemen	14	-	-	-	-	10	-	50	74
Laundry Operators	-	-	-	-	1	-	-	1	2
Inspectors	4	4	4	4	4	-	2	1	23
Janitors	1	4	4	6	9	6	3	35	68
Others	-	-	-	-	10	1	5	18	34
Total	23	8	8	10	25	21	16	149	260
TRANSPORTATION DEPARTMENT									
Supervisors	-	3	2	-	3	1	8	43	60
Drivers (Based on Areas Served)	7	23	24	30	36	21	30	35	206
Mechanics	-	1	1	1	2	-	8	50	63
Trainmen	-	4	4	3	4	-	1	1	17
Laborers	-	4	4	4	5	4	-	35	56
Others	4	12	12	7	14	4	11	91	155
Total	11	47	47	45	64	30	58	255	557

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	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	-	-	-	-	-	-	-	5	5
Nurses	←	4	→	3	3	1	8	74	93
H.I. Specialists	-	8	9	30	39	47	4	9	146
Technicians	-	2	→	2	→	2	-	20	26
Others	-	-	-	-	-	-	-	69	69
Total	-	14	9	35	42	50	19	188	357
ACCOUNTING DEPARTMENT									
Supervisors	-	-	-	-	-	-	-	17	17
Clerks	1	9	11	7	17	11	-	253	309
Telephone & Teletype Operators	-	-	-	4	-	-	-	34	38
Others	1	2	-	3	4	10	-	230	250
Total	2	11	11	14	21	21	-	534	614
MANAGEMENT	-	-	-	-	-	-	-	4	4
GRAND TOTALS	162	419	447	485	630	377	193	1557	4270

7/25/46

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EXEMPT PERSONNEL ARRIVALS AND DEPARTURES - JULY 1946

ARRIVALS

Name	Department	Physical Arrival	Origin
A. T. Strand	Technical	June 26	Re-instate - Military Service
T. G. LaFollette	Maintenance	" 27	Trans.-Engr., Wilmington
R. J. Bock	Protection	July 17	Re-instate - Military Service

DEPARTURES

Name	Department	Physical Departure	Reason
E. F. Miller	P	July 22	Trans.-Ammonia, Orange, Texas
A. P. Boston	S	" 18	Trans.-Ammonia, Charleston, W. Va.
J. E. Dunbar	Technical	" 16	Trans.-Wilmington
H. M. Cleveland	Power	" 1	Completion of Assignment
H. S. Livingston	"	" 9	Trans.-Rayon, Old Hickory, Tenn.
F. M. Acker	"	" 22	Trans.-Rayon, Buffalo, N.Y.
Ruth G. Brooks, R.N.	Medical	" 2	Completion of Assignment
O. Stevlingson, D.D.S.	"	" 16	Completion of Assignment
J. R. Thomas, D.D.S.	"	" 22	Resignation
D. A. Hauser	Accounting	" 16	Trans.-Engr.,Const., Carney's Point, N.J.

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HIJ

	HI	HJ	HK	HL
JC	1,325	90	33,534	2,311
JD	-	-	77,857	1,485
JE	1,325	90	111,391	3,796
JF	1,458	94	31,401	1,989
JG	21,606	59	615,358	2,340
JH	1,623	6	237,077	923
JI	-	-	16,514	66
JJ	17,095	67	800,534	3,141
JK	19,593	77	562,196	2,206
JL	-	12	-	584
JM	-	10	-	533
JN	-	1	-	59
JO	-	2	-	55
JP	-	-	-	570
JQ	-	-	-	499
JR	-	-	-	57
JS	-	-	-	44
JT	-	14	-	-
JU	-	33	-	-
JV	-	3	-	-
JW	-	11	-	-
JX	-	-	153,468	601.7
JY	8,256	32.4	195,874	768.8
JZ	6,656	26.1	163,213	639.9
KA	14,912	58.5	512,555	2,010.4
KB	-	-	97,467	382.6
KC	8,452	33.2	131,846	518.3
KD	6,761	26.5	98,828	387.5
KE	15,213	59.7	328,997	1,288.4
KF	13,125	51.5	161,434	633.6
KG	4,200	16.5	140,317	550.8
KH	-	-	-	-
KI	17,325	68.0	301,751	1,184.4
KJ	13,675	53.7	157,643(a)	618.8(b)
KK	-	-	95,816	376.1
KL	4,457	17.5	41,395	162.4
KM	18,132	71.2	294,854	1,157.3

	HM	HN	HO	HP
KN	1,998	137	1,865	125
KO	558	36	879	56
KP	46,093	122	51,442	117
KQ	15,214	60	11,163	44
KR	26,589	104	31,188	122
KS	19,993	79	19,839	79
KT	-	3	-	5
KU	-	27	-	27
KV	56,033	220	56,033	220
KW	64,224	252	64,028	251
KX	64,490	253	64,385	253
KY	184,747	725	184,446	724
KZ	30,373	119.2	28,261	110.9
LA	-	30.2	-	27.1
LB	-	1,086.1	-	1,157.3

[redacted]

	HQ	HR
LC	-	98,107
LD	6,597	134,009
LE	5,454	109,735
LF	12,051	341,851
LG	-	78,027
LH	6,815	108,348
LI	5,422	82,870
LJ	12,237	269,245

	HS	HT	HU	HV	HW
LK	10,660,000	3,445,000	-	14,105,000	246,482,000
LL	9,841,000	3,432,000	-	13,273,000	229,111,000
LM	534,000	243,000	-	777,000	14,650,000
LN	8,503,000	3,976,000	-	12,479,000	217,100,000
LO	-	471,000	-	471,000	8,715,000
LP	8,503,000	3,505,000	-	12,008,000	208,385,000
LQ	5,690,000	3,811,000	-	9,501,000	-
LR	-	-	-	2,679,000	-
LS	-	-	-	11,150,000	208,125,160

(a) Includes 59,141 units at C
(b) Includes 232.2 units at C

P DEPARTMENT

JULY 1946

PILE SUMMARY

	Pile B	Pile D	Pile F
Time Operated (%)	–	88.7	91.2
*Power Level (MW)	–	250	200
*Inlet Water Temperature (°C)	19.9	14.7	15.7
*Outlet Water Temperature (°C) (Maximum °C, 10 tubes, 0.240 zone)	19.9	50.5	45.0
Number of Scrams	–	0	0
Number of Purges	0	0	0
Helium Consumption (cu. ft.)	23,669	58,668	40,635
Metal Discharged (tons)	–	33.2	26.4
Inhours Gained (this month)	–	-8	12
*Inhours Poisoned	–	322	327
*Inhours in Rods	–	38	69

* Month-end figures

PILE BUILDINGS

General

The D and F Piles were operated at a nominal power level of 250 MW and 200 MW respectively throughout the month except for scheduled outages to discharge metal. There were no scrams of either unit this month. The B Pile was maintained in standby condition with a water flow of 4,000 g.p.m. through the month. Two additional units of refrigeration were placed in operation at D Pile making a total of six units at D Pile and four units at F Pile.

The table below lists the outages at D and F Piles:

	Outages			
	Scheduled			Length of
Date of Outage	Metal Discharge	Other Causes	Unscheduled	Outage (Hrs.)
6-26-46	F			12.3
7-2-46	D			24.2
7-3-46	F			11.5
7-9-46	D			18.5
7-10-46	F			11.7
7-16-46	D			19.7
7-17-46	F			14.0
7-23-46	D			18.9
7-24-46	F			14.0

Operating Experience

Special Requests No. 19 and No. 25-1 were loaded into tubes No. 1666-D and No. 2878-D respectively on July 2. Special Request No. 15-2 was loaded into

[redacted]

tube No. 2682-D, replacing a permanent poison column, on July 16. Special Request No. 13-1 was loaded into tubes No. 1474-F and No. 3274-F, and Special Request No. 3-1 was loaded into tube No. 2082-F, replacing permanent poison columns, on July 24.

Cast Metal slugs were discharged from tubes No. 2063-D on July 9, and 2363-F on July 3, and were replaced with regular metal.

Bismuth slugs were discharged from tubes No. 2685-F and No. 3574-F on June 26 and from tubes No. 1274-F and No. 2085-F on July 24, and were replaced with the same material.

High tank tests were made at B Pile on July 5 and July 23. Cross header screens were replaced at B Pile as a precautionary measure, since at low flow and pressure, screen plugging cannot be detected with the regular instruments. Similar tests were made at D Pile on July 2 and July 9. High tanks were tested on July 17 at F Pile. All tests were satisfactory.

On July 2, at the D Pile, subsequent to the relocation of the top limit switch of the discharge elevator, two metal pieces and several dummies were deposited on what was formerly the Aimer track on the elevator. Eight hours were consumed in their removal, consequently fourteen tubes, scheduled for discharge, had to be rescheduled for the following week.

On July 8 at B Pile steam pressure was lost for a period of three hours. During this period water pressure was maintained with the electric pumps.

On July 1, at D Pile, the power level was reduced to 225 MW, to measure power coefficient and graphite relaxation period. On July 24 at B Pile the monthly reactivity test with foil exposure was made. Also on July 24 at F Pile the "B" test hole was loaded with aluminum test samples to be subjected to atmospheres of helium, carbon dioxide, dry and humid air.

Mechanical Performance

At D Pile after the July 16 shutdown the "B" test hole assembly was found to be leaking water. On July 23 it was found that the aluminum head had developed several sizeable inlet water leaks. Since aluminum welding was found to be ineffective, the pile was started up with the assembly still leaking. Further efforts will be made to repair these leaks at a future shut-down.

A downcomer inspection at D Pile indicated no defects.

The exit flange on tube No. 2478-D was examined for corrosion by the Technical Department on July 23. While the flange showed evidence of slight pitting, no trouble is expected, since the extent of corrosion is quite small.

During the start-up of July 9 at D Pile the electrical overload heater on vertical rod #33 cut out several times. Later shut-down tests indicated that the rod was operating normally.

On July 23 tubes No. 2362-D, 2385-D, 3474-D, 1474-D, 3959-D and 4088-D were subjected, fully assembled, to push-pull tests, to measure the clearance

between the gun barrels and the graphite. Some evidence of binding was experienced on 3474-D. A complete report will be made by the Technical Department on these tests.

In continuance of the graphite expansion program tube No. 4674-D was measured for vertical bowing on July 2. On July 23 a transit survey was made of the D Pile rear face shield, and on July 24 of the front face and far side.

Regular monthly motion indicator measurements were made at D Pile on July 2, and at F Pile on July 3.

Gas Purification

The level of the oil seals in the low pressure circulating system at D Pile was adjusted to 16" and 6" on pressure and vacuum respectively on July 2 and July 9. The same adjustment was made at F Pile on July 3 and July 10. In the process of adjustment of the vacuum seal at D Pile 20,000 cu. ft. of gas was vented to the vent stack, when an attempt was made to use an air pump to remove oil from the seal.

On July 15, 16, 17 and 18 the circulating blowers and the drier units were taken out of service at B Pile for a period of 40 and 64 hours respectively for preventive maintenance. Work done consisted of repair of leaks in steam lines and electrical repairs to the drier instrumentation.

Special Hazards

As a result of the trapping of metal and dummy pieces on the discharge elevator at D Pile on July 2, an exposure hazard was experienced in their removal. The removal of these pieces was effected with a 40 mr. as indicated by personnel monitoring instruments.

New wooden containers for the bismuth shipping casks, when returned by the customer were found to be grossly contaminated. As yet no effective method of decontamination has been developed and new containers are being used for future shipments. The customer has been advised of the contamination.

Three graphite capsules were successfully removed from the composite slugs at B Pile storage basin. Even though it will be necessary to separate more of these slugs in the future, preliminary studies for the purpose of determining methods of decontamination of B Pile storage basin are being carried out. The level was lowered two feet on July 18 and smear samples taken from the walls. These smears, in conjunction with smears taken from bucket yokes on July 8, will form a basis for estimation of the amount and disposition of the contamination.

On July 2, the man hole cover was removed from the vacuum seal tank in the low pressure gas circulating system at D Pile, in an attempt to pump out the oil seal. In the process a large quantity of active gas was purged into the pipe tunnel and seal tank room. A maximum reading of 20 mr/hr. was measured at the door of the seal tank room by use of a Beckman instrument, by members of the H.I. Section.

[redacted]

Fish Laboratory

The last series of data was taken from the chinook salmon fingerlings on July 3, 1946. A few of the fish from each dilution level were preserved for possible future reference, several more were reserved for activity monitoring by the H.I. Section and the remainder, which amounted to 5,832 fish, were liberated into the Columbia River near the 100-F Area outfall.

The general results at the end of the experimental period were much the same as indicated in last month's report. There was little if any adverse effect of the area effluent water on young salmon if it was diluted with fifty or more parts of river water. Very definite adverse effects were apparent where the area effluent water was diluted with ten or fewer parts of river water. In undiluted area effluent water the survival and growth of the young salmon was very poor. Comprehensive reports on this and other studies are being prepared.

During the month a group of chinook salmon fingerlings were exposed to undiluted area effluent water for a period of eleven days, then returned to straight river water. The rate of activity decay in these fish is being studied by the H.I. Section.

The studies on the activity of fish in the Columbia and Yakima Rivers is being continued. During the month fish captured at the 100-F Area, Hanford, the 300 Area and above the Richland Irrigation Dam on the Yakima River were monitored by the H.I. Section of the Medical Department.

The principal activities at the Fish Laboratory are now the preparation of final reports and the revamping of the building for future studies.

300 AREA — METAL FABRICATION

Extrusion, Outgassing, Machining, and Chip Recovery

Extrusion, Machining, and Combined Yield were as follows:

	% Yield (Regular)			% Yield (SX Material)		
	June	July	To Date 1946	June	July	To Date 1946
Extrusion	93.8	92.7	92.4	93.4	0.0*	93.4
Machining	81.0	81.8	79.0	71.5	71.9	71.1
Combined	76.0	75.8	73.0	66.8	67.1	66.4

* None extruded during July.

Extrusion ran 4 shifts this period.

The machining of all 930 extruded SX rods was completed July 12, 1946, resulting in 32,162 accepted finished pieces. All lathes have been converted back for machining regular material.

A total of 130 pounds (six rods) of myrnalloy were machined, resulting in 44 finished slugs, 43 of which passed satisfactory tests.

The batch type oxide furnace has burned 18,943 pounds of D-6 to date.

The Chip Recovery Yield was as follows:

% Yield		
June	July	To Date 1946
95.9	95.1	92.9

The Chip Recovery process was operated eleven days this period.

Canning Operation

Metal Slugs — Type canned and yields obtained were as follows:

	% Canned		% Yield	
	July	To Date 1946	July	To Date 1946
New Machined — A's	0.0	10.0	0.0	78.7
New Machined — A's (Cast)	0.0	0.8	0.0	78.8
New Machined — MZ's	100.0	72.2	91.2	85.4
Recovered — Z's	0.0	9.5	0.0	86.0
Recovered — X's	0.0	7.5	0.0	90.0
Total	100.0	100.0	91.2	85.1

197 bismuth slugs, 43 myrnalloy slugs, 36 pieces of R-15-2, 69 pieces of R-13-1, 60 pieces of R-13-2, and 6 papooses were canned this period.

Canning rejects, by cause, were:

	% of Total Canned		
	June	July	To Date 1946
Non-seating	1.2	2.0	2.3
Wrinkled Cans	2.3	1.3	2.0
Marred Surface	2.0	2.7	3.7
Al Si on Outside of Can	.2	.3	0.3
Air Pockets	.1	.1	0.1
Frost Test Rejects	1.6	1.3	1.4
Warp	.3	.3	0.2
Bad Weld	.3	.3	0.4
Miscellaneous Causes	.4	.5	4.5
	8.4	8.8	14.9

[redacted]

P Department

[redacted]

Recovery Operation

	% Recovered		Average Weight — Lb.	
	July	To Date 1946	July	To Date 1946
Z Slugs	34.0	51.7	7.783	7.805
X Slugs	50.3	42.1	7.729	7.726
Rejects	15.7	6.2	—	—
Total	100.0	100.0		

Inspection and Testing

Autoclave rejects were as follows:

	June	July	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	0.18	0.00	0.07
Recovered — Z's	0.00	0.00	0.00
Recovered — X's	0.00	0.00	0.00
	0.14/M	0.00/M	0.05/M

The "As Received" quality of cans, caps, and sleeves were as follows:

	% Useable		
	June	July	To Date 1946
Aluminum Cans	84.1	87.9	80.5
Aluminum Caps	95.7	99.3	96.0
Steel Sleeves	56.1	0.00*	71.9

* None inspected this period.

On July 16, a shipment of 13,000 SX caps was received.

300 Area — Test Pile

The unit was operated 4 eight-hour days, making 100 routine tests on uranium slugs.

6

S DEPARTMENT

JULY 1946

PRODUCTION SUMMARY

Fifty-one batches were started in the Canyon Buildings during the month and forty-four were processed through the Concentration Buildings. Forty-four batches were delivered by the Isolation Building. The average purity was 98.8%.

T Plant completed the processing of current stocks of metal of high enrichment with batch T-6-07-81. Extraction waste losses thereupon returned to normal.

Separation of neptunium 237 was made from the extraction waste of batches T-6-06-819 and T-6-07-81.

Higher than normal material balances in T Plant were due to the inclusion of the product recovered in Acid washes of the process vessels in this month's accounting. The amount of product recovered from this source in the B Plant was not large enough to make a significant difference. The higher material balance values obtained were coincident with the change over from Section 7 to Section 8 with the consequent use of the 8-HMR assay as the starting basis. To date the use of this analysis has given material balances that are approximately 3% high.

Production Performance Data (6/26/46 – 7/25/46, Inclusive)

	B Plant	T Plant	Combined
Number of charges started	36	15	51
Number of charges completed	31	13	44
For completed charges:			
Percentage of starting product in waste			
This month	6.1	6.3 (a)	6.3
Last month	6.2	5.1 (b)	5.6
Cumulative to date	6.6	6.7 (c)	6.7
Percentage of starting product recovered			
This month	97.4	99.4	98.0
Last month	92.1	88.0	90.2
Cumulative to date	94.9	94.8	94.8
Percentage of starting product accounted for			
This month	103.5	106.2	104.3
Last month	98.3	93.1	95.8
Cumulative to date	101.5	101.5	101.5

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S Department

Production Performance Data, Cont'd.

G Decontamination Factor (Log)	B Plant	T Plant	Combined
This month	7.09	6.97	7.06
Last month	7.30	7.29	7.29
Cumulative to date	7.30	7.23	7.27

(a), (b), (c): Includes waste from processing recycle. The recycle wastes are estimated as: (a) 0.25%, (b) 0.19%, and (c) 0.22%.

Isolation Building Performance Data (6/26/46 – 7/25/46, Inclusive)

	% of Incoming Product			
	Prepared for Shipment	Recycle	Losses	Material Balance
Average for this month	96.1	3.8	0.09	100.0
Average for last month	97.2	4.5	0.12	101.8
Average to date	97.1	4.0	0.15	101.2

PRODUCTION PERFORMANCE

T and B Plants

Acid washes of the process vessels in both T and B Plants were completed during the latter part of June. In B Plant the product pick-up was small, 19.7% of a normal batch was recovered from the Canyon vessels and 3.8% from the Concentration Building. Product recovery was small from all T Plant vessels with the exception of the precipitation tank in Section 17 which yielded approximately 47% of a normal batch. As reported last month the failure of a weld in the suction leg of the circulating spray reduced the effectiveness of the spray washing of the vessel which normally keeps product from accumulating. A second acid wash of the Section 17 tanks following the installation of a new spray assembly yielded an additional 9.2% from the precipitator. A third acid washof the T Plant vessels which was scheduled ahead of the second neptunium batch indicated normally low product accumulation with 13.1% recovered from the Canyon vessels and 7.4% from the Concentration Building. To prevent a gradual accumulation of sizeable quantities of product over a long period of time acid washes of the process vessels will be made more frequently than has been the practice in the past; it is now planned to schedule an acid wash in each plant following the completion of forty batches.

Oxidation difficulties were encountered in Section 12 of the T Plant on the regular batches immediately following both neptunium batches. As reported last month the complete failure of the oxidation step in Section 12 on Batch T-6-06-320, which followed the first neptunium batch, resulted in the first cycle by-product waste containing the entire product content of the charge. Following the reworking of the waste to recover the product, the next two regular batches required an extra oxidation to obtain complete oxidation. The oxidation on the following batches was then normal until the second neptunium batch was processed whereupon the batch immediately following re-

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quired four oxidations in Section 12 before oxidation was complete. It is believed that an oxalate compound from the neptunium extraction in Section 8 remains behind in the small solution heels in the 8-4 and 12-7 tanks and that the concentration is sufficiently great in the batches immediately following to interfere with oxidation. It is planned to flush these vessels following any future neptunium batches to avoid similar difficulty.

A decrease in the decontamination in both plants was observed during the month, with occasional final product solutions from the B Plant giving a portable Beckman reading of slightly more than 100 mrep/hr. at the bottom of the product transfer container. While this decrease did not become apparent until some time after the change-over from skimming the Section 13 centrifuge to a 10 gallon heel instead of 30 gallon heel, the former procedure was temporarily reinstated starting with Batch B-6-07-023 to permit study of the decontamination conditions. The T Plant has continued to skim to the reduced volume of 10 gallons since the radiation level of the final product solutions from T Plant have not been abnormally high.

The difficulties in removal of the Lanthanum fluoride cake from the Cell E centrifuge bowl in B Plant which were reported last month were traced to a corroded spray assembly. A replacement assembly corroded rapidly at some small defective welds and a second replacement has since been made. The two failures were of a different type and at different locations, and the two failures within a month are not believed to be evidence of a new highly corrosive condition.

Isolation Building

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

Following the completion of the T Plant batches from metal of high enrichment in Cell 3 the M-1 and M-2 filters were leached. The procedure for leaching the M-1 filter was revised to determine whether unmetathesized lanthanum fluoride was being held up on the filter. The presence of lanthanum fluoride was not indicated. The M-2 filter was leached in the regular manner. Recovered product from the M-1 leach was recycled to the T Concentration Building.

The procedure for flushing the inside of returned sample cans was revised to incorporate suggestions made at a conference with Site Y personnel. The new procedure involves rinsing the cans with a large volume of 0.05N HNO_3 instead of the former practice of using 60% HNO_3 in which plutonium sulphate is relatively insoluble. The new procedure should assure that any product bearing precipitates remaining in cans upon return will be removed and detected by analysis of the rinse. There has been no evidence at HSW that precipitates were returned in the sample cans in quantities that were significant from an accounting standpoint.

Mechanical Performance

Equipment failures, similar to those reported during the past several months, caused by corrosion and the normal wearing out of the equipment, were experienced

during the month. The failures which occurred and the corrective action taken are listed below:

1) Disintegration of the G-9 gasket at the wall connector in the precipitator to centrifuge transfer piping in Section 14 of the B Plant resulted in a small loss of product to the sewer tank in Section 5 and to corrosion of the connector skirt. A new gasket and skirt were installed on the connector.

2) Failure of the skimmer in the centrifuge in Section 17 of the T Plant occurred early in the month. Low radiation levels permitted replacement with a reinforced skimmer and installation of a spare reinforced skimmer in the plow position. This failure and repair duplicates the experience in B Plant several months ago.

3) In the B Concentration Building the transfer jet from the centrifuge in Cell E to the precipitator in Cell F was replaced when inspection revealed corrosion of the jet throat.

4) Pinhole leaks in the CR-2 tank in the Isolation Building were repaired by welding.

5) On July 23 the B Plant switched from operation of the regular centrifuge (F-2) in Cell F to the spare centrifuge (F-22) because of repeated plugging of the transfer jet from the centrifuge with pieces of GX gasket material. This will permit the removal and detailed investigation to determine the source of the foreign material in the centrifuge bowl without loss in production time.

6) The centrifuge in Section 8 of the B Canyon developed a loud metallic noise when going through certain speed ranges when "plugged" from the normal operating speed to a stop. When this condition did not improve upon lubrication, the machine was replaced with a spare that had been tuned-up in the Maintenance shop. It is believed that the noise was due to the scraping of one or more dip tubes on the bottom of the bowl. The centrifuge was placed in a spare cell in the Canyon and repairs will be attempted by remote operation.

Waste Disposal

The installation of a new underground line from diversion box 153 in the T Waste Area to the second cascade tank in the X104 series permitted the diversion, on 7-22-46, of second cycle waste and stack drainage from the T Plant to the remaining two tanks in this series. The first tank was used for first cycle waste following the plugging of the tie line from the T to U Waste Areas as was reported in March. The excavation in the vicinity of tanks X104, 105, 107 in the T Waste Area for the installation of the new underground line mentioned above caused small portions of the thin Gunnite layer over the water-proof coating on the top of these tanks to slide and break off. The Gunnite layer and Bitumastic water-proofing on the tank tops are an extension of side-wall protection. The soundness of the tanks is in no way impaired by the slippage.

On 7-22-46, first cycle waste from the T Plant was diverted through the T to U tie line to the X110 series of tanks in the U Waste Area. Prior to this date ionization chambers and indicating thermometers were installed on the first cycle and metal waste underground tie lines in the U Area. Temperature measurements and the time required for drainage of these lines will be obtained with these instruments and will be followed closely so that prompt corrective action can be taken in the event that a restriction of flow is indicated. The first cycle tie line in the C Waste Area had similar instruments installed several months ago and installation is scheduled for the metal waste line in this area early in August.

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
X101,2,3	Metal	100	100	59.2	41.3	0	0	109	158)	
X104,5,6	Metal	—	—	0	0	—	—	269	269)	953
X201,2,3,4	Metal	0	0	0	0	37	37	37	37)	
X107,8,9	1st Cycle	100	100	0	0	0	0	338	338)	
X110,1,2	1st Cycle	—	—	31.7	0.8	—	—	231	335)	1242
X104	1st Cycle	—	100	—	—	—	0	—	—)	
X104,5,6	2nd Cycle	0	—	—	—	454	—	—	—)	
X110,1,2	2nd Cycle	93.3	100	—	—	30	0	—	—)	786
X105,6	2nd Cycle	—	0.2	—	—	—	302	—	—)	

Special Hazards

The product contamination on the outer surfaces of the sample cans that were returned by the customer during the month was greatly reduced. This decreased the amount of cleaning and consequent personnel exposure to product contamination in the Isolation Building.

Special Hazards were kept under good control as evidenced by the number and complexity of the unusual jobs that were completed during the month without over-exposure of personnel.

Meteorological Section

Eighty-nine pre-dissolving forecasts were furnished to the T and B Plants, and three high wind or thunderstorm 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'	30 mph
Minimum average hourly wind velocity at 200'	2 mph
Maximum average hourly wind velocity at 50'	23 mph
Minimum average hourly wind velocity at 50'	2 mph
Prevailing wind direction	WNW
Prevailing wind quadrant	W

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S Department

Meteorological Section, Cont'd.

Maximum soil temperature	151
Minimum soil temperature	52
Maximum air temperature (4 feet)	105
Minimum air temperature (4 feet)	49
Number of days precipitation and/or fog occurred	3
Number of days precipitation occurred	3
Number of days fog occurred	0
Greatest duration of precipitation	8.5 hours

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TECHNICAL DEPARTMENT

July, 1946

100 AREAS

Physics

Determination of Reactivity Coefficients - Production Test 105-50-P

A power coefficient test on the D Pile on July 1, intended as a check on the unexpectedly low values reported for the test of June 10, produced results in better agreement with the trends indicated by earlier tests. Consideration of the uncertainties in rod calibration, xenon transients, and power level indicates that the discrepancies are within the experimental accuracy of the measurements.

Reactivity of B Pile Under Shutdown Conditions - Production Test 105-58-P

Further indium foil irradiations in an empty tube of the shut-down B Pile have indicated no further change in neutron flux density since the decay of the photoneutron transient.

Preparation of Sources for Calibration of Health Instruments - Production Test 105-63-P

A casing of special materials which had been activated for use in the calibration of health instruments was removed from the B Test Hole of the F Pile on June 26 and turned over to the Health Instrument Section.

Corrosion of Aluminum Thimbles - Production Test 105-64-P

To determine the cause of a white deposit which has been observed on the horizontal control rods, apparatus for exposing test strips of aluminum to process conditions in atmospheres of carbon dioxide, building air, humidified building air, and helium was installed in the B Test Hole of the F Pile on July 24.

Special Irradiations

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

Request 3-1 (Thorium, second installment) was charged into the F Pile on July 24 for an irradiation of 60 days.
Request 13-1 (Beryllium nitride, second installment) was charged into the F Pile on July 24 for an irradiation of 30 days.
Request 15-2 (Lithium fluoride, third installment) was charged into the D Pile on July 16 for an irradiation of 50 days.
Request 17 (Graphite): A 16-lb. section of graphite from the D Test Hole of the F Pile, which had been exposed 722 Mw-days/adjacent ton, was given to the Army for shipment on July 8.
Request 19 (Mercuric sulfide) was charged into the D Pile on July 2 for an irradiation of 90 days.

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Requests 25-1 and 25-3 (Beryllium nitride, U. of Cal.) were charged into the D Pile on July 2 and June 25, respectively, for irradiations of 30 and 90 days.

In all cases, predictions of reactivity absorption by special columns were in good agreement with the observed results.

Graphite Monitoring - Production Test 105-1-P

Analysis of the temperatures indicated by six centrally located thermocouples in the D Pile has shown that the apparent thermal conductivity of the graphite has decreased to 1/33 of its initial value and that the ratio K_o/K is continuing to increase at a rate of 0.017 per Mw-day/CT, in reasonably good agreement with laboratory results on test samples.

Attempts to initiate a self-propagating thermal wave in graphite of high stored energy content have indicated that the velocity of a thermal disturbance in irradiated graphite is of the order expected on the basis of the thermal diffusivity, namely about 0.05 cm/sec. The effect of the stored energy release appears to be small; the probability that a pile might flash due to release of stored energy therefore appears, on the basis of the tests made to date, smaller than had been expected.

The transverse expansion of graphite under irradiation continues to vary linearly with exposure. Capsule graphite of 1099 Mw-days/CT exposure showed a transverse expansion of 2.5% in comparison to an expansion of 1.5% at 816 Mw-days/CT.

Other physics activities during the month included an analysis of the effectiveness of temporary poison columns used in the June 20 startup of the D Pile.

Water, Corrosion, and Engineering

Process Water Control and Pressure Drop Studies

The iron content in the process water averaged 0.030, 0.008 and 0.010 ppm at B, D, and F Areas, respectively. These values are considerably lower for D and F Areas than they have been for the past several months.

The rates of pressure drop increase for D and F Areas were 0.26 and 0.26 lbs./(sq.in.)(day), respectively. This value for D Area is lower than it has been for several months and this improvement, coupled with that of lower iron content in the water, is an indication that the period of higher film formation rate, which occurs when the river flow rate is at a maximum, has been passed.

Corrosion

Corrosion Tube 2874 was discharged at D on June 25. Gravimetric corrosion data for this tube are summarized below:

	Corrosion Data, Tube 2874-F		
	Accumulated Power	Penetration Rate, In./Mo.	
Exposure Days	MWD	Average	Maximum
333	55	0.00004	0.00006

These corrosion rates are about normal and no evidence of any unusual corrosion was noted. One slug from this tube was slightly blistered.

In order to follow the progress of cast material charged to D and F Piles (Production Test No. 105-46-P), Tube 2363 was discharged at F on July 3 and Tube 2063 was discharged at D on July 9. Gravimetric data for these tubes are summarized below:

Exposure Days	Tube Number	Corrosion Data, Cast Metal: Accumulated Power MWD	Penetration Rate, in/mo.: Average	Maximum
91	2063D	14	0.00004	0.00006
92	2363F	11	0.00004	0.00007

These corrosion rates are about the same as those obtained for regular slugs and no evidence of any unusual corrosion was noted. One possibly slightly blistered piece was found in Tube 2063D and one slightly blistered piece was found in Tube 2363F. Present plans are to discharge one tube containing cast material at D when the accumulated power reaches about 18 MWD.

The thimble for Horizontal Rod No. 2 at D was examined with the borescope on June 25. Some slight abrasion was noticed on the first few inches of the aluminum strip which reinforces the top of the thimble in the shield portion of the pile. This condition is not considered serious.

Graphite Expansion

Tube 4674 at D was traversed for vertical bowing on July 2. This tube is being monitored at relatively frequent intervals (every 5 or 6 weeks); The observed increase of 3/32 inch displacement since the previous traverse on May 21 is in line with previous observations.

Pneumatic jacking tests were made with the 1500 lb. jack on six tubes at D. During the tests the pigtails were replaced with rubber hose, but the tubes were not discharged. The following results were obtained:

	Tube Jacking Tests at D					
Tube Number	1474	2362	2385	3474	3959	4088
Gunbarrel Sum-Clearance-inches	22/32	21/32	22/32	>14/32	18/32	>4/32
Force required for full and reproducible movement - lbs.	700	900	800	>800	800	>1000
Binding	No	No	No	Yes	No	Yes

The data obtained from tubes where binding was not encountered provide a basis for following future changes in the sum-clearance between gunbarrels and the graphite, as the graphite is given additional exposure.

It is believed that the region where gun barrel binding occurs can be located precisely by use of wire strain gages mounted inside of the gun barrel and read while the gun barrel is under tension. The 9-tube mock-up is being prepared for test work designed to demonstrate the feasibility of this technique.

200 AREAS

General

Material Balance

The overall material balance for July at T Plant was 100.2% and at B Plant was 103.8%; the overall 200 Area material balance was 102.8%. The material balance across each processing building was as follows: B Canyon Building = 103.2%, T Canyon Building = 103.4%, B Concentration Building = 100.2%, T Concentration Building = 97.2% and Isolation Building = 100.0%. (These values include the most recent acid wash at each plant).

Acid Washes

The acid wash made in T Canyon the latter part of June recovered sufficient product to correct the low material balance and revealed the cause of the disappearance to be a defective acid circulator. Since that time an acid wash of each plant has been made with only the normally expected (15-25%) product pick-up. A decision has been made to process an acid wash run through each plant after approximately every 40 runs.

Product Shipped - Accounting

Representatives from Site Y visited H.E.W. on July 10-12 to discuss discrepancies in accountability of product between the two locations and to study the design of laboratory facilities here for analytical, research and development work.

Agreement on product assay values between the two sites has improved since a more vigorous dissolution technique (stirring plus increased time instead of shaking) was adopted at Site Y. The presence of a pinkish white solid, thought to be plutonium sulfate, in many of the lots has contributed to assay difficulties at Y. Assays on samples containing this solid have been erratic and 6-8% low. Dilute nitric acid (0.05M) has been found to be the best solvent for this precipitate. A rewash at Site Y of approximately 400 unreturned cans using dilute nitric acid recovered 1-2 kg. of plutonium, but this may reflect a change in the unloading procedure at Y whereby the unloading dip tube was shortened approximately 1/8 inch.

These observations, plus an occasional lot on which the Y assay is significantly higher than the W assay, lead to the questions: Has appreciable quantity of this material been returned to W, and does the AT solution at W contain this solid? The routine inspection of returned cans, as well as assay of the can rinses, has failed to show any significant quantity of product returned to W. A program investigating the occurrence of solids in the AT solution is in progress.

The reconciliation of past discrepancies will be attempted by studying all available tare weights, at both W and Y, of cans used in previous shipments, before and after recleaning, where this was done. A more precise estimation of the quantity of product held at Y in the form of recoverable residues may also decrease this discrepancy. The current relatively good agreement on accountability may be made better by (1) obtaining and assaying duplicate samples at Y; (2) making certain that the assay at W is not vitiated by the presence of solids in the AT sample and (3) comparing tare weights of the cans at W and at Y.

Recovery of Np^{237}

The extraction waste from another Class C run was reprocessed at T Plant for the recovery of Np^{237}. Although this run, and the one made in June, were both processed by the same procedure employed on earlier runs, and progressed without difficulty, they did result in oxidation difficulties in the Canyon on the regular plutonium runs which followed them. This difficulty has been deduced to result from sufficient oxalate advancing from the extraction step to interfere with the oxidation preceding the first decontamination cycle. On the first run following the June Np^{237} run, no oxidation was obtained, necessitating reworking of the scavenger by-product precipitate. On the first run following the July Np^{237} run, four successive oxidations were required to obtain complete oxidation of the plutonium. On future neptunium runs, a complete flush of the extraction cake dissolving and oxidation tanks prior to their use for plutonium should overcome this difficulty.

Curtailed Use of Air Sparging

The gradual reduction in the use of air sparging in both the Canyon and Concentration Buildings has been continued. Ultimately, all air sparging will be eliminated except that in the dissolvers, metal solution storage tanks and metathesis tanks and in the various catch tanks during emptying and prior to sampling.

Canyon Buildings

High 13-4-BP Loss (T)

As indicated above, the first cycle scavenger by-product precipitate on Run T-6-06-B-20 (first run following T-6-06-IP-1) contained 105% product and the "oxidized" effluent contained only 2.6% product. The "product" solution was transferred through Section 14 and discarded to waste. The by-product slurry was solubilized with silico-fluoride and returned to the precipitator where a product strike was made. The product cake was dissolved, oxidized with some difficulty, and returned to the precipitator where a by-product strike was made. The oxidized effluent proceeded in the usual manner. The total loss encountered in Section 13 was 4.4% made up as follows: original product effluent -2.2%, product effluent - 0.4%, by-product waste - 1.8%. The completeness of oxidation in Tank 12-7 of the two succeeding runs was checked before proceeding with the by-product strike, since this difficulty was thought to b e due to oxalate present in the heels remaining from the Np^{237} run. A re-oxidation step was performed after satisfactory results were obtained from the laboratory, due to the normal delay involved.

Return to 30-Gallon Skimming (B)

A number of runs at B Plant have emerged from the Canyon Building with abnormally low decontamination as measured by the C-4 Beckman meter, and several runs have been sent to the Isolation Building at 5-10 times the normal radiation level. There has been no correlation, however, between "hot" runs leaving the Concentration Building and the "hot" runs entering the Concentration Building. All of these runs, however, were skimmed to 10-gallon heels in Centrifuge 13-2 (first cycle scavenger by-product cake) so in order to determine the effect of such skimming on the radiation entering the Isolation Building, a return to 30-gallon skimming was temporarily adopted at B Plant.

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Underground Waste Lines and Tanks (T)

Tank X-104, Building 241-T, used for first cycle wastes, was filled during the month, necessitating re-use of the first cycle waste line 241-T to 241-U. The installation of temperature and activity indicating instruments at the U end of this line, plus a preliminary hot water flush, indicated a minimum temperature 5°C above the maximum observed crystallization temperature. No difficulty has been encountered.

Tank X-112, Building 241-T, used for second cycle wastes, was filled during the month, necessitating use of Tank X-105. Entry into this tank was made by a special line from Diversion Box 153-T, and not through Tank X-104, filled with first cycle waste.

Concentration Buildings

Reduced KOH Metathesis Volume (B and T)

The 70% metathesis volume procedure has continued to return approximately 0.2% product saving at both B and T Plants. The difficulty experienced at B Plant with incomplete removal of cake from Centrifuge B-2 was corrected with the installation of new centrifuge bowl sprays. Acid leaches of the nutsches in the Isolation Building have shown that no unmetathesized LaF_3 has resulted from this reduction in metathesis volume. This procedure is being recommended for adoption to routine plant practice.

Use of Centrifuge F-22 (B)

Difficulty at B Plant with plugging of jets F-1 to F-2, F-2 to F-1 and F-2 to F-10 has been traced to disintegration of the GX windage ring gasket in Centrifuge F-2 (metathesis). Spare Centrifuge F-22 has been placed in service to permit F-2 to be cleaned and inspected.

Isolation Building

Weight of Product Recycled

The greater amount of product recycled from T Plant runs as compared to B Plant runs has continued. The switching of processing cells in the Isolation Building, following the nutsche leaches, has shown that any differences between cell equipment or operation are not the factors causing the product content of T Plant recycles to be approximately 30% greater.

Iron Content of F-1 Solutions

Past calculations have shown that essentially all of the iron in F-1 solutions could be attributed to the KOH used in metathesis, if this material contained the maximum iron permitted by specifications (0.005%). It was expected, therefore, that the reduction in metathesis volume, and attendant decrease in weight of KOH used, would decrease the iron content correspondingly (from 0.196 mol to 0.140 mol). That this has not occurred is evident from the following data:

Plant	Metathesis Volume	No. of Runs	Ave. Mols Fe in P-1
B	100%	49	0.194
T	100%	25	0.203
T	90%	5	0.268
T	80%	5	0.197
T	70%	36	0.197
B	70%	21	0.187
T	60%	15	0.216

Oxalate Method of Handling Recycles

The desirability of eliminating the addition of potassium permanganate to the lanthanum oxalate -nitric acid mixture has been discussed previously. The complete elimination of the permanganate addition was found to be unfeasible in the previous report.

Subsequent testing, in which 80-90% of the permanganate was added as solid, and the final titrations with 4% solution eliminated, has shown that the full procedure must be employed in order to obtain complete dissolution of the oxalate precipitate and representative sampling of the recycle solution.

300 AREA

Extrusion

Billet groupings were prepared for the July billet shipment. One supplier's material was reported to contain abnormal amounts of carbon (570 to 1900 ppm) and silicon (10 to 1310 ppm). In addition, TDS data received on this shipment indicates that approximately 17% of the July shipment of 1326 billets can be expected to have 305 Test Pile results below the lower limit of -0.29 for MZ slugs.

305 Test - Production Test 314-40-M

During July, 26 stringers of Type F material were found to be out of control in the 305 Test Pile. Production Test 314-40-M was authorized in an attempt to determine cause for the decrease in reactivity, but thus far it has not been possible to correlate slug weight, density, or metal impurities with low reactivity based on H.E.W. tests. A comparison of Argonne pile test data and 305 results has indicated that there is a good correlation between the two tests on both acceptable and out-of-control material.

UM Material - Mercury Impurity (Production Test 314-38-M)

Results of chemical analysis of this material indicate that slugs which did not pass the pickling operation contain abnormal amounts of impurities. Those slugs which failed to pass the pickle operation (14%) were found to contain 90-100 ppm of mercury and 1800-4000 ppm of molybdenum.

Canning and Dipping

Special Requests

During the month, canning of the following special request samples was completed for exposure in the piles.

R-19 - 1 piece
R-25-1 - 1 piece
R-15-2 - 36 good pieces (5 leakers returned to the Army.)
R-3-1 - 45 good pieces (Turnings and solid scrap returned to the Army.)
R-13-1 - 69 good pieces (One leaker)

Production Tests

Production Test No. 313-78-M (Study for Evaluation of Slug Dimensions) - This test was completed and the report issued. The study indicated that 1) the present system of classifying slugs is satisfactory and 2) the MZ dimension is resulting in improved net yield; this increase is on the order of 3-4 percent.

Production Test No. 313-79-M (Study of Effect of Impurities in Flux) - Preliminary laboratory work on this test has been completed and the results indicate that different impurities in the flux have very different effects in promoting or inhibiting weight loss when dipping; sulfates, sulfides, and sulfites are especially deleterious with respect to increasing loss of weight while presence of phosphates, strontium, and nitrates has a slightly inhibiting effect on loss of weight. Calcium ion has a very pronounced inhibiting effect on weight loss, The effects of these impurities with respect to wettability of slug have not yet been investigated.

Studies Relative to Acceptance Standards for SX Slugs (Request 24)

In the course of preparation of small diameter short length (SX) slugs for Request 24, it was found that under the conditions of temperature 50°C above that anticipated in the operation of the Clinton pile, badly piped or porous material had a tendency to develop internal gas pressure within the sealed jacket inclosing them, and in some cases resulted in complete rupture of the jacket, followed by conversion of the base metal to oxide with progressive swelling and rupturing of the entire jacket. In order to minimize this tendency, it was agreed that acceptance standards should be established for SX pieces to be canned and, furthermore, that efforts should be made to insure complete dryness of all SX slugs at the time of canning. An extensive program was carried out in order to study the conditions under which drying could best be accomplished; to gain information relative to rates of tarnishing under varying conditions of temperature and humidity; and to establish tentative standards for classification of the surfaces on these pieces with respect to their acceptability for use in canning. The testing program will be continued until actual canning of SX slugs is started.

Studies Concerning Bronze Composition and Tin Build-up in The Canning Bath

Plant experience, verified by laboratory tests, has indicated that bronze composition is a critical factor in determining the rate of tin build-up in the Al-Si canning pot; i.e. when the copper content of the bronze falls below a certain critical value, the rate of tin build-up in the canning pot is increased

It has also been suggested that the composition of the bronze bath is critical with respect to the temperature required for successful operation, the thought being advanced that if the copper content of the bronze is permitted to exceed a certain critical value, it is necessary to operate that bath at a higher temperature in order to avoid an excessive number of wrinkles and nonseats in the canning process. On the other hand, if the copper content of the bronze falls below a certain critical value, a lower operating temperature is required to prevent excessive alloying of the tin component of the bronze

with the base metal of the slug. In order to check this proposition, it was agreed that a bronze bath carefully made up should be used in studying relation of the temperature to non-seats and wrinkles. This bath was to be replenished as necessary with bronze of exactly the same composition as the bath proper and was to be used for a period of one week, the inspection reports to be used as an index of the effect of varying temperatures on this bath of carefully controlled composition.

However, when this program was put into effect, it was found that the rate of tin build-up in the Al-Si canning pot was excessive, and it was possible to operate not more than half a shift before exceeding the tolerable limit The same results were obtained on a repeat attempt. It was suggested that this anomalous effect might be due to some unknown difference between bronze alloyed from virgin materials at the foundry which supplies H.E.W. with the alloyed metal and that made up from virgin copper and tin in situ. Accordingly, a bath was made up from fresh bronze as received from the foundry and was used under similar conditions with similar results. Since this rapid tin build-up in the Al-Si canning bath is not encountered when a bronze bath is used which has had several hundred slugs passed through it in normal operation, it appears that there is some inhibiting effect created in the bronze bath by having passed a large number of slugs through the bath. To check this theory, the bronze bath, which originally was made up of fresh material from the vendor, was continued in use for a period of a week, and daily analyses of the Al-Si canning bath used in connection with this bronze pot, indicated that there is a gradual decrease in the rate of tin build-up with the mounting number of slugs passed through the bronze. This problem is currently receiving further study.

Problems of Control of Bronze and Al-Si Composition

Results of studies concerning the interrelation of bath compositions indicate that beyond adjusting the slug temperature, the tin bath performs its required function of removing excess bronze only when the bronze is held within a narrow range of composition and temperature. The tin bath appears to be particularly ineffective in removing the tin-uranium-copper mush layer which forms on slugs dipped in bronze containing an abnormally high percentage of tin, with the result that when such bronze is used, tin build-up in the Al-Si canning bath is excessive. In addition, there is some evidence that factors contributing to other canning troubles arise from failure of the tin bath to perform its intended function.

Studies directed at development of alternate materials to use in place of the tin bath included substitution of lead for tin with results which indicate the possibility that better performance might be obtained if lead were used in place of tin in this bath.

Problems Concerning Causes of Distortion of Slugs During Irradiation

In connection with studies designed to test the preferred orientation theory in its application to the appearance of distorted and "blistered" slugs, during long exposure in the piles, work has been in progress for the past several weeks on design and construction of equipment which is expected to produce strips of uranium in which the crystals are orientated in preferred directions. The testing program, as planned, includes preparation of test material consisting of two thin uranium strips, in which the directions of crystal orientation are approximately at right angles to each other, these

strips to be mechanically fastened together after the manner of a bi-metallic thermostatic element, the assembly to be exposed in the pile in such manner that distortion due to thermal effects will be minimized, and that it may be presumed that any distortion observed in the exposed strip will have been caused by exposure to the radiations in the pile. In this way, it is hoped that the validity of the theory may be established.

Preparation of such test material has involved designing and building suitable equipment for production of the strips required. A rolling mill has been fabricated and several strips have been rolled with it. Experiments have been conducted to determine the proper annealing temperatures and techniques to be used in connection with the use of this rolling mill. A piece consisting of two strips mechanically fastened together, as described above, has been prepared, and the distortion of this piece, occasioned by thermal changes, indicates that preferred orientation of the crystals actually exists in the two strips. The problem remains to design a suitable container in which the test strip may be exposed in the pile without the danger of introducing distortion through thermal effects.

Autoclave Failures

Two autoclave failures, appearing among pieces canned on June 11 and 14, were sectioned and examined to determine the causes of failure. The aluminum wall of the piece canned on June 6 had been penetrated during the canning operation by a very hard unidentifiable particle. This particle resembled no material that is ordinarily found in or around the bath, and its hardness approximated that of silicon carbide. Its size was too small to admit chemical analysis so it must remain unidentified. The piece canned on June 14 had a wall rupture in the immediate vicinity of the failure point and the rupture was filled with Al-Si. The cause of the rupture was not apparent from macroscopic or microscopic study of the section of the slug.

LABORATORIES

Geometry Measurement

Routine measurements of the geometry of the methane proportional alpha counting instruments (accepted value - 50.5%) in the Control Laboratories were as follows:

	June		July	
Laboratory	Geometry	No. of Tests	Geometry	No. of Tests
222-B	50.53	82	50.51	168
222-T	50.46	81	50.49	166
231	50.51	21	50.48	49

Chemical Assay Procedure

The use of a standard iron solution (10.04 grams Fe per liter) as a means of checking the chemical titration procedure used in the determination of plutonium in final solution from the Isolation Process was continued. 103 determinations were made and the average of all results was 10.01 g.Fe/l. 81% of the determination agreed within ± 2% of the accepted value.

Routine duplicate determinations by the chemical titration procedure of each AT sample showed an average range for the pairs of analyses of 0.3%. 89 determinations were made using the modified procedure which employs a 1.0 ml. micro

burette, 0.04N ceric sulfate and a 0.025 ml. sample. This compares to an average range of 0.6% for 58 determinations made in June. The procedure at that time used a 0.1 ml. burette, 0.2N ceric sulfate and 0.010 ml. sample. The results for July indicate no significant difference between the two procedures.

Methods Improvement

A thorough review was made of all available reports dealing with Redox process in order to ascertain the extent to which analytical procedures had been developed. This compilation (Document No. 3-3586) can be used as a basis for future analytical development work for this process.

[redacted]

[redacted]

POWER DEPARTMENT

JULY 1946

GENERAL

The Power Department force was reduced 1.5% due to transfers and terminations.

100 AREAS

On July 8 a steam power interruption of three hours duration occurred in the B Area. The boiler in service was manually shut down when uncertainty as to the proper drum water level developed during the course of changing the feed water from the normal source to an auxiliary supply. Water to the Pile was not interrupted since an electric-driven pump was placed in operation before the steam-driven pump became inoperative.

On July 12 a leak developed in two tubes of No. 3 boiler in D Area due to the impingement of steam from a soot blower. The tubes have been replaced by tube dummies and the soot blower properly adjusted. Special emphasis has been placed on boiler inspections to prevent a recurrence.

On July 15 there was a short interruption of refrigeration facilities in the F Area. Improper operating technique in the changing of direct current exciters resulted in loss of excitation to the synchronous motor refrigeration compressors with a resultant shutdown of the system. The temporary loss of refrigerated water did not adversely affect the Pile.

200 AREAS

On July 23 there was a scheduled electrical shutdown of two hours duration affecting the reservoir pump house and the filter plant in the East Area. All services emanating from these locations were maintained through the use of steam-driven equipment.

300 AREA

On July 13 the No. 1 well pump was connected to the emergency electrical system. This alteration from the normal power supply was effected in order that the primary water supply would be maintained through the operation of the emergency generator in the event of a possible power outage.

700 AREA

On July 19 a leak developed in four tubes of No. 2 boiler due to the effect of impingement of the steam from the soot blower. The damaged tubes have been replaced and proper adjustment made to the soot blower.

1100 AREA

On July 9 the replacement of a 130-foot section of the 10-inch domestic water line was completed north of Stores Building in 700 Area. This represents a total of 330 feet of standard pipe as replacement of defective spiral welded pipe at this location.

In order to retard the growth of algae and other vegetation in the irrigation ditches, the chlorination of the supply ditches was initiated early in July. By means of a portable chlorinator, a total of 3,800 pounds of chlorine has been fed to the ditches at various points. Testing of the water for chlorine content has indicated a trace of chlorine to be present at points approximately 100 yards downstream. Although at this time, sufficient information has not been established to plan a definite line of procedure, early results indicate that we may expect much success from this program. It is worthy of mention that the vegetation growth in the irrigation ditches has presented a most serious problem in the summer months.

2 The outside contractor removed 17,500 gallons of digested sludge from the Sewage Disposal Plant.

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POWER DEPARTMENT STATISTICS

(June 26, 1946 through July 25, 1946, Inclusive)

	Unit		100 Areas	
			100-B	100-D	100-F
River Pump House (Building 181)					
River Stage	Ft. above sea level	(max.	404.4	393.4	380.2
		(min.	397.4	387.6	375.0
		(ave.	401.0	390.4	377.0
River Temperature	Ave. ° F		60.8	59.7	59.0
Water Pumped to Reservoir	gpm ave. rate		11644	42608	38823
Water Pumped to Refrigeration Plant (condenser water)	gpm ave. rate		--	19449	24146
Reservoir (Building 182)					
Water Pumped to Filter Plant	gpm ave. rate		9095	36155	34084
Water Pumped to Export System	gpm ave. rate		1879	2506	851
Water Pumped to Condenser System	gpm ave. rate		670	3947	3888
Chlorine Added at No. 1 Inlet	lb.		0	1094	0
Water Pumped to Export System	gpm, normal flow		5236	5236	5236
Filter Plant (Building 183)					
Filtered Water to Power House	gpm ave. rate		60	272	233
Filtered Water to Process	gpm ave. rate		4411	30799	30783
Filtered Water to Fire and Sanitary	gpm ave. rate		138	153	200
Chlorine Used in Water Treatment	lb.		2010	16906	11820
	ppm ave.		.61	1.30	.96
Lime Used in Water Treatment	lb.		34418	106550	76630
	ppm ave.		10.5	8.2	6.2
Ferrifloc Used in Water Treatment	lb.		86818	313200	281960
	ppm ave.		26.5	24.0	23.0
Carbon Used in Water Treatment	lb.		0	0	0
	ppm ave.		0	0	0
Raw Water Analysis	pH ave.		8.35	8.11	8.18
Finished Water Analysis	pH ave.		No Analysis	7.34	7.25
Alkalinity - M. O. Raw	ppm ave.		57	56	54
Alkalinity - M. O. Finished	ppm ave.		52	46	54
Residual Chlorine - Settled	ppm ave.		.77	.26	.61
Residual Chlorine - Finished	ppm ave.		.08	.15	.06
Iron - Raw	ppm ave.		.14	.12	.13
Iron - N. Clearwell	ppm ave.		--	.01	.01
Iron - S. Clearwell	ppm ave.		--	.01	.01
Chlorides - Filtered Water	ppm ave.		1.36	1.21	1.10
Hardness - Finished Water	ppm ave.		69	69	70
Turbidity - Raw Water	ppm ave.		7.1	5.3	8.5
Turbidity - Filtered Water	ppm ave.		0	0	0
Refrigeration (Building 189)					
Refrigeration Produced	tons/day		--	7638	7608
Temperature Process Water In	ave. ° F		--	61.5	60.6
Temperature Process Water Out	ave. ° F		--	49.5	48.2

Power Department Statistics (Continued)

	Unit		100 Areas		
			100-B	100-D	100-F
Power House (Building 184)					
Steam Generated - Total	M lb.		18998	93315	84384
Steam Generated - Ave. Rate	lb./hr.		26386	129604	117200
225# Steam to Plant (est.)	M lb.		16148	79196	71726
15# Steam to Plant (est.)	M lb.		0	122	110
Coal Consumed	Tons		1532	7178	6400
Coal in Storage (est.)	Tons		15135	22537	18435
Deaerator Plant (Building 185)					
Water Flow (ave.)	gpm		4161	30549	30533
Chemicals Consumed:					
Dichromate	lb.		4000	23900	28500
Sodium Silicate	lb.		50239	282100	343760
Chemical Analysis:					
pH	pH		7.67	7.66	7.65
Dichromate	ppm		No Analysis	2.0	1.9
Silica	ppm		" "	7.7	8.6
Dissolved Iron	ppm		.020	.01	.01
Process Pump Room (Building 190)					
Total Water Pumped	gpm ave.		4111	30399	30386
Water Temperature	ave.° F		63.5	57.9	54.5
Water Pumped - Total	gpm. Normal Flow		4111	32308	31535
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.		0	0	0
Chemical Analysis:					
A, B, C & D Headers Standard Limits					
pH 7.5-7.8		(max.	7.75	7.73	7.65
		(min.	7.55	7.55	7.60
		(ave.	7.66	7.64	7.63
SiO_2	ppm	(max.	10.0	9.5	10.0
		(min.	6.0	6.5	6.5
		(ave.	7.5	7.8	8.6
$Na_2Cr_2O_7 \cdot 2H_2O$ 1.8-2.2	ppm	(max.	2.4	2.1	2.1
		(min.	1.9	1.9	1.8
		(ave.	2.0	2.0	2.0
Iron	ppm	(max.	.04	.02	.02
		(min.	.005	.005	.005
		(ave.	.03	.011	.009
Free Chlorine as Cl_2	ppm ave.		.09	.15	.12

Power Department Statistics (Continued)

	Unit	200 Areas	
		200-E	200-W
Reservoir (Building 282)			
Raw Water Pumped	gpm ave. rate	3069	2167
Filter Plant (Building 283)			
Filtered Water Pumped	gpm ave. rate	428	417
Chlorine Consumed	lb.	422	340
Alum Consumed	lb.	2460	2950
Chlorine Residual-Sanitary Water	ppm	.45	.4
Power House (Building 284)			
Steam Generated - Total	M lb.	16628	17131
Steam Generated - Ave. Rate	lb./hr.	23094	23793
Coal Consumed (est.)	Tons	1271	1382
Coal in Storage (est.)	Tons	6621	5916

		300,700,1100 Areas		
		300	700	1100
Power House (Buildings 384 & 784)				
Steam Generated - Total	M lb.	4355	7909	
Steam Generated - Ave. Rate	lb./hr.	5049	11012	
Coal Consumed - Total (est.)	Tons	326	593	
Coal in Storage (est.)	Tons	612	2840	
Sanitary & Fire System (1100)				
Well Water Pumped - Total	gal.			165855000
Well Water Per Day	gal.			5529000
Well Water	gpm ave. rate			3840
Chlorine Residual	ppm			0.2
Sewage Treatment Plant (1100 Area)				
Total Treated	gal.			46650000
Treated Per Day	gal.			1555000
5 Ave. Rate	gal.			1080

MAINTENANCE DEPARTMENT

JULY 1946

GENERAL

The backlog of Maintenance work has decreased approximately 2% during the month, with no change in total force.

Work Order Summary:

Area	Work on Hand June 25		Work Completed in July		Work on Hand July 25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	64	135	168	256	84	138
100-D	65	172	294	468	36	116
100-F	86	244	172	471	112	186
100 Shops	67	911	182	836	40	789
200-E	151	464	398	728	203	630
200-W	292	985	453	1352	372	1156
300	174	484	164	525	152	405
700-1100	687	2544	894	3606	829	2400
Totals	1586	5939	2725	8242	1828	5822

100 AREAS

The "C" and "D" elevators in the B Pile Building were inspected and realigned. Minor repairs were made. The realignment of the D elevator in the D Pile Building, previously reported, has proven successful in eliminating apparent wear to guide rails. A new bearing was installed on this elevator to replace one damaged through faulty operation.

A new type underwater viewer was installed in the inspection pit in the Transfer Area in F Pile Building. The old type was removed.

The speed reducers on the horizontal regulating rods A and B in the F Pile Unit were interchanged to effect better operation from the Control Room.

The west loop of the main steam line to B Reservoir Pump House was repaired following damage caused by vibration when a build-up of steam condensate was suddenly released in starting a turbine. Larger steam traps plus a continuous bleed on this loop are under consideration.

Scheduled inspections and overhauls were completed on pumps in the D Reservoir Pump House. Several pumps required realignment, readjustment of impeller clearances, readjustment of turbine alignment and other minor repairs.

Impeller clearances were adjusted on two river pumps in D River Pump House.

Two tubes were removed from No. 3 boiler in D Power House due to leaks created by external erosion from the impingement of soot jets. The jets were realigned.

Maintenance Department

200 AREAS

Stainless steel sink traps are continuing to fail in the Isolation Building and are being replaced with Duriron traps.

The Worthington Air Compressor in the T Canyon Building was completely overhauled. The crosshead pin bearings showed appreciable wear and adjustments were made.

A newly designed plow and skimmer were installed in the 17-2 centrifuge in T Canyon Building as a replacement for the old type which failed.

The centrifuge 13-2 in B Canyon Building was replaced to provide a unit with a 10-gallon heel setting on the skimmers in place of 30-gallon. Centrifuge 8-2 was replaced due to the bowl striking a dip tube.

The oil retainer on the output shaft was replaced on E-1 gear reducer in B Concentration Building. The shaft was built up by metalizing and re-machining.

The inboard bearing on No. 2 raw water pump in T Reservoir Pump House failed due to lack of lubrication of the flexible coupling. A new bearing was installed.

300 AREA

Routine overhauls were made on 16 furnaces in the Metal Fabrication Building during the month. One new crucible was installed in each of 13 furnaces and two new crucibles were installed on each of 3 furnaces. Steel pots were replaced in two furnaces and new pedestals replaced in four furnaces.

Repairs were made to the brick work in the rotary hearth furnace in the Press Building followed by a gas leakage test that proved satisfactory.

Three containers were bored oversize for the extrusion press in the Press Building. A vacuum drying system was installed using three autoclaves.

The lay-up work in the Cold Semi-Works Building is complete except for blowing out air, steam, and water lines which will be done by August 1.

The overhaul of the chip recovery press in the Metal Fabrication Building was completed and the press reinstalled. See previous report.

Seven hundred fifty tote boxes were equipped with red fibre bottoms.

700-1100 AREAS

There were 75 houses renovated during the month and 24 orders were cancelled. There are 87 orders for renovation on hand.

Shingles on the roof of the Kadlec Hospital are being renailed to offset buckling caused by the shrinkage of the roofing boards.

The replacement of the 10" water line north of the Stores Building is complete. Numerous other underground water line repairs were completed.

The installation of a fence around the Salvage Yard was completed.

A total of 968 wood crates have been made to date for the packing and shipping of records.

All 1361 "prefab" houses have been spray painted and approximately half have been completed with trimming. Roofs on 376 "prefabs" have been painted with two coats of fire-resistant paint. Exterior painting on 166 permanent houses has been completed.

PROJECT ENGINEERING

Projects - Work Completed in July

Proj. No.	Title	Estimated Cost
C-77	Relocation of Monitoring Stations-200-E & W Parts I & II	$ 3,180
C-82	Columbia High School Transformer Relocation	725
	Total	$ 3,905

Projects Authorized and Under Construction

Project No.	Title	Percent Complete	Date Authorized	Estimated Cost
100 Areas				
C-29	Third Safety Device-Valve Replacement Buildings 105-B, D, F	80	6-25-45	$ 7,500
C-54	Installation of Strainers in High Tank Water Lines to Buildings 105-B, D, F	0	9-20-45	11,100
C-76	Pneumatic Charging Machines-Buildings 105-B, D, F	95	12-17-45	3,300
C-88	Installation of Ventilating Curtains Buildings 105-B, D, F	50	4-25-46	1,500
	Total			$23,400
200 Areas				
C-40	Additions to Laundry Facilities-Building 2723-W	98	4-12-46	$ 2,750
C-55	Sampler Clean-up Sink and Dryer-Buildings 221-T,U,B	80	9-28-45	9,900
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 & T.C. Pipe Warehouse 200-E	50	11-26-45	3,000
C-73	Process Waste Tie Lines from 241-T to 241-U and from 241-B to 241-C	99	12-17-45	22,350
C-90	Additional Solution Preparation Facilities	20	5-20-46	2,050
C-91	200-W Area Laundry - Building 2723 Ventilation	90	5-19-46	1,000
C-92	Additional Effluent Waste Disposal Facilities - Building 231	0	7-1-46	3,100
	Total			$47,900

Maintenance Department

Project No.	Title	Percent Complete	Date Authorized	Estimated Cost
300 Area				
C-70	Chip Reclamation Facilities	95	12-20-45	$ 28,000
	Total			$ 28,000
700-1100 Areas				
C-79	Braces for Laundry Trays	90	1-16-46	$ 4,800
C-87	Telephone Cable-Moisture Proofing	95	4-22-46	1,050
C-89	Barber & Beauty Salon Water Softener	0	5-7-46	1,050
C-93	Time Office Hutment-Heating, Cooling, and Lighting Alterations	65	6-12-46	1,600
C-94	Prefabricated House - 508 Smith - Fire Damage Repair	0	6-17-46	775
C-95	Richland Electric Appliance Shop - Hutment Addition	0	6-2-46	1,500
	Total			$ 11,675
Plant General				
None				
Grand Total - Work in Progress				$110,975

Engineering Studies

The following studies were completed and reports were issued:

Study Removal Tank 361 Sludge
Design Lint Catcher for Laundry
Job Instruction Sheets - Heavy Equipment
Procedure for Control of Gas Cylinders
Record of Work Performed in 100-B Area
Cost Survey of Commercial Study

Studies in progress at month-end were:

Project Buses - Install Heaters and Defrosters
Building 2713 - Remodel into Transportation Garage
Pomona Pump
Downcomer Surge Study
GEC Study
Investigate Drive on 200-N Crane
Design By-Pass for Waste Lag Storage Tanks
Paint Standards
Field Lubrication Work Sheets 700-1100 Area
Maintenance Department - Safety Meeting Topics
J.I. Sheets - Changing and Installing New Skimmers in Centrifuges
Recording Maintenance History Record, 12-26-45 through 6-25-46
Ventilation Study of 313 Building
Review Maintenance Department Spare Parts, Including Packing, Gaskets and Belting and Suggested Spare Parts to be carried by the Stores
Curtail stocks - Fire and Safety Supplies, Caption 903-13
Assist the Stores Department in inventory and classifying Stainless Steel Stock

ELECTRICAL DEPARTMENT

JULY 1946

GENERAL

Work Order Summary:

Area	Work on Hand June 25		Work Completed in July		Work on Hand July 25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	33	135	39	96	27	94
100-D	43	164	100	303	53	226
100-F	33	129	68	249	34	128
200-E	58	206	83	310	69	205
200-W	78	247	101	272	69	195
300	54	103	48	132	70	100
700-1100	67	177	105	267	74	220
Distribution	122	706	149	965	107	530
Totals	488	1867	693	2593	503	1698

100 AREAS

The primary circuit to control the refrigeration compressor in the B Area Pile Building was relocated from the line side to the load side of the disconnect switch to insure that all control would be dead when the disconnect to the unit is locked open.

Conduit was installed in the downcomer of B Pile Unit to permit relocation of the No. 1 Beckman Chamber by the Instrument Department. Due to corrosion on several of the vertical rods on this unit, it was necessary to change the air gap on the affected rods for removal from the unit. The "B" regulating rod failed to drive out on July 17. However, no faults were found on inspection and the rod is now operating satisfactorily. Trail cable on "D" elevator was rearranged to prevent cable from hanging on elevator and interfering with control circuits.

Telephones were installed in the 182 and 183 switch rooms to improve communications for emergency situations.

End bells on all 300 HP motors in the Primary Pump House (B Area) were inspected. No cracks in addition to No's. 2 and 5 units as previously reported were found.

Installation of speedometers on all locomotives was completed.

Limit switches for the "D" elevator for D Area Pile were readjusted as follows: Green light limit 4" above original location, and final limit lowered 6" to protect new periscope added to top of elevator. Emergency jumpers were provided to permit hand operation if final limit switch is operated. No. 33 vertical rod motor tripped out from overload three times in raising the rod, but subsequent operation was satisfactory. Rod No. 37 failed to lower on one occasion but no further difficulties were encountered.

A ground developed on No. 2 MG set for the D Area Refrigeration Plant caused by grindings of copper and carbon, bridging brush holder to ground.

A faulty carrier current coupling capacitor at the F Area Primary Substation was replaced by a unit available at B Area. Repairs were made to the faulty unit and it was reinstalled at B Area.

200 AREAS

In the B Plant Canyon Building, centrifuge unit 8-2 complete with motor was removed and replaced by a spare unit. The change was necessary because of mechanical trouble in the centrifuge.

The emergency switching procedure was revised after a study of process feeder loads. In the event of complete failure of service to the area, switching will be done at the substation to place the entire T and U, or B Plants on the emergency generator which has sufficient capacity to carry all normal loads in the area during the daylight hours, except the feeder to the water buildings and auxiliary buildings which will be disconnected.

Preventive maintenance included (1) overhaul of a 60 HP compressor motor in the Finishing Building (231), (2) change of design on communication trolley shoes on cranes in the Canyon Buildings, (3) tightening and resagging sections of distribution lines, and (4) relay tests and adjustment.

A closing coil on one of the 2300 volt breakers at the East Area Power Plant burned out due to failure of the cut-off switch in the control circuit. The coil was replaced and the switch repaired.

The waste monitor house at the T Concentration Building (224) was moved to the 241 U section, and the necessary changes in electrical service were made.

Electrical work on the following projects was completed:

C-77 - Relocation of Monitoring Stations
C-40 - Additional Laundry Facilities
C-91 - Air conditioning for Laundry

Line crews completed tightening of all guys and painting of anchor rods on the 230 KV system. Annual tightening of the 200-E Area 2.3 KV feeder circuits was completed.

300 AREA

Four motors driving acid pumps in the Metal Fabrication Building (313) were submerged because of the inability of the drainage system to handle a down-pour of rain. The motors were removed, cleaned and placed back in service with no effect on production.

One tin pot furnace element burned open as a result of metal spilled on the element when the crucible broke.

Building 3713, former Stores Building, was wired for 440 volt service to accommodate carpenter shop machines moved from Building 301.

2

700-1100 AREAS

On July 25, 1946, the 60 HP motor driving well pump No. 4 was removed to the shop and inspected. An excessive shaft vibration had developed, but it was found to be due to a bad pump shaft bearing below the motor.

Project C-82 - move transformers at Columbia high school was completed.

Thirty-one two-way mobile radio sets were overhauled and forty-nine units were serviced. One new installation of a two-way set was made.

Complete inspection was made of (51) 6.9 KV distribution transformers in Richland. This also included tightening of associated hardware, secondary and primary connections, and installation of wood molding on all ground wires where they pass telephone cable. Transformers in Richland substations, B1-S2 and B1-S3, were purged and gas pressure readjusted.

During the month, 104 telephone instruments were installed and 93 removed in the Village. In the areas, 25 instruments were installed and 23 removed.

Dormitory W-8 was provided with increased facilities including thirteen lines and five bridging extensions.

Two leased lines were disconnected, the one to Portland and one of the existing two to Seattle.

Arrangements were made for the release of 100 additional residence telephones.

A study was made of the telephone inter-connection with the BPA system through Midway substation for the purpose of improving quality of speech transmission. The amplification of speech on this end is to be attempted.

The circuits of local switching selectors in the 200-E Area were modified slightly to reduce the time during which inter-area trunks are seized on a local call. The results of this change are to be observed in the 200-E Area before similar alterations are made to any of the other exchanges.

A discussion meeting was held with members of the Engineer Corps and with Accounting Department representatives on the subject of economy and service advantages to be gained from the use of different type switchboards. Further information is being accumulated on the subject of traffic handling standards, and on the operating cost experience of telephone companies.

POWER SUPPLY INTERRUPTIONS

Date	Area	Circuit Affected	Time	Duration	Remarks
July 23	100-B R.R. Sub	C2X63	2:05 PM	3:35 PM	Bird flew into phases

3

POWER STATISTICS - ELECTRICAL DEPARTMENT

FOR MONTH ENDING JULY 25, 1946

ITEM	ENERGY - KWHRS. June	ENERGY - KWHRS. July	MAX. DEMAND - KW June	MAX. DEMAND - KW July	LOAD FACTOR - % June	LOAD FACTOR - % July	INCREASE OR DECREASE - % Energy	INCREASE OR DECREASE - % Max. Demand
230 KV SYSTEM								
151 B Out	1680	1420	3600	4000	62.7	49.3	15.5 (d)	11.1
151 D Out	10250	11070	17600	19300	78.3	79.7	8.0	9.7
151 F Out	10260	10670	15800	15800	87.3	93.8	4.0	0
251 Out	1800	1730	3200	3000	75.6	80.1	3.9 (d)	6.3 (d)
TOTAL OUT	23990	24890	40200**	42100**	-	-	3.8	4.7
MIDWAY IN	24219	25322	38400*	40400*	84.8	87.1	4.6	5.2
Transm. Loss	229	432	-	-	-	-	-	-
Percent Loss	0.9	1.7	-	-	-	-	-	-
66 KV SYSTEM								
1151 A Out	1134	1007	4100	3600	37.2	38.8	11.2 (d)	12.2 (d)
1151 B Out	1154	977	3500	3100	44.3	43.7	15.3 (d)	11.4 (d)
751 A Out	1651	1517	3063	3006	72.4	70.1	8.1 (d)	1.9 (d)
351 A Out	206	202	408	414	67.8	67.6	1.9 (d)	1.5
351 B Out	218	234	1140	1000	25.7	32.5	7.3	12.3 (d)
Hanford Out	222	256	600	600	49.7	59.2	15.3	0
TOTAL OUT	4585	4193	12811**	11720**	-	-	8.5 (d)	8.5 (d)
Hanford In	222	317	600*	600*	49.7	73.3	42.8	0
Pasco In	4381	3901	10700*	9100*	55.0	59.5	11.0 (d)	15.0 (d)
TOTAL IN	4603	4218	11300**	9700**	54.7	60.4	8.4 (d)	14.2 (d)
Transm. Loss	18	25	-	-	-	-	-	-
Percent Loss	0.4	0.6	-	-	-	-	-	-
PROJECT TOTAL								
230 KV (Item 5)	23990	24890	40200**	42100**	-	-	3.8	4.7
66 KV (Item 15)	4585	4193	12811**	11720**	-	-	8.5 (d)	8.5 (d)
TOTAL OUT	28575	29083	53011**	53820**	-	-	1.8	1.5
230 KV (Item 6)	24219	25322	38400*	40400*	84.8	87.1	4.6	5.2
66 KV (Item 18)	4603	4218	11300**	9700**	54.7	60.4	8.4 (d)	14.2 (d)
TOTAL IN	28822	29540	46600*	47600*	83.1	86.2	2.5	2.1
Transm. Loss	242	457	-	-	-	-	-	-
Percent Loss	0.8	1.5	-	-	-	-	-	-

* Coincidental Demand
** Non-Coincidental Demand
(d) Denotes decrease

Average Power Factor - 230 KV System ---99.1%
Average Power Factor - 66 KV System ---91.6%

INSTRUMENT DEPARTMENT

JULY 1946

GENERAL

Work Order Summary:

Area	Work on Hand June 25		Work Completed in July		Work on Hand July 25	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	39	69	59	144	40	39
100-D	51	125	102	292	50	162
100-F	52	174	86	319	59	162
200-E	35	125	197	302	38	122
200-W	58	87	196	237	66	105
300	61	274	65	278	64	263
700	34	80	87	179	29	52
Totals	330	934	792	1751	346	903

100 AREAS

Experimental work is being continued on the use of bonded wire strain gauges for measuring strain and deflection in process tubes and gun barrels. Activities have been centered on a "mock-up" in Building 105-F Flow Laboratory and the tubes of Building 105-B process unit.

A revised underwater viewer was installed in Building 105-F Storage Basin.

The one-inch Chamber installed in the biological shield, D hole, at Building 105-B failed due to the internal aquadag coating flaking off.

200 AREAS

Improvement of the Building 221-U Canyon periscope by installation of a wide angle prism was completed.

Installation of 5 inch G. E. tubes to monitor first cycle waste line and the metal waste lines in Building 241-U waste storage area was completed. A temporary installation of amplifying and recording equipment is being used until process conditions allow completion of the permanent installation.

The air intake monitoring project was completed with the installation of a 614 building atop Building 271-T.

Difficulty is being encountered due to stoppage of process tank dip tubes for specific gravity and weight factor measurements. In some cases high pressure air has failed to clear the tubes and it has been found necessary to use acid.

300 AREA

A device for numbering badge film packs has been built for the Health Instrument Section. Phonograph needles mounted in a rotating spider form the numbers when forced into the film by a lever arrangement.

[redacted]

Instrument Department

700 AREA

Victoreen projection meters used in reading pencil-type meters are being converted to a revised calibration standard for the Health Instrument
2 Section.

PROTECTION DEPARTMENT

JULY 1946

PATROL DIVISION

General

Labor turnover in the Patrol Division was 0.68% during July.

Plant Areas

Sixteen Special Duty escorts were handled.

Sixty-four Special escorts to and from 200 East and 200 West areas were handled.

Requests handled totalled 938, mainly consisting of escorts, opening doors and gates for employes of other departments.

A total of 146 Unusual Incident Reports was received, which consisted mainly of unlocked and open doors, windows and files, and traffic violations.

June 26, 1946 manning of back towers in 212-N and 212-R areas discontinued. Foot Patrol of 200 East Administration area and Power areas inaugurated.

Eight employes were given emergency first aid treatment in areas by Patrol Supervision during periods when Doctors or Nurses were not in the area.

Practice evacuations were held in the 100-B area on July 3, 100-D area on July 11, 100-F area on July 11 and 200-East area on June 28 and June 29.

Training

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

	June		July	
	No.	Percent	No.	Percent
Unqualified	26	8	27	9
Marksman	107	34	108	34
Sharpshooter	70	23	80	25
Expert	110	35	99	32
Totals	313	100	314	100

Upon completion of area competition for this period, awards were presented as follows:

High Team Average	273-2/5	Richland
High Area Average	237-11/23	100-B
High Individual Score	292	200 East

[redacted]

[redacted]

Protection Department

The Sub-Machine Course was not fired during the month of July.

A 16 M. M. projector has been obtained and the regular training program is now supplemented with suitable training films.

Richland Area

	June	July
Check on absentees	3	2
*Persons assisted	205	261
Doors and windows found open in commercial facilities	11	24
Lost children found	8	6
Ambulance runs	41	33
Lost dogs reported	4	5
Dog and cat complaints	27	41
Persons injured by dogs	10	9
Totals	309	381

*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

Security Education

New security posters, referring to atomic Know How, were distributed and posted in the manufacturing areas on July 10, 1946.

New bus size posters, referring to atomic Know How, were posted in the village buses, and in the village and administration area on July 17, 1946.

A total of 235 Security Meetings was held and attended by 3050 employes throughout the entire plant and administration areas during the period of June 26, 1946, to July 25, 1946

Plant Visitors

Name - Organization	Purpose of Visit	Access to Areas Classified	Access to Areas Unclassified
Hubert W. Collins U. S. Engineers Office Pacific Division Presidio, California	Consultation	X	
Sylvan Cromer U. S. Engineers Office Manhattan District Santa Fe, New Mexico	Consultation	X	
Albert H. Hatch U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation	X	
Charles F. Metz U. S. Engineers Office Manhattan District Santa Fe, New Mexico	Consultation	X	
Roy C. Moses Chief Engineers Office Washington, D. C.	Consultation	X	
Frank Pittman U. S. Engineers Office Manhattan District Santa Fe, New Mexico	Consultation	X	
David Shaw U. S. Engineers Office Manhattan District Oak Ridge, Tennessee	Consultation	X	
Reginald Whittaker U. S. Engineers Office Pacific Division Presidio, California	Consultation	X	
James H. Roberts U. S. Engineers Office Manhattan District Santa Fe, New Mexico	Consultation	X	
James T. Serduke U. S. Engineers Office Manhattan District Santa Fe, New Mexico	Consultation	X	

[redacted]

[redacted] 7-45-47

Protection Department

Name - Organization Outside Service Personnel	Purpose of Visit	Access to Areas Classified	 Unclassified
William H. Milton General Electric Company Pittsfield, Mass.	Consultation	X	
H. E. Callahan General Electric Company Pittsfield, Mass.	Consultation	X	
Frank G. Cliffe General Electric Company Pittsfield, Mass.	Consultation	X	
Erwin G. Doughty General Electric Company Pittsfield, Mass.	Consultation	X	
G. F. Gardner General Electric Company Pittsfield, Mass.	Consultation	X	
Glenn W. Giddings General Electric Company Pittsfield, Mass.	Consultation	X	
Beverly L. Vosburgh General Electric Company Pittsfield, Mass.	Consultation	X	
A. B. Greninger General Electric Company Pittsfield, Mass.	Consultation	X	
M. J. Hammer General Electric Company Pittsfield, Mass.	Consultation	X	
Lewis F. Huck General Electric Company Pittsfield, Mass.	Consultation	X	
General			
D. P. Barnes Westinghouse Electric Corp. Portland, Oregon	Consultation		X
Jarrette C. Black Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	

Name - Organization	Purpose of Visit	Access to Areas Classified	Access to Areas Unclassified
General (Cont.)			
J. C. Christensen Progressive Cafeteria Chicago, Illinois	Consultation		X
E. W. Johnson Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
Harry Lee Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
H. W. Linder Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
Wilton B. Mickelson Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
Frank M. Norton Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
John T. Rehms Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
Stubbert C. Riggle Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	
Robert L. Stockman State Dept. of Health Spokane, Washington	Consultation		X
Merton E. Torrence Bureau of Reclamation U. S. Dept. of Interior Coulee Dam, Washington	Dismantle a water tower	X	

Protection Department

Statistical Summary

	June	July
Number of employes cleared for classified information.	20	26
Number of visitors cleared for classified information.	0	2
Number of authorization cards issued to employes	17	4

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

	June				July			
Area	A	B	C	Total	A	B	C	Total
100-B	359	617	326	1302	347	634	334	1315
100-D	639	542	336	1517	631	552	338	1521
100-F	703	476	341	1521	587	488	345	1420
200-E	692	714	321	1727	677	711	324	1712*
200-W	883	656	293	1832	851	664	301	1816
200-N	65	400	175	640	65	402	169	636
300	560	555	174	1289	545	562	179	1286

*Includes 21 "A" badges charged to Riverland Yards

Area	Temporary Access	
	June	July
100-B	17	11
100-D	44	27
100-F	35	17
200-E	8	13
200-W	11	42
200-N	5	4
300	36	40
Total	146	154

INVESTIGATION DIVISION

Investigation

The following summary reflects the work of this Division:

	June	July
Cases pending at beginning of month.....	93	92
Cases received during month.....	252	290
Cases closed during month.....	253	262
Cases pending at end of month.....	92	120
Number of employes approved for clearance.....	20	26
Construction personnel files reviewed for transfers.....	21	23
Number found satisfactory for employment.....	38	38
Number found unsatisfactory for employment.....	7	7
Number of Personnel Security Questionnaires concerning concessionaire employes processed and forwarded to Military Intelligence office without investigation.....	58	34

PATROL DIVISION - RICHLAND OFFENSES

Classification of Offenses	Offenses Known or Reported to Patrol	Offenses Unfounded	Actual Offenses June	Actual Offenses July	Offenses Cleared By Arrest	Offenses Cleared By Other Action	Perpetrators Involved
Assault	0	0	0	0	0	0	0
Attempted Suicide	0	0	0	0	0	0	0
Burglary-Breaking and/or Entering	2	2	1	0	0	0	0
Larceny-Theft (except auto & bike):							
(a) - $50.00 and over value	1	0	0	1	0	0	(u)
(b) - Under $50.00 value	3	2	6	1	0	0	(u)
Auto Theft	0	0	0	0	0	0	0
Bicycle Theft	7	1	5	6	0	0	(u)
Destruction of Government Property	3	0	4	3	0	1	1
Destruction of Personal Property	1	1	1	0	0	0	0
Disorderly Conduct	0	0	0	0	0	0	0
Drunkenness	2	0	6	2	2	0	2
Missing Persons	1	0	0	1	0	1	1
Offenses against family & children	2	0	0	2	0	2	5
Prowlers	2	0	0	2	0	0	(u)
Rape	0	0	0	0	0	0	0
Sex offenses	1	0	0	1	0	1	2
Vagrancy	0	0	0	0	0	0	0
Miscellaneous	3	1	2	2	0	1	1
Juveniles (other than reported above) Disorderly Conduct	5	0	5	5 (a)	0	5	9
	33	7	30	26	2	11	21

(a) - The five offenses were perpetrated by nine juveniles, of ages 5, 6, 11, 13 and 15 through 17 years.
(u) - Represents "unknown".

Value of property recovered from June 25 through July 25 was $200.00 (includes three bicycles).

7-45-42

[redacted]

Protection Department

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 June	Richland July
Murder	0.225	0.037	0	0	0
Robbery	5.32	0.89	0	0	0
Aggravated Assault	2.49	0.615	0	0	0
Burglary	30.97	5.16	7.33	0.66	0
Larceny	86.08	14.34	63.33	7.33	5.33
Auto Theft	23.96	3.97	6.66	0	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 June	Richland July
Murder	0.215	0.036	0	0	0
Robbery	3.62	0.6	0	0	0
Aggravated Assault	1.17	0.19	0	0	0
Burglary	27.8	4.63	7.33	0.66	0
Larceny	81.22	13.53	63.33	7.33	5.33
Auto Theft	24.04	6.0	6.66	0	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 June	Richland July
Robbery	58.6%	0	0	0
Burglary	64.4	63%	100%	0
Larceny	49.6	27	45	0
Auto Theft	80.3	20	0	0

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 fingerprint youthful offenders."

In Richland every delinquent juvenile is entered in the records.

1224444

DECLASSIFIED

PATROL DIVISION - TRAFFIC CONTROL STATISTICS

Motor Vehicle Accidents

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	June	July	June	July	June	July	June	July
Plant	2	2	0	0	0	0	0	1
Richland	12	10	0	0	1	1	3	3
Totals	14	12	0	0	1	1	3	4

Accident Causes

	Negligent Driving		Failure to Yield Right-of-Way		Reckless & Drunken Driving		Miscellaneous Causes	
	June	July	June	July	June	July	June	July
Plant	1	0	0	0	0	0	1	2
Richland	5	7	5	5	2	0	0	1
Totals	6	7	5	5	2	0	1	3

Plant Warning Traffic Tickets Issued

	Speeding		"Stop" Sign		Parking		Improper License		Defective Equip.		Totals	
	June	July	June	July	June	July	June	July	June	July	June	July
Plant	2	3	2	0	2	1	0	0	2	2	8	6
Richland	16	21	10	25	67	88	7	1	37	45	137	178
Totals	18	24	12	25	69	89	7	1	39	45	145	184

Court Citation Traffic Tickets Issued

	Speeding		"Stop" Sign		Drunken Driving		Reckless Driving		Negligent Dr.		Other Violations		Totals	
	June	July	June	July	June	July	June	July	June	July	June	July	June	July
Plant	4	2	1	10	0	0	0	0	0	0	1	0	6	12
Richland	10	6	18	6	0	1	0	4	6	5	15	10	47	32
Totals	14	8	19	16	0	1	0	4	6	5	14	10	53	44

Traffic Volume

	June	July
(- 24 hour period).....	9,887	7,334

58

4-4-5-4 2

SERVICE DEPARTMENT

JULY 1946

PLANT SERVICE

PERSONNEL

Department	Roll Additions	Inter-Dept. Transfers In	Inter-Dept. Transfers Out	Roll Terminations	Net Roll Change
Management	-	1	-	1	-
P Department	2	-	1	3	- 2
S Department	-	-	1	3	- 4
Technical	1	1	-	8	- 6
Power	1	-	2	6	- 7
Maintenance	6	5	1	8	+ 2
Electrical	-	-	-	3	- 3
Instrument	-	-	-	2	- 2
Protection	2	-	2	3	- 3
Service	8	-	-	6	+ 2
Transportation	4	-	-	8	- 4
Medical	11	-	1	13	- 3
Accounting	16	1	-	20	- 3
Totals	51	8	8	84	- 33

Roll Additions

	Exempt	Non-Exempt	Total
New Hires	1	31	32
Reemploys	1	4	5
Reinstates	-	9	9
Other Plant Transfers	1	-	1
Net Additions	3	44	47
Payroll Exchanges	4	-	4
Gross Additions	7	44	51

Terminations

Another Job	1	13	14
Dissatisfied with Job	-	2	2
Illness in Family	-	3	3
Pregnancy	-	6	6
Getting Married	-	3	3
Going Home	-	5	5
Husband Leaving Project	-	2	2
Going to School	-	2	2
Voluntary Unexplained Absence	-	8	8
Deceased	-	1	1
Reduction of Force	3	16	19
Transfer to Other Plants	8	1	9

Service Department

	Exempt	Non-Exempt	Total
Discharged	-	3	3
Other	1	2	3
Net Terminations	13	67	80
Payroll Exchanges	-	4	4
Gross Terminations	13	71	84

Approximately 24% of all terminations occurred in the Accounting Department; 15% in the Medical Department and 10% in the Technical, Maintenance and Transportation Departments.

Personnel Turnover	June	July
Total Turnover	2.53%	1.36%
Plant Absenteeism (Non-Exempt)		
Male	1.81%	1.39%
Female	3.00%	2.47%
Plant Average	2.05%	1.61%
Non-Exempt Personnel - Interviews		
Accepted	30	74
Rejected	247	532
Others	161	156
Total Interviews	438	762
Non-Exempt Personnel - Placed on Roll		
Current Month Interviews	16	44
Previous Month Interviews	-	-
Total Placed on Roll	16	44

Military Service Personnel (World War II)	July	To Date
Employees Entering Military Service	-	151
Employees Returned from Military Service	2	43
Employees of Other du Pont Plants Added to Roll.	1	42
Other Veterans Hired	20	429
Total	23	514

SELECTIVE SERVICE

Due to the possibility of single men and married men without children being called into Military Service through age 44, it was necessary to make an extensive survey of the various age groups (by marital status and draft classifications) of all our male personnel falling within these age limits. Subsequently, it was learned that the Armed Forces are unlikely to call anyone over age 29, and therefore only data including this age group is included in this report.

[redacted]

[redacted]

Service Department

The survey is being kept current and the figures shown below reflect the true picture as of this writing:

Age 19 Through 29

Technically Trained	1-C	4-F	Other	Total
Married	-	3	44	47
Single	-	1	27	28
Totals	-	4	71	75
Non-Technically Trained				
Married	72	32	4	108
Single	43	22	2	67
Totals	115	54	6	175
Grand Totals	115	58	77	250

CENTRAL FILES

	June	July
Classified Documents Received (In Mail)	384	70
Unclassified Documents Received (Total)	3,225	2,276
Classified Documents Issued	2,140	1,499
Inter-Area Transfer (Classified)	1,745	2,776
Documents Routed (Classified)	5,396	4,160
Requests - File Documents (Classified)	772	1,232
Requests - Technical Library	102	147

SAFETY AND FIRE PROTECTION

Safety

Plant Safety Record - 196 Days

Injury Statistics

	June	July	Year to Date
Major Injuries	-	-	1
Non-Tab. Major Injuries	1	-	3
Sub-Major Injuries	4	1	17
Minor Injuries	226	213	1669

Sub-Major Injury No. 68

July 12 - [redacted] (Transportation Department, Old Hanford James Warehouse, 200-W Area), sustained a puncture wound of the sole of his left foot. Injured was helping load scrap lumber on a low body semi-trailer. The trailer was almost loaded when the injured walked through some weeds and picked up material in both hands. He returned to the trailer and as he raised the lumber to place it on the trailer he stepped

on a nail which was protruding from a board lying on the ground near the trailer. The nail penetrated the composition on sole of his shoe and entered his left foot. Injured was not wearing safety shoes.

Minor Injuries

See charts appended to this departmental report.

A total of 386 Safety Meetings were held, with an attendance of 5,135.

A letter of commendation was received from the Area Engineer, U. S. Corps. of Engineers, for the operation of the Hanford Engineer Works for a six month period, January 10, 1946 to July 10, 1946, without a time-losing injury. Photostatic copies of this letter have been made and posted in Plant bulletin boards.

Inspections were conducted in Village facilities and in the new busses. Recommendations were made for protective equipment. A study is being made of the means of testing the hydraulic brake system in all Plant cars and trucks.

A new non-slip paint has been applied to the Production Department shower floors in the 300 Area to eliminate the slipping hazard. It has proved very satisfactory to date.

All posted safety rules in the 200 A reas are being revised. Locations of these rules are also being changed.

The training subjects covered in the weekly meetings of the Safety Engineers and Fire Department Supervisors were "Safety Publicity and How to Achieve" and "Eye Protection."

Additional 16 millimeter moving picture films and 35 millimeter sound slide films have been ordered for use in safety meetings.

Fire Protection

Fires

	Number of Fires		Estimated Damage	
	June	July	June	July
Village	10	7	$3,600.00	$40.00
Plant	6	9	-	6.00
Miscellaneous	5	9	-	-
Totals	21	25	$3,600.00	$46.00

Fires occurring in Village and Plant areas were minor in nature and involved small monetary loss.

Service Department

Inspections were made of 239 Village homes. Occupants of all homes inspected were advised by the Inspector of fire hazards occurring in the home and how to eliminate them; also, the location of nearest alarm box and how to turn in an alarm.

Eighteen lectures were delivered to various groups in the Transportation, Stores, Patrol and Accounting Departments on what to do when trapped in a room by fire in the home, and eliminating the causes of fire in the home through a home safety meeting with all members of the family.

A flow test was conducted on the Village fire pumps July 12. Test showed pumps were discharging as per their rated capacity (1,000 G.P.M.).

Fire extinguishers in 155 government-owned motor vehicles operating in the 700-1100 Area were inspected. Copy of record of inspection was forwarded to the Transportation Department.

INDUSTRIAL RELATIONS AND TRAINING

Contacts are summarized as follows:

	June	July
Policy	13	31
Military Service	3	27
Insurance	3	23
Housing	18	21
Municipal (Facilities)	2	2
Personal	18	34
Miscellaneous	13	29
Income Tax	6	9
Total	76	176

Notices were placed in the locked bulletin boards advising employees of the procedure to be followed in converting the Group Life Insurance, now provided under the Company's Industrial Relations Plans.

Welfare Section

Two men's softball leagues, one of 8 and one of 6 teams and consisting of approximately 225 employee players, have started the second half season schedule with the assistance of the Welfare Section. At a recent meeting of the leagues, tentative plans were made for a championship play-off at the end of the season.

Two issues of "The Life Line" plant safety bulletin, were prepared and issued to employees.

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Service Department

GENERAL DIVISION

Laundering volumes were as follows:

Plant Laundry (Bldg. 2723)	June	July
Coveralls - Pieces	13,851	13,564
Towels - "	5,406	5,703
Miscellaneous "	22,355	22,944
Total Pieces	41,612	42,211
Total Dry Weight - Lbs.	56,064	57,767

The installation of the stainless steel washer and one tumbler dryer in this laundry was completed.

The ventilation air cooling project was also completed in this building.

700 Area Laundry (Bldg. 723)	June	July
Flatwork - Pieces	31,305	27,599
Rough Dry - "	19,089	15,384
Finished - "	1,990	1,589
Total Pieces	52,384	44,572
Total Dry Weight	29,359	25,406

VILLAGE ADMINISTRATION

HOUSING

Permanent Village Houses

	Family Occupancy Figures		
	Moved In	Moved Out	Month End
Du Pont	39	45	2142
Government	21	11	185
Totals	60	56	2327

Summary:

Houses occupied by family groups	2327
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	8
Houses available for assignment	159
Government houses without lease in du Pont possession exclusive of authorized rent-free houses	3
Total Houses	2500

Prefabricated Houses

	Family Occupancy Figures		
	Moved In	Moved Out	Month End
Du Pont	45	39	1079
Government	16	4	102
Totals	61	43	1181

Summary:

Houses occupied by family groups		1181
Unoccupied pending installation of effects and arrival of families		2
Houses available for assignment		54
Government houses without lease in du Pont possession		6
Total prefabs (active)		1243
Closed and available for excess		-
Turned over to excess	559	
Removed from project	469	
Awaiting removal		90
Total prefabs on Project		1333

Total prefabs moved from Project during month: None

Tract Houses

Occupied	57	(Includes occupancy by du Pont, Government, Sub-Contractors and concessionaires, in Richland and vicinity)
"	7	(Includes occupancy by Bonneville Power in Priest Rapids and White Bluffs)
"	1	(Special - Fumigation)
Vacant	43	
Total	108	(Includes Richland, Priest Rapids and White Bluffs)

Dormitories

Occupied by men	6	
Occupied by women	6	
Community Organizations	3	(1 to Teen-Age Club; 1 to Youth Council; 1 to Pre-School Nursery)
Government Offices	1	
Held as emergency additional hospital accommodations	1	
Vacant	8	
Total	25	

Dormitory W-8 (closed and in stand-by condition) was released to the Government June 26 for office space.

Dormitory W-4 was closed and placed in stand-by condition July 18.

General

The allocation of houses to General Electric Company management was started July 1.

A project has been requested for $3,125.00 to cover repair of the A type dwelling at 1446 Thayer Drive which was seriously damaged by fire on June 22, 1946, with minor damage to the adjoining dwelling at 1444 Thayer.

COMMERCIAL FACILITIES

Operation

Progressive Cafeterias	June	July
Cafeteria Meal Customers	33,625	33,446
Total Dollar Sales	14,758	14,532
Per cent of room-day occupancy, Transient Qrtrs.	88.00%	85.00%
Carnation Company		
Gallons of milk sold	47,541	38,086
Gallons of cream sold	1,963	895
Gallons of ice cream sold	3,618	4,588
Pounds of Cottage Cheese sold	630	495
"Richland" and "Village" Theaters		
Customer Count	43,989	50,297
Gasoline Sales	**May**	**June**
Total Gallons, all stations	97,833	93,684

General

Operation of the Village Pony Ring was discontinued during the month because of ill health of the operator and lack of sufficient business.

A change in operators of the restaurant facility in the Commercial Bus Depot was made by Motor Coach Lunch, Inc.

A meeting was held with the operator of the Cafeteria, at which time final determination was made of inventory adjustments in connection with the year-end inventory, April 30, 1946, relative to adjustment of serviceable and unserviceable items. At the request of the operator, a proposed revised schedule of cafeteria prices has been submitted for approval in line with increased operating costs, to become effective August 1, 1946, if approved.

A report was submitted to the Area Engineer covering comments of the facility operators relative to the adequacy of facility buildings and equipment.

Service Department

The Engineering Section completed the requested study of the maintenance, utilities, and service costs involved in the operation of commercial facility buildings during the period April 1, 1945 through March 31, 1946. This information was embodied in a report to the Area Engineer covering facility rental income and expenses during that period.

The Carnation Company announced increases in the retail and wholesale prices of milk and dairy products on June 11 and July 8.

Notice was received from Mrs. Edith Earp, operator of the Dog Pound facility, of her desire to terminate her contract August 1, for reasons of health. Investigation has been started to determine the possibility of obtaining a full-time veterinary service in connection with the Dog Pound operation.

COMMUNITY ACTIVITIES

Schools

The average daily attendance at the four grade school recreation centers was 20 each. The afternoon program of supervised recreation at the park had an average attendance of 245. There was a daily attendance average of 35 high school age children at the Hi-Spot Club.

The annual inventory of the four grade schools, high school and nursery school was completed during this period.

At the request of the Area Engineer a project was prepared and approved for the construction of additional classrooms as required by estimated increased enrollment and promotions. Eleven hutments are to be installed as follows: Columbia High School, 4; Sacajawea Grade School, 6; Lewis and Clark Grade School, 1. Approval was also given for the installation of one further additional hutment at the high school if approved funds will permit this addition to the original project.

General

Permission was granted to the Benton County Chapter of the American Red Cross to conduct swimming classes at the Village pool between the hours of 10 to 12 a.m., daily except Wednesdays and Sundays, subject to the understanding that this company would assume no responsibility for the safety of persons using the pool during these periods other than to maintain the physical facilities in proper operating condition.

During the period June 24 to July 21 the average attendance at the Richland Park Swimming Pool was 448, with the peak attendance of 875 on July 21 and the low attendance of 28 on July 8.

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MONTHLY INJURY ANALYSIS

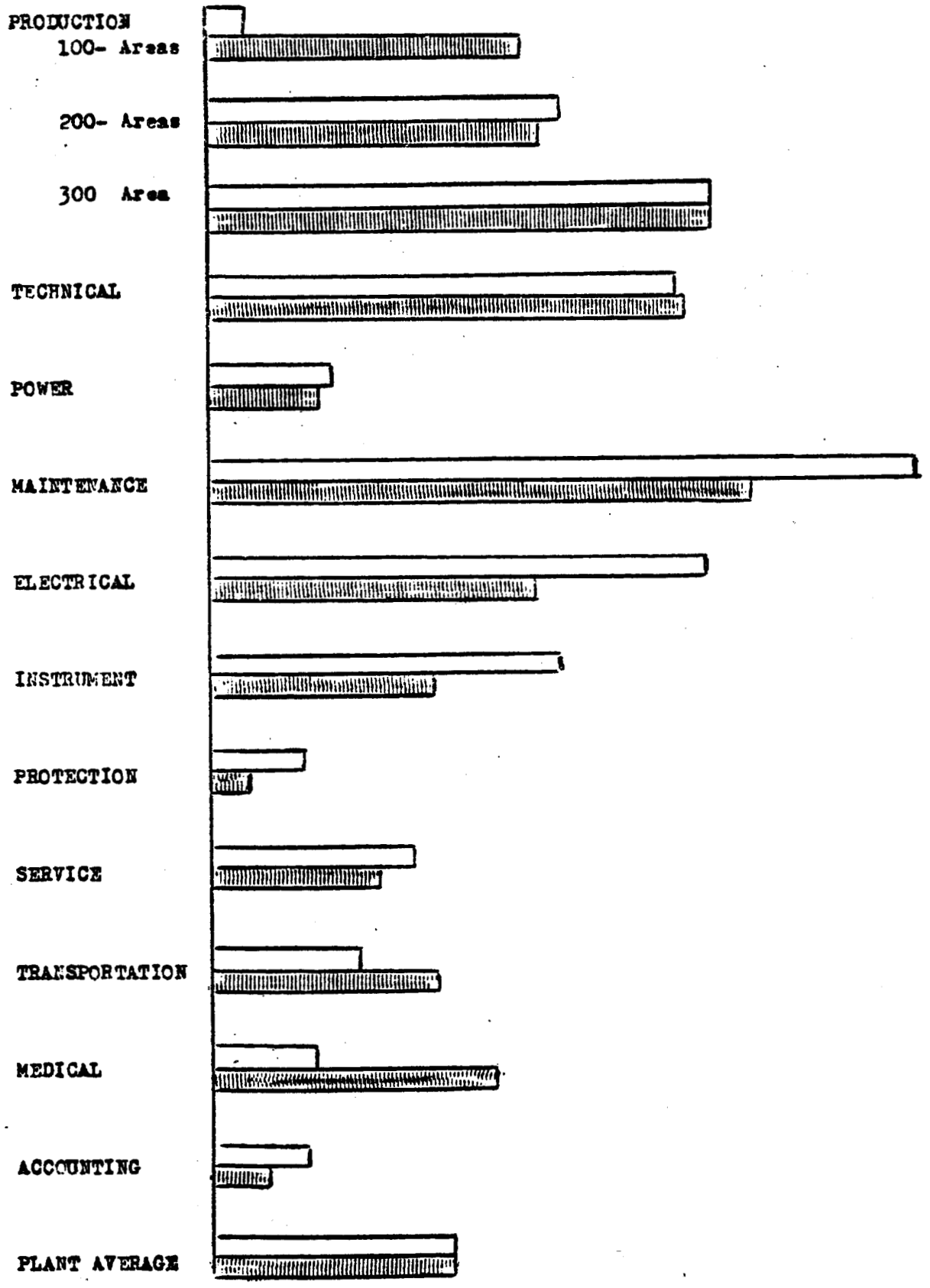
Period - June 26 through July 25, 1946

Minor Injuries

	Misc. Burns	Abrasions	Contusions	Lacerations	Punctures	Splinters	Strains & Sprains	Foreign Body	Unclassified	TOTAL JULY	TOTAL LAST MONTH
Production P	8	5	0	3	0	1	1	0	1	19	13
S	2	8	2	5	1	2	0	1	1	22	24
Technical	6	1	1	8	3	0	0	0	1	20	21
Power	0	2	1	5	0	0	0	2	1	11	12
Maintenance	7	8	7	17	3	4	2	2	6	56	67
Electrical	2	3	0	1	3	4	0	0	0	13	21
Instrument	0	4	0	2	0	0	0	0	0	6	10
Protection	1	0	0	1	0	1	0	0	0	3	9
Service	0	1	1	3	1	2	1	0	0	9	11
Transportation	6	4	4	2	0	2	1	2	5	26	18
Medical	3	7	1	7	1	1	0	0	1	21	8
Accounting	0	0	0	2	1	0	0	2	2	7	12
TOTAL	35	43	17	56	13	17	5	9	18	213	226

Last Month
This Month

JULY
FREQUENCY RATE CHART
Minor Injuries



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TRANSPORTATION DEPARTMENT

JULY 1946

RAILWAY AND AUTOMOTIVE OPERATIONS

A further reduction of automotive equipment inventory was effected with thirty-five units being declared excess.

Under the program of disposing of and exchanging non-standard types of automotive units and replacing those worn beyond economical repair, five units have been exchanged since June 25, 1946.

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

Comparative figures for plant bus trips are:

	Average Daily Trips	
	June	July
Passenger Buses - 100-B	5	5
Passenger Buses - 100-D	8	8
Passenger Buses - 100-F	9	9
Passenger Buses - 200-W	13	13
Passenger Buses - 200-E	9	9
Passenger Buses - 300	6	6
Inter-area passenger service (Stretchouts)	3	3
Inter-area express service (1 panel delivery)	1	1
Inter-area mail service (1 panel delivery)	1	1

Significant daily averages for Village bus operation are:

	June	July
Total passengers handled, including transfers-	2,242	2,185
Total bus trips	87	87
Total bus miles handled	504	504
Revenue	$110.05	$107.20

MECHANICAL AND LABOR

Work Order Summary:

	Work on Hand June 25		Work Completed in July		Work on Hand July 25	
Areas	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
Labor:						
100,200,300	90	598	170	1382	94	774
700 & 1100	167	1537	245	2334	201	1503
Repairs:						
100,200,300	6	154	1	237	15	137
Riverland	54	424	21	247	49	369
700 & 1100	497	2133	419	2053	510	1974
Totals	814	4846	856	6253	869	4757

Transportation Department

Bulk fuel plant statistics (in gallons):

	Gasoline	Diesel Fuel	Kerosene
Stock at start of month	34443	6040	795
Received during month	79000	17350	1600
Delivered to Area Stations:			
du Pont	72327	19809	1461
Government	22431	546	-
Totals	94758	20355	1461
Stock at end of month	18685	3035	934

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

		July								
	June Totals	100 B	100 D	100 F	200 W	200 E	300	700-1100	Portable Units	Totals
Inspections (Preventive Maintenance)	1262	39	70	63	86	80	-	621	265	1224
Grease Jobs	1262	39	70	63	86	80	-	621	265	1224
Shop & Repair Orders	2485	21	89	130	35	-	6	1729	-	2056*
Gasoline Dispensed (Gallons)	75561	2677	4046	4372	5540	5243	773	34462	8258	68134**
Kerosene Dispensed (Gallons)	347	5	-	-	-	-	-	-	344	349
Diesel Fuel Dispensed (Gallons)	18167	-	-	-	-	-	-	-	10800	17437***

* Includes 46 shop and repair orders at Riverland Yard.
** Includes 2763 gallons disbursed from Morrison-Knudsen underground tanks.
*** Includes 6637 gallons diesel fuel from Riverland Yard.

Labor work volume statistics are as follows:

		July							
	June Totals	100 B	100 D	100 F	200 W	200 E	300	700-1100	Totals
Cars Coal Unloaded	553	-	241	203	56	64	9	16	589
Cars Other Materials Unloaded	31	3	16	10	2	6	5	0	42
Personal Effects Moved Including Baggage and Freight	22	-	-	-	-	-	-	38	38

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Transportation Department

RICHLAND TRAFFIC OFFICE

The work volume statistics are as follows:

Office Business	June	July
Household Goods Movements Arranged	12	14
Household Goods Movements Traced	8	0
Automobile Shipments Arranged	4	2
Automobile Shipments Traced	1	0
Rail Bills Approved	92	47
Truck Bills Approved	163	94
Express Bills Approved	81	20
Household Goods Claims Filed	11	9
Household Goods Claims Collected - Number	19	16
Household Goods Claims Collected - Amount	$969.95	$355.89
Work Orders Issued - RHG Repairs	30	112
Insurance Riders Issued	62	16
Insurance Bills Approved	21	56
Freight Claims Filed	2	1
Freight Claims Collected - Number	5	1
Freight Claims Collected - Amount	$23.98	$3.61
Requests for Billing	3	8
Rail Reservations Made	59	95
Air Reservations Made	63	73
Ticket Refund Claims Filed - Number	13	3
Ticket Refund Claims Filed - No. of Tickets	13	4
Ticket Refund Claims Collected - Number	9	12
Ticket Refund Claims Collected - Amount	$382.06	$569.62
Freight Shipments Traced	25	6
Express Shipments Traced	-	-
Carload Shipments Received	690	717
Carload Shipments Outbound	12	10
Hotel Reservations Made	26	25
Expense Accounts Checked	25	47
Freight Shipments Converted	600	590
Express Shipments Converted	6	0
Government Bills of Lading Accomplished	70	50
Freight Bill Pre-Audit Savings	$136.00	$89.93
Rates, Routings, Schedules Checked	788	836
Routing Instructions Issued	10	7

Household Effects	June	July
Lots Shipped Out	14	14
Lots Pending	43	70
Automobiles Shipped Out	4	2
Household Lots Via Express	26	9
Household Lots Via L.C.L. Freight	2	0

Transportation Department

Commodities Received - Carloads	June	July
Aluminum Sulphate	0	1
Ammonium Silico Fluoride	0	1
Anthrafilt Coal	0	2
Asphalt	1	2
Caustic Potash	0	1
Caustic Soda	13	15
Cement	0	1
Chemicals	4	4
Chlorine	1	1
Coal	613	635
Ferric Sulphate	9	10
Ferrous Ammonium Sulphate	1	1
Helium Gas	0	1
Hospital Car	1	0
Hydrogen Peroxide	0	1
Lime	6	7
Lubricating Oil	1	0
Lumber	1	0
Merchandise	5	7
Nitrate of Soda	1	0
Nitric Acid	13	10
Passenger Bus	0	1
Phosphoric Acid	3	1
Pipe Strainers	0	1
Plywood	3	0
Rail Creepers	1	0
Salt	1	0
Silicate of Soda	3	10
Soda Ash	5	4
Sulphuric Acid	2	0
Tin	0	1
Tractor	1	0
Transformer	1	0
Totals	690	718

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MEDICAL DEPARTMENT

JULY 1946

HEALTH INSTRUMENT SECTION

100 Areas

General

Two irradiated uranium slugs and some dummy slugs were removed from the discharge elevator after the elevator had been left in the wrong position during discharge operations. A horizontal rod was removed from a Pile so that the thimble could be borescoped. Some radioactive gases were released from the Pile cooling system during maintenance on some of the equipment.

Work Permit Summary

Special Work Permits were processed as follows:

	June	July
100-B	177	44
100-D	581	557
100-F	628	400
Total	1386	1001

Retention Basis Effluent

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

	100-D	100-F
Power Level (MW)	250	200
Average beta dosage-rate (mrep/hr)	0.7	0.7
Average gamma dosage-rate (mr/hr)	1.2	1.5
Average total dosage-rate (mrep/hr)	1.9	2.2
Average integrated dose in 24 hrs. (mrep)	46	53
Maximum integrated dose in 24 hrs. (mrep)	53	58

Pile Buildings

The #2 horizontal shim rod was removed from the 100D Pile so that the rod thimble could be borescoped. Measurements against the shield in which the rod tip was placed were as high as 4000 mr/hr. There was considerable contamination on protective clothing and the borescope during this work.

After the startup of the 100D Pile, the radiation levels on top of the pile were higher than normal, readings of 200 mr/hr have been found repeatedly around the vertical rod railing. The high readings are probably due to the presence of radioactive gases in the third safety headers. Contamination around the top of the pile has caused readings up to 200 mrep/hr on protective clothing worn there.

Due to the discharge elevator being left in the wrong position during discharge operations two irradiated uranium slugs and several dummy slugs were caught on the aimer track of the elevator. A probe meter over the front edge of the elevator and about six feet from the slugs gave a reading of about 15,000 mr/hr. Personnel removing the slugs were exposed to a maximum radiation level of 1000 mr/hr and their total exposure did not exceed 40 mr as recorded on their pencil meters.

During maintenance work in the tunnel between the 100D Pile Building and the Gas Purification Building high gas activities were obtained when the process gas system was vented to the tunnel. Personnel were removed from the location until the defect was remedied.

200 Areas - T and B Plants

General

The cave-in caused by the broken metal waste line has been filled in and some contaminated dirt has been removed from the location. The crane bridges have been found to be contaminated.

Survey Statistics

	June			July		
	T	B	Total	T	B	Total
Special Work Permits	413	341	754	540	363	903
Other routine & special surveys	453	450	903	415	438	853
Smear samples for alpha counts	958	740	1698	990	724	1714
Smear samples for beta counts	1017	760	1777	864	762	1626
Air monitoring samples	430	414	844	409	340	749
Thyroid checks	295	218	513	374	251	625

Canyon Buildings

The cave-in outside the B Plant Canyon Building has been filled in so that radiation levels around the pile are less than 5 mr/hr. Some of the ground around the cave-in was contaminated and has been removed.

The crane bridges in both the B and T Plants have been found to be somewhat contaminated, due presumably to air borne activity. Readings as high as 120 mrep/hr are obtainable on some surfaces on the B Plant bridge.

Control Laboratories

Product contamination has been very well controlled in both the T and B Plant Laboratories. Radiation levels were high at times due mostly to collections of active material in the contaminated waste cartons. No air sample had as much as 10^{-11} µg Pu/cc.

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Concentration Buildings

Product contamination was kept at low levels except for one instance where a total of about 240 μg Pu was found on the floor of the F cell in the B Plant. This total was reduced to about 20 μg Pu after one clean up. Air contamination was not very high, the maximum value obtained on any sample was 4.1×10^{-11} μg Pu/cc.

200 Area Isolation Building

Air Monitoring

The maximum concentration found in a spot check air sample was only 4×10^{-11} μg Pu/cc. 216 Samples were taken and 209 of these had less than 10^{-11} μg Pu/cc. 75 Little Sucker air samples run continuously by shifts had no result as high as 4×10^{-12} μg Pu/cc. There were 14 samples of the filtered hood air and the maximum value was 5×10^{-12} μg Pu/cc.

Surface Contamination

Four hundred seventy-five non-regulated items were found to be contaminated. 388 of these were found in the Laboratories and 62 were found in Process areas. Floor contamination was low except for one spot with 4 μg Pu which was caused by a leaking trap.

Gamma Radiation

The radiation levels increased markedly, the maximum being 90 mr/hr at the side of a PR container.

300 Area

Metal Fabrication Plant

Seventeen air samples were taken in known contaminated zones in the Press Building and all of these samples had more than 1.5×10^{-4} μg U/cc. One sample had 6.7×10^{-3} μg U/cc. Further measurements with finger films indicate that the personnel engaged in handling metal are receiving less than 100 mrep per day.

Separations Laboratories

There was some contaminated equipment as the result of a special job. 39 air samples were taken and the maximum value was 3×10^{-11} μg Pu/cc. The rest of the samples all had less than 2×10^{-11} μg Pu/cc.

Plant General

Water Monitoring

Three hundred ninety-one water samples were collected during the month. The maximum concentration of beta activity in the river water was 2×10^{-4} μc/liter in a sample obtained near the 300 Area. One river sample gave a slight positive count for alpha activity amounting to

about 1 dis/min per liter. One Ranch #13 water sample had 6 x 10^{-5} μc/liter, all other well samples had less than 5 x 10^{-5} μc/liter. The 300 Area wells have again shown alpha activity. The maximum obtained was 13 dis/min. per liter and is thought to be due to uranium rather than plutonium. Rain samples collected in the 200 Areas had up to 7 x 10^{-2} μc/liter.

Atmospheric Monitoring

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

Location	Integrons (mrep/24 hrs)		C Chambers (mrep/24 hrs)	
	June	July	June	July
100-B	0.6	0.6	0.2	0.3
100-D	0.4	0.2	0.3	0.4
100-F	0.5	0.5	0.3	0.4
200-W	0.5	0.6	0.4	0.4
200-E	1.7	1.2	0.9	1.0
Riverland	1.5	1.4	-	-
Hanford	0.5	0.1	-	-
300 Area	*0.8	*0.7	0.6	0.5
Richland	0.2	0.5	-	-
Benton City	0.7	0.1	-	-
Kennewick	0.1	1.1	-	-
Pasco	*0.3	*1.3	-	-

* mr/24 hrs.

The maximum concentrations recorded by constant iodine monitors were 1.6 x 10^{-6} μc/liter in the 200 East Area and 10^{-6} μc/liter at Benton City. Hand pump air samples, taken in the 200 Areas when the dissolver gases approached the ground, had up to 4 x 10^{-6} μc/liter. Special burning tests run on contaminated sage from the 200 East Area indicate that the burning of scrap at Hanford does not produce excessive air contamination.

Vegetation Contamination

Iodine contamination levels changed very little during the month. Special checks on fruit from nearby orchards indicated no activity greater than 0.05 μc/kg. The average values were:

Location	μc/kg	
	June	July
North of 200 Areas	0.31	0.25
Hanford	0.17	0.23
Near 200 Areas	1.90	1.40
South of 200 Areas	0.20	0.18
Richland	0.06	0.07
Benton City	0.13	0.07
Kennewick	0.05	0.04

Laundry Decontamination and Hand Counting

52,124 items were monitored in the Plant Laundry, including 11,478 coveralls, 16,795 gloves, and 11,090 overshoes.

24,857 alpha hand counts and 25,173 beta hand counts were recorded. About 0.5% of the alpha counts and 0.7% of the beta counts were above the warning limits.

Calibration Service

Radium calibrations were:

Type	Instrument	Number of Calibrations June	Number of Calibrations July
Stationary:	Integron	400	371
	HM & GE Chamber	194	193
	Total	594 *	564 **
Portable:	Beckman Survey Meter	163	160
	Lauritsen Electroscope	63	68
	Victoreen Survey Meter	117	114
	GM Survey Meter	44	47
	Miscellaneous	24	33
	Total	411	422
Personnel Meters:	Pencils	6360	6977
	Badges	960	720
	Total	7320	7697
Total Radium Calibrations		8325	8683

X-ray and Intermediate energy gamma and beta calibrations:

Portable Instruments:		
Pencils	5957	4884
Miscellaneous Film	885	689
Total	6842	5573
Grand Total	15,167	14,256

** 364 furnished by Area
* 349 furnished by Area

Miscellaneous

A group of salmon fingerlings were exposed to process water for 11 days after which they were transferred to river water to determine the rate at which the activities are eliminated. Preliminary results indicate some elimination of the short-lived activities and no elimination of the longer-lived activities. Several water fowl which have been living in the 300 Area retention pond have been examined for radioactive

materials. Liver, kidney and bone samples had alpha activity of about 500 dis/min/kg. Further measurements will be made. Some attempts are being made to extract plutonium from vegetation by means of the TTA extraction method. 158 samples have been counted for the urinalysis program. Two of these samples have more than the provisional tolerance amount of 1.4 dis/min for one day's sample, but these values have not been confirmed and may be due to contamination.

Personnel Meters

Pencils

	100-B 100-D	100-F	(H&N) 200	200-W	300	Total
Total Pencils read	9,336	9,918	22,918	25,627	10,067	77,866
No. of single readings: (100 to 200 mr)	43	31	92	140	29	335
No. of paired readings: (100 to 200 mr)	0	2	5	2	0	9
No. of single readings: (over 200 mr)	67	55	51	220	85	478
No. of paired readings: (over 200 mr)	2	2	2	1	0	7
Paired Readings Lost:	0	3	1	1	0	5

Badges

Badge results by Areas were:

	100-B	100-D	100-F	200-E	200-N	200-W	300	Total
Badges processed:	1,759	2,926	3,210	4,121	584	4,857	2,632	20,089
No. of readings: (100 to 300 mrep)	0	90	1	22	0	10	95	218
No. of readings: (300 to 600 mrep)	0	25	0	0	0	0	2	27
No. of readings: (600 to 900 mrep)	0	1	0	0	0	0	0	1
No. of lost readings:	1	2	1	1	0	8	1	14

None of the readings greater than 300 mrep is presumed to be real because the readings were caused by defective or light struck film. 17 sets of badge film were not marked with payroll numbers but none of these badges recorded an exposure greater than 300 mrep.

PLANT MEDICAL SECTION

Physical Examinations

	June	July	Year to date
Pre-employment	33	93	409
Annual	274	215	1832
Sub-contractor (Food handlers, etc.)	20	35	237
Rechecks	124	98	922
Interval rechecks (Area)	944	889	6828

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Physical Examinations (continued)	June	July	Year to date
Terminations and Transfers	102	77	741
Army & Government	53	41	275
Assist to Clinic, A&H Ins., etc	2	0	30
Total	1554	1446	11274

Laboratory Examinations

Clinic Laboratory

Pre-employment, terminations, transfers	1005	1262	7857
Annual	1848	1470	12117
Rechecks (Area)	5782	4663	36166
First Aid	37	31	283
Plant Visitors	121	153	623
Clinic	1967	1913	15244
Hospital	1487	1347	12160
Public Health(Including food handlers)	163	263	1178
Military	135	34	550
Total	12543	11136	86178

X-ray

Pre-employment,terminations,transfers	174	213	1231
Annual	288	232	1976
First Aid	75	54	465
Clinic	236	241	1733
Hospital	99	72	650
Public Health(Including food handlers)	16	35	287
Military	37	9	122
Tuberculosis Survey	1072	744	1816
Total	1997	1600	8280

Electrocardiographs

Industrial	81	84	818
Clinic	11	12	79
Hospital	5	11	79
Military	0	1	8
Total	97	108	984

Allergy

Skin Tests	11	11	60

First Aid Treatments

Occupational Treatments	299	284	2090
Occupational Retreatments	769	845	6022
Non-occupational(Welfare) Treatments	2580	2529	21718
Total	3648	3658	29830

Absentee Investigation Report	June	July	Year to date
Total number calls requested.....	27	42	515
Total number calls made.....	27	42	515
Number absent due to illness in family.....	3	2	36
Number not at home when call was made.....	4	8	42

General

The total number of chest x-rays taken of employees' families during the survey period was 1816. It is calculated that the number of individuals who should have taken advantage of this opportunity was 5,776. This figure was obtained by subtracting employees who get annual x-rays, children under five years of age, and those having had x-rays during their treatment in Kadlec Hospital or Clinic within the past year. On a percentage basis, 50% of the total village population including employees have had chest x-rays during the past year. This is considerably higher than most locations throughout the country.

The July health topic was "Summer Health". Group discussions were held and bulletins distributed throughout the plant.

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

VILLAGE MEDICAL SECTION

Clinic

Treatment Summary	Men	Women	Children	June	July	Year to date
First Visits	155	168	126	394	449	3906
Retreatments	780	1522	534	2946	2836	19841
			Total	3340	3285	23747
Seen in Well-Baby Clinic.....				186	136	1382

Clinic Visits

Medical.....	488	469	3867
Pediatrics.....	313	308	3303
Surgical.....	656	608	4392
Gynecological.....	279	278	1958
Obstetric (new).....	48	44	302
Obstetric (recheck).....	425	422	2901
Venereal Disease.....	58	45	492
Ear, Nose & Throat.....	283	223	1635
Eye.....	189	150	1545
Visits handled by nurses (hypodermics, dressings, etc.).....	202	479	2129
Night Clinic Visits.....	399	259	1223
Total.....	3340	3285	23747

[redacted]

Home Visits	June	July	Year to date
Doctors	91	110	1081
Nurses	44	50	431
Total	135	160	1512

Dental Health Center			
Patients treated	1610	1360	11133

KADLEC HOSPITAL SECTION

General

There were fewer admissions, discharges and patient days this month than last. The average daily census was also less, as was the amount of surgery done. It is rather unusual to have a decrease in hospitalizations during the month of July, but this might be explained by the fact that a great many people are away on vacations.

Census	June	July	Year to date
Admissions	322	249	2155
Discharges:			
Surgical	60	70	505
Medical	40	21	278
Obstetric & Gynecologic	68	59	437
Eye, Ear, Nose & Throat	86	57	397
Pediatrics:			
Children	33	19	293
Newborn	39	33	236
Total	326	259	2146
Patient Days	1859	1565	13239
Average Stay	5.7	6.0	6.1
Average Daily Census	59.9	52.0	62.9
Discharged against advice	0	2	6
One-day cases	92	67	374

Operations

Transfusions	8	14	119
Eye, Ear, Nose & Throat	80	47	304
Dental	4	2	15
Casts	15	7	80
Minors	45	46	494
Majors	29	22	181
Deaths	3	3	18
Deliveries	38	34	214
Stillborns	0	1	4

Physiotherapy Treatments	June	July	Year to date
Clinic	80	88	592
Hospital	27	32	203
Army	5	13	108
Industrial:			
Plant	50	77	516
Personal	25	38	298
Total	187	248	1717

Pharmacy			
Number of prescriptions filled	1356	1448	10578

Patient Meals			
Regulars	2127	1721	14315
Lights	175	390	2220
Softs	1027	756	7659
Surgical Liquids	147	81	875
Tonsils & Adenoids	210	132	920
Specials	216	373	2988
Liquids	300	273	2210
Total	4202	3726	31187

Cafeteria Meals			
Noon	1232	1115	9967
Night	178	160	1630
Total	1410	1275	11597

Nursing Personnel		
First Aid Nurses	23	23
Clinic Nurses	12	12
Public Health Nurses	7	3
Hospital General Nurses	53	55
Aides & Orderlies	38	39
Total	133	132

PUBLIC HEALTH SECTION

General

During the month four of the nurses, including the nursing supervisor, terminated their employment. The remaining staff of three successfully carried out the entire program, although it is anticipated that two additional nurses will be required by the time the schools reopen. Every effort is being made to make these replacements with specially trained public health nurses.

One case of meningococcic meningitis and two cases of scarlet fever were reported during the month. Also, one new case of active tuberculosis was admitted to the sanitarium in Walla Walla.

During the month, 110 scout examinations were given and in addition many received immunisations for Rocky Mountain spotted fever.

The mosquito control program continues to be one of the major phases of the sanitarians' activities. The expansive breeding areas created by the Columbia and Yakima Rivers are gradually diminishing. With the recession, stagnant pools are beginning to form along the Columbia River. This problem will increase as the river recedes. Leaks and breaks in the irrigation lines have created several problems. Flooded areas from this source may go without detection for several days due to the large area served by the irrigation system. The incidence of adult mosquitoes in the village remains at a low level with no serious complaints.

The food handling establishment operators have made a considerable effort to follow previous recommendations and some definite improvements have been made. The ratings for the month of July have not been completed as yet but the indications are that the scores will be higher than for the month of June.

Much time has been spent with the milk producers inasmuch as there have been some relatively high bacterial counts on the raw milk. The difficulty seems to be brought about by the extremely warm weather. The majority of the samples taken after pasteurization have been satisfactory.

The swimming pool has been operating properly. All of the bacteriological samples have been acceptable. On the third or last day before the pool is drained, the bottom of the pool is hardly visible. This condition is largely due to the sandy area immediately adjacent to the pool.

The sewage disposal plant has been operating satisfactorily from a bacteriological viewpoint. All of the samples have been within acceptable limits.

Revised restrictions placed on the peddling of eggs, in cooperation with the Department of Agriculture, have curtailed this operation considerably. Vending of this nature has been confined to fresh fruits this past month.

Dog bites and investigations thereof continue to be a frequent occurrence. Approximately half of the cases have been caused by molesting or otherwise antagonizing the animal concerned. Rabies has been absent in all of the animals involved as of this date.

Communicable Diseases Reported	June	July	Year to date
Meningococcic Meningitis	0	1	1
Diphtheria	0	0	0
Chickenpox	4	4	72
German Measles	2	0	17
Measles	15	3	107
Mumps	0	1	36
Scarlet Fever	0	2	13
Pinkeye	0	0	3
Influenza	0	2	118

Communicable Diseases Reported (continued)	June	July	Year to date
Impetigo	1	4	22
Ringworm	0	0	26
Scabies	0	0	21
Vincent's Infection	0	0	49
Syphilis	2	1	7
Gonorrhea	0	1	20
Tuberculosis	1	2	4
Total	25	21	516
Immunizations			
Smallpox	16	0	11463
Diphtheria	24	48	222
Whooping Cough	31	51	233
Schick Test	2	1	44
Tetanus	31	48	252
Typhoid	0	2	2
Total	104	150	12216
Administration			
Newspaper Articles	0	0	17
Committee Meetings	0	0	6
Attendance	0	0	95
Staff Meetings	0	1	10
Lectures and Talks	1	0	28
Attendance	15	0	640
Sanitation Inspections	123	111	951
Bacteriological Laboratory			
G. C. Smear	17	30	283
G. C. Culture	13	20	248
Fungus Culture	39	19	128
Vincent's Examinations	2	2	138
Trichomona's Examinations	16	13	182
Sputum for T. B. organisms	15	22	99
Bacterial Cultures	27	36	233
Examinations for Parasites	5	21	185
Throat Smear and Cultures	11	9	120
Blood Cultures	3	4	19
Stool Cultures	16	4	40
Eye Smears	1	2	19
Examinations for spermatozoa	1	0	9
Quantitative determination of blood alcohol	0	0	4
Type for pneumococcus	0	0	3
Treated water samples	97	95	575
Untreated (raw water) samples	93	84	613
Milk samples(includes milk,cream,ice cream)	55	92	529
Sewage samples	9	9	64
Examinations for eosinophiles	19	21	46
Dark field examinations	1	0	5
Total	440	483	3542

ACCOUNTING DEPARTMENT

JULY 1946

GENERAL

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

The average hourly rate for the Monthly and Weekly Salary Rolls was $2.24 and $1.96, respectively.

ACCOUNTING

Through July 31, billings totaling $369,641,189.14, representing 11,238 public vouchers (Form 1034) have been submitted to the Government, of which the General Accounting Office has approved 11,113, with a total value of $368,088,606.20.

CLERICAL

Statistically from a cost standpoint the leased line service does not pay for itself, and the line to Portland and one of the Seattle lines, temporarily disconnected last month, will be left disconnected on a permanent basis.

All priority on telephone and teletype communication was discontinued as of July 15, 1946.

Stores as of July 1 will change from using the last purchase price to the average price inventory method as individual captions are inventoried during the period July 1, 1946 through December 31, 1946.

The procedure for writing off material damaged or spoiled in the storeroom was revised during the month. Under the old procedure the Stores Department obtained a store ticket for the damaged or spoiled material from the Department normally using the material. Under the new procedure, Stores will obtain a written report from another plant section qualified to verify that the material is defective and upon receipt of this report, will process a CKV to charge Salvage and credit a Stores sub-account for the adjustment.

Accounting Department

STATISTICS

Accounting (calendar month basis)

	June		July	
	No.	Amount	No.	Amount
P.O.'s Received	905	---	1,029	---
MR's Received	1,892		2,380	---
APV's Entered	1,928	540,350.58	2,021	708,530.73
Checks Issued	1,214	582,677.99	1,276	831,716.60
Cancelled	26	---	35	---
PR Transfers	4	964,973.24	4	937,393.59
EB's Entered	246	2,908.50	168	1,842.39
1034's Issued	312	1,389,250.14	183	2,047,449.41
Reimbursed	278	715,433.22	302	2,101,464.94
Non-Payment Credits	0	---	0	---
War Bonds Issued (Maturity Value)	3,250	120,756.00	3,036	115,075.00

Purchasing

	June	July
PHX Purchase Orders Placed	1,080	873
Orders Placed by Government	85	107
Requisitions Received	1,871	1,407
Requisitions Placed	1,450	1,436
Requisitions on Hand (unplaced at month-end)	420	391

Stores

Returnable Containers Received	253	400
Returnable Containers Returned	907	330
Balance on Hand (at month-end)	3,384	3,454
Shipments Made (ORCM)	26	24
Receiving Reports Issued	2,197	2,148
Material Exception Reports Issued	47	38
Items Set-up in Stores Stock (at month-end)	40,747	40,624
Excess Material Shipped to Date	$3,517,000.14	$4,073,556.19
Value of Excess Material Inventory	1,587,156.19	1,107,248.68
Stores Disbursements	70,983.98	66,352.71
Spare Parts Disbursements	2,552.09	34,311.90
Value of Stores Stock (at calendar month-end)	1,018,671.90	1,002,481.80
Value of Spare Parts (at calendar month-end)	1,119,125.32	1,241,931.37
Value of Special Process Materials (at calendar month-end)	214,549.61	478,869.39

Essential Materials

Value of Materials Consumed during Month	349,043.36	309,847.85
Value of Materials in Stock (at calendar month-end)	886,562.96	1,062,733.22

Miscellaneous Clerical

Duplicating & Printing Orders Received	4,282	3,899
Duplicating & Printing Orders Completed	4,241	3,870
Mail Handled (Incoming)	12,273	13,841

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PROJECT AND RELATED PERSONNEL

	6/25/46	7/25/46
Government Employees		
Civilian Personnel - Corps of Engineers	274	293
" " - GAO	4	4
Commissioned Officers (exclusive of MP's and MI)	17	15
MP Company (including C.O.)	206	259
MI Detachment (including C.O.)	26	27
Military Personnel (other than above)	10	9
Total	537	607
Prison Industries (total)	364	285
Mohawk Wrecking and Lumber Company . .	170	291
Richland Village Personnel		
Facilities	651	649
Schools and Churches	177	47
Total	828	696
Morrison-Knudsen Personnel	90	88
Du Pont Personnel	4303	4270
GRAND TOTALS	6292	6237