DN-5894 HW-7-5505-Del

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HW-7-5505-Del

This Document consists of 169 Pages No. [redacted]

December 18, 1946

INV SEP 23 '83

HANFORD ENGINEER WORKS

MONTHLY REPORT

NOVEMBER 1946

[redacted]

DECLASSIFIED
WITH DELETIONS

HW-7-5505-Del

TABLE OF CONTENTS

GENERAL SUMMARY

The power levels of the Piles at 100 D and 100 F were maintained at 250 MW and 200 MW respectively. The operating time efficiency was 88.1.

Forty batches were started through the Canyon Buildings and twenty-seven charges were delivered from the Isolation Building.

There were no major injuries during November. As of November 30, the plant had accumulated forty-six injury free days.

The proposed visit of the Atomic Commission did not materialize due to adverse weather preventing their arrival by air. The Commission plans to visit Hanford Engineer Works at an early date for the inspection that was scheduled.

The housing situation in Richland has become extremely acute and additional units must be secured without delay if the program of plant operation is to continue as planned. An immediate survey is being made of the available housing units inside of the plant area to determine what can be done by moving the units to Richland. At the same time, immediate plans are being studied for a request for five hundred additional single unit houses. Also a project proposal has been submitted for the conversion of dormitories from the usual dormitory rooms to ten apartments. Approval of this project is expected immediately.

STAFF

MANAGER	D. H. LAUDER
ASSISTANT MANAGER	G. G. LAIL
PRODUCTION SUPERINTENDENT	C. N. GROSS
TECHNICAL SUPERINTENDENT	A. B. GRENINGER
WORKS ENGINEER	W. P. OVERBECK
P DEPARTMENT SUPERINTENDENT	J. E. MAIDER
S DEPARTMENT SUPERINTENDENT	W. K. MAC CREADY
POWER SUPERINTENDENT	H. H. MILLER
MAINTENANCE SUPERINTENDENT	W. W. PLEASANTS
ELECTRICAL SUPERINTENDENT	H. A. CARLBERG
INSTRUMENT SUPERINTENDENT	
SERVICE SUPERINTENDENT	E. L. RICHMOND
TRANSPORTATION SUPERINTENDENT	R. T. COOKE
MEDICAL SUPERINTENDENT	W. D. NORWOOD, M.D.
CONSTRUCTION AND DESIGN SUPERINTENDENT	F. W. WILSON
WORKS ACCOUNTANT	F. E. BAKER

FORCE REPORT
NOVEMBER 1946

	Non-Exempt		Exempt		Total	
	10-31-46	11-30-46	10-31-46	11-30-46	10-31-46	11-30-46
Management	-	-	4	4	4	4
Design & Construction	-	-	1	1	1	1
P Department	177	175	43	44	220	219
S Department	249	246	52	53	301	299
Technical	123	122	76	89	199	211
Power	355	354	78	78	433	432
Maintenance	435	465	86	94	521	559
Electrical	158	164	35	35	193	199
Instrument	109	108	26	30	135	138
Service	574	578	145	144	719	722
Transportation	535	555	59	60	594	615
Medical	266	264	97	105	363	369
Accounting	607	572	15	47	622	619
TOTAL	3588	3603	717	784	4305	4387

PERSONNEL DISTRIBUTION - NOVEMBER 1946

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	Total
P DEPARTMENT									
Supervisors	6	12	12	-	-	11	-	3	44
Operators	11	39	41	-	-	84	-	-	175
Total	17	51	53	-	-	95	-	3	219
S DEPARTMENT									
Supervisors	-	-	-	21	27	-	1	3	52
Operators	-	-	-	123	110	-	12	1	246
Others	-	-	-	-	-	-	1	-	1
Total	-	-	-	144	137	-	14	4	299
TECHNICAL DEPARTMENT									
Supervisors	-	5	-	7	5	11	-	6	34
Chemists, Engineers & Physicists	1	7	6	5	14	40	-	5	78
Analytical Personnel	2	12	8	32	16	21	-	-	91
Others	←	1	→	2	3	2	-	-	8
Total	3	25	14	46	38	74	-	11	211
POWER DEPARTMENT									
Supervisors	7	25	22	6	9	-	2	7	78
Operators	36	97	96	24	32	8	-	34	327
Others	4	5	5	-	7	4	-	2	27
Total	47	127	123	30	48	12	2	43	432
MAINTENANCE DEPARTMENT									
Supervisors	1	2	11	4	12	3	2	25	60
Engineers	-	-	-	-	-	-	-	34	34
Mechanics	8	22	63	30	72	25	12	176	408
Others	1	1	5	6	11	1	-	32	57
Total	10	25	79	40	95	29	14	267	559*

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	Total
ELECTRICAL DEPARTMENT									
Supervisors	1	2	3	2	4	1	12	5	30
Electricians	4	11	14	17	13	7	51	31	148
Others	1	1	2	1	3	-	10	3	21
Total	6	14	19	20	20	8	73	39	199
INSTRUMENT DEPARTMENT									
Supervisors	1	3	4	2	4	6	-	3	23
Engineers	-	-	-	-	-	4	-	3	7
Mechanics	5	13	13	15	14	18	-	5	83
Others	-	3	3	3	4	7	-	5	25
Total	6	19	20	20	22	35	-	16	138
SERVICE DEPARTMENT									
Supervisors	8	7	6	9	7	10	7	83	137
Patrolmen	23	51	52	82	71	28	8	56	371
Firemen	15	-	-	-	-	10	-	54	79
Laundry Operators	-	-	-	-	2	-	-	1	3
Inspectors	4	4	4	4	4	-	1	1	22
Janitors	2	5	5	6	8	6	-	38	70
Others	-	-	-	-	10	1	5	24	40
Total	52	67	67	101	102	55	21	257	722**
TRANSPORTATION DEPARTMENT									
Supervisors	1	2	2	2	2	1	9	41	60
Drivers (Based on Areas Served)	12	22	27	31	32	18	29	39	210
Mechanics	-	1	1	1	2	-	8	62	75
Trainmen	-	4	4	4	4	-	-	1	17
Laborers	3	4	4	4	5	4	-	70	94
Others	6	10	9	10	14	4	13	93	159
Total	22	43	47	52	59	27	59	306	615

	100-B Area	100-D Area	100-F Area	200-E Area	200-W Area	300 Area	Plant General	700-1100 Area	Total
MEDICAL DEPARTMENT									
Physicians	-	-	-	-	-	-	6	12	18
Dentists	-	-	-	-	-	-	-	8	8
Nurses	-	4		3	3	1	7	75	93
H.I. Specialists	-	9	11	31	37	60	-	10	158
Technicians	-	2			2	1	-	20	25
Others	-	-	-	-	-	-	-	67	67
Total	-	15	11	34	42	62	13	192	369
ACCOUNTING DEPARTMENT									
Supervisors	-	-	-	-	-	-	-	47	47
Clerks	2	6	6	7	14	11	-	223	269
Telephone & Teletype Operators	-	-	-	1	-	-	-	28	29
Others	-	1	3	3	4	11	-	252	274
Total	2	7	9	11	18	22	-	550	619
DESIGN AND CONTRUCTION	-	-	-	-	-	-	-	1	1
MANAGEMENT	-	-	-	-	-	-	-	4	4
GRAND TOTALS	165	393	442	498	581	419	196	1,693	4,387

* 7 Monthly Salary and 5 Weekly Salary employees assigned to Design and Construction.
** Includes one Design & Construction employee (Monthly Salary).

ARRIVALS AND DEPARTURES OF EXEMPT PERSONNEL

ARRIVALS

Name	Department	Physical Arrival	Origin
David McDonald	P	11-18-46	New
Fredrick A. Hollenbach	S	11-29-46	New
Robert K. Smith	S	11-8-46	New
Willis G. Browne	Technical	11-15-46	New
Arthur B. Carson	"	11-15-46	New
John C. L. Chatten	"	11-8-46	New
Harold A. Gauper, Jr.	"	11-4-46	(On Schenectady Roll)
Clifford E. Kent	"	11-4-46	New
Walter W. Koenig	"	11-4-46	New
Joseph T. Mitchell	"	11-12-46	New
Richard M. Padden	"	11-20-46	New
Raymond Ward	"	11-1-46	Trans.-Pittsfield, Mass.
Henry A. White, Jr.	"	11-4-46	New
Vernon G. Blanchette	Maintenance	11-25-46	New
Lester M. Finch	"	11-21-46	New
John S. McMahon	"	11-6-46	New
William D. Martin	"	11-1-46	New
Edward A. Monson	"	11-29-46	New
Jesse L. Smith	"	11-25-46	New
James C. Stover	"	11-25-46	New
Rodney G. Hoff	Instrument	11-14-46	New
Ivan M. Jacobs	"	11-25-46	New
William A. Preisz	"	11-12-46	New
Howard H. Jones	Service	11-14-46	New
Henry L. Wiltrout	Transportation	11-14-46	New
James S. Gold	Medical	11-20-46	New
Samuel H. Hulett	"	11-15-46	New
Klaudius Kuiper	"	11-25-46	New
Max M. McConiga	"	11-29-46	New
Anthony F. Roucek	"	11-14-46	New
Homer F. Royle	"	11-6-46	New
Virgil H. Stucki	"	11-6-46	New
Joseph Thaler	"	11-1-46	New
Robert C. Thorburn	"	11-12-46	New
George G. Lail	Management	11-11-46	Trans.-On Pittsburgh Roll

DEPARTURES

Name	Department	Physical Departure	Destination
G. E. McMillan	P	11-7-46	Trans.-Plastics, Arlington, N. J.
J. F. Donnelly	S	11-15-46	Completion of Assignment
L. G. Ahrens	Maintenance	11-10-46	Trans.-Engr. Dept., Wilmington, Dela.
J. W. Brands	Electrical	11-10-46	Trans.-Indus. Engr., Wilmington, Dela.
G. H. McCammon	Service	11-15-46	Completion of Assignment
Richard M. White	"	11-29-46	Completion of Assignment
Lawrence L. German	Medical	11-24-46	Trans.-Knolls II Research Lab., Schenectady, N. Y.

WHM

	WW	WX	WY	WZ
CA	0	0	36,460	2,496
CB	-	-	-	1,487
CC	-	-	-	3,983
CD	407	25	35,349	2,228
CE	11,255	44	674,063	2,558
CF	1,849	7	243,681	949
CG	2,298	9	27,290	108
CH	16,254	64	906,258	3,467
CI	16,412	64	659,688	2,499
CJ	-	6	-	175
CK	-	4	-	617
CL	-	7	-	561
CM	-	5	-	69
CN	-	5	-	71
CO	-	8	-	610
CP	-	6	-	168
CQ	-	2	-	63
CR	-	4	-	61
CS	-	7	-	-
CT	-	3	-	-
CU	-	6	-	-
CV	-	10	-	-
CW	-	6	-	-
NA	-	-	153,473	602.4
NB	6,784	26.6	227,810	894.1
NC	8,352	32.8	193,106	757.9
ND	15,136	59.4	574,389	2,254.4
NE	-	-	97,504	382.7
NF	6,784	26.6	164,030	643.8
NG	8,488	33.3	129,152	506.9
NH	15,272	59.9	390,686	1,533.4
NI	9,870	38.7	211,326	829.4
NJ	6,720	26.4	152,891	600.1
NK	-	-	-	-
NL	16,590	65.1	364,217	1,429.5
NM	-	-	-	386.6
NN	-	-	-	376.1
NO	-	18.8	-	212.7
NP	-	39.9	-	428.9
NQ	-	58.7	-	1,404.3

	WP	WQ	WR	WS
NR	1,250	81	843	54
NS	938	49	398	21
NT	18,104(a)	71(a)	19,658(b)	77(b)
NU	14,737	58	12,443	49
NV	42,257	135	32,803	129
NW	11,462	45	9,139	36
NX	-	2	-	5
NY	-	40	-	32
NZ	-	27	-	27
GA	55,969	220	55,969	220
GB	63,780	250	63,780	250
GC	64,090	252	63,954	251
GD	183,839	722	183,703	721
GE	29,658	116.4	28,340	111.2
GF	-	18.8	-	25.2
GG	-	1,345.6	-	1,404.3

	WT	WU
GH	0	98,107
GI	6,995	161,639
GJ	4,729	132,241
GK	11,724	391,987
GL	0	78,073
GM	5,343	133,965
GN	6,754	107,388
GO	12,097	319,426

	WK	WL	WM	WN	WO
GP	7,807,000	5,328,000	-	13,135,000	296,400,000
GQ	7,381,000	5,064,000	-	12,445,000	275,945,000
GR	339,300	860,900	-	426,200	17,256,000
GS	5,739,000	1,790,000	-	7,529,000	262,697,000
GT	-	238,700	-	238,700	10,224,100
GU	5,739,000	1,551,300	-	7,290,300	252,472,900
GV	5,969,000	5,055,000	-	11,024,000	-
GW	-	-	-	790,000	-
GX	-	-	-	8,638,000	253,640,160

(a) Does not include 3,932 unbonded pieces at 16 units.
(b) Does not include 1,367 unbonded pieces at 5 units.

HW-7-5505-Del

I. GENERAL

Except for scheduled outages the D and F Piles were operated at a nominal power level of 250 MW and 200MW respectively.

The 300 Area production rate continued on a 60 ton per month basis to meet the 100 Area requirements.

II. ORGANIZATION AND PERSONNEL

One supervisor, David MacDonald, was hired during the month and assigned to the 100 Areas for training.

G. E. McMillan, the remaining du Pont consulting supervisor for the P Department, left the Project on November 1, 1946.

One operator from the 300 Area and one operator from 100F Area were terminated at their request.

III. AREA ACTIVITIES

PILE SUMMARY	PILE B	PILE D	PILE F
Time Operated (%)	-	93.8	82.5
*Power Level (MW)	-	250	200
*Inlet Water Temperature (°C)	9.8	9.8	9.9
*Outlet Water Temperature (°C) (Maximum °C, 10 Tubes, 0.240 Zone)	9.8	47.4	41.9
Number of Scrams	-	2	1
Number of Purges	0	0	0
Helium Consumption (cu. ft.)	24,141	74,410	84,240
Metal Discharged (Tons)	0	26.6	33.0
Inhours gained (This Month)	0	13	(-)17
*Inhours Poisoned	-	338	335
*Inhours in Rods	-	64	52

* Month end figures

PILE BUILDING

Outage Breakdown

Date of Outage	Scheduled Outages: Metal Discharge	Scheduled Outages: Maintenance	Unscheduled	Length of Outage (Hrs.)
11-4-46			D	0.2
11-4-46 thru 11-7-46	F			82.6
11-5-46	D			22.2
11-8-46			F	0.6
11-9-46	F			4.4
11-20-46	F			21.8
11-26-46	D			22.3
11-27-46	F			16.4
11-29-46			D	0.2

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Outage Breakdown, Cont'd.

The unscheduled outage at D-Pile on November 4 was caused by a momentary electric power interruption in the Bonneville system; the outage on November 29 resulted from failure of the throw switch during a routine test of the emergency gasoline alternator. The unscheduled outage at the F-Pile was caused by improper setting of the No. 4 Beckman while the level was being raised.

The November 4 shutdown at F-Pile was extended to allow the Electrical Distribution group to repair breakers at substation 151-F. Several major projects were completed at the Pile Bldg. during this outage. The November 9 shutdown at F-Pile was to remove temporary poison columns needed for the extended shutdown.

Concurrent to the continued reduction of the river temperature, the remaining two refrigeration units were taken off the line at the D-Pile, one on November 6 and the other on November 7. B-Pile was maintained in standby condition with a water flow of 4,000 g.p.m.

Operating Experience

A number of Special Request pieces were processed during the month. Details may be found in the Technical section of this report.

The program of bismuth irradiation continues to be expanded gradually to meet requirements. The F-Pile loading underwent the following changes on November 4: tubes No. 1666-F, 1682-F, 3082-F and 3266-F which contained regular metal were discharged and replaced with 45 slugs each of bismuth and tubes No. 2685-F and No. 3574-F each containing 60 slugs were discharged and recharged with 45 slugs. As recommended in Classified Document 7-5288 less slugs per tube are being charged to increase the average concentration per slug.

The bi-monthly reactivity test of D-Pile was performed on November 1 in conformance with Production Test No. 105-74-P.

Functional tests of the High Tanks were completed satisfactorily on the following days: B-Pile, November 19; D-Pile, November 26; F-Pile, November 27. All 4" cross header screens in "B" riser at B-Pile were changed on November 19.

Pressure drop tubes No. 2375F, 2473-F, 2475-F, and 2575-F were discharged and recharged November 4.

The monthly foil exposure in the B-Pile was made November 29 by members of the Technical Department.

Mechanical Experience

In accordance with Production Test No. 105-81-P, a number of tubes are plug-gauged each time they are due for discharge to evaluate tube

Mechanical Experience, Cont'd.

bowing at the inner end of the gun barrels. During November, 14 tubes were gauged at the D-Pile and 6 tubes at the F-Pile, and the results are given in the Technical section of this report. The test will continue for several months.

The semi-annual pressure testing of vertical rod thimbles was completed at B and F Piles in November; 12 of the 29 thimbles at D-Pile were tested during this period. All thimbles tested were found to be in satisfactory condition.

At B-Pile, the separate gun barrels and tubes of the 6 tubes which showed binding under Production Test No. 105-52-P were further jacked pneumatically. Additional work is planned as an aid in evaluating the results of the test.

Other work at the B-Pile included overhauling of the slug manipulator and installation of brackets so that the mechanism can be removed for repairs without the necessity of pumping out the storage basin. Final alterations to the High Tank strainer installation were completed on November 20.

At the D-Pile vertical rod No. 25 hung in its upper position during startup on November 5. It was made inoperative until November 26 when the upper limit switch was found to be out of order. It was adjusted and the rod was returned to service. The rod guide and the upper portion of the rod tip section of No. 37 vertical rod were buffed on November 26. Prior to start up the rod tested satisfactorily. About 12 hours after start up this rod did not move during routine functional test and was tagged out of service until further repairs can be made.

Van Stone flange inspections were made during the November 5 probing of tubes in D pile. Inspection of the front flanges on tubes 4383-D and 4364-D showed appreciable pitting which extended along the ribs for 2" or 3" from the front of the tube. The rear flange of tube 4262-D showed minor pitting. For a fuller discussion see the Technical section of this report.

A Third Safety flood tank at the D pile was found to be losing about a quarter inch of borax solution per day and was removed from service on November 15. On November 26, the Mason-Neilan valve on this tank was replaced and the tank was satisfactorily returned to normal operation.

A leak was observed November 9 in the Process Water System to the D pile. The leak was at a flange on No. 28½ cross header between the near side screen and the front nozzle take-offs. On November 26 the flange was inspected and regasketed as no opening was detectable. After operating pressure was applied at start-up the leak was still present although diminished. Further investigation will be made.

Mechanical Experience, Cont'd

The chief item for F-Pile during November was the extended shutdown from November 4 through 7, planned primarily to allow the Electrical Distribution group to inspect and overhaul breakers at the 151-F substation. During this shutdown the following major repairs and installation items were covered: Installation of Elliott Twin Bucket Strainers in near and far High Tank lines; removal and replacement of damaged process tubes 2174F and 2284F; installation of new neoprene seals in the top near and far side joints of the biological shield; removal of cork and brick over the near side of the unit roof to allow upward expansion; installation of new Mason-Neilan valves in the Third Safety flood tank lines; and inspection and repairs to mattress plates and extensions.

With the installation of the Elliot Twin Bucket Strainers at 100F, all three Piles are now provided with these facilities. The High Tank stand pipes were drained and all sludge which had accumulated at the bottom of the stand pipes was pumped out.

Tube 2174-F, which was loaded with lead dummies in July, 1945, when it was damaged during discharge of a normal stringer, and tube 2284-F, which was loaded with dummies in October, 1946, when it was found to be badly gouged after a normal stringer had been discharged with great difficulty, were removed and replaced with new tubes. The old tubes were removed after allowing 24 hours for short life radioactive components to decay. They were pushed out of the unit from the front face and cut off in two-foot sections by a remotely controlled acetylene torch; the sections of the tube fell into the storage basin where the water offered adequate protection from the radioactive pieces.

The cork liner which was located above a brick wall on the top of the unit at the near side had shown considerable compression because of expansion of the packing. This cork liner and one layer of the brick wall were removed and replaced by a canvas gas-tight curtain to allow free movement of the top of the unit on the near side.

Five new Mason-Neilan valves were installed in the Third Safety flood tank discharge lines to replace the old type Belfield valves completing this installation in all three 100 areas. These valves are operated by positive air pressure and lend themselves more readily to periodic testing than did the old valves.

The water in the storage basin of the F-Pile was pumped down approximately four feet in order that a careful inspection of the mattress plates and extensions might be made. One mattress plate was rebuilt and plans are being made to replace one mattress plate extension early in December. The mattress plates in general were found to be in fair condition and it is estimated that they will give satisfactory service for several months without major replacements.

Gas Processing Building

One carload of helium was unloaded to the D-Area storage tanks during the period November 20 to 22.

Special Hazards

Decontamination of the B-Pile storage basin was completed and the basin was refilled on November 15. The trench east of the B Pile Bldg. was backfilled and danger zone signs were erected to prohibit excavation in that zone.

Minor contamination still exists in the 100-F area ash pit. Both sides of the Retention Basin have been tested for leaks and show a maximum leakage of 50 gal. per min. This leakage appears normal when compared with previous tests. Further study of this problem will be made in an effort to determine the exact source of the contaminant.

Following the extended shutdown at F Area a number of small radioactive gas leaks were found at the base of the unit at the near side and front face. The leaks are located at the junction of the concrete base and the steel plate which forms a part of the gas seal. The leaks have been greatly reduced with a plastic sealing compound. Further work will be done along these lines.

300 AREA - METAL FABRICATION

Extrusion, Outgassing, and Machining

Extrusion, Machining, and Billet Yields were as follows:

	% Yield		
	October	November	To Date 1946
Extrusion	93.4	93.7	92.5
Machining	81.8	82.1	79.9
Billet	76.4	76.9	73.9

Due to shortage of metal and operating difficulties, extrusion operated only one day during this period. On November 20 the billet carriage in the Rotary Furnace locked and would not rotate, apparently due to the carbonization of grease in the ball race. Carbon tetrachloride, Duponal and caustic solution are being used to remove this material.

The 44 TX billets sorted from the August and September shipments for production test No. 314-42-M and extruded last period, were machined to MZ dimensions and the bare slugs tested in the test pile. There will be no further processing of the TX material included in the August and September shipments until the results of this test are available.

[redacted]

Extrusion, Outgassing, and Machining, Cont'd.

The processing of unbonded pieces is being continued at a rate of approximately 800 pieces per week. Of the 707 pieces stamped with an "R" and believed to be rolled material, 657 were centerless ground to MZ dimensions for canning. Fifty pieces were transferred to Technical for observation and testing.

Ninety-six rolled rods (4414 lbs.) received from another site were machined to MZ dimensions. The machining yield was 63.3% or 356 slugs. The subnormal yield was due to irregular rod lengths and abnormal (large) diameters.

A total of 1920 bismuth slugs was received during this period. No machining was necessary; these slugs met specifications for both length and diameter.

Chip Recovery and Oxide Burning

The Chip Recovery yield was as follows:

% Yield		
October	November	To Date 1946
92.7	91.8	92.7

The Chip Recovery process was operated three days during this period. During operations on November 25, three fires occurred in the centrifuge. Operations were normal and the only change that had been made since previous operations was the removal of material that had accummulated in the bottom of the centrifuge. The material removed was partially restricting the flow of circulating air and possibly the increased flow promoted ignition of process material. This is being investigated further.

A total of 12,450 lbs. of turnings was received from another site for briquetting.

The Oxide Burner was operated daily during this period.

The material burned is as follows:

	Weight Out - Lbs.		
	October	November	To Date 1946
Extrusion Skirts & Floor Sweepings (D-2)	2944	0	2944
Chip Recovery Floor Sweepings (D-2)	420	0	420
Extrusion Oxides (D-6)	869	890	21952
Chip Recovery Oxides (D-6)	3199	565	14730
Site Y Material (D-6)	0	13448	13448
	7432	14903	53494

Canning Operation:

Metal Slugs - Type canned and yields were as follows:

	% Canned		% Yield	
	November	To Date 1946	November	To Date 1946
New Machined - A's (stripped unbonded)	23.6	8.5	86.2	80.1
New Machined - A's (Cast)	0.0	0.5	0.0	78.8
New Machined - MZ's	76.4	76.3	91.1	87.4
Recovered - Z's	0.0	8.3	0.0	87.3
Recovered - X's	0.0	6.4	0.0	90.8
	100.0	100.0	89.9	87.0

Two hundred and fifty pieces of Request No. 13-3, (beryllium nitride) thirty-five pieces of Request No. 13-4 (beryllium nitride), and three hundred and ninety-nine pieces of Request No. 15-10 were canned during this period. One piece of Request No. 15-10 failed to pass bubble test and will be returned to the vendor. All slugs of the Special Request No. 15 series are lithium fluoride.

A stripping die was fabricated for the Special Request canning press. The die has performed satisfactorily in stripping canning rejects for recanning.

Of the 1920 bismuth slugs received during November, 447 have been canned to date.

Canning rejects, by cause, were:

	% of Total Canned (Regular)		
	October	November	To Date 1946
Non-Seating	2.0	2.2	2.2
Wrinkled Cans	1.3	2.4	1.9
Marred Surface	2.4	2.1	3.3
Al Si on Outside of Can	0.3	0.1	0.3
Air Pockets	0.1	0.2	0.1
Frost Test	1.2	1.3	1.4
Warp	0.1	0.7	0.2
Bad Welds	0.3	0.3	0.4
Miscellaneous Causes	0.8	0.8	3.2
	8.5	10.1	13.0

The recovery of uranium from bronze flux was continued on a 24-hour a day schedule. To date, approximately 36,000 lbs. have been processed, with 22,000 lbs. of bronze and 14,000 lbs. of BFC_6 recovered.

The 356 MZ rolled slugs machined this period were canned November 21. The canned pieces were stamped with an "R" for identification.

[redacted]

Recovery Operation:

	% Recovered		Average Weight - Lbs.	
	November	To Date 1946	November	To Date 1946
Z Slugs	81.4	54.3	7.818	7.803
X Slugs	15.6	39.7	7.745	7.728
Rejects	3.0	6.0	--	--
	100.0	100.0		

Inspection and Testing:

Autoclave rejects were as follows:

	October	November	To Date 1946
New Machined - A's (Stripped unbonded)	0.00/M	0.30/M	0.05/M
New Machined - A's (Cast)	0.00	0.00	0.00
New Machined - MZ's	0.00	0.09	0.06
Recovered - Z's	0.00	0.00	0.00
Recovered - X's	1.70	0.00	0.07
	0.06/M	0.14/M	0.06/M

Two autoclave failures occurred during this period. The MZ failure was due to a small piece of crucible being imbedded between the can and slug. The failure on A's appeared to be due to an unwetted or penetrated area below the cap.

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

	% Useable (Regular)		
	October	November	To Date 1946
Aluminum Cans	93.7	90.8	83.2
Aluminum Caps	98.5	97.5	96.7
Steel Sleeves	87.7	63.8	72.1

The yield on "Special Request" cans inspected this month was 99.0%; the yield to date is 93.8%.

During November the degreaser at Final Inspection was operated on a two-week cleaning schedule. The results were satisfactory and a small saving will be realized in the amount of solvent used. A production test is currently under way to check the feasibility of using the final etch acid (HNO_3) two weeks or longer. The acid is normally used only one week.

300 Area - Test Pile

The unit was operated ten eight-hour days, making 80 regular tests on canned slugs, 116 tests on TX bare slugs for production test No. 314-42-M, and 15 tests on billet eggs.

FORCE REPORT - NOVEMBER 1946

Force Report figures are listed below:

	100-B	100-D	100-F	300	700 & 1100	Total
Supervisors	6	12	12	11	3	44
Operators	11	39	41	84	0	175
Total	17	51	53	95	3	219

I. GENERAL

Forty batches were started in the Canyon Buildings during the month and twenty-seven were processed through the Concentration Buildings. Twenty-seven batches were completed in the Isolation Building. The average purity was 98.9%.

The material balances for T and B Plants averaged 100.5% and 102.4%, respectively. Some increase in the extraction effluent waste losses was noted in both plants, but except for isolated cases waste losses in general compared favorably with past performance.

Although the scheduled number of batches was started in the Canyon Buildings during November the charges completed were less than anticipated. Contributory causes were briefly as follows:

1. Change in inventory cut-off point at 231 Building to permit more prompt tabulation of monthly figures.
2. Partial plug-up of 10-1 metal waste transfer line in B Plant.
3. Dismantlement of HF system in T Plant tank farm for scheduled inspection and incorporation of desirable piping changes and replacements.

Production Performance Data (11/1/46 - 11/30/46, inclusive)

	B Plant	T Plant	Combined
Number of charges started	27	13	40
Number of charges completed	21	6	27
For completed charges:			
Percentage of starting product in waste			
This month	5.7	5.2(a)	5.6
Last month	5.5	6.4(b)	5.6
Cumulative to date	6.4	6.6(c)	6.5
Percentage of starting product recovered			
This month	96.7	95.3	96.4
Last month	99.8	97.2	99.5
Cumulative to date	95.6	94.9	95.3
Percentage of starting product accounted for			
This month	102.4	100.5	102.0
Last month	105.3	103.6	105.2
Cumulative to date	102.0	101.6	101.8

Production Performance Data (11/1/46 – 11/30/46, inclusive), Cont'd.

	B Plant	T Plant	Combined
G Decontamination Factor (Log.)			
This month	6.96	7.08	6.99
Last month	7.35	7.07	7.32
Cumulative to date	7.27	7.23	7.25

(a), (b), (c): Includes waste from processing recycle. The recycle wastes are estimated as: (a) 0.21%, (b) 0.97%, and (c) 0.24%.

Isolation Building Performance Data (11/1/46 – 11/30/46, inclusive)

	% of Incoming Product			
	Prepared for Shipment	Recycle	Losses	Material Balance
Average for this month	95.0	3.2	0.13	98.3
Average for last month	94.5	3.1	0.12	97.7
Average to date	96.9	3.9	0.14	100.9

II. ORGANIZATION AND PERSONNEL

The following personnel were placed on the S Department monthly salary roll during the month:

Fred Hollenback	Shift Supervisor	Assigned to B Plant
R. K. Smith	Shift Supervisor	Assigned to T Plant

G. E. Halm and M. E. Jackson were upgraded from Shift Supervisors to Senior Supervisors and assigned, respectively, to the B Plant Concentration Building and to the Isolation Building. M. A. Phillips, Senior Supervisor, was transferred from the B Plant Concentration Building to the Isolation Building. J. F. Donnelly, formerly Senior Supervisor in the S Department, terminated on November 15.

III. AREA ACTIVITIES

PRODUCTION PERFORMANCE

T and B Plants

Decontamination Factors

During November the behavior of several runs at B Plant that were poorly decontaminated in the Canyon Building differed quite noticeably from that of previous runs in that the decontamination remained poor after processing through the Concentration Building. Runs B-6-11, D11, 12, and 13 had PR can bottom Beckman readings that ranged between 120 and 160 mr/hr. A sample of the final product solution of Run D-12 was collected for fission product analysis. At T Plant only one run was received in the Concentration Building that was more active than normal, and its final PR can reading was 85 mr/hr.

Decontamination Factors, Cont'd.

A Beckman reading of 150 mr/hr. was tentatively established as a maximum limit for product shipped to the Isolation Building. In the event this limit is exceeded it will be necessary to reprocess the material at the expense of additional waste loss. Should the decontamination problem grow worse every effort will be made to reduce the activity of runs through some modification of the process, preferably in the Canyon Building. The evaluation of current run performance now being undertaken by the Plant Assistance Group will afford the means for determining future corrective measures.

Acid Washes

Acid washes were started in both Canyon Buildings during November. At B Plant the flush was completed through the Concentration Building with a total overall product pickup from process equipment of 19.35%. At T Plant the acid wash was still in progress at monthend with an indicated pickup of 16% from the Canyon Building. In both cases the acid used to flush the extraction effluent tank was not returned to the run as was done previously. As a result a normal amount of activity was carried along and the runs afforded no difficulty in their handling.

Process Leaks

As was reported last month B Canyon was shut down on October 30 to determine the source of a product leak. The suspected leaks in Cells 17R and 8L were confirmed and repairs made. Operation was resumed on November 4. On November 6 while centrifuging Run B6-10-F32 in Section 17 the conductivity meter gave a sudden rise. The "A" transfer jet between the precipitator tank and the centrifuge was shut off and the centrifugation was completed with the "B" jet. During the cake removal operation there was also evidence of a slight leak. Gasket (GX) replacements were made in both the "A" and "B" assemblies and in the centrifuge to solution tank transfer jet. Operation was resumed and there was no evidence of further leakage during the balance of the month.

New Source of Hydrofluoric Acid

On the basis of a Production Test conducted by the Technical Department approval was granted to use double-distilled anhydrous hydrofluoric acid received from a new vendor. Waste losses were not adversely affected.

High Extraction Effluent Waste Loss

After the shutdown caused by the process leak reported previously Run B-6-11-F1 was processed through Section 8 with a resulting high extraction effluent waste loss of 3.04%. Recentrifugation failed to lower this loss. It is probable that the high loss was caused by the fact that 81 hours had elapsed after the run was reduced before the strike in the extraction section was made. In the future the reduction step will be repeated if it becomes necessary to hold the charge for as much as 36 hours in the reduced state.

Experimental Dissolving of Bismuth Metal

A second experimental dissolving of Bi metal was made in tank M-403 during November at T Plant. The dissolving was entirely successful and was followed by a full scale dissolving in tank M-401 of 600 pounds of metal. This dissolving was also successful. All $BiONO_3$ solution manufactured on the plant has been within analytical specifications and was used in the Canyon process during the month with no difficulties encountered to date.

Cell E Centrifuge Skimming

The E Cell centrifuge skimmer stops in the B Plant Concentration Building were moved outward during November to give a skimming heel of approximately 100 pounds. No appreciable improvement was noted in the Cell E product effluent waste losses over that reported during October. Further work was discontinued in this direction pending investigation of other minor deviations, such as the rate of skimming and the return of the skimmed heel to the following run.

Recovery of I^{131}

On November 15 the department made an off-plant shipment of 13.36 litres of radioactive iodine at a concentration of 1.36 mc/litre. No satisfactory reason was discovered for the lower than previously attained concentration of 2.1 mc/litre. The Technical Department in conjunction with the S Department was assigned the problem of evaluating the use of an alkaline bisulphite absorbing medium instead of the sodium carbonate solution used at present. No results of this study were available at monthend.

3-5R Dissolver Heel

During November some difficulty was encountered at B Plant in charging the 3-5R Dissolver due to an accumulation of heel in the tank. Efforts to appreciably reduce this metal heel by increasing the quantity of dissolving acid from 4850 pounds to 5000 pounds were not successful. The decision was then made to make a fourth cut instead of the usual three before recharging. The results of this measure were not known at monthend. Coincidental with the appearance of the large heel in this dissolver it was noted that the Section 6 reduced metal solution assays for several runs were lower than normal, although substantiated by succeeding analyses in Section 8. An attempt will be made to correlate the apparent lower product bearing metal with the dissolver heel difficulties.

Control of Batch Size Make-Up

Some further difficulty was encountered in T Plant during the month in maintaining the desired precision in adjustment of batch size prior to extraction. For several runs it was necessary to take the extraction

Control of Batch Size Make-Up, Cont'd.

product and extraction waste effluent analyses to determine the accounting basis for batch size. In each case the Section 8 reduced metal assay was not in satisfactory agreement with the calculated basis for the batch size and would have led to erroneous analytical results in subsequent processing of the runs.

Error in Dissolution of Product Cake in Section 17

After centrifugation of the second decontamination cycle product cake on Charge T-6-10-D5 at T Plant it was noted that some of the waste effluent had inadvertently been returned to the precipitator tank and, mixed with the cake dissolving acid, had been used in dissolving the product cake. The cake solution was returned to the precipitator, diluted and reduced, and then reprocessed according to the normal procedure. The additional waste loss was negligible. The error was due to a defective gang valve disc in the jet assembly controlling the transfer from the effluent tank to the precipitator.

Special Flush of "A" Cell Precipitator Tank

The difficulty with the plugging of the A Cell precipitator to centrifuge jet continued during November in the B Plant Concentration Building. The installation of a screen under the jet afforded only temporary relief and on the basis of experimental laboratory work a nitric acid-peroxide flush of the precipitator was made in an effort to dissolve the material causing the trouble. Lowered Beckman readings on the tank indicated partial success but did not eliminate the difficulty since plugs were encountered during the centrifugation of several subsequent runs. A second flush will be made in December in an effort to further reduce the plugging.

Isolation Building

Hydrogen Peroxide Study in the Isolation Building

A special study of the effect of various strengths of hydrogen peroxide on the first cycle strike in the Isolation Building was started during November. A comparison of 12% peroxide will be made against the normal 8.8% concentration currently employed. It is expected that the increased concentration of peroxide will reduce the amount of recycle returned to the T Plant Concentration Building.

Second Cycle Process Error

A process error developed in the second cycle precipitation of Run T-6-11-D5 when 6% nitric acid was added to the precipitator tank instead of hydrogen peroxide. The error was remedied by using 50% more than the normal amount of peroxide and the run was processed with no further difficulty other than an unusually high waste loss in the second cycle which was returned as normal recycle to T Plant Concentration Building.

WASTE DISPOSAL

T and B Plants

Partially Plugged Metal Waste Transfer Line at B Plant

During the month difficulty was experienced at B Plant in jetting the 10-1 metal wastes to the 241C waste storage tank farm. Jetting became sporadic and the difference in the Beckman reading between a full and empty line dropped rather abruptly. Although a sodium bicarbonate flush had recently been made of the line it was deemed advisable to repeat this flush using double the volume and making four jettings of 5000 pounds of 10% $NaHCO_3$ each. The Beckman readings improved somewhat but the jetting remained unsatisfactory, leading to the belief that the jet itself was partially plugged or mechanically imperfect. The jet was replaced with no apparent improvement and it was evident that the line itself was partially plugged.

In an effort to remove the obstruction believed to be chemical in nature the building was shut down on November 14 and flushes of 60% HNO_3 followed by 10% $NaHCO_3$ and 30% Na_2CO_3 were made. This was followed by a flush of 25% H_2SO_4 followed by $NaHCO_3$ and Na_2CO_3. A total volume of 10,000 pounds was used in these flushes and while the Beckman background of the transfer line was further reduced the jetting difficulties continued. A water connection was made to the wall connector in Cell 10-L and 2500 gallons of water were added at approximately 3 gallons per minute. This was followed by approximately 2500 gallons at 75 psi at 30 gallons per minute. It had been estimated that 25 psi should have been sufficient to deliver this quantity through the line. At the conclusion of the water flushing the acid used in flushing the Section 8 product effluent tank was jetted unneutralized through the line followed by an equivalent amount of $NaHCO_3$ and Na_2CO_3. Stoppage of the jet continued to occur at intervals of approximately 1700 pounds indicating that the line was plugged between the Canyon Building and the 154B Diversion Box. To verify this it was decided to put Section 9 in service and to install the necessary jumpers for jetting from this Section via the 10-4 metal waste transfer line to 241C tank farm, thus bypassing the 10-1 to 154B transfer line. This was done and operations were resumed on November 20. No further difficulty in jetting the metal waste occurred during the balance of the month.

At monthend a water flush of the partially plugged 10-1 line was in process between the 154B Diversion Box and Cell 10L. Preliminary results indicate that this procedure will be effective in freeing the line for future use.

Sodium Bicarbonate Flush of T Plant Metal Waste Line

A $NaHCO_3$ flush was made of the metal waste transfer line in T Plant. Normal waste transfer performance was obtained as a result of this clean-out.

Sludge Measurements in Metal Waste Storage Tanks

Work was under way at monthend to install chamber walls in the X-101B metal waste storage tank in T Plant for the purpose of determining the sludge level in this tank. A sample of the metal waste effluent will be taken when a procedure has been devised for its procurement.

Additional Waste Storage Facilities

Project C-112, providing for additional underground waste tank facilities in B Plant, was approved during November. Work will commence the first of December.

Waste Status

The status of the Waste Storage Areas on November 30 is shown in the following table:

Bldg. 241 Tanks	Type Waste	% Full				Reserve Capacity in Batches to Process				Total
		B	T	C	U	B	T	C	U	
x101,2,3	Metal	100	100	100	53.0	0	0	0	127)	
x104,5,6	Metal	—	—	10.4	0	—	—	241	269)	767
x201,2,3,4	Metal	0	0	0	0	28	28	37	37)	
x107,8,9	1st Cycle	100	100	0	0	0	0	338	338)	
x110,1,2	1st Cycle	—	—	71.6	11.6	—	—	96	299)	1071
x104,5,6	1st Cycle	—	100	—	—	—	0	—	—)	
x104,5,6	2nd Cycle	23.1	—	—	—	349	—	—	—)	
x110,1,2	2nd Cycle	100	100	—	—	0	0	—	—)	618
x105,6	2nd Cycle	—	11.2	—	—	—	269	—	—)	

MECHANICAL PERFORMANCE

T and B Plants

HF System

The overhaul of the anhydrous hydrofluoric acid system at the T Plant Concentration Building was completed during November and the system was tested and returned to service. No appreciable corrosion was found. Following completion of this phase of the HF system in T Plant, work was commenced on the HF system in the 211-T Tank Farm. The piping was dismantled, inspected and overhauled including a hydrostatic test of the storage tank. Replacement fittings and valves were installed and recommended and approved piping changes were incorporated in the system. The system was pressure tested and placed back in service. No appreciable corrosion was noted.

No. 1 Fan at 291B

The installation of the new bearings on the No. 1 fan in the Stack Exhaust Building at B Plant was completed on November 11. The fan operated satisfactorily although with somewhat more vibration than No. 2 fan. Project C-100, providing for replacement facilities, was approximately 20% complete at monthend.

GX Gasket Study

As mentioned in last month's report tests conducted at B Plant have indicated that GX gaskets will stand up very well when impacted with the slow speed impact wrench now being used. On this basis GX gaskets have been installed in Sections 8, 14, 16 and 17 to replace G9 gaskets that failed while in service. As a control on these gaskets several gaskets have been left impacted in connectors in mock-up cells in the East Area general shop and they will be removed and checked for deformation at monthly intervals. In addition to this test several gaskets were installed in shop connectors and subjected to steam heat. While some flow of the material was evident all gaskets withstood a hydrostatic test prior to their removal from the connectors.

The present status of the Canyon Leak Prevention Program outlined in September's report is as follows:

1. The installation of three additional conductivity meters in T and B Canyons will proceed as soon as they can be procured.

2. A maintenance schedule for the replacement of all critical gaskets and pipe assemblies containing gaskets which cannot be changed was agreed upon by both plants. Steps will be taken to effect the necessary changes as quickly as possible.

3. GX gaskets will be used for replacement purposes if presently installed GX gaskets continue to be satisfactory until such time as the replacement program outlined above can go into effect.

Section 17 Centrifuge Failure

On November 20 the Section 17 centrifuge in B Plant failed and was replaced with a spare machine. Preliminary inspection indicated either bearing or motor trouble.

Cell D Centrifuge Motor Trouble

The Cell D centrifuge motor which failed on October 24 was inspected during November. A fin which was welded to the rotor for the purpose of improving the air circulation had broken at the weld and slipped into the motor and burned out the stator winding. The possibility of removing the stator to the shop for repairs was being considered at monthend.

Isolation Building

Replacement of Filter Boxes

During the past several months the pressure drop across the contaminated air filters at the Isolation Building had gradually increased. During the month two filter boxes were replaced with an immediate improvement in air flow. The Project Group is currently studying the eventual problem of replacing all such filters.

SPECIAL HAZARDS

T and B Plants

Constant Iodine Monitoring Unit

Further changes were made to the CRM unit installed in the crane cab at T Plant Canyon Building. The unit was placed in service and will be checked for its effectiveness at the earliest opportunity. Similar revisions will be made to the B Plant installation during December.

R-3 Danger Zone

The addition of gravel to the R-3 Danger Zone at B Plant has been completed. At monthend there were no surface readings greater than 2 mr/hr. The erection of the climb-proof fence around the Danger Zone is now 75% complete. A survey of the 14 test holes located about the perimeter of the area indicated no significant readings.

Section 8 Centrifuge in Cell 10-R

Cell 10-R in B Plant Canyon was opened during the month to determine the possibility of observing the installation of new dip tubes in the old Section 8 centrifuge from the deck while using the special dip tube remote extractor. The maximum reading at deck level was 500 mr/hr. The allowable time limit will probably make it possible to definitely determine that the new tubes are properly centered with the dowel pins engaged.

Loss of Water from Cask Car

Cask Car #38 was delivered to B Plant Canyon Building from the North Area on November 23. Upon opening the car it was discovered that the water had drained from the cask during the transfer. The outlet valve had apparently worked open during the transfer of the car. It is planned to install suitable plugs in the outlet valves to prevent a recurrence.

Isolation Building

Use of Hand Cream

As a result of a Special Hazards Incident involving the hand contamination of a member of the Technical Department on November 2 all personnel in the Isolation Building are now applying Breck industrial cream to the hands at the start of each work day and after each washing during the day.

METEOROLOGICAL SECTION

Ninety forecasts were furnished to the T and B Plants, and twelve 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'	43 mph
Minimum average hourly wind velocity at 200'	0 mph
Maximum average hourly wind velocity at 50'	33 mph
Minimum average hourly wind velocity at 50'	0 mph
Prevailing wind direction	WNW
Prevailing wind quadrant	W
Maximum air temperature (4 feet)	64°F
Minimum air temperature (4 feet)	16°F
Number of days precipitation and/or fog occurred	22
Number of days precipitation occurred	8
Number of days snow occurred	4
Number of days fog occurred	10
Greatest duration of precipitation	5.2 hours

FORCE REPORT — NOVEMBER 1946

Force Report figures are listed as follows:

	200—E	200—W	Plant General	700 & 1100	Total
Supervision	21	27	1	3	52
Engineers on Assignment	0	—	1	—	1
Operators	123	110	12	1	246
	144	137	14	4	299

Plant General: — Includes Meteorological and 200 North Area.

700 & 1100: — Includes Richland Supervision and Records Group

200 West: — Includes 231 Building.

TECHNICAL DEPARTMENT

NOVEMBER 1946

GENERAL

R. E. Curtis, W. W. Marshall and R. J. Hale spent November 4 - 14 visiting the following locations in connection with uranium analysis techniques:

Argonne National Laboratory, Chicago, Illinois
Mallinchrodt Chemical Works, St. Louis, Missouri
Bureau of Standards, Washington, D. C.
Massachusetts Institute of Technology, Cambridge, Mass.
Metal Hydrides Company, Beverley, Mass.

J. M. West returned on November 7 from his visit to Argonne National Laboratory, where he had reviewed the processing of irradiated lithium fluoride as well as test pile procedures. A. B. Greninger and C. W. J. Wende visited Schenectady in the period November 10 - 15, where they attended the first meeting of the G. E. Nucleonics consultants.

Plant visitors of special interest to the Technical Department were as follows:

S. Lawroski, from Clinton Laboratories, spent November 11 - 21 in consultation with the Chemical Development Division relative to Redox process and design.

J. Marsden and W. I. Patnode, of the Research Laboratory at Schenectady, discussed mutual technical problems and inspected laboratory facilities in the course of their visit with Dr. Coolidge on November 18 - 23.

C. P. Cabell, of the 100 Area Engineering group, was assigned the preparation of several talks scheduled for presentation to Western and South-western Sections of A.I.E.E. early in 1947.

A bibliography of significant technical documents issued by the department during November is appended.

ORGANIZATION OF PERSONNEL

As noted in the plant Force Report, total personnal in the Technical Department increased from 199 to 211. The divisional month-end strengths were:

	Oct. 31	Nov. 30
Laboratories	150	155
100-300 Technical	24	28
200 Technical	8	9
Chemical Development	10	12
Statistics	5	5
General	2	2
Total	199	211

1199254

Exempt roll additions as engineers, chemists, metallurgists, and a physicist accounted for most of the force increase. The Laboratories Division added laboratorians to effect a net gain of three in this non-exempt classification.

100 AREAS

Physics

General

An extended shutdown of the F Pile, which began on November 4, permitted calculation of the effectiveness of temporary poison columns. The results confirm previous indications that the effectiveness of a poison column varies as the cube of the water temperature rise in adjacent tubes.

Predictions of reactivity changes of the F Pile, based on metal quality data and expected graphite gains, have agreed well with the observed loss of two inhours over the past five months, and of one inhour during the last month.

On the basis of information provided by the Argonne National Laboratory, a special graphite stringer for the testing of sample "eggs" from uranium billets was built for the Test Pile and preliminary calibrations were made. A need for a general cleanup of the Test Pile was indicated by certain variations in behavior, and this overhaul was in progress as the month ended.

Assistance was given to the Engineering Section of the Maintenance Department in the completing of the design of a replacement assembly for the "B" Test Holes, and of an apparatus for making special irradiations in the reflector region of the "E" Test Hole.

At the end of the month, the reactivity status of the two operating piles was as follows:

	D Pile (Nov. 31)	F Pile (Nov. 27)
In rods	64 inhours	47 inhours
In lead-cadmium columns	0	17
In Special Requests:		
within poison pattern	302	281
outside poison pattern	0	15
In Plant Assistance irradiations	0	0
In bismuth columns	34	41
In dummy columns	2	2
In xenon	497	427
In overall coefficient	-92	-76
Total cold, clean reactivity	807 inhours	754 inhours

The present data for the D Pile are based on results of the coefficient test of November 1, and on the value of 60 inhours for a full column of lithium fluoride slugs which was adopted at this area during the month. Calculation of the October reactivity balance on the same basis indicates a gain of 13 inhours for the D Pile in November.

Graphite Monitoring - Production Test 105-1-P

Graphite from No. 9 rod thimble of the D Pile was found to contract 0.28% in the transverse direction as a result of annealing at 1000°C., and is therefore being used for annealing studies in preference to graphite from the "D" Test Hole of the D Pile, which showed a contraction of only 0.17% under similar conditions. Studies of contraction as a function of time, temperature, and composition of ambient atmosphere were begun to determine the conditions required for the annealing of a pile.

Apparatus was partially assembled for pile exposures of expanded graphite in various reactive gases, to determine whether effects similar to those brought about by annealing can be produced in this way and to test the possibility that graphite expansion in the pile may be inhibited by the presence of oxygen.

In the graphite monitoring program, test hole samples which had been exposed 1215 MD/CT were found to have properties in line with expectations; namely, an increase in thermal conductivity ratio, K_o/K, to 39.4; a decrease in cross-breaking strength ratio, B/B_o, to 1.7; a slight decrease in crushing strength ratio, C/C_o, to 2.3; and a stored energy of 90 cal/gm., with a stored energy spectrum flattened at the peak. Graphite from the No. 9 rod thimble, which had been exposed 1054 MD/CT, showed less change than test hole samples of comparable exposure. The stored energy was only 36 cal/gm. and the stored energy spectrum indicated that the temperature of exposure must have been about 150°C. The thermal conductivity ratio was 19.6.

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

Foil exposures in the B Pile on November 29 gave an nv of 107.0 neutrons/cm^2 sec. with the gas purity at 99.1%. This result corresponds to a condition 1.42% k below critical, and represents no significant change during the month.

Xenon-Free Reactivity Coefficients - Production Test 105-78-P

In the first attempt to measure the power coefficients of a xenon-free pile, which was conducted last month at the D Pile, no definite "turn-around" in the xenon effect was observed, and as a result the interpretation of the test is subject to considerable uncertainties. A second experiment was done under improved conditions at the F Pile on November 7 and 8. Results were as follows:

Coefficient	From Rise 0.2 to 36 MW	From Drop 36 to 0.4 MW	Average
Cm	-0.31 ih/MW	-0.35 ih/MW	-0.33 ih/MW
Cg	1.24 ih/MW	1.29 ih/MW	1.26 ih/MW
Co	0.93 ih/MW	0.94 ih/MW	0.93 ih/MW
Graphite Period	62 minutes	75 minutes	--

A plot of inhours of metal effect versus power level gives a smooth, non-linear curve which has a slope of 0.33 ih/MW near zero power, and 0.22 ih/MW near 225 MW. Graphite effects fall on a similar curve with the exception of the data given above. It appears that the xenon cross-section increases with the neutron temperature by approximately 0.1% per megawatt.

This test also gave a value of s = 0.045 for the fraction of xenon formed directly in fission. Within experimental error, this checks the currently accepted value of s = 0.06.

Special Irradiations

The present status of this program is summarized below. Those items which were active during November are marked with an asterisk. Items listed as completed last month receive no mention. The number in parentheses under "Status" indicates the number of the Production Test, Series 105-P, and "Final" indicates that a final report has been issued. The letter suffix after a tube number denotes the pile.

Req.No.	Material	Quantity	Exposure	Status on Nov.30,1946	Inhours Absorbed
3-1	Thorium	43 slugs	2 months	Awaiting shipment (49-B)	
5	Np^{237}	200	Area Item		
6	U^{233}	1 slug	1 year	Charged 3282-F	5
10-B	Gd oxide	1 slug	--	Postponed	
11	Radium	1 gm	120 days	Charged F, test hole 10/2/46 (77)	0
12A	U^{235}	--	--	Postponed	
12B	Pu^{239}	540 mg - 1 slug	8 months	Charged 3378-F 4/18/46 (59)	5
13-1	Be_3N_2	69 slugs	60 days or longer	Pos. Tube Charge Date 35 Completed, shipped 10/11/46 34 3274F 7/24/46 (70)	16
13-2	Be_3N_2	60 slugs	60 days or longer	30 3169D 8/6/46 30 2666F 8/7/46 (70A)	15 15
14	Al-U Alloys	3 slugs	2,12, >12 months	Slugs in preparation at another site	
15-3*	LiF	45 slugs	50 days	Shipped 11/14/46 (55C)	
15-4*	LiF	99 slugs	50 days	85 pieces shipped 11/14 14 pieces awaiting shipment (55D)	

Technical Department

Req.No.	Material	Quantity	Exposure	Status on Nov.30,1946			Inhours Absorbed
15-5*	LiF	197 slugs	50 days	Discharged and awaiting shipment (55E)			
15-6*	LiF	100 slugs	50 days	14 pieces discharged awaiting shipment (55F)			
				Pcs.	Tube	Charge Date	
				24	2082D	10/8/46	27
				36	1579F	10/16/46	36
				26	1569D	10/15/46	29
15-7	LiF	100 slugs	50 days	Pcs.	Tube	Charge Date	
				32	3179D	10/15/46	33
				35	3179F	10/16/46	33
				18	1474D	10/23/46 (55F)	22
				13	3169F	11/6/46	14
15-8*	LiF	99 slugs	40-50 days	27	2066D	10/23/46	30
				10	3169F	11/ 6/46	11
				39	2374F	11/ 6/46	35
				23	1579D	11/ 5/46 (55F)	27
15-9*	LiF	198 slugs	40-50 days	12	3276D	11/ 5/46	17
				21	2374D	11/26/46	21
				31	2666D	11/26/46	33
				23	2682D	11/26/46	36
				19	1474F	11/27/46	22
				23	1569F	11/27/46	25
				25	2082F	11/27/46	27
				25	2682F	11/27/46 (55F)	27
15-10*	LiF	400 slugs	40-50 days	13	2374D	11/26/46	13
16-2	95-241	2 mg - 1 slug	8 months	Charged 3378-F 4/18/46 (59)			5
19*	Mercury	100 mg.- 1 slug	90 days	Completed, shipped (68-Final)			
20	Thallium Nitrate	5 mg - 1 slug	3 months	Charged 2271-F 8/7/46 (71)			5
21,22,23	Unallocated						
25-3*	Be_3N_2	1 slug	90 days	Completed, shipped (66-Final)			
26*	Antimony	50 mg.	60 days	Awaiting loading (83)			

Corrosion and Blistering

The results of examination of exposed material are summarized in the following table:

Tube	MD/Tube	Exposure Days	No. of Blistered Pieces
1776-D	66	411	32
3276-D	9	60	12
2375-F	45	348	30
2473-F	44	348	29
2475-F	46	348	26
2675-F	46	348	30

Corrosion data for the slugs from Tube 1776-D showed an average penetration of 0.04 mils/mo., and a maximum penetration of 0.08 mils/mo.

Van Stone flanges were inspected during the initial probe tests discussed below. The front flanges of Tubes 4383-D and 4364-D were quite severely pitted, as was the back flange of Tube 4262-D to a lesser extent. Six front flanges in the F Pile showed evidence of the usual moderate type of pitting attack. The rear flanges in the F Pile were all etched somewhat, and the rear flange of Tube 4583-F had numerous deep pits.

Probe Tests on Top Central Tubes

The purpose of probe tests is to monitor the freedom of discharge of bowed process tubes by inserting large diameter slugs of standard length past the region of sharpest tube curvature near the end of the gun barrels. Initial tests on seven tubes in the D Pile and six tubes in the F Pile showed that for eight of these tubes the constriction was worse at the front end, and for only one tube was the constriction worse at the rear end. Subsequent tests during the next few months will be confined to monitoring only the front end of those tubes which may be probed without removal of the front nozzle. Seven additional tubes in the D Pile were monitored by this technique. The measurements indicate that early results obtained from Tube 4674 were somewhat pessimistic and not representative of the general condition in the top tubes.

Graphite Expansion

The face-to-face graphite length at the F Pile was measured while two of the aluminum process tubes were out of the unit. These measurements indicated a face-to-face graphite expansion of 28/32" at Tube 2174-F and 23/32" at Tube 2284-F after a total exposure of 128,000 MWD. This is in reasonable agreement with a previously reported face-to-face graphite expansion of 20/32" at B Pile at Tube 3671 after an exposure of 99,000 MWD.

Further push-pull tests were made on six tubes in the B Pile which had previously been found to bind. Each gun-barrel and the tube were jacked separately after removing the nozzles. Both gun-barrels of Tube 4082-B were found to bind. Tests of the gun-barrels of the other five tubes did not show any binding but did show abnormally high friction. Moreover, high

friction was encountered in some cases when the tube alone was jacked. These results, which suggest that difficulty may be encountered in attempting to replace process tubes, are in disagreement with the results of previous tests on Tube 3671-B. Further jacking tests will be required before general conclusions can be drawn. The desirability of replacing several of these tubes for further information on the feasibility of a large scale tube replacement program is under consideration.

Miscellaneous

Work was begun on the design of a hot laboratory for physical measurements on irradiated materials.

Recently constructed underwater calipers for measuring the diameter of blistered slugs are being given preliminary trials.

Work has started on an extensive photographic record of various types and stages of blistering.

An assembly comprising a uranium slug with a thermocouple well, special dummy slugs, and thermocouple leads has been fabricated for measuring metal temperatures in an operating pile. Charging and discharging tests have been carried out in the B Pile, and hydraulic tests in a flow laboratory tube are in progress.

200 AREAS

General

Acid Washes

Routine acid washes were made at both T and B Plants. Product recovery was normal and the pick-up of activity was satisfactorily low. In the latter respect the B run differs from the two preceding acid washes at B Plant because the 8-3 Tank flush was sent to waste instead of being processed.

Decontamination Efficiency

Poor decontamination has again been observed in several runs at B Plant. In addition to the increased activity of runs entering the Concentration Building, PR can Beckman readings on the final product solution have also been high. On Run B-6-11-D-12 the Canyon Building log decontamination factor was 4.29 (5.0 - 5.6 is standard) while the overall factor through the Concentration Building was 6.72 (7.0 is standard). A sample of the F-10-P solution on this run was examined by the Laboratories Division; 96% of the total beta activity was due to cerium. This result is similar to the finding on the E-4-RC sample of Run B-C-09-8W-1 where 87% of the gross beta activity was caused by this element.

The first recent poorly decontaminated run has appeared at T Plant. The Canyon Building log decontamination factor for T-6-11-D-1 was 4.12 and the overall factor was 6.58.

Canyon Buildings

Dissolution of Metallic Bismuth

Two additional test dissolvings of metallic bismuth (150 and 600 lb. portions of Bi) were completed satisfactorily at T Plant. Control of the reaction was adequate and final concentrations were suitable. Use of the bismuth nitrate solution thus obtained for product and by-product precipitations resulted in satisfactory performance on 4 plant runs. Disposal of the nitric oxides evolved during bismuth dissolution is a problem requiring solution before this method of operation can be adopted routinely.

Partially Plugged Waste Line

The slow rate of flow of neutralized metal waste solution from the B Canyon Building to the waste storage area indicated partial plugging of this line. A number of flushes with solutions of nitric acid, sulphuric acid, sodium bicarbonate, sodium carbonate, and water failed to remove the obstruction. The first portion of the line, from 10-1 Tank to Diversion Box 154, was there-upon by-passed by making use of the line from 9-1 to this box and specially fabricated jumper piping. This system permitted normal flow of wastes and has been placed in regular use. The problems of clearing the plugged portion of line and preventing future similar occurrences remain to be solved.

Dissolver Heel

Very short dissolving times for the third cut from recent chargings of Dissolver 3-5-R at B Plant, as well as visible evidence during charging operations, had indicated a considerable increase in metal heel in this dissolver. A fourth cut was therefore made. The dissolving time was satisfactory at 8 hours, indicating that approximately 1 ton of metal heel still remained.

Concentration Buildings

Lanthanum Fluoride Product Precipitation Losses

Continued operation at the newer skimmer setting of Centrifuge E-2 at B Plant has verified the indication of early results that 0.3% lower E-3-W waste losses are obtained. Tests are now under way to evaluate the benefit gained from a 15-minute skimming period instead of the usual 5-minute period; first results suggest that 0.1% saving may be found.

Jetting Difficulties

Recurrent plugging of the A-1 to A-2 Jet at B Plant led to a hydrogen peroxide-nitric acid flush of A-1 Tank. This has not eliminated the plugging difficulties.

Erratic and occasionally high F-7-WS losses at B Plant have occurred recently. This may be due to partial plugging of the F-1 to F-2 Jet; it is planned to check this assembly.

Production Test 224-T-10

It has been proposed that the F-9-WS wastes be used in place of the dilution water during metathesis of succeeding runs. Procedures have been evolved and a Production Test write-up has been prepared for approval signatures.

Isolation Building

Weight of Product Recycled

A survey of data covering several months of operation shows that the hydrogen ion concentration alone is not a controlling factor as regards the amount of product in Isolation Building supernatant solutions. As previously mentioned, the iron content of these solutions also appears unrelated to the weight of product recycled. There is some evidence that the presence of larger amounts of potassium ion, which result from back-neutralization of high acidity P-1 solutions, may be beneficial in reducing the weight of recycled product. This lead is being followed.

Activity of P-1 Solutions

Recent runs from B Plant (such as B-6-11-D-13) have contained sufficient by-product activity to limit the working time near the P-1 Tank to less than 4 hours. This is close to the maximum permissible activity under present operating conditions. Brief examination of the gamma decay rate of samples from the P-1 solution has shown the activity not to be a short-life material such as element 93.

300 AREA

Evaluation of Impurities in TX Metal - Production Test No. 314-42-M

Analysis of data obtained in the processing of approximately 29 tons of TX (remelted turnings scrap) uranium billets has led to the following conclusions:

(1) The central portions of extruded rods show a higher density than the end portions. The density varies along the rods according to a smooth parabolic curve. This condition is reflected in Test Pile results, which show that stringers made up of slugs from the mid-portions of rods have a higher reactivity than those from the end portions.

(2) In general, Test Pile results correlate well with billet lot classifications based on chemical analyses. There were a few notable exceptions: for example, one billet which was reported to have an exceptionally high impurity content gave better Test Pile results than the best billets of the best lot.

(3) There appears to be no correlation between C.D.S. (calculated danger sum) values and Test Pile results.

(4) Slugs obtained from the lead end of rods generally show greater warp after machining than those taken from the remainder of the rod.

(5) The billet density reported by the Army is consistently about 0.045 gm/cm^3 higher than the average density of the slugs prepared from the billets.

(6) A group of slugs from a given rod shows the maximum reactivity in the Test Pile when the slugs are arranged in the stringer in the same order which they occupied in the rod. Arrangement of the slugs in random order gives approximately the same reactivity as does interchange of end and center slugs.

(7) Day-to-day variations in the apparent reactivity of the same slugs tested in the same order are greater than differences between stringers from different rods tested on the same day. An effort is being made to minimize these variations.

Extrusion

Carbonization of the lubricant on the ball races of the rotary hearth billet furnace impeded rotation of this furnace. Laboratory tests indicated that an alkaline solution of Duponol ME would disperse this carbonized grease, Accordingly, the races were cleaned with this solution, relubricated, and returned to service.

Canning Studies

Special Requests

During November, 399 pieces of Request 15-10 (lithium fluoride) and 250 pieces of Request 13-3 plus 35 pieces of Request 13-4 (both beryllium nitride) were canned.

Rolled Uranium

To provide slugs of rolled uranium for exposure in connection with studies of blistering in the piles, approximately 360 pieces of rolled "N" uranium plus approximately 250 pieces of extruded "N" material from the same batch of billets have been canned. In addition, 600 slugs of rolled uranium recovered from unbonded slugs are available for these studies.

Production Tests

Three Production Tests directed toward the more economical use of essential materials have been begun. These are No's. 313-82, 84, and 85-M, which deal respectively with the period of use of the Al-Si canning bath, the final etch solution, and the can etch solution.

Experimental work was completed on the evaluation of flux impurities under Production Test 313-79-M, and the preparation of four-inch slugs of "A" diameter was begun under Production Test 313-83-M. Of 220 four-inch "A" pieces machined from short rod ends, only about 60 were acceptable.

Six special slugs with thermocouple wells have been canned and autoclaved.

Canning of Bismuth Slugs

A stripping device for use with bismuth and other special slugs has been installed on the hydraulic press and is operating satisfactorily.

Preliminary tests on the use of a one-piece aluminum end cap in place of the present two-piece assembly for the canning of bismuth and Special Request slugs have yielded excellent results.

Metallurgical Studies

Approximately half of the slugs required for a pile exposure of thermally cycled material have received their heat treatment. Continued difficulties with the special heat-treating furnace have slowed this work

LABORATORIES

Work Volume Statistics

The following tabulation shows the source and volume statistics for samples on which analyses were completed:

	October		November	
	Samples	Determinations	Samples	Determinations
Routine Control, 200 Areas	1,523	2,543	1,396	2,397
Routine Control, 300 Area	600	809	596	1,065
Water Control, 100,700 Areas	10,242	18,892	9,887	18,058
Process Reagents, 200 Areas	734	1,334	591	1,058
Essential Materials	171	870	175	934
Special Samples	923	1,764	683	1,539
Total	14,193	26,212	13,328	25,051

200 Area Process Control

B and T Plants

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

	October		November	
Laboratory	Geometry	No. of Tests	Geometry	No. of Tests
B Plant	50.53%	227	50.52%	199
Isolation Building	50.53	46	50.52	40

A survey study was made in the B Plant Laboratory to check on the validity of the sampling technique and the standard LaF_3 precipitation procedure for plutonium assay of sample 8-1-MR. Although the study was not extensive, the following tabulation of results on duplicate 8-1-MR samples indicates that both the sampling and the analytical procedure give reproducible results.

Run	Sample No. 1	Sample No. 2
T6-11-D9	1.89×10^6 c/m/ml	1.91×10^6 c/m/ml

[redacted]

(1) Establishment of new standards.

(2) Increasing the sensitivity and lowering the limits of the conventional procedure (the pyro-electric method) to meet the new requirements.

(3) Conducting time studies to determine personnel and equipment requirements.

(4) Increasing the number of personnel to meet the new requirements.

(5) Training of all personnel, both old and new, in the pyro-electric technique.

(6) Establishing analytical routines to handle a large number of samples.

Essential Material Control

In order to supplement the Spectrochemical Unit's program outlined above, it is necessary that wet chemical proof procedure should be available for all elements which are determined spectrochemically. To facilitate the establishment of wet chemical procedures, an uranium analytical group is being formed. This group will also be available to perform the analytical work necessary for the test program now underway in connection with studies of uranium metal quality. The analytical procedures which will be established as the initial objective of this group are: boron, chromium, copper, iron, magnesium, manganese, lead, silicon, tin, carbon, hydrogen, nitrogen, mercury, chloride and density.

Specification tests have been set up for paints and allied products. These tests include both wet chemical and spectrochemical analyses.

REDOX PROCESS DEVELOPMENT

Semi-Works Design

Redox Specifications Letters No's. 2, 3 and 4 were prepared and transmitted to the Design and Construction Department. These Letters defined basic requirements for equipment design and layout for the following Semi-Works apparatus groups:

Letter No. 2, issued November 1, outlined a suggested over-all layout of equipment contemplated for the demonstration columns and all auxiliary equipment, including metal solution preparation and chemical make-up facilities. The treatment was general rather than detailed and was intended to furnish information for basic structural and architectural planning.

Letter No. 3, issued November 19, contained specifications for facilities to be used for metal solution preparation. By means of flowsheets, equipment lists, and sketches, the details of suggested arrangement, instrumentation, and operation of this equipment were outlined.

Letter No. 4, issued November 25, contained flowsheet specifications for all head tanks, displacement feed tanks, and receivers for the glass demonstration unit. Sketches attached to it outlined the suggested layout of these auxiliaries with respect to tank positioning and piping tie-in with the columns.

The Design and Construction Department submitted structural layout plans for the demonstration apparatus for approval (Drawing No. H-3-5005), and joint meetings have established the desirable revisions to these preliminary plans. The design of the new ventilation system for the Semi-Works Building is being prepared.

Materials and Equipment Procurement

The status of the materials and equipment procurement for construction of the Semi-Works demonstration unit was reviewed again late in the month. The break-down of procurement items into Group A (immediate construction needs) and Group B (deferred construction needs) has been retained. The month-end status of materials orders and receipts is as follows:

Classification	% Ordered	% Received
Group A	95	40
Group B	90	0

In addition to the above, it should be pointed out that unfavorable shipment dates are scheduled for the following Group A items: Explosion-proof fittings, 1/2-inch stainless steel valves and flanged fittings, and structural steel. Advancement of shipment is being attempted.

No change in the previously reported start-up time of early March 1947 is being made at this time, but this schedule continues most optimistic.

Solvent Extraction Seminars

Dr. S. Lawroski of Clinton Laboratories was at Hanford Engineer Works from November 11 - 21 for consultation on solvent extraction process development. A series of nine seminar discussions was held concerning the general outline, and as much detail as time permitted, of the program for Redox process development at this site. Main topics covered in these meetings may be briefly summarized as follows:

(1) Apparatus, methods, predicted results, and control measures for the "cold" demonstration studies;

(2) Equipment, methods, and procedures for solvent recovery;

(3) Experimental program and equipment design for the "hot" column reproducibility studies;

(4) Apparatus and methods for large-column scale-up H.E.T.S. studies;

(5) Redox process chemistry;

(6) Solvent extraction laboratory program to supplement semi-work studies;

(7) Design, construction, and operation of large-scale extraction units;

(8) Techniques of handling volatile solvents;

(9) Solvent extraction development progress at Clinton Laboratories.

In each meeting involving a discussion of the Hanford program, the plans for equipment and procedure were outlined in detail for Dr. Lawroski's consideration and comment. Although considerable discussion followed each such presentation, the proposed program was approved in toto.

Supplementary to these meetings, a conference was held on November 20 with Drs. Marsden and Patnode (Schenectady visitors) and Dr. W. D. Coolidge to discuss the desirability of establishing a research group for fundamental solvent extraction studies.

STATISTICAL STUDIES

Analyses of variance made on data submitted by the 300 Area Technical group revealed that slugs cut from different portions of extruded rods were significantly different in reactivity, weight, density, and warpage. The slugs from both rod ends were less reactive, lighter, less dense, and more warped than slugs from the center of the rod.

The relationship between slug density and the portion of the extruded uranium rod from which it came was found to be a parabola of the type $Y=a+bx+cx^2$, where "Y" is slug density and "x" the slug position in the extruded rod. The correlation coefficient for the fitted parabola was 0.986, 1.000 being perfect.

A "t" test indicated slug density to be significantly lower than reported billet density. From a correlation analysis, only 53% of the fluctuations in slug density was attributable to concomitant variation in billet density.

A highly significant difference between Test Pile reported reactivities on the same stringers on different days was found to exist. Each of several stringers varied concomitantly from day-to-day during a four day test period.

The precision of dih measurements estimated from all routine tests made from January through October of this year (758 stringers) was found to be $\pm$ 0.059 dih for the normal test in which duplicate stringers are used with duplicate readings on each. This estimate of precision does not include errors due to day-to-day shifts in reactivity as noted in the paragraph above.

The effect of slug weight and stringer length on dih measurements was reported.

Weighted monthly Test Pile dih averages since January of this year were computed for the 100 Area Physics group.

Additional data submitted to H.E.W. by the Corps of Engineers for relating metal reactivity to density and metal impurities are being analyzed statistically in conjunction with the metal quality studies which have been in progress for the past two months.

A statistical study of Columbia and Yakima river water sampling for chemical analysis indicates that the number of sampling stations may be reduced from 12 to 4 without loss of information. The second phase of this study now underway is concerned with the frequency of sampling.

Technical Department

BIBLIOGRAPHY OF DOCUMENTS ISSUED

NOVEMBER 1946

GENERAL

"Technical Progress Letters" numbers 122 to 125, inclusive, were issued routinely on a weekly basis.

Title	Date	Doc.No.
100 AREAS		
Production Tests		
105-55-P, Supplement C, "Special Irradiation" Request No. 15-3 (Final Report)	11/26/46	7-5401
105-55-P, Supplement F, "Special Irradiation No. 15." (Interim Report)	11/ 6/46	7-5323
105-66-P, "Special Irradiation Request 25-3" (Final Report)	11/22/46	7-5381
105-68-P, "Special Irradiation Request No. 19" (Final Report)	11/22/46	7-5380
105-73-P, "Examination of Exposed Slugs"	9/16/46	7-5072
105-76-P, "Discharge of Highly Exposed Slugs" (Final Report)	11/29/46	7-5422
105-78-P, Supplement A "Xenon Free Reactivity Coefficients"	10/30/46	7-5288
105-80-P, "Measurement of Slug Temperature"	11/12/46	7-5367
105-82-P, "Bowing of Tube 4494-D"	11/18/46	7-5376
105-83-P, "Special Irradiation Request No. 26"	11/22/46	7-5383
Meetings		
100-300 Area Program Meeting - November 5, 1946	11/ 8/46	7-5344
Graphite Expansion Committee	11/ 4/46	7-5342
Memoranda		
Measurement or Horizontal Bowing of Process Tubes	10/31/46	7-5284
Graphite Expansion Unit Motion Measurements	11/21/46	7-5374
Hot Laboratory Design I	11/26/46	7-5398
Hot Laboratory Design II	11/26/46	7-5399
Summary of Blistering Inspections	11/27/46	7-5413
Problem Assignments		
3-P "Apparatus for Chattering Studies"	10/29/46	7-5277
200 AREAS		
"Request for Concentration Building (224-B) Samples"	11/ 5/46	7-5319
"Report from 200 Areas Plant Assistance Group for October 1946"	11/18/46	7-5375
"200 Area Program Meeting - November 21, 1946"	11/26/46	7-5400

Title	Date	Doc.No.
CHEMICAL DEVELOPMENT		
Design Specifications		
"Redox Specifications Letter No. 2"	11/1/46	3-5066
"Redox Specifications Letter No. 3"	11/19/46	3-5099
"Redox Specifications Letter No. 4"	11/25/46	3-5109
Meetings		
"Redox Steering Committee Meeting - November 7, 1946	11/11/46	3-5095
STATISTICAL		
"Meeting on Metal Quality, October 31, 1946"	11/ 7/46	3-5075
"The Precision of dih Measurements"	11/11/46	3-5080
"Statistical Report on Quality for 300 Area - October 1946"	11/14/46	3-5086
"Relationship Between dih, Slug Weight, and Stringer Length"	11/14/46	3-5089
"Weighted Monthly dih Averages"	11/15/46	3-5092
"Interim Report on Production Test 314-42-M"	11/20/46	3-5102
"Day-to-Day Differences in Test Pile Results"	11/25/46	3-5116
"Test Pile Errors"	11/27/46	3-5113
300 AREA		
Production Tests		
Production Test No. 313-82-M "Period of Use of Al-Si Baths"	11/ 6/46	3-5081
Production Test No. 313-83-M "Four-Inch Bonded Slugs - "A" Diameter"	11/13/46	3-5106
Production Test No. 313-84-M "Period of Use of Final Etch Solution"	11/ 7/46	3-5082
Production Test No. 313-85-M "Period of Use of Can Etch Solution"	11/13/46	3-5107
Production Test No. 313-80-M (Final Report) "Four-Inch Bonded Uranium Slugs"	11/14/46	3-5093
Production Test No. 314-42-M (Interim Report) "Evaluation of Metal Impurities - TX Material"	11/ 6/46	3-5074
Memoranda		
Classification of Billets by Lots - October Shipment	11/13/46	3-5088
Study of Canning Costs	11/12/46	3-5091
Committee on Improvement of Metal Yields	11/15/46	3-5108
Consideration of Extrusion Conditions	11/8/46	3-5087
Problem Assignment No. 1-M "Comparison of Cast, Rolled, and Extruded Metal"	11/5/46	3-5083

GENERAL

As a result of recent research, significant reduction in the consumption of water treatment chemicals has been made in all 100 Areas.

Improved coal efficiencies have been attained by close attention to air-fuel ratios, reduction of air infiltration, and by overall attention to steam generation on the part of the responsible supervision and operating personnel. Stimulation of interest on the part of the steam generation operating groups can be attributed to recently improved operating and reporting procedures.

ORGANIZATION AND PERSONNEL

Broadening of our supervisory training has been initiated by the interchange of selected supervision between unlike operating areas. By this exchange of supervision between areas, it is believed that aside from the development of knowledge and a more flexible supervisory group, the effect on personnel generally will be beneficial.

100 AREAS

Studies pertaining to the effective use of water treatment chemicals which have been in progress for several months in 100-B Area have permitted the reduction of approximately 20% in the chemicals consumption in D and F Areas. In B Area where the requirement for water is low and no hazard involved, consumption had been reduced approximately 60%, under certain conditions. Indications point to a further reduction in the chemical requirements of the two operating areas when further testing now in progress will have been concluded.

Correlated with our program of improving boiler economy has been the inspection and repair of the settings. All boilers in D Area have been given a coating of air sealing compound.

On November 13 a pressure fluctuation occurred in the process water supply system to the Pile in F Area, during a period when the operator was attempting to parallel the master controllers. The Pile was not affected.

On November 6 all refrigeration units in D Area were removed from service, freon removed from the coolers, and the usual schedule for winter lay-up became effective.

200 AREAS

On November 11 the Ruggles-Klingmann valve on the emergency generator in the East Area was replaced due to faulty operation.

Power Department

300 AREA

On November 12 the acid mix tank for the hydrogen zeolite water softening equipment was removed from service for repairs to the defective lining.

To improve excess furnace air conditions, control dampers have been installed in the cinder recovery fans connected to the steam boilers.

700 AREA

On November 22, No. 4 boiler was removed from service because of tube leaks. Inspection revealed that several tubes had failed due to an improperly aligned soot blower. This boiler had been in service for approximately four months and it is believed that misalignment might have occurred during this period. Continued close inspection of all like equipment will be made in order to prevent recurrence of this type of failure.

1100 AREA

On November 28 a new gas heater was installed at the Sewage Disposal Plant to replace a defective unit. A second heater, previously coal-fired, has been converted for gas use by the installation of the reconditioned gas burners from the defective unit.

All irrigation pumping equipment has been placed in lay-up condition for the winter.

The quantity of water hose which was distributed to the Village residents for irrigation purposes has been collected and placed in storage.

ORGANIZATION - POWER DEPARTMENT

NOVEMBER 30, 1946

Distribution of Personnel by Areas

Area	Supervision	Operators	Others	Totals
100-B	7	36	4	47
100-D	25	97	5	127
100-F	22	96	5	123
200-E	6	24	0	30
200-W	9	32	7	48
300	0	8	4	12
700 - 1100	7	34	2	43
Plant Gen.	2	0	0	2
Totals	78	327	27	432

NOVEMBER 1946

POWER DEPARTMENT STATISTICS

	Unit		100 Areas		
			100-B	100-D	100-F
River Pump House (Building 181)					
River Stage	Ft. above sea level	(max.	385.5	378.2	364.4
		(min.	384.6	377.5	363.8
		(ave.	385.1	377.9	364.1
River Temperature	ave. ° F		48.6	49.1	48.6
Water Pumped to Reservoir	gpm ave. rate		9296	40898	37251
Water Pumped to Refrigeration Plant (condenser water)	gpm ave. rate		-	8430	0
Reservoir (Building 182)					
Water Pumped to Filter Plant	gpm ave. rate		7223	34898	33130
Water Pumped to Export System	gpm ave. rate		1490	2034	559
Water Pumped to Condenser System	gpm ave. rate		583	3966	3362
Chlorine Added at No. 1 Inlet	lb.		0	0	2000
Water Pumped to Export System	normal flow		4083	4083	4083
Filter Plant (Building 183)					
Filtered Water to Power House	gpm ave. rate		93	313	275
Filtered Water to Process	gpm ave. rate		4388	31546	27687
Filtered Water to Fire and Sanitary	gpm ave. rate		98	133	159
Chlorine Used in Water Treatment	lb.		1715	5800	7350
	ppm ave.		.66	.46	.61
Lime Used in Water Treatment	lb.		350	63735	80000
	ppm ave.		.13	5.1	6.7
Ferrifloc Used in Water Treatment	lb.		24102	231500	280000
	ppm ave.		9.3	18.4	23.4
Carbon Used in Water Treatment	lb.		0	0	0
	ppm ave.		0	0	0
Raw Water Analysis	pH ave.		8.2	8.2	8.1
Finished Water Analysis	pH ave.		No Anal.	7.39	7.3
Alkalinity - M. O. Raw	ppm ave.		59	60	60
Alkalinity - M. O. Finished	ppm ave.		55	53	48
Residual Chlorine - Settled	ppm ave.		.37	.23	.2
Residual Chlorine - Finished	ppm ave.		.07	.15	.1
Iron - Raw	ppm ave.		.09	.07	.0
Iron - N. Clear well	ppm ave.		No. Anal.	.01	.0
Iron - S. Clearwell	ppm ave.		No. Anal.	.01	.0
Chlorides - Filtered Water	ppm ave.		.8	1.2	1.1
Hardness - Finished Water	ppm ave.		65	67	66
Turbidity - Raw Water	ppm ave.		2.2	2.6	4.9
Turbidity of Filtered Water	ppm ave.		No Anal.	0	0
Refrigeration (Building 189)					
Refrigeration Produced	tons/day		-	450	0
Temperature Process Water In	ave. ° F		-	52.0	0
Temperature Process Water Out	ave. ° F		-	50.2	0

1199270

	Unit	100 Areas		
		100-B	100-D	100-F
Power House (Building 184)				
Steam Generated - Total	M lb.	30827	106963	99521
Steam Generated - Ave. Rate	lb./hr.	4282	148560	138223
225# Steam to Plant (est.)	M lb.	27088	93045	88077
15# Steam to Plant (est.)	M lb.	40	1082	499
Coal Consumed	tons	2468	8228	7540
Coal in Storage (est.)	tons	11519	30096	29362
Deaerator Plant (Building 185)				
Water Flow (ave.)	gpm	4138	31296	27437
Chemicals Consumed:				
Dichromate	lb.	1800	22000	22700
Sodium Silicate	lb.	19785	26085	261880
Chemical Analysis:				
pH	pH	7.66	7.65	7.65
Dichromate	ppm	No Anal.	1.9	2.0
Silica	ppm	No Anal.	6.8	7.1
Dissolved Iron	ppm	.02	.01	.01
Process Pump Room (Building 190)				
Total Water Pumped	gpm ave.	4103	31121	27262
Water Temperature	ave. ° F	49.5	50.5	50.7
Total Water Pumped	normal flow - gpm	4103	31990	30799
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	3100	0
Chemical Analysis:				
A, B, D & D Headers Standard Limits				
pH 7.5-7.8		(max. 7.75	7.70	7.70
		(min. 7.55	7.55	7.60
		(ave. 7.67	7.64	7.66
SiO_2	ppm	(max. 7.0	8.5	8.0
		(min. 5.5	5.5	6.0
		(ave. 5.9	6.9	7.3
$Na_2Cr_2O_7 \cdot 2H_2O$ 1.8-2.2	ppm	(max. 2.1	2.0	2.1
		(min. 1.9	1.8	1.8
		(ave. 2.0	1.9	2.0
Iron	ppm	(max. .04	.02	.02
		(min. .02	.005	.005
		(ave. .03	.01	.012
Free Chlorine as Cl_2	ppm ave.	.07	.13	.15

	Unit	200 Areas	
		200-E	200-W
Reservoir (Building 282)			
Raw Water Pumped	gpm ave. rate	2234	1849
Filter Plant (Building 283)			
Filtered Water Pumped	gpm ave. rate	424	390
Chlorine Consumed	lb.	255	209
Alum Consumed	lb.	2097	2472
Chlorine Residual - Sanitary Water	ppm	.59	.63
Power House (Building 234)			
Steam Generated - Total	lb.	22030000	25966000
Steam Generated - Ave. Rate	lb./hr.	30597	36064
Coal Consumed (est.)	tons	1879	2168
Coal in Storage (est.)	tons	11144	10786

	Unit	300, 700, 1100 Areas		
		300	700	1100
Power House (Buildings 384 and 784)				
Steam Generated - Total	lb.	10780000	19586000	
Steam Generated - Ave. Rate	lb./hr.	14972	27203	
Coal Consumed - Total (est.)	tons	877	1504	
Coal in Storage (est.)	tons	1733	4957	
Sanitary and Fire System (1100)				
Well Water Pumped - Total	gal.			62932000
Well Water Per Day	gal.			2098000
Well Water	gpm ave. rate			1457
Chlorine Residual	ppm			0.2
Sewage Treatment Plant (1100 Area)				
Total Treated	gal.			49000000
Treated Per Day	gal.			1633000
Ave. Rate	gal.			1134

GENERAL:

Two sub-major injuries were sustained by Maintenance employees during the month of November. Both of them were fractures of the little finger. One occurred in the 300 Area when a mechanic was assisting riggers in moving a heavy tank into position and his finger was caught between the tank and the rollers. The other was in the 100-F Area where the operator of a large size paving breaker crushed his finger between the handle of the breaker and part of a large valve. A safety contest of four month duration has been organized to commence December 1st. The first month will be on the subject of Housekeeping, second month - Personal Safety Equipment, third month- Safety Meetings, and fourth month - Safety Skit. The three main areas will compete against each other and a cumulative score will be kept over the four month period. The award will be in the form of a picnic attended free by the winners and paid for by the losers.

A Minor Construction section was organized as a subdivision of the Maintenance Department in order to handle small construct ion jobs which are not of sufficient magnitude to be handled by the Design and Construction Department. All minor construction work will be performed by General Electric employees who will be on exactly the same basis as other maintenance workers. Construction work currently in progress under this group includes alteration of the Employment Building, alteration of Dormitory W-4 for the Design and Construction Department, erection of a coal bunker for the heating plant at the Military Police Barracks, alteration of Dormitory W-10 for the education program, and construction of an additional wing on the Administration Building in the 300 Area.

ORGANIZATION AND PERSONNEL:

Four engineers and two draftsmen were transferred to the Design and Construction Department. These men are engaged in design of a new separation process and were transferred when this design program was taken over by the Design and Construction Department.

Two Maintenance mechanics were promoted to foremen to supervise work in the Minor Construction section.

Total enrollment in the department increased from 521 to 560. These figures include twelve men in the Design and Construction Department who do not appear on that roll yet, although they are actually working there. New men reporting for permanent assignment in Maintenance were as follows:

1 Assignment Engineer	6 Painters
3 Draftsmen	1 Pipefitter
8 Carpenters	2 Upholsterers
	8 Helpers

There were two terminations.

WORK ORDER SUMMARY:

FIELD FORCES

	Work on Hand 11/1		Work Completed in Nov.		Work on Hand 11/30	
Area	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	77	214	128	222	106	216
100-D	68	180	274	471	57	193
100-F	128	287	175	405	133	211
Overhaul	54	1596	143	889	84	1379
200-E	208	693	353	951	237	883
200-W	505	1406	544	1516	579	1544
300	158	355	227	526	142	402
700-1100	1090	3341	951	3700	1204	3985
Minor Const.	0	0	6	180	7	280
Total:	2288	8072	2801	8862	2549	9094

ENGINEERING SECTION

	Work on Hand Nov.1 Est. Man Days	Work Completed in Nov. Est. Man Days	Work on Hand 11/ Est. Man Days
Studies	536	192	576
Projects	1135	815	899
Total:	1671	1007	1475

As indicated in the above work order summary, the volume of work increased more than the manpower available to do it. This indicates a need to continue hiring in order to meet present as well as future demands. The Engineering Section appears to be keeping abreast of its work and decreased its backlog during the month. The two areas that reflect the greatest backlog increase over the one month period are the 700-1100 Area and Minor Construction.

100 AREAS:

Cleaning of the 105-B transfer and storage basin was completed. The temporary pump was removed and the sluice trench backfilled.

The underwater manipulator was re-built. Bronze chain sprockets were made to replace the original cast iron sprockets. All the bronze and steel shafting was replaced with stainless

steel shafting to prevent corrosion which had formerly limited the use of this equipment. Angle iron guide brackets were anchored to the manipulator pit floor so that this equipment could be lowered into correct position.

The main steam line to 181-B which was taken out of service early in the summer to conserve coal was put back into service for the winter months.

The three Reuse Pumps in Building 190-B were laid away in accordance with Standard Lay-away Procedure set up by the Power Department. The suction valve to No. 1 pump was provided with a 4 inch drain line to the tunnel drainage system to provide hot well drainage.

Vertical safety rods Nos. 25 and 37 in the 105-D Pile were removed from the unit so that the rods and rod guides could be buffed to remove rust. No. 7 Mason Neilan valve on the 3X System developed a leak of approximately 1-1/2 gallon per day and was removed and replaced with a new valve. A large hand wheel was installed on the manipulator controls to make the machine work easier. A unit heater was installed in the transfer area over the manipulator pit to provide heat for the operators.

Neoprene seals on the near side and far side of 105-F Pile were removed and replaced with larger Neoprene seals to provide for further expansion. The cork expansion joint between the concrete block wall and the walkway behind the 3X tanks had compressed to 3/4 inch and the wall itself showed signs of cracking due to expansion. One course of concrete brick and the cork seal were removed entirely. 2 X 4's were bolted to the concrete block wall and the concrete ceiling. These strips were set in mastic to make up for the irregularities in the concrete. A 16 inch strip of canvas was attached to these 2 X 4's by using a nailer strip to hold the canvas in place. Twenty-one vertical thimbles were tested with 87 lbs. of air and were found to be in good condition.

A wooden baffle deaerator was installed on the head tank in Building 146-F to facilitate the removal of air from the water in this building. This equipment has not been in service up to the present time. A report will be made on its operation next month.

No. 5 Pomona pump in Building 181-F was overhauled on schedule. Sections 6 and 7 of the drive shaft were worn and had to be rebuilt by metalizing. All rubber bearings in this pump were replaced. A copper ring bearing holder was installed in each bowl to prevent the bearing from dropping down and cutting groves in the impeller lock nuts. The first stage bowl had considerable cavitation. The impeller travel surface in the bowl was machined to permit the installation of a 7/16" brass wearing blade. No. 13 Pomona pump was overhauled on schedule. All of the pump shafts were re-built to original size by metalizing and all the pump bearings were replaced. The second stage impeller showed cavitation

at the end of the blades. The second stage bowl showed small spots of cavitation which were filled in with ferro weld and ground down to a smooth surface. Second stage bowl bearing had dropped down on the top of the impeller nut and cut a deep groove in it. Copper bearing holders were installed to hold rubber bearing in place in both bowls. The first stage impeller travel surface was erroded by cavitation over 75% of its area. In four places the cavitation had eaten through the thickness of the metal so that a hole was formed from the inner surface wall to the outer surface wall. The repair was made by pre-heating the entire pump bowl and building up the erroded areas with cast iron rod. The built up surface was held to within 1/2 inch of the finished surface. The entire face of the bowl was machined and a one-inch full face brass insert was installed. The insert was then machined down so that the finished wearing plate was 5/8 inch thick.

No. 4 boiler was overhauled on schedule. The back wall and baffle were completely removed and re-built. A.P. Green fire brick dipped in Sairset compound cement were used to build up the wall. The baffle was formed in place by using Kasset Fire Clay and was given a one-inch clearance above the wall. The piers were removed and re-built with Kasset Fire Clay. The old steel coal deflector plates were replaced with new stainless steel plates. The front row shaker grates were reduced in length by 1/8 inch to prevent them from catching on the front plate of the fire box. The stoker line shaft was worn and was rebuilt to standard size by metalizing. New adjusting nuts were installed on the pillow block bearings. These were made so they can be adjusted with a spanner wrench instead of with a hammer and punch. The outboard and inboard bearings on the forced draft fan turbine were replaced with new bearings.

200 AREAS:

Replacement of bearings on No. 1 fan at the Canyon fan house in East Area was completed. Fan operates satisfactorily but continues to give indication of a bent shaft or out of balance rotor.

A special check was made on all fan bearings in the Carrier supply fans for the Canyon Building. All bearings were also flushed and supplied with new oil.

The key cover block to cell 18-L was replaced with a spare provided by construction. The cause of failure is not known but a crack developed in the lower section.

The centrifuge in the canyon (centrifuge #17-2) was removed from service because the dip tubes were striking the bottom of the bowl. It was replaced with a unit from section 19 that had not been in service as yet. This unit from section 19 was modernized by replacing the skimmer and plow with the new design skimmers. The unit from 17-2 will be repaired by replacing the dip tubes and will be available for future replacement needs.

In order to stop a leak between the cover and case of the

outside shell of A-2 centrifuge, in the East Area Concentration Building, two broken cap screws had to be replaced. Because of location considerable dismantling had to be done under severe S.W.P. conditions.

A connection head gasket test program has been in progress in the mock up cells of the Maintenance shop. Teflon gasket material is being tested to devise ways of using it to replace G-9. Final conclusions have not been made.

Two valves were replaced in the H.F. System of the East Area Canyon Tank Farm. The general program of testing existing tanks and replacing pumps and piping has not been started. Operating department plans are not complete yet but because of large quantity of acid on hand it will be necessary to provide additional storage space before the present system can be purged for testing and replacing.

Waste disposal line 10-1 to division box 154-B became plugged and waste was diverted to another line. Attempts are being made to remove the obstruction from the line with water pressure.

The semi-annual program of testing safety relief valves on unfired pressure vessels in the B plant is in progress. At the same time a hydrostatic test is being applied to the vessels themselves.

The Buffalo air supply unit to the Canyon Building was repainted to overcome rust pitting.

The Terry Turbine, Ruggles - Klingman control valve in the boiler house was replaced with a new valve. The new valve functions satisfactorily. The removed valve will be reconditioned and kept for replacement.

The hangers on the outside steam lines were adjusted to remove sag from the lines. In general the line was found to be quite uneven showing considerable movement in the supports.

General inspection and repair of steam traps on outside locations was completed.

In order to transfer H.F. acid from the heat treat storage area to the pickling vat, it was necessary to recondition the pipe system. Valves, nipples, fittings were replaced where needed.

The oil burners in the heat treat furnace were cleaned and reconditioned but continued unsatisfactory performance requires replacement parts in the burners. These have been ordered.

The program to repaint the deck and tank on the R.R. cask cars has been started. As these cars can be spared from service they will be repainted.

The general inspection and replacement of the H.F. system in the West Area Canyon Tank Farm was completed. The storage tank was inspected and pressure tested. Piping at the unloading and transfer pumps was changed to conform to H-2-312. Dual valves were installed at all points in the system as recommended.

The four preheater coils in the Buffalo air supply unit, to the Concentration Building, were replaced. Copper tube coils were used in replacement.

The Johnson temperature controls for the carrier units in the Canyon are beginning to fail in service. General cause of failure is leakage in the diaphram. Some units will have to be factory reconditioned.

Inspection of the West Area Canyon basement sump pumps showed that the lower bearing lubricating line was corroded through indicating a slight acid condition of the floor washings pumped. The lubricating line was replaced on each pump with stainless steel.

The La Bour pumps on the Q and K system developed bearing trouble. Inspection has shown that the recommended lubrication with grease is inadequate since the grease falls into the housing between the bearings and never gets to the bearings at the ends. The replacement bearings were hand packed with grease and no attempt will be made to lubricate except by this method hereafter. The pumps were designed for an oil lubricant and changed to grease at start-up.

The Pennsylvania air compressor No. 1 was given a routine inspection. Only replacement made was the discharge valve springs.

Replacement dip tube assembly for No. 1 Tank B cell in the West Area Concentration Building was necessary. This was shop fabricated, heat treated, and pickled.

Thermometer well for No. 6 Tank B cell in the Concentration Building was replaced also. Replacement was made with 25-12 stainless material.

Outside repainting of West Area buildings has been suspended because of the weather and painting crews are doing inside process area work.

The reroofing program was completed. All built up roofs in 200 East, 200 West, 200 North and Riverland were recoated. Built up flat roofs with a gravel coating were no recoated because of their excellent condition, but flashings were required.

300 AREA:

No. 9 lathe had several parts replaced in order to handle a different type of work anticipated for this machine. Sliding doors were installed on the hydrofluoric acid shed in order to facilitate

handling of acid in this building. A furnace cooling device was constructed to reduce the time between furnace shutdowns and overhauls. A four foot opening was cut in the wall between the Can Wash and Special Request Rooms in order to speed up handling of materials.

Regular extrusion dates were interrupted in Building 314 by failure of the rotary hearth furnace. Investigation proved that an accumulation of carbonized lubricant was blocking the movement of the hearth. Steps were taken to overcome this condition by removal of the obstructing materials and the furnace will again be ready for operation by December 2nd. Consideration is being given to a regular flushing period for the furnace to eliminate a future recurrence of the above condition.

A number of laboratory tables and fans were removed from a room in 321 Building in order that the space could be converted to office use. A hutment was removed from Hanford and placed in the 321 Area directly north of the main building.

Bearings were replaced in one of the boiler feed pump turbines in Building 384 because of an excessive amount of oil being consumed. Sliding doors were built and installed at the ash disposal entrance. A lead lined acid tank was removed from the water softener room and repaired.

New laboratory hoods and benches were installed in Room 4-B of Building 3706 and ventilating equipment was enlarged to accomodate the increased demand by these hoods.

Approximately 500 tote boxes were repaired by the addition of a metal tray bottom.

The balance of the parts necessary to repair the Airtemp radial compressor unit in Building 3706 were received and are now in process of installation.

700 AREA:

Installation of new partitions and acoustic board in the west wing of 703 first floor for the new location of the Time Office was completed.

Four hundred thousand board feet of lumber was brought in fro Pasco and unloaded for the Stores Department.

Two Quonset hutments were brought into the 700 Area and placed south of the 713 Building for the Stores Department. One of these hutments has been temporarily loaned to the Maintenance Department and is being used as a Mattress Repair Shop.

Several steam radiators were moved and the air ducts changed to fit the partitions in the 705 Building.

Installation of water control valves on the dessert coolers i

703 and 705 was completed.

A new entrance gate to the 700 Area was installed.

The Loading Dock on the west side of Building 703 was doubled in size.

The job of crating information to be shipped off the plant at the 712-B hutment is 95% complete.

Five water line leaks were repaired within a radius of six feet on the ten inch underground water line near the east entrance to the 700 Area.

During the month 200 signs were made for the Accounting Depar ment, 190 signs for the 300 Area, and the Monthly Health Bulletin was drawn up for the Medical Department, along with other miscellaneous small jobs.

Some work has been done on the green trim of the 703 Building.

Thirty desks and three drafting tables were refinished during the month.

1100 AREA:

The 17th leak in the underground water pipe on Wellsian Way was repaired.

One hundred and fifty Village houses were winterized and one hundred de-winterized with no bad freeze-ups during the month.

All irrigation lines have been winterized but the valves on the system have yet to be repacked and repaired to be ready for th next season. All sewer and water lines were plugged off under ground where prefabs had been removed.

One hundred and seventy-five furnaces were repaired during the month. There is an average of one furnace door blown off per day. The removal of furnace registers has been started in the "E" type houses and in Division #2 and #3.

Sixty-eight household refrigerators were repaired.

The testing and repairing of safety valves in the commercial area is completed.

The hydrostatic testing of unfired pressure vessels is 75% complete.

The hydrostatic testing of unfired pressure vessels is 75% complete.

A new gas fired boiler was installed at the Sewage Disposal

Plant and the boiler in the sub-basement converted to burn gas.

The irrigation ditch pumps were inspected and the necessary repair parts ordered.

All carpenter work on "E" type houses was completed in preparation for outside painting. All of the "E" type houses have been given a prime coat but 13 are still to be second coated.

The carpenter work on Division #1 houses has been stopped alont with the exterior painting of these houses.

Installation of the new shingles on the Lewis & Clark school roof is half finished.

Maintenance Department work on the four additional hutments for the use of the grade schools was completed during the month.

The work of altering the second floor of W-4 Dormitory for the Design and Construction Department was completed.

A hutment is being erected for the use of the inside painting group north of the Rainbow Filling Station on Casey Avenue.

The new aluminum weather stripping was installed on four prefabs in place of the original plastic stripping which has proven unsatisfactory.

During the month most of the exterior painting was stopped and most of the painters were engaged in painting bathrooms, kitchens, portions of the interior of many of the commercial facilities, and the interior of 704 Building.

The outside painting group will be further sub-divided and placed under three foremen, in order to begin the interior painting program Monday, December 2nd.

The number of houses to renovate has been reduced during the past month and very few orders are on hand other than 67 prefabs which are being reconnected on Project C-109.

The addition of two furniture repair men has increased the output during the past month and with the separate mattress hut now in use, a further increase in production during December is expected.

It is planned to continue the spray painting of prefabs during the winter with a group of four men. However, it may be necessary to pull off this work if the paint which is on order is not received soon.

Equipment for the Accounting Department was transferred from Building 705 to Building 703 Saturday, November 16th. It was necessary to make the move on a week end since the equipment was needed by the Accounting personnel in their work.

Mechanics were called out on Saturday, November 23rd in order to install new valves in steam lines at several pieces of equipment to enable units to be shut down for repairs without shutting down the entire system. Valves were repacked and leaks in steam lines repaired at equipment which could not be shut down during the normal work week at the same time. Valves were also installed in the water softener in order that the two softeners tanks could be sectionalized.

MINOR CONSTRUCTION

Work on alteration of the employment building started on November 11th and is about 55% complete. Materials for this work are promised on the job site between December 5th and December 10th and if materials arrive as scheduled, the job will be completed by December 20th. Paint is on order but as yet there is no promise date of delivery.

The work on alteration of Dormitory W-4 for the Design and Construction Department started November 21st and is about 45% complete. All work will be completed by December 20th, except for electrical fixtures and painting. To date, there is no promise as to when the electrical fixtures will be delivered. Paint order is not yet placed.

Approval has been obtained to start construction of an additional wing on the 300 Area Technical Building. Preliminary layout is under way and excavation should start the first week in December.

Construction of a new coal bunker in the Military Police Barracks Area will get under way December 9th.

ENGINEERING SECTION

Projects and Suspense Codes Authorized and Under Construction

100 AREAS

Proj. No.	Title	% Phys. Complete	Date Auth.	Est. Cost
C-29	Third Safety Device-Valve Replacement Buildings 105 BDF	100	6-25-46	$ 7,500
C-54	Installation of Strainers in High Tank Water Lines-105 BDF	100	9-20-46	11,100
C-88	Installation of Ventilation Curtains Buildings 105 BDF	100	4-25-46	1,500
	Total Estimated Cost 100 Areas Projects			$20,100

200 AREAS

Proj.No.	Title	% Phys. Complete	Date Auth.	Est. Cost
C-67	Dismantle T.C. Extra Machinery Storage and T.C. Pipe Warehouse	95	11-26-45	$ 3,000
C-100	Fan Shielding and Replacment Eqt. 291 TUB	15	9-17-46	9,600
C-103	Remodel 2713-W Building for Transportation Garage	75	9-17-46	4,400
C-106	Intermediate Waste By-Pass Jumper 221-TB	65	9-20-46	3,350
C-107	Rerouting of Waste Lines from Sec. 9 to 221-B	60	9-20-46	1,300
C-112	241-B Waste Storage Tanks	0	11-18-46	1,667,000
	Total Estimated Cost 200 Areas Projects			$1,688,650

700-1100 AREAS

C-87	Telephone Cable Moisture Proofing	99	4-22-46	$ 1,950
C-89	Barber Shop Water Softener	99	5-7-46	1,050
C-94	Prefab - 508 Smith - Repair Fire Damage	90	6-17-46	775
C-97	Street Paving - Village	50	8-16-46	10,450
C-99	1444-1446 Thayer - Fire Damage Repair	45	8-13-46	3,125
C-101	Bus Heater and Defrosters	85	8-30-46	12,150
C-102	Schools - Install Sixteen Huts	98	8-30-46	24,960
C-105	Build 20 Zeuto Instruments	50	9-11-46	1,900
C-108	Village Walk-In Refrigerators-Thermometers	0	11-5-46	4,350
C-109	Reactivate 87 Prefabs	35	10-30-46	5,655
C-111	Sewage Lift Station - Revise Pumps	0	11-4-46	2,200
	Total Estimated Cost 700-1100 Area Projects			$ 68,565

MULTIPLE AND MISCELLANEOUS AREAS

C-96	Riverland R.R. Shops -Electric Heat	85	7-10-46	$ 3,700
C-110	3000 Area Barracks - Construct Coal Bunker	5	11-13-46	4,700
	Total Estimated Cost for Active Approved Projects all Areas			$1,785,715

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1199201

Projects Being Routed for Authorization

E.R. No.	Title	Estimated Cost
813	S.C. 10110 - Alterations to Dorm. W-4	$ 5,800
778 (C-114)	S.C. 10115 - Building 705 Alterations to Employment Building	6,025
804 (C-115)	Dormitories-Install Fire Alarms	4,100
	Total	15,925

Project Engineering - Area Reports

100 AREAS

Design jobs added during the month, but not completed, include "Modified Mattress Plate for 105 Building," "Buffing Machine for Vertical Rods," and "Design study on Downcomer." The projects being prepared are"Additional Facilities for Fish Laboratory" "Design and Fabrication of 'B' Casks and Shipping Containers," and "'B' Test Hole Facility."

200 AREAS

Study on H.F. pumping and piping completed except for tank inspection. Engineering Report submitted study being made to convert Buffalo Air Conditioning Units to Wet and Dry Units 222-T&B.

Study being made of ventilating system in 231 Building.

Work Orders Worked On:

Decontamination of N.W. Crane
Counter-integrating air monitoring unit and shield.
Reroute waste lines from Sec. 9 to 221-T.
Staked wells at roads by waste line.
S.W.P. area maps prepared and spotted test shafts.
Soil sampling and test shaft device.
Staked process waste lines for grading and clearing.
Staked coordinates near R R. for services to new car spot.

Project on Diverting Second Cycle Waste from 241-110-T-B to Cribs and Tile Fields is being estimated.

300 AREA

Engineering Data Report #10 "Billet Casting" completed and issued.

Preliminary studies made of proposed change houses and submitted to "P" Department.

Preliminary layout of coal handling equipment for 384 Building made during the month.

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1199208

Continued with design of additions to 3706 Building.

Continued with Technical drafting in the area.

700-1100 AREAS

Status of various projects will be found briefly presented in the tabulated section of this report. In addition to the projects, the following items should be listed:

Dormitory W-10-Conversion to Educational Building (E.R. 827) Engineering 50% Complete.
Bldgs. 703-705 Building & Ground Improvements (E.R. 761) Engineering 100-% Complete (Awaiting information)
Village - "Shot and Cover" Paving (E.R. 766) Engineering 90% Complete.
Dormitories 15,16,17,19,20 and 21-Replace Shingle Roofs (E.R. 803) Engineering 90% Complete
Irrigation Completion (E.R. 780) Engineering 50% Complete.
Dormitory W-13 - Conversion to Apartments (E.R. 816) Engineering 80% Complete.
Bldg. 3706 - Addition (E.R. 825) Engineering 50% complete.
Village Public Grounds - Pop-up Sprinkler System (E.R. 822) Engineering 0% Complete
Bldg. 702 - Automatic Dial Telephone Exchange (E.R.828) Engineering 0% Complete.

Engineering Studies

Completed During the Month

E.R. No.	Title
4113	Paint Standards for General Purpose Painting
4257	Stainless Steel Identification
4266	Increased Swimming Facilities (Awaiting approvals)
4267	Riverland-Richland Terminal Consolidation
4270	H.E.W. Painting Survey
4272	Well Drilling Cost Estimate

New Studies Added This Month

4276	Chlorination of Irrigation Canal
4277	Use of Wall Tile in Village Bathrooms
4278	700-1100 Air Conditioning Survey
4279	Improved Food Handling Facilities - Schools
4281	Tract House Reconditioning Survey
4282	Increased Use of Electric Water Coolers
4283	Additional Air Conditioning - Nurses' Station-Hospital
4284	Steam Line Support Replacement
4285	700 Area Central Shop Building

1199209

Other Active Studies

4264 Air Conditioning Survey - 703 Building
4269 Improved Fuel Handling Facilities - 300 Area
4274 Estimated Equipment Needs - Transportation Department.

Drafting and Print Control Summary

	This Mo.	Last Mo.
Drawings and Sketches Completed	88	180
B&W and Blueprints Produced	4,201	4,227
Photostats Produced	18,645	13,122
Portagraphs	198	1,825
Other Prints Handled	4,249	4,993

Work Order Control

Summary of Work Orders processed during the month of November:

	Normal Orders Processed
Electrical	637
Instrument	856
Transportation	1,120
Maintenance	2,801
Total	5,414

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ELECTRICAL DEPARTMENT

NOVEMBER 1946

GENERAL

Work Order Summary:

Area	Work on Hand Oct. 31		Work Completed in Nov.		Work on Hand Nov. 30	
	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	33	86	34	102	42	99
100-D	40	178	75	290	46	160
100-F	35	114	35	257	55	164
200-E	81	196	99	304	74	151
200-W	74	269	61	294	81	227
300	52	108	69	132	71	117
700-1100	120	356	106	341	148	433
Distribution	163	683	158	807	173	794
Totals	598	1990	637	2527	690	2145

The engineering study of electrical heating for the permanent type residences was completed and plans are now under way for experimental installations to refine the design features of the conversion unit.

A project is now being prepared and detail design initiated for installation of a fully automatic dial telephone exchange in the Richland office. This installation estimated at $240,000 will provide expanded capacity to render additional services required by expansion of plant facilities and increases in personnel. Expansion of the 300 Area automatic exchange will be included in this work.

The process power requirements have dropped to their seasonal low demand or only 30,000 KW. This is the lowest demand since April 1946 when the 100 B Area was placed in standby status. Total project demand including the 300, 700, and 1100 Areas was 44,800 KW which is also the lowest total demand since April, 1946. In November, the village non-coincidental peak load of 18,000 KW reflects increasing demand due to seasonal heating and is the highest village demand since January, 1946. Project power factor continues high and averaging about 98 percent, the project load factor for the month was 82.3 percent.

Spot checks are being made to evaluate seriousness of pole butt rot found on telephone, distribution, and transmission line poles. Excessive deterioration is indicated due to use of unseasoned timber during construction. Distribution poles with 1-1/2 to 2 inches of radial rot have been found. One telephone pole with a 16 inch butt was completely rotted through and pole failed in a moderate wind. On the 230 KV transmission line, the Western Red Cedar poles appear in good condition with up to one inch of radial rot through outer sap wood. The Douglas Firs on this line appear to be rotting rapidly, poles have been found with 4 to 4-1/2 inches of radial rot.

ORGANIZATION AND PERSONNEL

Several organizational changes took place during the month initiated by the transfer of W. J. Dowis to the Design and Construction Department. The 100 and 200 Areas were combined under E. E. Weyerts who was formerly assigned the 100 Areas only. H. A. Remaly, formerly Assistant Area Engineer in the Distribution Division, was promoted to Area Engineer and assigned responsibility for the 300, 700, and 1100 Areas.

Within the 100 Area group, one additional change was made wherein the Assistant Area Engineers were interchanged. R. B. Britton is now in charge of 100 B and 100 D electrical work and P. R. Engels is in charge at 100 F.

A minor construction group under the supervision of W. J. Stubblefield as Craft Foreman has been established in the 700 Area to perform electrical construction and renovation work required on several projects recently approved for the 700-1100 Areas. Additions are being made to craft personnel to meet this increasing work load. During November four Electricians and three Electrician's Helpers were employed.

AREA ACTIVITIES

100 Areas

Project C-96-E31 covering electric heating at Riverland Yard is 90 percent complete.

Other than routine maintenance, the following corrective measures were taken: All 2000 HP refrigeration motors in 100-D were inspected, cleaned, and sealed for winter lay away. In 100-F the same program is now in progress. The vertical safety rod clutch assemblies were rechecked in both areas to confirm air gaps and drop out voltages which were changed to new values last month. Adjustments appeared to be stable. Inspection of transfer area crane in 105-D revealed rubber mounting under solenoid brake coil needed replacement, and this work has been scheduled for the next area shut down. The reelite and automatic charging switch cords on "C" elevator in 105-F were repaired. The lower limit switch was also adjusted to assure stopping at floor level.

The connected loads were interchanged on 100-F feeders E6X2 and E6X3 to correspond with similar change previously made in 100-B and D. This change provides improved emergency supply to the 105 and 115 Buildings.

The bonding of dead-end structures on the "B" side of Station A-6 was completed. The bi-annual inspection of 230 KV Oil Circuit Breakers A-362 and A-364 and the bi-annual inspection and tests at the Rivernita, Orchard, and Classification Yard 13.8 KV substations was completed. The semi-annual inspection and calibration of all 230 KV and 13.8 KV protective relays and instruments was started during the month.

200 Areas

In addition to routine maintenance, work included several trouble cases which developed during the month. The D2 cell centrifuge motor [redacted] the B Concentration
2 Building failed. Dismantling revealed that a steel vane welded to the rotor had broken loose and was thrown into the stator windings. As yet the motor has not been cleared from the process danger zone for final repair.

The brake solenoids on two of the cranes in the 200 N Areas developed a vibrational noise which was found due to poor alignment of the brake linkage and failure of the shading coils; it was thought that the latter was caused by improper seating of the armature. Repairs have been completed.

A 10 HP motor driving an acid pump in the 200 E acid tank farm was burned out due to locked rotor current caused by repeated starting attempts against a frozen pump shaft. This motor had been controlled by a maintain-contact push button and was replaced by a momentary contact type. The motor is being re-wound.

Major distribution work in the 200 Areas consisted of replacing a split pole on feeder E8-L51 and straightening a two pole transformer station serving 200 W Laundry and Shop. New services and flood lighting was provided for the 2713 W Garage. Overhead conductors were resagged, guys pulled and hardware was tightened in the vicinity of 272 W Building. All conduits connecting to fire alarm boxes in the 200 W Area were grounded.

300 Area

The industrial X-Ray unit used in calibration of health instruments, Calibration Building 3745, gave trouble due to breakdown of a capacitor between one side of the condenser and the case. Repairs are being made, and a spare unit has been requisitioned for use in case the repaired unit does not stand up under the high voltages.

The rotary hearth furnace in the Press Building was out of service from November 20 to November 27. The rotating carriage would jam at both ends of an arc through which it would travel normally. It was freed after (1) dissolving caked grease in the ball race, and (2) re-aligning the gear drive mechanism. Efforts are being made to find a lubricant more suitable to the application. Since there is only one unit of this type and production could be affected by a long shut down due to serious trouble, a review is to be made to determine types of trouble that might develop, repair time required, and time that production could continue with the store of rods normally on hand.

Intermittent trouble was experienced with the marking fluoroscope, Material Preparation Building, from November 21 to November 29. The insulating oil, which had become somewhat carbonized was replaced. On November 29, it was found that the transformer insulator had broken down between coil and core. Repair is in progress, and a new transformer is being requisitioned to be held as a spare part.

700-1100 Areas

Line crews made complete inspection, installed grounds and molding on forty-one additional distribution transformers. Additional transformer capacity was installed at Jefferson and Lewis and Clark schools to supply hutments recently erected. The 700 Area fence lighting received a complete annual inspection.

Services were reconnected to thirty-three prefabricated houses, and by-pass disconnects were installed at Stations B1-S1, B1-S2, and B1-S3 in the 700 Area. Power and lighting services were also installed to supply hutments erected in the 700 Area for the Minor Construction Unit.

Annual load checks are being made on all 6900 volt feeders and power transformers in the 700-1100 Area. Spot checks of load and voltage levels are being made on distribution transformers supplying residential load.

The status of electrical work on current projects is as follows:

Account 10,103 - School Hutments (12)	95% Complete
C-102 - School Hutments (4)	95% "
WO-70476 - W-4 Dormitory (Second Floor)	20% "
WO-02977 - W-4 Dormitory (First Floor)	5% "
Building 705	50% "

Telephone Group

During the month, 211 telephone instruments were installed and 172 removed in the 700-1100 Area. In the process areas, 36 units were installed and 25 removed.

In anticipation of increased demands on the telephone system in the near future, the following steps have been taken:

1. 200 additional instruments have been ordered.
2. Office letter was issued suspending departmental quotas and authorizing installations for essential purposes only.
3. Switchboard and cable facilities were re-examined for service bottlenecks.
4. Preparation of plans and specifications for converting Richland exchange from manual to automatic dial and providing increased switchboard capacity.

The status of current telephone projects is as follows:

C-87 - Gas pressure fault detection system	100% Complete
Voice repeater on "C" level trunk to BY	95% "
Emergency board for areas	15% "

Radio Maintenance

Fifty-four two-way mobile sets were overhauled and fifty-three received servicing. Four new sets were installed. One transmitter outage occurred due to tube failure on November 11 to Station WUGN 6. Duration was 48 minutes.

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Power Supply Interruptions

Date	Area	Circuit Affected	Time	Duration	Remarks
Nov. 11	White Bluffs	Substation	10:00 A (10-21-46)	10:15 A (11-12-46)	Bad Trans.
Nov. 20	Richland	Well No. 2	1:46 P (11-19-46)	8:30 A (11-20-46)	Blown Fuse
Nov. 21	Richland	D1-L1	5:20 P	6:18 P	Burned up disc.
Nov. 22	Richland	D1-L1	10:15 A	10:42 A	Replace broken cutout
Nov. 25	100-F	Transformer	?	7:00 P	Primary fuse blown
Nov. 25	300	Street Lights out	11:18 P (11-21-46)	3:56 P (11-25-46)	Broken wire
Nov. 26	200-W	Fence Light Circuit	10:00 A	11:15 A	Broken wire

POWER STATISTICS - ELECTRICAL DEPARTMENT
FOR MONTH ENDING NOVEMBER, 1946

ITEM	ENERGY - MWHRS. Oct.	ENERGY - MWHRS. Nov.	MAX. DEMAND - KW Oct.	MAX. DEMAND - KW Nov.	LOAD FACTOR - % Oct.	LOAD FACTOR - % Nov.
230 KV SYSTEM						
151 B Out	1,480	1,590	3,000	4,000	66.3	55.2
151 D Out	10,520	7,950	18,000	14,500	78.6	76.1
151 F Out	7,470	6,510	15,900	10,800	63.1	83.7
251 Out	1,990	2,120	3,300	3,600	81.0	81.8
TOTAL OUT	21,460	18,170	40,200**	32,900**	-	-
MIDWAY IN	21,847	18,569	37,600*	30,000*	78.1	86.0
Transm. Loss	387	399	-	-	-	-
Per Cent Loss	1.7	2.1	-	-	-	-
66 KV SYSTEM						
1151 A Out	2,044	2,734	5,000	6,500	54.9	58.4
1151 B Out	1,876	2,373	4,700	6,000	53.6	54.9
751 A Out	2,021	2,174	4,393	4,740	61.8	63.7
351 A Out	250	239	504	432	66.7	76.8
351 B Out	240	202	1,120	920	28.8	30.5
Hanford Out	269	206	600	700	60.2	40.9
TOTAL OUT	6,700	7,928	16,317**	19,292**	-	-
Hanford In	297	372	600*	700*	-	-
Pasco In	6,411	7,595	15,200*	18,000*	56.7	58.6
TOTAL IN	6,708	7,967	15,800**	18,700**	57.1	59.2
Transm. Loss	8	39	-	-	-	-
Per Cent Loss	1.2	0.5	-	-	-	-
PROJECT TOTAL						
230 KV (Item 5)	21,460	18,170	40,200**	32,900**	-	-
66 KV (Item 15)	6,700	7,928	16,317**	19,292**	-	-
TOTAL OUT	28,160	26,098	56,517**	52,192**	-	-
230 KV (Item 6)	21,847	18,569	37,600*	30,000*	78.1	86.0
66 KV (Item 18)	6,708	7,967	15,800**	18,700**	57.1	59.2
TOTAL IN	28,555	26,536	47,200*	44,800*	81.3	82.3
Transm. Loss	395	438	-	-	-	-
Per Cent Loss	1.4	1.7	-	-	-	-

* Coincidental Demand
** Non-coincidental Demand

Average Power Factor - 230 KV System---99.6%
Average Power Factor - 66 KV System---97.6%

900 KWH fed to Hanford 6.9 KV from Pasco November 3, 1946.

INSTRUMENT DEPARTMENT

NOVEMBER 1946

GENERAL

Last month's report mentioned the need for hurrying design work in order to keep shop forces well supplied with a backlog of work. This situation disappeared very quickly in November and the work backlog has doubled.

The training program for Instrument Helpers was concluded after sixteen lecture sessions and is now being supplemented by "on the job" training in smaller groups.

Shortage of dry batteries has become a serious threat to continuity of service of several types of portable instruments and to construction of new ones. In cooperation with the Purchasing Office, efforts are being made to relieve this shortage.

Work Order Summary:

	Work on Hand Nov. 1		Work Completed in Nov.		Work on Hand Nov. 30	
Area	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
100-B	36	62	49	123	44	40
100-D	50	124	106	320	58	130
100-F	65	168	96	370	60	130
200-E	45	103	228	344	40	93
200-W	58	72	199	273	63	80
300	65	246	74	335	67	491
700	52	68	104	167	38	81
Totals	371	843	856	1932	370	1045

ORGANIZATION AND PERSONNEL

Henry D. Middel and Charles A. Hansen, Jr. visited the Instrument Department this month and will shortly return as Superintendent and Assistant Superintendent, respectively. Mr. Middel has been in industrial engineering work with the Apparatus Department in Schenectady and has considerable experience in design and administrative work. Mr. Hansen has been with the General Engineering and Consulting Laboratory and is particularly well qualified in development of process instrumentation.

The Instrument Engineering Section has expanded to eight members, has acquired working space, and has submitted its first formal monthly report which is abstracted below.

100 AREAS

A pressure surge which occurred in the Process Pump House system in 100F appeared to be due to an unusual method of operating the controls which consists of switching from one regulator to another without first going through manual adjustment.

Difficulties occurred in both areas this month with the ion chambers which monitor exit water from the Retention Basins. Erratic readings were caused by condensation of moisture on insulators. It was necessary to replace the chambers in order to allow thorough cleaning in the shop.

In an inspection of flowmeter taps at the Filter Plant in 100F, it was found that the iron pipe which had been provided between the flume and clear well was badly corroded. This was replaced with stainless steel, and similar inspections in other areas have been scheduled.

The probe of a Victoreen survey meter was enclosed in a watertight housing for use in surveying for misplaced slugs in the Pile Discharge Basin.

200 AREAS

Work Orders have been received for installation of two conductivity meters in each area to monitor waste water from the Canyon Buildings. The experimental installation which has been previously described has already proven its worth in detection of process leaks.

Water level controls in the deaerator heater of the West Area Boiler house have been improved, through linkage adjustments, to minimize fluctuations. This resulted in better control of the five pound steam supply.

Better performance of "Poppy" contamination detectors has been obtained through an educational program for users. These instruments require careful adjustment and a better understanding of the methods of adjustment, on the part of the user, leads to fewer service calls.

Twofold alpha hand counters have been received from Clinton and placed in service. These units employ a counting rate meter as indicator, and it is expected that they can eventually be developed into a fourfold unit, using scaling circuits and recorders similar to our present beta hand counters.

300 AREA

Work on a fluorescent photometer for Health Instrument use is 80% complete. It has been delayed to some extent for delivery of essential parts which are on order.

There have been additional requests for "low background" alpha counters which are of an old type which once was used for all alpha counting work. Due to the increased need for such units, it has been considered economical to standardize on some improvements and extend these to units which are already in service.

An incident involving potential over exposure to contamination has led to design of "Jam Indicators" for hand counters. This is a device which will indicate when the counting rate is so high that the recorders fail to operate, giving an otherwise apparent indication that there is little or no contamination present. Jam indicators have been developed at other sites but some revision is required to adapt them to our equipment.

700 AREA

Investigation of mica window counters has revealed that, in service, the threshold and plateau voltages rise linearly at an approximate rate of 2.4 volts per 10^6 counts. The plateau shrinks as its upper limit exceeds approximately 1500 volts. This would indicate that maximum length of service could be obtained by periodic adjustment of operating voltage with respect to the gradually rising threshold. From this, one might predict that, operating at 50 volts above threshold on a tube whose threshold starts at 1000 volts, one would get a total life of 2×10^8 counts. This prediction is in reasonably good agreement with some of the best life records we have experienced.

INSTRUMENT ENGINEERING SECTION

Two rooms have been acquired in Building 3706. These were ones which were left unfinished in original construction and have been used for storage. They have been improved by wiring and installation of benches which are suitable for instrument development activities.

Initial assignments include development of a device for detecting faults in canning of slugs. Gratifying results have been obtained with a balanced inductance bridge which involves two small coils which are held close to the slug surface and to a reference surface. It appears that pockets of occluded air as small as 1/32" in diameter in the bonding layer between the slug and can are easily detected. Best results were achieved at the upper frequency limit (100,000 cycles) of present equipment and it is planned to get additional equipment to determine results at higher frequencies.

Other initial assignments include: (2) Improvements of Beckman Controller, (3) Portable Survey Instruments for use in Explosive Atmosphere, (4) New Equipment for Measurement of Bowing in Process Tubes, (5) Design of Xenon Calculator, (6) Preparation of Technical Manuals.

7 550

[redacted]

INSTRUMENT DEPARTMENT

MONTHLY FORCE REPORT

Date: November 29, 1946

CLASSIFICATION	703 Bldg.	100B Area	100D Area	100F Area	200W Area	200E Area	200N Area	300 Area	700 Area	Total
Supervisors (Monthly)	1	1	3	4	4	2		6	2	23
Engineers (Monthly)	2							4	1	7
Instrument Mechanics (Weekly)		5	13	13	14	15		18	5	83
Others (Weekly)			3	3	4	3		7	5	25
TOTALS	3	6	19	20	22	20		35	13	138

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PERSONNEL

GENERAL

On Saturday, November 16, the Time Office Section of the Accounting Department was moved from Building 705 and reconstruction work was begun the following week on this building in order to prepare space for consolidation of the Personnel Division.

ORGANIZATION AND PERSONNEL

Employment and Investigations

The Employment and Investigation Division organization remained unchanged during the month except for the addition of one interviewer, who was added to the force on November 14.

Industrial Relations

Organization of the Industrial Relations Division remained unchanged except that the Supervisor of Women's Activities was changed to report to the Division Supervisor of Industrial Relations rather than the Chief Supervisor of Personnel.

Education and Training

No organization changes were made in this Division during the past month.

ACTIVITIES

Employment and Investigations

Effective November 19, the execution of Patent Agreements by new employees was added to the sign-up procedure. A member of the Employment Section has obtained the necessary credentials to serve as a Notary Public. Arrangements also have been made for this member of the Employment Section to visit the areas according to a schedule during the month of December to secure the execution of Patent Agreements by personnel assigned to these areas who customarily would have been required to execute such an Agreement as a condition of employment.

A survey of personnel records made during the past month reflects that there are approximately 6800 individual personnel files that will require reproduction before release to the E. I. du Pont de Nemours & Company, Inc. Reproduction of these files was begun on November 14. Progress on this program, however, has been rather slow because of the lack of additional personnel in the Blueprint Group.

The program of classifying all applications for employment for reference value, which was started during the latter part of October, is about 35% complete.

Employment interviews and volume of new cases received for investigation again showed a decline during the past month. A total of 1064 applicants for employment were interviewed as compared against 1238 during the month of October. New cases received for investigation declined from 368 in October to 231 in November.

Industrial Relations

Consideration is being given toward development of a Supervisory Training Discussion Program and progress is being made toward the development of such a program. Training discussion meetings were held at the request of the Maintenance Department in the 700 Area, which discussion included the following topics: Group Disability Insurance and Group Life Insurance Plans. One hundred fourteen employees attended.

A prospective training program for women, particularly in the clerical and stenographic groups, has been prepared and will be submitted for approval and adoption in the very near future.

During the month of November 642 contacts were made by the Industrial Relations Counselors in the various areas as compared to 443 contacts during the month of October. Favorable reports have been received as to the benefits being obtained by Supervision from the use of these Counselors.

Industrial Relations Contacts are summarized as follows:

CONTACTS

Policy	135
Military Service	30
Insurance	150
Recreation	53
Housing	83
Facilities	32
Personal	71
Miscellaneous	73
Income Tax	15
Total	642

The female representative of the Industrial Relations Division assisted in the organization of a Girls' Dormitory Club. Through this organization sports activities and social affairs will be arranged. A successful tea, attended by 60 young ladies, was held on November 17. At the present time a girls' basketball group has been organized.

An Employees' Handbook, entitled "You and General Electric", which will be distributed not only to all employees presently on the project but also

to all new employees, is approximately 85% complete. This handbook includes information concerning the "Story of the General Electric Company", Company policies, employee benefit plans, and a section on Safety and Security, and on the Village of Richland.

Selective Service has been comparatively inactive during the past month. Present status as to the plant's Selective Service picture is outlined below:

19 through 29 Year Group (Non-fathers)

Technically Trained	1C	4F	Other	Total
Married	10	3	20	33
Single	3	4	32	39
Total	13	7	52	72

Non-technically Trained	1C	4F	Other	Total
Married	93	31	0	124
Single	58	29	3	90
Total	151	60	3	214

TOTALS

Technically Trained	72
Non-technically Trained	214
Grand Total	286

Men called into Military Service during the month of November	0
42-A (Spec. Revised) Forms completed and mailed for month of November	5

During the past month a representative of the Industrial Relations Division participated in the discussions on the availability of the Blue Cross Service to concessionaire employees and teachers on the project. Further discussions are planned on this subject.

The member of the Industrial Relations Division in charge of Insurance and Compensation attended a hearing at Prosser, Washington, on November 21, 1946 in the case of vs. The Department of Labor and Industries. At the same time discussion was also had in Prosser with the attorney in the case of .

Workmen's Compensation and insurance activities during the past month are reflected in the following statistics:

	October	November	Total Since Sept. 1, 1946
1. Workmen's Compensation Claims reported to the Department of Labor and Industries	1	2	8
Workmen's Compensation Claims reported to Travelers	0	0	0
Liability cases reported to Travelers	2	3	5
Unreported cases	2	3	5
Cases handled for du Pont	7	4	13

2. Payments approved for Workmen's Compensation claims: No. of Claims - Amount

	October	November	Total Since Sept. 1, 1946
Medical Aid	24 - $1,231.07	16 - $ 371.30	40 - $ 1,602.37
Accident Fund	25 - 8,436.03	16 - 5,679.85	41 - 14,115.88
Pension Fund	24 - 2,039.57	23 - 1,139.57	47 - 3,179.14

Education and Training

During the month of November an "Interest Questionnaire" was prepared and is being printed. This will be distributed with a covering letter to all superintendents and supervisors for distribution to all employees on the project. The purpose of this questionnaire is to determine from the results the initial educational program to be instituted.

Personnel data forms for prospective instructors have been prepared. A majority of the 80 universities and colleges have responded to requests for catalogues. Initial contacts have been established with the University of Washington by a personal visit and with the Washington State College representative who visited Richland.

STATISTICS

Employment and Investigation

Number of Employees on Rolls	10/31	11/30
Exempt	717	784
Non-exempt	3588	3603
Total	4305	4387

Additions to the Rolls

	Exempt	Non-exempt	Total
New Hires	32	90	122
Reemployees	0	0	0
Reinstates	0	4	4
Transfers from Other Plants	1	0	1
Net Additions	33	94	127
Payroll Exchanges	38*	0	38
Gross Additions	71	94	165

* Employees added to exempt roll from non-exempt

Terminations from the Rolls

	Exempt	Non-exempt	Total
Net Terminations	4	41	45
Payroll Exchanges	0	38**	38
Gross Terminations	4	79	83

**Employees removed from non-exempt roll to exempt roll.

Approximately 71% of terminations were on a voluntary basis, and most of these were for the following reasons: (a) another job (20%), (b) to be with husband (13%), (c) medical reasons (4%).

General

	Oct.	Nov.
Applicants Interviewed	1,238	1,064
Absenteeism Statistics (Weekly Salary Roll)		
Male	2.14%	2.00%
Female	3.28%	2.97%
Total Plant Average	2.38%	2.21%

Investigation Statistics

	Oct.	Nov.
Cases pending at beginning of month	385	572
Cases received during the month	368	231
Cases closed	181	22?
Cases pending at end of month	572	58[illegible]
Number of employees approved for clearance	76	89

	Oct.	Nov.
Number found satisfactory for employment	204	147
Number found unsatisfactory for employment on project	9	5
Number of Mohawk Wrecking & Lumber cases where Military Intelligence was advised to issue permanent badges	40	52
Number of Personnel Security Questionnaires concerning Concessionaire employees processed and forwarded to M.I. Office without investigation	58	112

Distribution of Personnel

Exempt Personnel

Assistant Superintendent - Personnel	1
Chief Supervisor - Personnel	1
Chief Supervisor - Education and Training	1
Division Supervisors	2
Assistant Division Supervisor	1
Section Supervisors	6
Industrial Relations Counselors	3
Total	15

Non-exempt Personnel

Investigators	2
Interviewers	2
Fingerprinter	1
Photographer	1
Total	6
GRAND TOTAL	21

All the personnel listed above is assigned to the 700 Area with the following exceptions:

One Industrial Relations Counselor assigned to the 100 Areas.
One Industrial Relations Counselor assigned to the 200 Areas.
One Section Supervisor assigned to the 300 and 700 Areas.

Personnel Force Breakdown

	Plant General	700-1100	Total
Supervisors	-	12	12
Others	3	6	9
Total	3	18	21

Service Department

PLANT

SAFETY & FIRE PROTECTION

Safety

Plant Safety Record - 46 Days

Injury Statistics

	October	November	Year to Date
Major Injuries	1	-	3
Non-Tab. Major Injuries	1	-	4
Sub-Major Injuries	-	2	22
Minor Injuries	255	224	2779

Sub-Major Injury No. 72

November 13 - (a Mechanic in the Maintenance Department, 300 Area), assisted by two other employees, was replacing an acid tank in the Water Softener Room of Building 384. The tank was rolled into its original position. A fellow-employee, using a steel bar, raised the tank from the roller, the other roller having been previously removed. The injured, who was standing nearby awaiting the positioning of the tank, reached down to remove the roller a sufficient distance to permit placing of a 4" x 4" block. Grasping the end of the roller at the moment the supporting bar slipped, the ring and little fingers of the injured were caught between the tank bottom and the roller, causing an over-riding fracture of the proximal phalanx of the left little finger. The fellow-employee immediately raised the tank releasing hand. The weight of this tank was approximately 866 pounds. Injured was wearing safety gloves.

Sub-Major Injury No. 73

November 22 - (Maintenance Department, 100-F Area), sustained a fracture of the distal end of the distal phalanx of the left little finger. The injured was using a paving breaker on some cement floor in Building 190, working near a large valve, when he caught his finger between the paving breaker handle and the valve.

Minor Injuries

See charts appended to this departmental report.

A total of 418 Safety Meetings were held during the month of November, with an attendance of 5,744.

During the month 40 pairs of prescription safety spectacles were ordered; 29 pairs were received, checked and fitted; and 122 adjustments and repairs made to all types of safety spectacles.

There were 669,720 exposure hours from November 1, 1946 to and including November 30, 1946. There is a total of 1,045,448 exposure hours since the last tabulatable major injury (October 15, 1946).

Experiences

300 Area

Minor Injuries	28
Sub-Major Injuries	1
Major Injuries	0
Days since last tabulatable Major Injury	1064
Days since last Sub-Major Injury	17
Days without a Minor Injury	14
Safety Meetings conducted	48
Number in attendance	697
Safety suggestions received	24
Safety spectacles delivered	2
Safety spectacles serviced	37

A survey was made of the storage of oils, greases, paints and other flammable liquids in the 300 Area and found to be somewhat below standard in some locations. Each department concerned has been asked to make necessary corrections.

Storage and fire-fighting procedure for magnesium has been reviewed with the P Department and Fire Department. Storage location is to be changed and the Fire Department instructed to let the magnesium burn out in case of ignition and not attempt to get near it or extinguish it.

Control of gases piped into Building 3706 in case of fire has been reviewed with the Technical Department and Fire Department. The Technical Department has assumed the responsibility for closing all valves in case of fire during regular work periods. On the night shifts and week-ends this responsibility will rest with the Fire Department. Gas tanks will be shut off by closing tank valves.

100-B Area

Minor Injuries	4
Sub-Major Injuries	0
Major Injuries	0
Days since last tabulatable major injury	788
Days since last Sub-Major Injury	322
Days without a Minor Injury	25
Safety Meetings conducted	20
Number in attendance	173
Safety suggestions received	0
Safety spectacles delivered	2
Safety spectacles serviced	0

100-D Area

Minor Injuries	15
Sub-Major Injuries	0
Major Injuries	0
Days since last tabulatable major injury	492
Days since last Sub-Major Injury	109
Days without a Minor Injury	17
Safety Meetings conducted	41
Number in attendance	485
Safety suggestions received	0
Safety spectacles delivered	2
Safety spectacles serviced	0

100-F Area

Minor Injuries	16
Sub-Major Injuries	1
Major Injuries	0
Days since last tabulatable Major Injury	585
Days since last Sub-Major Injury	8
Days without a Minor Injury	18
Safety Meetings conducted	50
Number in attendance	573
Safety suggestions received	0
Safety spectacles delivered	3
Safety spectacles serviced	0

All oxygen breathing apparatus in the 100 Areas was inspected this month. Some connections required tightening due to gasket shrinkage. All oxygen bottles contained at least 90 atmospheres of oxygen.

200-E Area

Minor Injuries	47
Sub-Major Injuries	0
Major Injuries	0
Days since last tabulatable Major Injury	46
Days since last Sub-Major Injury	231
Days without a Minor Injury	10
Safety Meetings conducted	33
Number in attendance	384
Safety suggestions received	18
Safety spectacles delivered	6
Safety spectacles serviced	40

Inspection of 272-E Shops and Transportation Garage was made. Some items were noted that needed attention in the Shop. The Garage was in excellent shape.

Service Department

200-W Area

Minor Injuries	46
Sub-Major Injuries	0
Major Injuries	0
Days since last tabulatable Major Injury	324
Days since last Sub-Major Injury	180
Days without a Minor Injury	6
Safety Meetings conducted	54
Number in attendance	584
Safety suggestions received	13
Safety spectacles delivered	6
Safety spectacles serviced	35

[redacted]

A study is being made concerning the safety and health conditions in the High School manual training department.

Plant Activities

A study has been made and a procedure concerning a "Safety Award Program" will be submitted to management for approval.

The Village newspaper was given several articles for publication during the month concerning fire protection and safety activities.

Beginning this month, the Safety Department is supplementing its monthly report with a graph. This graph gives a 13-month picture for each department of the Minor Injuries and their frequency rates, together with their probable upper and lower injury "limits" as based on their past Minor Injury records.

A plan is being studied where safety suggestions that are adopted for use by management will bring a prize to the one offering the suggestion.

Five near-serious accidents have been investigated during the month and recommendations have been made to prevent recurrence in the future.

The following lectures were delivered during November at the Safety Educational Meeting held each Friday:

"Fire Causes and Fire Protection"
"Overhead Sprinkler Systems"
"First Aid"
"Safety and Fire Protection at Oak Ridge, Tennessee"

Fire Protection

Fires

	Number of Fires		Estimated Damage	
	Oct.	Nov.	Oct.	Nov.
Village	9	10	$255.00	$36.00
Plant	2	4	15.00	-
Miscellaneous	1	-	-	-
Totals	12	14	$270.00	$36.00

The majority of Village fires occurring were of a minor nature. One small fire resulting in approximately $36.00 in damage occurred when a hot electric space heater was pushed against a bed at 310 Rossell Street. Heater ignited mattress and bed spring.

[redacted]

Service Department

The Chief Supervisor and Division Supervisor conducted an observation tour of the Oak Ridge Plant in Tennessee. Various items and practices which were observed and considered advantageous were noted and recommendation for their adaption by Hanford Engineer Works will be submitted. This tour covered period November 12 through 22nd.

Lectures on fire prevention and safe handling of electrical appliances were given to the four classes in General Science at the Columbia High School. These classes also visited #1 Fire Station and were shown the fire-fighting equipment and the various methods of approach and attack in extinguishing a fire.

Special instruction posters, showing how to operate the heating furnace, were posted in 2,000 houses during the month.

All fire hose in the 700-1100 Areas was changed, tested and cleaned.

No reports of smoke combustion in furnaces have been received since new posters ("How to Operate Furnace") have been installed.

All fire alarm boxes in Village and Plant Areas were tested.

An inspection was conducted of all public and commercial buildings in Village and all buildings in each Plant Area. Hazardous conditions found were corrected.

Fire Extinguishers

Inspected	2,891
Installed and relocated	78
Refilled	289
Repaired	172

Fire Drills and Lectures

Outside	39
House Drills	158
Auxiliary Brigade	25
Safety Meetings	44

Safety & Fire Protection Force Breakdown

	100-B	100-D	100-F	200-E	200-W	300	Plant General	700-1100	Total
Supervisors	4	-	-	-	-	4	4	19	31
Inspectors	4	4	4	4	4	-	1	1	22
Firemen	15	-	-	-	-	10	-	54	79
Others	-	-	-	-	-	1	2	1	4*
Totals	23	4	4	4	4	15	7	75	136

*Includes 4 Monthly Roll employees (Safety Engineers).

GENERAL DIVISION

Laundering volumes were as follows:

Plant Laundry (Bldg. 2723)	October	November
Coveralls - Pieces	14,589	12,847
Towels - "	4,466	3,681
Miscellaneous "	24,549	21,619
Total Pieces	43,604	38,147
Total Dry Weight - Lbs.	63,320	55,880
700 Area Laundry (Bldg. 723)		
Flatwork - Pieces	33,571	27,544
Rough Dry - "	19,684	17,940
Finished - "	2,108	1,897
Total Pieces	55,363	47,381
Total Dry Weight - Lbs.	31,557	27,007

Janitor Service

The opening of W-4 as a Construction Office added slightly to the janitor work load. This increase was absorbed without increase in personnel at this time.

General Division Force Breakdown

	100-B	100-D	100-F	200-E	200-W	300	Plant General	700-1100	Total
Supervisors	-	-	-	-	-	-	2	5	7
Laundry Operators	-	-	-	-	2	-	-	1	3
Janitors	2	5	5	6	8	6	-	38	70
Others	-	-	-	-	10	-	-	9	19
Totals	2	5	5	6	20	6	2	53	99

CLASSIFIED FILE

The reorganization program started in October has continued during the month of November. The Area Supervisor on loan from the Technical Department completed a trip to Argonne National Laboratories and Monsanto Chemical Company during the period November 1 through November 16, where file systems and library facilities were reviewed.

Files were checked for five employees prior to their transfer or termination.

The following figures provide a comparative study of volume of work involved in the handling of classified documents:

[redacted]

	October	November
Classified Documents Received (In Mail)	267	352
Unclassified Documents Received (Total)	4,478	2,195
Classified Documents Issued	3,275	2,503
Inter-Area Transfer (Classified)	3,879	4,951
Documents Routed (Classified)	6,721	4,818
Requests - File Documents (Classified)	2,427	1,616
Requests - Technical Library	194	177

Classified File Force Breakdown

	300	700	Total
Supervision	1	3*	4*
(Accounting Clerical)	2	9	12**
Totals	3	12	16*

*Includes one Area Supervisor on loan from Technical Department.

**Not included in Service Department force count.

Plant Division Force Breakdown

	100-B	100-D	100-F	200-E	200-W	300	Plant General	700-1100	Total
Supervisors	4	-	-	-	-	5	6	27	42
Firemen	15	-	-	-	-	10	-	54	79
Laundry Operators	-	-	-	-	2	-	-	1	3
Inspectors	4	4	4	4	4	-	1	1	22
Janitors	2	5	5	6	8	6	-	38	70
Others	-	-	-	-	10	1	2	10	23*
Totals	25	9	9	10	24	22	9	131	239

*Includes 4 Monthly Roll employees

Monthly	46
Weekly	193
Total	239

PROTECTION

GENERAL

The Patrol has been requested to be especially alert at sensitive areas around installations due to the removal of the Military Police Detachment, River and Desert Patrols. The Patrols have been iliminated from 5:00 P.M. to 8:00 A.M. daily during this period of the year when areas are rendered visually impenetrable by fog.

The Division Supervisor in charge of the Richland Area Patrol, accompanied by the Sergeant in charge of Traffic and Accident Investigation, spent four days at the Oak Ridge plant studying the method of operation of the Oak Ridge Police force. Considerable time was spent with personnel in charge of traffic control, accident investigation and police records. It was found that they use the approved Federal Bureau of Investigation record system. Notes were taken and forms obtained to be used to the best of advantage for the Richland Patrol traffic records. Notes and photographs were made of operational methods in the Detective Bureau, Juvenile and Welfare and Transportation Units.

PATROL

Nine special duty escorts were handled.

The 200-East and 200-West Areas handled 265 special escorts within the 200 areas.

Requests handled totalled 851, mainly consisting of opening doors and gates for employees of other departments.

A total of 246 unusual incident reports was received, which consisted mainly of unlocked and open doors, windows and files, and traffic violations.

Seven employees were given emergency first aid treatment in area by patrol supervision during periods when doctors or nurses were not in the area.

Practice evacuations were held in the 100-B Area on November 29, 100-D Area on November 15, and 100-F Area on November 26.

Training

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

	October		November	
	No.	Percent	No.	Percent
Unqualified	27	7	33	9
Marksman	117	32	111	29
Sharpshooter	80	22	89	23
Expert	140	39	151	39
Totals	364	100	384	100

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

High Team Average	272-1/5	200-West
High Area Average	243-34/58	Richland
High Individual Score	295	200-East

Qualifications in the F. B. I. Course firing were as follows:

	October		November	
	No.	Percent	No.	Percent
Unqualified	65	45	29	50
Marksman	33	23	14	24
Sharpshooter	30	21	13	23
Expert	16	11	2	3
Totals	144	100	58	100

Qualifications on the Sub-Machine Gun Course were as follows:

	August		November	
	No.	Percent	No.	Percent
Unqualified	23	6	125	33
Marksman	28	8	113	30
Sharpshooter	85	24	97	25
Expert	220	62	47	12
Totals	356	100	382	100

Health talks were given on "Eyes and Glasses".

Richland Area	October	November
Check on absentees	1	2
*Persons assisted	243	226
Doors and windows found open in commercial facilities	47	46
Lost children found	9	6
Ambulance runs	29	27
Lost dogs reported	4	4
Dog and cat complaints	43	26
Persons injured by dogs	4	9
Totals	380	346

*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

Security Education

Security Bulletin No. 2, entitled "Safeguarding Military Information" was issued under the date of November 27, 1946. This bulletin reviews a number of classification regulations and describes the responsibilities of the Classified File Section.

The following is a statistical summary of persons cleared for classified information:

	October	November
Employees	76	87
Visitors	0	0
Authorization cards issued	65	12

Protection of Plant Facilities

W-4 Dormitory was occupied by the Design and Construction Department on November 13, 1946. Since this Department will be engaged in classified work, the following building safeguards were established:

A - All lower windows and all outside doors barred.

B - All outside doors, with the exception of the main entrance, sealed.

C - A receptionist or patrol officer on duty at entrance to the office section during office hours. Entrance and exit regulations include the display of an HEW photo pass or Visitors Pass. Visitors not in possession of a Visitors Pass are required to register and be under escort at all times, while in the office section of the building.

D - During the hours the building is unoccupied, the front door is locked and the keys retained by the Richland Patrol Section. The Patrol Section also makes frequent surveys both within and outside the building during off-shift hours, being alert for unusual circumstances such as open windows, doors, file cabinets and fire hazards.

E - A procedure was effected, whereby classified blueprints and tracings could be stored in the Blueprint vault in the Administration Building, in cases where facilities in the W-4 Dormitory were inadequate for proper theft and fire safeguards.

The Protection program also included a review of the Manhattan District regulations relative to Visitor Control, safeguarding classified information and security education among employees.

A statistical summary of outstanding area badges is shown below (A, B and C denote type of clearance.)

October					November				
Area	A	B	C	Total	Area	A	B	C	Total
100-B	370	664	378	1412	100-B	384	681	389	1454
100-D	631	601	356	1588	100-D	647	595	410	1652
100-F	580	533	358	1471	100-F	590	542	403	1535
200-E	732	716	326	1774*	200-E	743	720	349	1812**
200-W	777	751	330	1858	200-W	776	782	355	1913
200-N	68	461	157	686	200-N	64	479	160	703
300	628	588	188	1404	300	648	596	215	1459

* Includes 21 badges at Riverland
** Includes 19 "A" badges at Riverland

Temporary Badges

Area	Temporary Access	
	October	November
100-B	12	7
100-D	32	14
100-F	13	12
200-E	15	10
200-W	22	12
200-N	10	1
300	39	24
Total	143	80

Plant Visitors

Name - Organization	Purpose of Visit	Access to Areas Classified	Access to Areas Unclassified
Schenectady Office Personnel			
C. A. Hanson General Electric Company Schenectady, New York	Inspection and Consultation	X	
J. Marsden General Electric Company Schenectady, New York	Inspection and Consultation	X	
H. D. Middel General Electric Company Schenectady, New York	Inspection and Consultation	X	

Service Department

Name - Organization	Purpose of Visit	Access to Areas Classified	Access to Areas Unclassified
W. I. Patnode General Electric Company Schenectady, New York	Inspection and Consultation	X	
Other General Electric Personnel			
L. W. Baur General Electric Company Seattle, Washington	Inspection	X	
G. M. Clifton General Electric Company Seattle, Washington	Consultation (11-26-46) Consultation (11-5-46)		X X
J. F. Gogins General Electric Company Portland, Oregon	Consultation		X
H. M. Gustafson General Electric Company Seattle, Washington	Consultation		X
W. C. Marpert General Electric Company Seattle, Washington	Consultation		X
Allied Project Personnel			
S. Lowroski U. S. Engineers Office Oak Ridge, Tennessee	Inspection and Consultation	X	
Outside Service Personnel			
E. L. Allen Pacific Telephone & Telegraph Co. Spokane, Washington	Company Business		X
J. L. Barger U. S. Engineers Corps Portland District Portland, Oregon	Consultation on elevation of water requirement in relation to Umatilla		X
A. W. Huff Bonneville Power Administration Walla Walla, Washington	Consultation		X
S. A. Murray Pacific Telephone & Telegraph Co. Spokane, Washington	Company Business		X

Service Department

Name - Organization	Purpose of Visit	Access to Areas Classified	Access to Areas Unclassified
J. R. Weatherly Milwaukee Railroad Company Seattle, Washington	Inspection		X
H. L. Wiltrout Milwaukee Railroad Company Seattle, Washington	Inspection		X
G. W. Larue Wesix Heater Company Portland, Oregon	Consultation		X

Protection Division Force Breakdown

	100-B	100-D	100-F	200-E	200-W	300	Plant General	700-1100	Total
Supervisors	4	7	6	9	7	5	1	32	71
Patrolmen	23	51	52	82	71	28	8	56	371
Others	0	0	0	0	0	0	0	4	4
Totals	27	58	58	91	78	33	9	92	446

PATROL DIVISION - RICHLAND OFFENSES

Classification of Offenses	Offenses Known or Reported to Patrol	Offenses Unfounded	Actual Offenses Oct.	Actual Offenses Nov.	Offenses Cleared By Arrest	Offenses Cleared By Other Action	Perpetrators Involved
Assault	2	0	0	2	1	1	3
Attempted Suicide	2	0	0	2 (a)	0	2	2
Burglary-Breaking and/or Entering	9	1	2	8 (b)	4	0	3
Larceny-Theft (except auto & bike):							
(a) - $50.00 and over value	0	0	2	0	0	0	0
(b) - Under $50.00 value	8	1	11	8	0	1	1
Auto Theft	1	0	0	1	0	0	(u)
Bicycle Theft	6	1	8	5 (c)	1	0	2
Destruction of Government Property	3	0	1	3	0	0	(u)
Destruction of Personal Property	1	0	2	1	0	0	(u)
Disorderly Conduct	0	1	1	0	0	0	0
Drunkenness	5	0	2	5	5	0	5
Missing Persons	2	1	2	1 (d)	0	1	1
Offenses against family & children	3	0	0	3 (e)	1	2	5
Prowlers	0	0	2	0	0	0	0
Rape	0	0	0	0	0	0	0
Sex Offenses	1	0	0	1 (f)	1	0	5
Vagrancy	0	0	0	0	0	0	0
Violation State Game Laws	0	0	1	0	0	0	0
Miscellaneous	1	0	2	1 (g)	0	1	1
Juveniles (other than reported above) Disorderly Conduct	7	0	2	7 (h)	0	6	14
	51	5	38	48	13	14	42

(a) - One of the offenses was perpetrated by a juvenile, of age 19 years.
(b) - Four of the offenses were perpetrated by three juveniles, of ages 12, 12 and 13 years.
(c) - One of the offenses was perpetrated by two juveniles, of ages 14 and 15 years.
(d) - The one offense was perpetrated by a juvenile, of age 15 years.
(e) - One of the offenses involved a juvenile, of age 17 years.
(f) - The one offense was perpetrated by four juveniles, of ages 14, 16, 18 and 19 years, and one adult.
(g) - The one offense was perpetrated by a juvenile, of age 16 years.
(h) - Six of the offenses were perpetrated by six juveniles, of ages 8, 9, 12, 13, 16, 18 and 19 years. Juveniles of ages 12 and 13 years are the same juveniles as juveniles of ages 12 and 13 years cleared in item (b).

Value of property recovered for the month of November was $325.70 (includes five bicycles).

PATROL DIVISION - COMPARISON CHART OF RICHLAND OFFENSES

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

Classification	Wash., Oregon & Calif. Six Months (Jan-June 1946)	Wash., Oregon & Calif. One Month Average	Richland Six Months (Jan-June 1946)	Richland Oct.	Richland Nov.
Murder	.198	.033	0	0	0
Robbery	3.87	.645	0	0	0
Aggravated Assault	1.85	.308	0.66	0	1.33
Burglary	31.14	5.19	2.65	1.33	5.33
Larceny	131.31	21.89	40.98	14.0	8.66
Auto Theft	27.75	4.63	7.99	0	0.66

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 (Jan-June 1946)	State of Washington One Month Average	Richland Six Months (Jan-June 1946)	Richland Oct.	Richland Nov.
Murder	.225	.038	0	0	0
Robbery	6.15	1.03	0	0	0
Aggravated Assault	1.41	.234	0.66	0	1.33
Burglary	35.59	5.93	2.65	1.33	5.33
Larceny	92.01	15.34	40.98	14.0	8.66
Auto Theft	34.89	5.82	7.99	0	0.66

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

Classification	National Average (Jan-June 1946)	Richland Six Months (Jan-June 1946)	Richland Oct.	Richland Nov.
Robbery	55.6	0	0	0
Burglary	62.2	25%	0	5%
Larceny	47.0	25%	4.76%	7.69%
Auto Theft	76.8	40%	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 finger-print youthful offenders."

In Richland every delinquent juvenile is entered in the records.

PATROL DIVISION - TRAFFIC CONTROL STATISTICS

Motor Vehicle Accidents

	Total Number		Fatalities		Major Injuries		Minor Injuries	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Plant	0	4	0	0	0	1	0	5
Richland	16	12	0	0	1	0	2	7
Totals	16	16	0	0	1	1	2	12

Accident Causes

	Negligent Driving		Failure to Yield Right-of-Way		Reckless & Drunken Driving		Miscellaneous Causes	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Plant	0	3	0	0	0	0	0	2
Richland	7	7	7	2	1	1	3	3
Totals	7	10	7	2	1	1	3	5

Plant Warning Traffic Tickets Issued

	Speeding		"Stop" Sign		Parking		Improper License		Defective Equip.		Totals	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Plant	3	2	0	0	0	0	0	0	3	5	6	7
Richland	14	18	13	9	124	181	3	3	61	51	215	262
Totals	17	20	13	9	124	181	3	3	64	56	221	269

Court Citation Traffic Tickets Issued

	Speeding		"Stop" Sign		Drunken Driving		Reckless Driving		Negligent Dr.		Other Violations		Totals	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Plant	0	1	0	0	0	0	0	0	0	1	1	1	1	3
Richland	12	6	5	7	2	3	1	1	5	5	5	6	30	28
Totals	12	7	5	7	2	3	1	1	5	6	6	7	31	31

Traffic Volume

	October	November
Richland - Downtown Street (average car count - 24 hour period)	9,097	9,231

[redacted]

VILLAGE

GENERAL

Issuance of Village Regulations and Policies

A new policy covering Village Regulations and Policies was put into effect this month. Under this policy, all village regulations and policy memoranda will be submitted as recommendations to a committee of the Works Staff which meets regularly for consideration of village matters. Upon approval of this committee the Village Office is authorized to issue such regulations and policy memoranda and to provide the necessary publicity.

All previous regulations and policies are currently in process of review. Village Memorandum Number 45, concerning sound broadcasting, fireworks, parades, rallies, etc., was reissued in revised form on November 27. New regulations were issued as follows:

No. 52 Outside Improvements - Village Dwelling, issued 11-18-46
No. 56 Use of Public Buildings, issued 11-26-46
No. 57 Policy Concerning Housing Eligibility, issued 11-27-46

Village Memoranda

Five additional Village Memoranda were issued during November. Number 50 dealt with the program to remove dampers in heat registers to reduce the incidence of fires in conventional type homes. Number 51 set forth the details of the arrangements by which residents may rent project-owned furniture to supplement their present compliment of personnally or project-owned furniture. Number 53 pointed out the necessity for all possible conservation of coal. Number 54 announced the discontinuance of the program for handling moves from one house to another. Number 55 explained in detail the procedure established for interior decorating of homes.

Village Population

The total population as of November 30 was 13,567, an increase of 314 over the population as of October 31, 1946. Population groups are as follows:

Females over 18	4,311
Males over 18	4,140
Total	8,451
Children under 18	5,116
TOTAL POPULATION	13,567

Village Improvements

As a result of a survey made by the Electrical Department, recommendations were made to Management covering proposals to establish electrical heating in conventional type dwellings. As a result of these recommendations, the

Engineering Department has been authorized to install two experimental installations for observation and study during the present winter season.

A Landscape Committee has been established to study and make recommendations on a long range basis of problems of planting, improvement of grounds, and dust and weed control in the village. The members include the Landscape Architect, Village Engineer, as Chairman, and representatives of the Labor and Power Departments, Village Organization and Public Health Section.

Plans for the erection of a Junior High School moved ahead during November as a result of various conferences, and on November 29, a detailed series of final recommendations on construction and facilities was submitted to the Design and Construction Department for review and submission to the architect.

The dining room in the Transient Quarters was completely renovated and put into operating condition to be available for project requirements.

As set forth in detail in Village Memorandum Number 55 dated November 21, the program for the interior painting of all village dwellings commenced December 2. Since the completion of the program would require approximately 2½ years due to the necessity for outside painting during clement weather, arrangements have been made to provide, gratis, cold water paints in approved colors to those residents who desire to apply color in their homes. It is believed that this program will provide for the orderly redecorating of village dwellings and at the same time permit those residents who are interested, to apply color without delay.

ORGANIZATION AND PERSONNEL

J. S. McMahon, reporting to the Works Engineer, has been appointed Village Engineer with the general responsibility of coordinating the execution of Village maintenance and operating service and of establishing necessary controls and follow-up on village work.

R. M. White, Division Supervisor of the Contracts and Records Division, terminated employment to resume private law practice. His responsibilities have been assumed by W. C. Poe, Section Supervisor, acting under the supervision of R. J. Pederson, Division Supervisor of the Commercial Facilities Division. As a result of this re-alignment, the Village Organization now consists of three operating divisions, e.g. Housing, Commercial Facilities and Community Facilities.

J. D. Shaw joined the Commercial Facilities Division to maintain routine contacts with the commercial facilities.

DIVISIONAL ACTIVITIES

Housing

Following is a report of the housing utilization as of November 30, 1946:

Houses occupied by family groups	Conventional	Prefab	Tract	Total
Operations	2117	995	27	3139
Facilities	114	92	4	210
Government	178	127	25	330
Total Occupied Houses	2409	1214	*56	3679
Houses utilized for special purposes	3	0	1	4
Houses Assigned - (leases written)	16	8	0	24
Houses Assigned - Awaiting Tenants' move	24	15	1	40
Government Houses - Unassigned	0	0	**50	50
Operations Houses Unassigned - Vacant	48	***93	0	141
Operations Houses to be released by moves	(10)	(31)	(0)	(41)
TOTAL HOUSES	2500	1330	108	3938

* Occupancy figure includes 4 houses occupied by Bonneville Power in Priest Rapids and White Bluffs. The unoccupied figure includes some houses which are untenable.

** Government Property offering 14 Tract Houses for sale as salvage.

***This figure includes 69 prefabs, formerly excessed, which are to be reconnected and reconditioned for use, and 4 prefabs, fire damage, being repaired.

Housing Turnover During Month	Begin Month	Moved In	Moved Out	Month End	Difference
Conventional Type	2351	104	46	2409	Plus 58
Prefabricated	1190	76	52	1214	Plus 24
Tract	55	3	2	56	Plus 1
TOTALS	3596	183	100	3679	Plus 83

Assignment of Housing

The following tabulation indicates the public response to the house moving program from its inception in September to the last and final posting, November 27:

Date	No. Posted	No. Applicants	No. Assigned
9-2-46	196	249	98
9-19-46	84	76	21
10-3-46	38	128	20
10-17-46	25	69	11
10-31-46	48	123	36
11-14-46	44	110	29
11-27-46	23	82	22

Due to the critical housing shortage on the project, the program of listing vacant houses to make house moves possible to present residents has been discontinued until further notice. The last posting was made November 27. This information was publicized in Village Memorandum Number 54, dated November 19.

The program instituted in September to expedite the removal of personal furniture from the houses of transferred du Pont employees has resulted in the freeing of all but five houses.

Dormitory Experience

Following is the Dormitory Statistics report for the month of November, 1946:

Dormitories	No.	Occupants	Vacancies	Total Beds
Men - Occupied	5	161	34	195
Men - Unoccupied	3	0	117	117
Women - Occupied	5	160	30	190
Women - Unoccupied	5	0	214	214

Women's Dormitories Occupied by:

Community Org.	3
Medical Dept.	1
Government Offices	1
G. E. Offices	1
Education	1
TOTAL DORMITORIES	*25

* Possible occupancy 18 dormitories: 8 men's; 10 women's.

Future Housing Requirements

In order to present the critical nature of the current housing situation with respect to availability of dwelling units, the current unfilled applications and anticipated requirements as indicated by the employment forecast, a special report was prepared as of November 14 and this information transmitted to the Area Engineer. In line with this report the Area Engineer has forwarded this information to Manhattan District, outlining the various steps which are under consideration to alleviate this problem and requesting necessary assistance from the District.

During the month the availability of housing in nearby communities was checked and it was determined that little relief can be obtained from these communities. Inspection was made of 26 steel hutments at the Pasco Naval Air Station, each of which contains two apartments, which can be moved to Richland and established on existing vacant prefab sites, providing housing for 52 families. This possibility has been called to the attention of the Area Engineer.

A study of all vacant tract houses is under way, including consideration of tract houses in the White-Bluffs-Hanford Area, which might be suitable for moving to Richland and establishing as permanent housing.

Redesign of a typical dormitory was made to provide ten one-bedroom apartments and a project initiated for conversion of one unit in accordance with the approved design.

Partial Furniture Rentals

As set forth in Village Memorandum No. 51, issued November 18, reasonable requirements of village residents for additional items of project-owned furniture may be rented to supplement tenants' present compliment of personally or project-owned furniture. Additional furniture, as available, may now be rented up to a total of $300 valuation at a monthly rental of 75 cents for each $50 of valuation, plus handling charges for additional delivery or removal trips required for the convenience of the tenant.

Tenant Service and Village Maintenance

Following is the experience on the processing of Work Orders during the month of November:

	Incomplete November 1	Issued During November	Incomplete December 1
Patrol Orders	1016	3547	1246
Work Orders	940	746	1053

Tabulation of house renovations, by types, for the month is as follows:

Tract	A	B	D	E	F	G	H	L	Prefab	Total
	0	12	13	0	9	4	0	5	1	26	70

The Maintenance Department has been requested to complete, at the earliest possible date, the renovation of the 87 reactivated prefabricated houses mentioned in the last monthly report. At the end of November, 18 had been completed.

As a result of the bituminous coal strike, all residents were requested, in Village Memorandum Number 53, to cooperate in a village-wide program of conservation.

It is estimated by the Transportation Department that on the average there is from six weeks to two months supply of coal in each village dwelling coal bin. Current deliveries to homes are limited to filling bins to half capacity; no delivery is made in cases where bins are half filled. Following the end of the first week in December, further deliveries of coal will be made only in accordance with actual needs.

Housing Eligibility

Village Memorandum No. 57 was issued November 27, defining the policy governing assignment of village dwellings. It is noted that the term "eligibility" is not synonymous with availability. In other words, qualification as to eligibility does not imply obligation to assign housing, since such assignment would be subject to availability and to the discretion of management.

In line with this policy, the Employment Office was instructed on October 1 to advise all women applying for work that housing is not abailable for assignment to new women employees regardless of family status. Exceptions to this general policy are made only with management's approval.

COMMERCIAL FACILITIES

The following figures indicate the trend of current activity as related to various basic items:

	October	November
Cafeteria Meal Customers	36,511	35,364
Percent of room-day occupancy Transient Quarters	89.05%	86.00%
Gallons of ice cream sold	6,197	3,013
Gallons of milk and cream sold	49,862	48,217
Theater customer count	43,289	43,904
Cases of soft drinks sold	6,088	4,476
	September	October
Gallons of gasoline sold	97,968	104,631

A total of 1,217 dog tags have been sold to date. Animals on hand at Dog Pound as of October 31, 3; animals impounded during November, 28; released during month, 9; disposed of, 15; animals on hand as of November 30, 7.

At the operator's expense, a neon sign was installed in front of Johnson's Photo Studio.

The following facility improvements were made at project expense:

Water softening equipment was installed in the Barber and Beauty Shop; and

A revision of overhead hangers and steam valve system in the Commercial Laundry was made to provide for more efficient service and maintenance.

A meeting was held with representatives of the Carnation Company, project milk suppliers, and representatives of our Medical, Public Health and Commercial Facilities Departments to discuss possible causes of occasional "E-Coli" content in pasteurized and homogenized milk. A definite program for elimination of this problem was agreed upon. Dr. Norwood expressed appreciation of the cooperative attitude of Carnation management.

A meeting was held with a representative of the Government Accounting Office, the operator and accountant of Richland Recreation Hall and representatives of the Village Organization, to discuss recommendations made as a result of audit of the facility's bookkeeping system made by the Government Accounting Office. It appears that the operator is now maintaining his books in accordance with the recommendations of the Government Accounting Office, with a few minor exceptions which were explained to Accounting Office representatives.

A food store comparative price check was made during the month in Richland, Pasco and Kennewick. Results of a preliminary tabulation indicate that the prices in the Richland food stores are generally in line with those in the immediate area.

Organization changes:

Miss Shirley Parnell replaced I. R. Robertson as manager of the local Western Union Office.

CONTRACTS AND NEGOTIATIONS

The recommendation that the monthly rental of the Hardware Store be increased from 3 percent to 3½ percent of gross receipts was approved and an amendment to the operating contract was drawn up, effective October 1, for the period October 1 through December 31, 1946. At the end of that period, the rental rate is to be further reviewed in the light of the facility's year-end financial statement.

An amendment to the operating contract of the State and County License Agency was written, to permit expansion of the Operator's activities and the sub-letting of a part of the premises to the Richland Motor Company as a sales office at a rental of $15.00 per month.

Recommendation was made that in view of the net loss shown by the Operator of the Bus Depot in the third quarterly profit and loss statement submitted to this office, the flat rental of $90.00 per month be waived during the months of September through December, 1946, the remaining rental provisions to remain as presently in effect. At the expiration of the above named period the entire situation is to be reviewed.

At the request of the Operator, the existing operating contract was amended for the operation of the Transient Quarters and the Cafeteria, and the furnishing of maid service was further amended to permit annual settlement as of December 31 of each year, instead of April 30 of each year. This was done to facilitate income tax matters for the Operator, as all of his operations, including those in other states, are kept on a calendar year basis.

Inventories and Property

Work was continued on preparation and execution of inventories of commercial facilities and community organizations. As of the present, all but seven facilities and community organizations have executed property inventories.

A meeting, attended by F. E. Baker, G. C. Houston, R. M. White and W. C. Poe was held on November 26, 1946, for the purpose of discussing the annual settlement of the school audit and the handling of property matters in general. It was agreed in the meeting that equipment furnished the schools would be divided into two categories:

1. Property that the School District would be held financially responsible for, in accordance with the contract.

2. Property that the School District would be held accountable to the Government, but not financially responsible for in the event of loss or damage beyond repair.

The decision was reached in the same meeting concerning the respective responsibility of the Accounting Department and the Village Organization for maintaining records of Government equipment assigned to commercial facilities and community organizations. The Accounting Department will maintain records of the quantity of items furnished the Village Organization for use by the Facilities. The Village Organization, in turn, will maintain records showing the location of all such equipment.

General

A total of eight interviews was had, covering requests for establishment or conduct of businesses as follows:

Selling of Army surplus materials; taking of photographs; barber shop; hardware store; solicitation of funds for war countries' rehabilitation; selling of household magazines and dictionaries; and automobile repair shop.

Letters were written during the month relative to proposals to establish the following type businesses:

Bakery; roller skating rink; chiropody practice; use of sound equipment.

Work of tabulating the figures showing the Operator's own investment in each respective facility and the percentage ratio of this investment to the net profit of each facility for the first six months of 1946 was completed.

COMMUNITY FACILITIES

Churches

The Richland Latter Day Saints Church was assigned two field workers by the Salt Lake headquarters on November 4, 1946.

Special Thanksgiving Day morning services were conducted by the Catholic, United Protestant, Christian Science, Redeemer Lutheran and Richland Lutheran Churches.

Schools

The enrollment for School District #400 as of November 22, was as follows:

Sacajawea Grade School	923	
Lewis & Clark Grade School	752	
Marcus Whitman Grade School	642	
Jefferson Grade School	334	
Total, all Grade Schools		2651
Columbia High School		670
Nursery Schools		94
Total, all Schools		3415

There were 79 children enrolled in the Richland Nursery School with an average attendance of 66. This is an increase of 2 children during the month. There were 15 children enrolled in the Extended Day Care program of the Nursery School, with an average attendance for the month of 12, a decrease of 3 children since the last month's report.

Immunization shots for smallpox, diphtheria, and whooping cough were given during the month.

Thirteen night school classes were started during the month, including journalism, sociology, mathematics, history, woodshop (2), typing (3), bookkeeping, shorthand, spanish and sewing.

Four additional hutments were authorized for erection, two at Lewis & Clark and one each at Jefferson and Sacajawea Grade Schools.

School holidays were observed on Armistice Day, November 11, and Thanksgiving Day, (from 2:30 p.m. Wednesday, November 27, through December 1).

Other Community Activities

As approved by the Area Engineer on November 29, 1946, three new organizations (recommended for approval by the Recreation Advisory Committee, November 19), were established in Richland. These included the Officers' Toastmasters Club (II), Delta Kappa Gamma (Teachers' Sorority), and Mrs. T. M. Kleckner's Piano School.

Facilities Personnel

The total full-time paid personnel employed by Richland commercial and community facilities and organizations as of November 30 is as follows:

Commercial Facilities	640
Churches	15
Schools	195
Community Organizations	16
Total	866

Major Activities during the month included:

Nov. 1—2	Village Players, "Over 21"	Columbia High School
Nov. 5	Election	Schools
Nov. 7	Reformation Rally	Columbia High School
Nov. 8	Veterans of Foreign Wars' Dance	Recreation Hall
Nov. 9	Richland-Grandview Football Game	High School Stadium
Nov. 9	Boy Scout Paper Collection	Village
Nov. 11	Armistice Day Dance	Legion Hall
Nov. 14	Clare Tree Major Children's Theater	Columbia High School
Nov. 15	Richland-Prosser Football Game	High School Stadium
Nov. 16	Boy Scout Round-Up	Lewis & Clark School
Nov. 22	Style Show	Recreation Hall
Nov. 24	Youth Center Open House	Dormitory W-16

VILLAGE ENGINEERING

NOVEMBER 1946

HW-7-5505-De1

GENERAL

The position of Village Engineer was created on November 6, 1946, as set forth in Organization Announcement No. 16 with the responsibility of coordination of estimating and scheduling of maintenance and minor construction work in the Village.

Since the contacts of this office are to be carried on mainly between the Village Organization and the various Works Engineering Departments, it was felt desirable to spend some time with the various Superintendents and members of their organizations to discuss various aspects of the Village Engineers' responsibility and to formulate plans for handling future problems.

ORGANIZATION AND PERSONNEL

It is planned by mid-December to have a small organization operating under direction of the Village Engineer. The detailed functions of this group are now being studied and evaluated so that certain persons can be assigned specific responsibilities; these will probably include preliminary discussion, planning and scheduling, issuance and approval of work orders, field inspection, follow-up and material and cost control. Estimating work and preliminary design will be accomplished through established groups by direct line.

At this writing only one person, the Village Engineer, is assigned to this work.

ACTIVITIES

A Landscape Committee was formed with the Village Engineer as Chairman. The first meeting was held November 16, 1946. A report on recommendations was issued to Management.

A field trip was made with the Area Maintenance Engineer and Fire & Safety Engineer to inspect food store doors, location of neighborhood paint shops and request by a Community Organization to remove partitions in an existing two story building.

Work orders were reviewed daily and discussed with Village Administration with elimination of some unnecessary orders and coordination of others. Work orders of unusual character were investigated in the field.

Warning posts along roads and protective handrail throughout the Village were inspected with the Road Engineer and Village Safety man. Recommendations were forwarded to the Traffic Committee and work orders will be issued if these recommendations are approved.

Suggested relocation and re-naming of streets in the northeast section of the Village was considered and it was recommended that nothing be done on this as it appears to be working all right and no safety or traffic hazard exists.

Cold air ducts in a few houses in the Village were inspected and it was recommended to the Fire Protection Supervisor that he inspect to determine whether a fire hazard exists from accumulated dust and trash.

The Commercial Laundry was visited with the Maintenance Engineer to inspect damage caused in settlement of heavy equipment and possible failure of piping. A work order was issued to shim up equipment temporarily to eliminate safety hazards and a request was initiated for a project to permanently correct the condition.

Theater #1 (Richland) was visited and inspected for a steam leak and for faulty mechanical equipment in the attic. Work orders were issued to the Maintenance Department to make the necessary repairs.

Scheduling of the large backlog of mechanical work necessary in commercial facilities was discussed with the Works Engineer. This will be started in the immediate future.

Recommendations were made to the Design & Construction Superintendent relative to the new Junior High School - these comments were based on past experience in accepting buildings from the sub-contractor.

A work order was issued to the Transportation Department to provide manpower to keep the downtown section of the Village clean and free of debris and waste paper which has littered the town and given a slovenly appearance.

A field inspection trip to White Bluffs was made to determine the feasibility of moving houses to the Village and placing them on prefab sites.

A meeting, in the Maintenance Superintendent's office, was held to arrive at a course of treatment for bathroom walls in Village houses.

The traffic problem at Lee Blvd. and Goethals Drive was discussed with the Safety Chief Supervisor. Installation of an electric stop and go sign is being considered.

TRANSPORTATION DEPARTMENT

NOVEMBER 1946

Hw-7-5505-De/

GENERAL

There were approximately five inches of snow covering the Project as a result of a two day storm on November 20 and 21, 1946. Snow removal from walkways, bus terminals, roads and streets, railroad tracks and switches was handled routinely. The heavy snow fall and icy roads caused several area buses to arrive as much as fifteen minutes late. The scheduled Richland train movement was not made on November 22, 1946, as the train crew was utilized in snow drift removal.

Arrangements were made with the Washington State Patrol to issue at Richland, Washington State Driver's Licenses to any Project resident not having but desiring same. Four hundred and fifty driver's licenses were issued during three days, November 22, 23 and 25, 1946.

The departmental absentee percentage for the month of November (period 10-28-46 to week ending 11-24-46) is 1.74%. There were 10,885 man days worked and 189 man days absence. The departmental percentage from January 1, 1946, (period 1-1-46 to week ending 11-24-46) is 1.84%. There were 122,760 man days worked and 2,257 man days absence. The plant average is 2.15%. The departmental percentage was under the plant average for 37 weeks and over for 9 weeks. The low week percentage for the period is 0.71% and the high is 4.04%.

It may be assumed that departmental functions continued on a normal basis except as otherwise noted under sectional activities.

ORGANIZATION AND PERSONNEL

The organization as shown on the chart attached is as of November 1, 1946. During the month one additional Yardmaster was employed and assigned to Riverland as Train Dispatcher. An Accounting employee of the Traffic Section was upgraded to Weighmaster and assigned to the Yardmaster's office. A Tractor Operator was upgraded to Labor Foreman and temporarily assigned to the Minor Construction Section of the Maintenance Department. One clerk was returned to the Accounting Department for reassignment from the Repairs Section.

Employment Requisitions were issued during the month to increase the force by eighteen in total number of employees; new hires are Laborers, six of whom will be temporarily assigned to Stores Section of the Accounting Department and twelve to the Labor Section of this department. Six of the twelve are replacing six Laborers temporarily assigned to the Minor Construction Section of the Maintenance Department to work on new projects.

Distribution of personnel in the department, by areas, and Morrison-Knudsen, sub-contractors engaged in Railroad Track Maintenance, for November is shown in table appended. Not included in this table are clerical personnel assigned

from the Accounting Department; employees in this category as of November 30, 1946, numbered twenty-six.

SECTIONAL ACTIVITIES

1. Railway Operations:

Railway operations continued on a normal basis and train movements were effected as scheduled. Call in of one train crew and Yardmaster on Number 3 shift, November 25, 1946, was necessary in order to handle a special car movement. This move was completed without incident. The movement of coal from Hanford for the Pacific Coast Coal Company consisting of 292 cars was completed on November 16, 1946.

A revised train sheet for the use by the Dispatcher has been placed in effect. The revision is patterned after the standard forms used by Class "A" railroads.

The following indicates the volume of railroad operation activities during the month.

Carload Movements

Project				Mohawk Wrecking Co.	
Loads In	Empties In	Loads Out	Empties Out	Empties In	Loads Out
689	10	12	695	196	197

The volume represented by these movements is best reflected by the total cars handled, which was 7,168 for the month, including the Intra-Plant movement of Process cars.

2. Automotive Operations:

Miscellaneous automotive operation services including (a) Motor Pools, (b) Inter-Area Shuttle Service, (c) Inter-Area freight, mail and express service, (d) Towing and wrecker services, were rendered during the month with no change.

Off-the-Plant automobile trips (Company business and official visitors) totaled 62.

The Area bus system operated during the month as scheduled with the exception of two days when several area buses were late because of heavy snow fall and icy roads.

The route of the Riverland bus, both to and from Riverland, was changed on November 22, 1946, to proceed via 200 West to the Yakima Road to Route Number 6, thence to Riverland.

The 100-B Area bus routes and bus stops were revised to better serve the Area while on a standby basis. The route now favors the 190 Building Change House stop in place of the previous stop at the 1704 Building. This revised route will remain in effect until the Area is placed on an operating basis.

Comparative figures for the Plant bus trips are:

	Average Daily Trips	
	October	November
Passenger Buses - 100-B Area	5	4
Passenger Buses - 100-D Area	9	8
Passenger Buses - 100-F Area	10	8
Passenger Buses - 200-W Area	14	11
Passenger Buses - 200-E Area	10	10
Passenger Buses - 300 Area	7	6
Inter-Area passenger service (Stretchouts)	3	3
Inter-Area express service (Panel delivery)	1	1
Inter-Area mail service (Panel delivery)	1	1

The following tabulation of total monthly passenger counts, by shifts, for all Areas indicates the extent of Area bus traffic:

Shift:	No. 1	No. 2	No. 3	Total
	16,505	29,098	28,074	73,677

The Village Local bus system operated during the month as scheduled. Schedule time of the Hunt-Van Giesen bus, on the to-work 7:30 a.m. schedule, was revised to allow the bus to arrive at the 700 Area four minutes earlier than on other schedules.

Significant daily averages for Village bus operation are:

	October	November
Total passengers handled, including transfers	2,103	2,314
Total bus trips	87	87
Total bus miles operated	504	504
Revenue	$102.85	$114.30

Passenger distribtuion over the four Village routes is well illustrated by the weekly survey made during this report period as shown in the following table:

Week of November 11 - 17, 1946

Routes	Passengers
Hunt-Van Giesen	4,015
Williams-Thayer	4,176
Putnam-East Benham	4,658
Longfitt-West Benham	4,358

During the period November 1, to November 6, 1946, the Government Equipment Section filled requests for additional automotive units from their Reserve Pool. Four units were received, of which only two were rebuilt and acceptable as new.

Effective November 6, 1946, transfer of the remaining automotive units and all construction equipment in the Government Equipment Section Reserve Pool was completed. This transfer was the second step in the "Consolidation of Motor Pools". This transfer consisted of 145 units and gives this department responsibility for dispatch and maintenance of all automotive and construction equipment formerly maintained and dispatched by Army personnel, with the exception of certain units assigned to Prison Industries, the Military Police Detachment No. 2, and various Engineer installations. The units transferred are maintained in a Reserve Pool and are assigned temporarily or permanently as requests are received. During the month eight automotive units were permanently assigned to departments, and thirty-three units were temporarily assigned to the Corps of Engineers for construction of the Richland Airport.

Purchase Requisitions were issued during the month to cover exchange of twenty automotive units in the Reserve Pool and to increase this pool by nine units. The increase in the pool is to supply units which have been requested and approved and consist of one three-bag concrete mixer, one portable rock crusher and screening plant, three light plants, one tool trailer, one stretchout bus, one ambulance and one flatbed truck. During the month one automotive unit was excessed.

Units on inventory and in service are shown under the respective Plant departments to which they are assigned as shown in the Equipment Inventory appended.

The following tabulation indicates extent of usage of automotive equipment for the month of November 1946:

Code	Type	No. Units	Total Mileage
1A	Sedans	271	423,267
1B	Buses	106	137,137
1C	Pickups	193	141,939
1D	Station Wagons	50	44,679
1G	Weapon Carriers	24	11,179
68 (Series)	Trucks	198	104,328
	Total Mileage		862,529

During the month, seven units (sedans and pickups) were added to the Administration Motor Pool Reserve Parking Lot at the rear of 716 Building.

Conducting examinations and drivers' tests continued. The volume involved in examining applicants and issuing permits is indicated by the following tabulation:

Applicants:	Male	109	Number retested	15
	Female	6	Total tests given	130
	Total	115	Number rejected	4

Permits Issued:

Limited to driving with glasses	12
Unlimited	99
Total	111

Mechanical and Labor

1. Mechanical Operation

Maintenance and repair facilities functioned with little change.

The Work Order Control System continued with no changes. Following is Work Order Summary for the mechanical operation.

	Work on Hand October 30		Work Completed in November		Work on Hand November 30	
Areas	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days	No. of Orders	Estimated Man Days
Mechanical:						
100,200,300	17	170.0	4	236.5	17	168.4
Riverland	61	480.3	15	304.6	48	376.0
700 & 1100	654	2241.0	519	2019.0	481	2304.0
Totals	732	2891.3	538	2560.1	546	2848.4

The following Repair and Service Statistics for Project Equipment indicates the volume of work involved in these service inspections and other shop repair orders, and the distribution of work among the various areas:

Preventive Maintenance	100 B	100 D	100 F	200 W	200 E	300 -	700-1100	River-land	Port. Units	M.K.	Totals
Inspections Class "A"	-	-	-	-	-	-	55	-	-	-	55
Class "B"	37	72	60	89	58	-	807	-	493	-	1616
Units Lubricated	37	72	60	89	58	-	807	-	493	-	1616
Shop Repair Orders	67	132	88	183	146	4	2752	114	-	-	3486
Gasoline (Gallons)	3186	4605	5180	7126	6542	1158	48550	-	11170	2977	90494
Kerosene (Gallons)	-	-	-	-	-	-	-	-	1691	-	1691
Diesel Fuel (Gallons)	-	-	-	-	-	-	10	8849	5127	-	13986
Antifreeze (Quarts)	47	67	43	114	78	45	603	2	401	11	1461

Distribution of fuel continued during the month without change. Bulk fuel plant statistics (in gallons) for November are shown in the following table:

	Gasoline	Diesel Fuel	Kerosene
Stock at start of month	19,850	4,930	2,881
Received during month	89,317	23,651	1,300
	109,167	28,581	4,181
Delivered to Area Stations:			
General Electric	83,896	18,415	2,622
Government	12,840	795	
	96,736	19,210	2,622
Stock at end of month	12,431	9,371	1,559

Equipment performance in general was satisfactory and routine for the month.

Effective November 20, 1946, Government Inspection Form No. WD AGO-461 and War Department Technical Manual T.M. 37-2810 were put in use replacing forms previously used in performing Class "A" inspections.

2. Labor Operation:

a. Areas

1) General - It may be assumed that work in the areas continued on a routine basis with nothing to report unless otherwise noted.

2) 200 West - Project C-103, remodel 2713-W into Transportation Garage, was 75% complete November 30, 1946. The Area Garage was moved to 2713-W during the month and transportation services are functioning in the new location.

Eighteen steel test wells were driven to varied depths between Building 221-T and 221-U.

Five hundred cubic yards of gravel were loaded in this area and transported to Building 221-B in 200 East.

French drains at Building 2704-W, 282-W, 283-W and 284-W were excavated, cleaned and backfilled.

3) 200 East - Post holes were dug for protection fence at the 221-B Area and five hundred cubic yards of gravel were placed over this area.

4) Labor volume statistics are as follows:

	Oct. Totals	100 B	100 D	100 F	200 W	200 E	300	700-1100	Totals
Cars Coal Unloaded	638	33	202	256	19	22	34	103	669

	Oct. Totals	100 B	100 D	100 F	200 W	200 E	700-300	700-1100	Totals
Cars Other Materials Unloaded	24	0	5	7	1	5	2	2	22

Work Order Summary is as follows:

Areas	Work on Hand October 30 No. of Orders	Work on Hand October 30 Estimated Man Days	Work Completed in November No. of Orders	Work Completed in November Estimated Man Days	Work on Hand November 30 No. of Orders	Work on Hand November 30 Estimated Man Days
Labor:						
100,200,300	123	939.1	202	1449.6	60	938.5
700 & 1100	234	1136.3	380	2304.7	112	1624.5
Totals	357	2065.4	582	3754.3	172	2563.0

b. Road and Street Maintenance

1) Outer area roads and Village streets were maintained and repaired in the normal manner.

2) Several itmes of new work were completed during the month and are as follows:

a) The size of the parking compound at the Pennywise Drug Store was increased by stabilizing and graveling the area.

b) Ten foot shoulders on each side of the railroad track leading into the large cut at Building 221-B were constructed.

c) Sidewalks were constructed at the 3000 Area Checking Station, Lewis and Clark School and Kadlec Hospital.

3) Area road striping program was forty percent complete at month's end.

4) All paved roads in 100-D Area were repaired during the month.

5) Extensive work was done on removal of weeds from the shoulders of inter-area roads and the cleaning of road right-of-ways.

c. R. R. Track Maintenance - Plant Forces

1) Work in this section for the month was of a normal routine nature.

2) One car of ballast was placed in 100-F and one car in 200 East. The 200 East coal track was raised to newly established grades.

d. R. R. Track Maintenance - Sub-Contractor Forces

1) Work in this section for the month was of a normal routine nature; raising track, picking up joints, lining, surfacing and grading various tracks. Three hundred cross ties were changed out during the month.

e. Village Services

1) Extensive work of burning weeds and cleanup of public areas, which included final cleanup of weeds and debris in 700 Area, was carried out during the month.

2) Coal delivery has reached a high peak with a crew of twenty-five men being engaged in routine delivery in the Village and outside facilities. This work may be curtailed due to rationing of coal on hand, with emergency deliveries continuing as at present.

3) The sawing and delivery of kindling required an average of four to six men continuously to maintain a supply.

4) Furniture handling has declined during the month of November and the crew has been decreased in accordance with the decrease in work volume.

5) The irrigation system and ditch patrol was shut down for the season as of November 1, 1946, and the foreman and four men are now being used in repair and cleaning of the irrigation system for the 1947 season.

6) Hauling of materials and concrete work is being carried out for Minor Construction Division of the Maintenance Department.

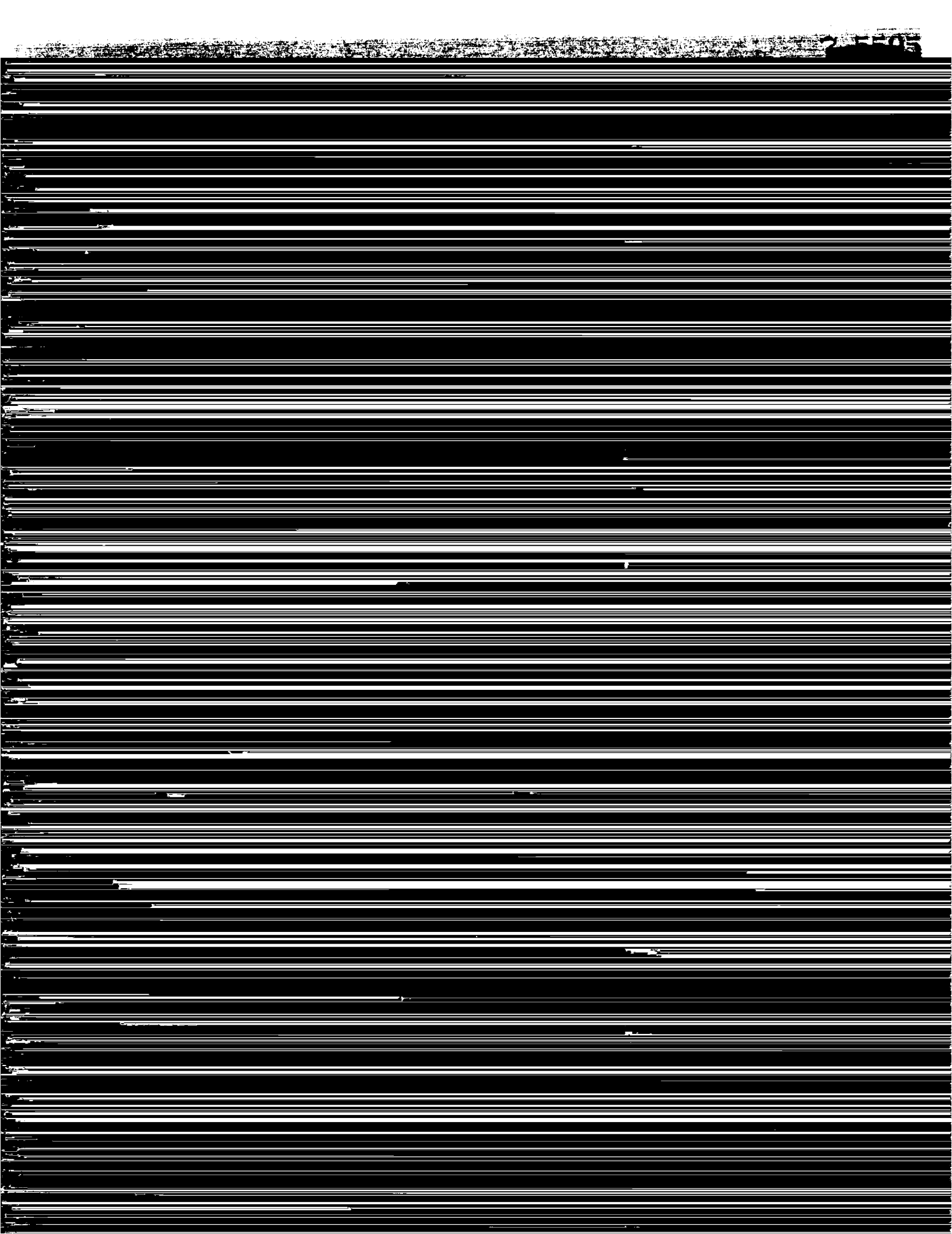
7) A foreman and crew of four men have been set up to handle hand excavation and routine work as required by the plumbing section of the Maintenance Department.

Traffic Division

Traffic Division activities and operating procedures continued during the period on a routine basis.

The following items are of interest:

1. The Purchasing Division advised on November 7, 1946, that arrangements had been made with the Tennessee Valley Authority to ship elemental phosphorus from Sheffield, Alabama to Charleston, South Carolina, for conversion into Phosphoric Acid by the Virginia-Carolina Chemical Corporation for shipment to Hanford. As freight charges will be for the account of the Hanford Engineer Works, the Traffic Manager of the Virginia-Carolina Chemical Corporation at Richmond, Virginia was con-



General Electric Company on the basis of 12¢ per cwt. on eleven carloads of Ferric Sulphate which moved from Lockland, Ohio, to Hanford from October 1 to October 14, 1946, inclusive. This request for reparation was based on the fact that effective October 1, 1946, the General Electric Company assumed payment of freight charges on these shipments at a rate of $1.35 per cwt. which we considered unreasonable to the extent that it exceeded the rate of $1.23 per cwt. effective October 15, 1946, which was published as a result of our proposal submitted to the Milwaukee Railroad on February 12, 1946.

5. On November 29, 1946, the Milwaukee Railroad was requested to file with the Interstate Commerce Commission reparation claim for the account of General Electric Company on the basis of $0.50 per cwt. on three carloads of liquid Caustic Soda which moved from Pittsburg, California, to Hanford from October 1 to November 17, 1946, inclusive. Our request for reparation was based on the fact that effective October 1, 1946, General Electric Company assumed the payment of freight charges on these shipments at a rate of $1.30 per cwt., which we considered unreasonable and discriminatory to the extent that it exceeded the rate of $0.80 per cwt. effective November 18, 1946, which was published as a result of our proposal submitted to the Milwaukee Railroad on August 13, 1946.

6. The Interstate Commerce Commission issued Service Order 645-A effective 4:00 p.m., November 18, 1946, prohibiting any common carrier by railroad transporting cars loaded with bituminous coal, whether billed or unbilled, from mines, scales, classification or assembly yards between mines and scales, or from any designated mine tracks or designated mine slidings unless authorized to do so by special permit issued by the Office of Defense Transportation. As no special permit was secured for this Project, there have been no shipments of coal from the mines to Hanford since the effective date of the order.

7. Home Insurance Policy TR-32398 protecting the shipment of household effects against damage while in transit, temporary storage or permanent storage was made effective November 1, 1946, for the account of General Electric Company. This policy provides the same coverage afforded by Home Insurance Company Policy 3657 issued to the DuPont Company.

8. The following is a summary of savings in freight charges through November 30, 1946, as a result of rate reductions secured from the carriers.

Commodity	Origin	Savings thru October 31	Savings for November	Total
Caustic Soda	Tacoma (H)	$ 7,299.23	$ 486.72	$ 7,785.95
	Tacoma	2,462.71	245.73	2,708.44
Soda Ash	Trona & West End, Cal.	4,029.90	848.40	4,878.30
Hydrated Lime	Evans, Wn.	383.21	54.68	437.89

Office Records	Hanford to Newbridge, Del.	$ 2,525.12	$ 309.38	$ 3,334.50
Ferric Sulphate	E. Point, Ga., & Lockland, Ohio	_____	678.72	678.72
	Totals	$16,700.17	$3,123.63	$19,823.80

(H) Purchased thru Henderson, Nevada, but supplied from Tacoma.

9. Statistics outlining the routine work of this division follow:

Office Business

	October	November
Household Goods Movements Arranged	80	42
Household Goods Movements Traced	31	6
Household Storage Bills Approved	69	13
Automobile Shipments Arranged	3	2
Automobile Shipments Traced	2	3
Rail Bills Approved	405	861
Truck Bills Approved	190	206
Express Bills Approved	123	98
Household Goods Claims Filed	3	9
Household Goods Claims Collected - Number	3	6
Household Goods Claims Collected - Amount	$62.38	$160.26
Work Orders Issued - HHG Repairs	36	53
Furniture Dates to Expense Accounts	21	13
Insurance Riders Issued	100	90
Insurance Bills Approved	81	0
Freight Claims Filed	3	5
Freight Claims Collected - Number	6	1
Freight Claims Collected - Amount	$1,180.50	$81.02
Requests for Billing	0	2
Rail Reservations Made	51	54
Air Reservations Made	41	37
Ticket Refund Claims Filed - Number	4	0
Ticket Refund Claims Filed - No. of Tickets	5	0
Ticket Refund Claims Collected - Number	6	3
Ticket Refund Claims Collected - Amount	$81.28	$92.98
Freight Shipments Traced	44	5
Carload Shipments Received	743	689
Carload Shipments Outbound	26	10
Hotel Reservations Made	16	17
Expense Accounts Checked	43	28
Bills of Lading Converted - Freight Shipments	424	1
Bills of Lading Converted - Express Shipments	0	1
Government Bills of Lading Accomplished	53	58
Freight Bill Pre-Audit Savings	$520.33	$211.97
Rates, Routings, Schedules Checked	814	992
Routing Instructions Issued	3	18

Household Effects	October	November
Lots Shipped Via Van	60	6
Lots Pending	18	10
Automobiles Shipped	3	2
Household Lots Via Express	21	9
Household Lots Via L.C.L. Freight	1	0
Baggage Shipments	23	0

Commodities Received - Carloads	October	November
Automobiles	1	0
Ammonium Silico Fluoride	0	1
Argon Gas	0	1
Caustic Potash	1	1
Caustic Soda	9	8
Cement	1	0
Chemicals	2	0
Clorine	1	1
Coal	680	615
Fire Brick	1	0
Ferric Sulphate	17	10
Ferrous Ammonium Sulphate	0	1
Helium Gas	1	1
Hydrogen Peroxide	0	1
Hydrofluric Acid	1	1
Lime	3	3
Lubricating Oil	0	1
Merchandise	6	6
Nitrate of Soda	0	1
Nitric Acid	9	12
Oxalic Acid	1	0
Phosphoric Acid	3	4
Salt	0	2
Silicate of Soda	4	13
Soda Ash	3	3
Sulphuric Acid	0	3
Totals	744	689

[redacted]

HANFORD ENGINEER WORKS
TRANSPORTATION DEPARTMENT
DISTRIBUTION OF PERSONNEL
November 30, 1946

DEPARTMENT PERSONNEL

		General	100 B	100 D	100 F	200 W	200 E	300	700-1100	River-land	Total
1.	Supervision	6	1	2	2	2	2	1	41	3	60
2.	Drivers	23	12	22	27	32	31	18	39	6	210
3.	Mechanics	1	-	1	1	2	1	-	62	7	75
4.	Trainmen	-	-	4	4	4	4	-	1	-	17
5.	Laborers	-	3	4	4	5	4	4	70	-	94
6.	Oilers	-	-	1	1	3	1	-	32	1	39
7.	Tool and Stores Attendants	-	-	-	-	-	-	-	7	-	7
8.	Crane Operators	-	1	1	1	3	2	-	2	-	10
9.	Tractor Operators	-	1	2	2	2	2	1	4	-	14
10.	Helpers	-	1	3	2	2	2	2	47	8	67
11.	Trackmen	-	3	3	3	3	3	1	-	-	16
12.	Weighmaster	-	-	-	-	-	-	-	-	2	2
13.	Equipment Inspector	2	-	-	-	1	-	-	1	-	4
	Totals	32	22	43	47	59	52	27	306	27	615

HANFORD ENGINEER WORKS
TRANSPORTATION DEPARTMENT
DISTRIBUTION OF PERSONNEL
November 30, 1946

MORRISON KNUDSEN CONTRACTORS
Benton City Camp

MONTHLY:

Office Manager	1
Track Foremen	6
Total	7

HOURLY:

Timekeeper	1
Stenographer	1
Chef	1
1st Cook	1
2nd Cook	1
Dishwashers	3
Bull Cooks	2
Truck Drivers	7
Watchman	1
Laborers	56
Total	74

[redacted] 550[illegible]

TRANSPORTATION DEPARTMENT
EQUIPMENT INVENTORY
November 1, 1946 through November 30, 1946

	1-A - SEDANS	1-B - BUSES - 29	1-B - BUSES - 37	1-B - BUSES - SEMI	1-B - STRETCHOUT	1-C - PICKUPS	1-D - CARRYALLS	1-D - PANELS	1-D - STATION WAGONS	1-G - JEEPS	1-G - WEAPON CARRIERS	5 - BATCH PLANTS	6 - ROAD SWEEPERS	6 - ROAD BROOMS	6 - TAR HEATERS	6 - PAINT SPRAYERS	10 - GRINDERS	10-A- FLAT CARS
Accounting	1	1				9	1											
Electrical	8					23	1	2			7							
Government	42	1			1	30	8	2		2	2							
Instrument	6					6		2										
Maintenance	8				1	37	1	1	2		10					1		
Medical-H.I.	13						4	1										
Power	8					15	1					1						
Protection	40					2	3				9							
"P" Dept.	5					5												
"S" Dept.	4					8	3											
Service	8	2				11	2	2										
Technical	10							1										
Transportation:																		
Automotive	4		78	1	8	2		2	1									16
Mechanical	9	37				27	8	3	2		2	1	1	3	4		8	
Adm. Pool	81	1			1	4			1	1	1							
Medical Pool	13								1		1							
300 Area Pool	6					3												
Repair Pool	10					21			4	2	2							
Reserve Pool	11	1			8	4			2	4	8		1					
TOTAL	296	43	78	1	11	207	26	16	13	9	42	2	2	3	4	1	8	16

	10-B - WELL BOTTOM CARS	10-C - DUMP CARS	10-D - GONDOLAS	10-E - MOTOR CARS	10-F - CABOOSE	10-G - PUSH CARS	10-H - TANK CARS	10-J - Hospital Car	13 - COMPRESSORS	16 - CONVEYORS	17 - CRAWLER CRANES	17-T - MOTOR CRANES	22 - EARTH AUGERS	30 - Finishing Machine	33 - MOTOR GRADER	33-A - PULL GRADER	38 - Lift Loaders	39 - ~~DIESEL LOCOMOTIVE~~	39 - DIESEL LOCOMOTIVE	39 - ~~CARGO LOCOMOTIVE~~	40 - Transit Mix	40-A - CONCRETE MIXERS
Accounting													1									
Electrical																						
Government																						
Instrument																						
Maintenance									6													
Medical - H.I.																						
Power																						
Protection																						
"P" Department																						
"S" Department																						
Service																						
Technical																						
Transportation:																						
Automotive	11	8	2		2		6												8			
Mechanical				13		18			15	3	10	4	1		5	1					2	
Adm. Pool																						
Medical Pool																						
300 Area Pool																						
Repair Pool																						
Reserve Pool							2	1	6		3	1		2		1	2				1	1
TOTAL	11	8	2	13	2	18	8	1	26	3	13	5	2	2	5	2	2		8		1	8

	45 - VIBRATING SCREEN	49 - PUMPS	52 - ROLLERS	55 - SCRAPERS	59 - SPREADERS	63 - RUBBER TIRED TRACTORS	63 - CRAWLER TRACTORS	64 - SEMI - TRAILERS	68-A - DUMP TRUCKS	68-B - FLAT TRUCKS	68-C - TANK TRUCKS	68-D - FIRE TRUCKS	68-E - TRUCK TRACTORS	68-G - AMBULANCES	68-H - GARBAGE TRUCKS	68-J - WINCH TRUCKS	68-K - LINE TRUCKS
Accounting								4		4			4				
Electrical								5		4						1	3
Government							1	4	2	8	4	10	4	3		2	1
Instrument																	
Maintenance		16						4		17			2			7	
Medical - H.I.								1		1				15			
Power																	
Protection																	
"P" Department																	
"S" Department											1						
Service		1								1		25					
Technical														1			
Transportation:																	
Automotive	1	2 15	5	6	6	10	20	19	19	47	13	1	1 19		6	1	
Mechanical										1							
Adm. Pool																	
Medical Pool																	
300 Area Pool																	
Repair Pool																	
Reserve Pool		11					6	15	7	8	2		9		1		
TOTAL	1	46	5	6	6	10	27	50	28	88	20	36	39	19	7	11	4

	68-L - WRECKER TRUCKS	71 - FARM WAGONS	73 - WELDERS	74 - LIGHT PLANTS	78 - FARM MACHINERY	80 - KERRICK CLEANER	ATTACHMENTS 8' - DRAGLINE BUCKETS	8 - CLAMSHELL BUCKETS	17-A - BACKHOE	17-B - SHOVELS	29 - ENGINE - POWER UNIT	47 - SNOW PLOW	63-A - DOZERS	63-B - P. C. U.	63-C - SIDEBOOM	TOTALS
Accounting																25
Electrical			1	7												62
Government																124
Instrument																14
Maintenance			33													145
Medical - H.I.				2												87
Power				1												26
Protection				3												87
"P" Department																8
"S" Department																16
Service											1					53
Technical																12
Transportation:																
Automotive	3											1				150
Mechanical		14	3	26	18	1		7	15	1	2		12	15	2	475
Adm. Pool																101
Medical Pool																15
300 Area Pool																9
Repair Pool																31
Reserve Pool	2		4	7	1	2		2	2		2		4	4		135
TOTAL	5	14	41	46	19	3		9	17	1	4	1	1	16	19	2
																1438
																Total Units
																Total Attachments 70
																GRAND TOTAL 1508

HEALTH INSTRUMENT SECTION

HW-7-5505-Del

Organization

L. L. German was transferred to the Research Laboratories, Schenectady, New York. C. C. Gamertsfelder visited the laboratories to assist with the setting up of an H.I. organization there. M. L. Mickelson assumed the duties of the Assistant Chief Supervisor (Survey) vacated by Mr. German.

Build-up of the force proceeded at a satisfactory pace. Distribution of personnel and the present organization are given in the appendix.

General

A review of the current information on the hazards of plutonium deposition in the body and its rate of elimination led to the following proposed values: *

1. Tolerable deposition of plutonium in the body = 0.5 μg
2. Terminal elimination rate in urine = 0.004% per day
3. Daily elimination in a 24-hour urine sample = 2.8 dis/min.

Plans have been carried forward to offer formal training in the H.I. specialty to new Engineers and to potential supervisors for other departments. The training program has been prepared for a start in early January.

The evening instruction courses organized by the H.I.Section have continued with apparent success. The average absenteeism has been just under 20%, including vacations and all other causes. Vacations have accounted for an abnormal amount of absenteeism, because so many members of the group scheduled late vacations in view of the uncertainties resulting from the change in operating company on September 1. However, there was also a tendency for men to attempt too many classes, or classes at an unsuitable level, with a resultant permanent withdrawal. Approximately fifty members of the organization have successfully carried about 8 to 12 hours of home study per week, thus demonstrating the feasibility of their attending two courses, concurrently. Experience with this school may be of value in the establishment of policies in connection with the plantwide educational program.

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* Parker, H.M. 7-5377 (11/4/46) "Report of Visits to the Radiation Laboratory, Berkeley, Calif., Clinton Laboratories, Oak Ridge, Knoxville, Tenn., and the Argonne National Labs., Chicago, Illinois."

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100 Areas

Salient Points

Personnel was present in a discharge area when several dummy slugs were discharged from two Process tubes due to "blowing" of the caps. Bowing measurements of Pile tubes continued. An irradiated, unjacketed uranium slug was found to cause large amounts of beta contamination in a Storage Area basin. During an extended shutdown, the near and far side neoprene seals were replaced and two Process tubes replaced. As water was drained from a Storage Area prior to repair work on the mattress plates, two irradiated uranium slugs were found to be lodged on the mattress plates. Numerous gas leaks were located along the bottom seam of a Pile. Beta activity was found in air samples taken on top of a Pile during Vertical Safety Rod testing. A Storage Area basin was decontaminated and refilled.

Work Permit Summary

	October	November
100-B	151	183
100-D	833	460
100-F	465	886
Total	1449	1529

Retention Basin Effluent

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

	100-D	100-F
Power Level	250	200
Average beta dosage-rate (mrep/hr)	0.5	0.5
Average gamma dosage-rate (mr/hr)	1.3	1.5
Average total dosage-rate (mrep/hr)	1.8	2.0
Average integrated dose in 24 hrs. (mrep)	43	48
Maximum integrated dose in 24 hrs. (mrep)	48	50

Water samples were taken from the stagnant pond located between the F-Area Pile Building and the Retention Basin in an attempt to locate the source of contamination. The samples were taken before, during and after the extended shutdown, and the results established that leakage from the basin or associated sewers was responsible for the observed contamination. No appreciable build-up of long-lived activity was noted.

Time of Sampling	μc/liter
Prior to extended shutdown	0.02
During extended shutdown	0.003
Four days after extended shutdown	0.1
Eighteen days after extended shutdown	0.08

Both sides of the basin were back in service when the last sample was taken.

Pile Buildings

Numerous gas leaks were detected along the base of the 100-F Pile at the junction of the iron and concrete. Readings up to 1 rep per hour were reported on the near side minus 9-foot level and on the front face under the elevator. The far side minus 9-foot level showed no appreciable reading. Other gas leaks were apparent at the "E" experimental hole and the far side neoprene seal. The leaks were sealed with Permatex but reappeared after several days. A search for similar leaks in the D-Area revealed none. However, readings up to 75 mrep/hr were later found at the "B" experimental hole. The maximum dosage-rate on tubes opened for bowing measurements was 150 mrep/hr. The maximum reading on cask containers of off-plant shipments was 10 mr/hr. Maximum tip-off reading was 500 mrep/hr, and for troughs 400 mrep/hr.

The 100-B Area Storage Area basin was decontaminated by washing the walls, columns and ledges with a fire hose and pumping the sludge to a burial trench. The contaminated items were previously removed and buried. Most residual contamination appeared at the junction of columns and ledges. The sludge pipe used in this work was stored except for one "hot" section which was cut out and buried. The maximum reading on an open end of the pipe was 60 mrep/hr.

Two Process tube end caps were "blown" off while men were working in the 100-D discharge area. Several lead and stainless steel dummy slugs were discharged by the water pressure, but radiation levels were not exceptional. One cap was knocked off when a lead dummy, dropped from a higher tube, struck it.

The maximum reading at the Vertical Safety Rod rail was 500 mr/hr. A maximum reading of 1 roentgen per hour was observed at the #10 rod bumper plate; other readings at the bumper plates ranged from 100 to 625 mr/hr. The maximum reading obtained when rod #37 was removed for buffing was 120 mr/hr at 4 feet from the tip; the point of closest approach.

Ten stainless steel plugs removed from the 100-D Area "B" experimental hole were removed from temporary storage on the experimental level to permanent storage at the burial ground. Readings through the shield on the experimental level were up to 1.8 roentgens per hour at 1 inch. Better shielding at the burial grounds reduced this to 7.5 mr/hr at 3 inches. The maximum reading of an unshielded plug was 13 rep per hour.

A water sample was taken near an irradiated, unjacketed uranium slug stored in the 100-D Storage Area basin. This sample gave a reading of 0.7 μc/liter beta activity, but no alpha activity was detected.

A slow neutron survey on the top of the F-Area "D" experimental hole gave a flux of 750 nv, corresponding to 6.25 mrem/hr.

200 Areas - T and B Plants

Salient Points

Sampling ports were generally maintained at low levels. Gross product contamination of a Canyon deck occurred during connector gasket repairs. The sampling procedure was revised after difficulty was again encountered with an 8-4 sample. Air contamination in the Canyon occurred coincidental with opened cells. An increase of positive air sample incidence occurred when the dissolver was in operation. Air contamination was detected at a waste tank. Extremely high contamination of a pair of coveralls from an unknown cause occurred.

General Statistics

	October			November		
	T	B	Total	T	B	Total
Special Work Permits	289	361	650	173	592	765
Other routine and special surveys	362	505	867	410	457	867
Smear samples for alpha counts	756	816	1572	704	557	1261
Smear samples for beta counts	726	816	1542	614	557	1171
Air Monitoring Samples	440	261	701	396	328	724
Thyroid Checks	241	291	532	240	221	461

Canyon Buildings

The T-Plant sampler ports were maintained at low levels of activity. The maximum dosage-rate at the surface was 200 mrep/hr, and at 2 inches, 40 mr/hr. Smears of the pipe gallery fans and motors showed some indication of both alpha and beta contamination. Of interest was the fact that the number of positive air samples increased when the dissolver was in operation, irrespective of the sample location.

In only five instances did the dosage-rate at the sampler ports in the B-Plant exceed 50 mrep/hr at 4 inches. The maximum was 110 mrep/hr. The maximum surface dosage-rate was 9 rep per hour. The contamination in the stairwell at R-15 was finally removed by removal of the concrete. Contamination of 3 rep per hour at the surface, and 550 mr/hr at two inches, was found on R-11 stairwell steps. A weight factor tube from Section 15 was removed and inspected on the Canyon deck. Readings of 8 rep per hour and 2 roentgens per hour at 18 inches were recorded, and rods used to unplug the tube read 1 rep per hour at about 12 inches. Canyon deck contamination of 1 rep per hour at six inches occurred. Connectors from Section 17-L were regasketed on the B-Plant Canyon deck causing contamination of about 1.7 mg Pu spread over 900 square feet.

Air samples taken while Cells were open gave:

	Air Concentrations	
	μg Pu/cc	μc F.P./liter
Section 8	--	2.9×10^{-6}
Section 17	2.2×10^{-10}	--
Section 18	--	1.3×10^{-6}
Section 1	3.7×10^{-10}	2.6×10^{-6}

The B-Plant 17-2 centrifuge was replaced, and the old centrifuge stored in Cell 1-R. The radiation exposure rate during this work reached a maximum of 200 mr/hr for short periods.

Sampling irregularities occurred for the third time in recent weeks when a reading of 500 mr/hr was observed on a "doorstop". The samplers' standard procedure was revised as follows:

(1) Equipment handled must be less than 2 rep per hour at 4 inches *

(2) Doorstops must be less than 100 mr/hr at 4 inches.

As in the past, the samplers notify the Dispatcher or Supervisor of the monitoring data. Should a "doorstop" read greater than 100 mr/hr at 4 inches, it will be handled by the Technical Department under Special Work Permit control.

Control Laboratory

Approximately 1 μg Pu was found in the B-Plant Laboratory on sampling equipment in Room 1, and about 7 μg Pu in Room 7. Room 7 contamination was located on such items as work benches, decontamination sinks, drying lamps, sample carriers, pliers, and the floor. A spill at the "Goldberg" resulted in contamination of 2 rep per hour at the surface and 150 mr/hr at two inches. Another spill on the decontamination table produced measurements of 1.5 rep per hour on the table covering, and 2 rep per hour on equipment.

Gross coverall contamination and possible localized surface exposure of a chemist to a dosage-rate of about 1.1 rep per hour

* Obviously such statements as these should read that the dosage-rate not the equipment shall be less than a specified value. This is understood in the Plant and these typical ungrammatical condensations cause no confusion.

for an unknown period of time (less than 3 hours) occurred. * It was possible to prove that the coverall was not significantly contaminated when put on by the chemist. His operations must, therefore, have caused a spill, but it was impossible to define the circumstances more closely than this.

Concentration Building

Approximately 27 µg Pu was reported on T-Plant Cell surveys during the month with most contamination accounted for as follows: C-Cell 6 µg, D-Cell 7.5 µg, E-Cell 2 µg, and F-Cell 8.5 µg. Contamination was reported on the floor mat at the entrance to the F-10 chained area. This mat is included in the protective clothing procedure, and should have been clean. Unusually high measurements were recorded on the Sample truck. Dosage-rates of 400 mr/hr and 2.5 roentgens per hour were found on the "suitcase" and "suitcase" handle; this caused a reading of 60 mr/hr on the outside of the truck. Contaminated paper used by the samplers was the cause.

Approximately 4 µg Pu was reported for the month on Cell surveys in the B-Plant. About 1.5 µg was found in D-Cell, and 2.5 µg in the F-10 enclosure. The maximum radiation level reported was 300 mr/hr at the C-4 tank. Surface contamination of 25 mrep/hr was recorded on the door of the D-Cell balcony.

Waste Disposal

Air samples from the vent of the 361 tank in the T-Plant, taken after jetting, showed 2.1 x 10^{-10} µg Pu/cc, and 3.6 x 10^{-6} µc/liter. Samples were taken before, during and after jetting of waste solution.

The metal waste solution line from the B-Area 154 diversion box to the C-Area Tank farm was tested for plugging. A reading of 1 roentgen per hour was observed over the open box. The C-Area 151 diversion box was opened for inspection. A reading of 1.3 roentgens per hour was observed over the open box.

A sludge sample from the B-Plant 361 tank measured 5 rep per hour at 1-1/2 inches. Maximum dosage-rate of personnel exposure was 100 mrep/hr.

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* Special Hazards Incident #35, Class 1

Special Hazards Incident #4, Class 2

Fan House

The bearings on the B-Plant #1 stack fan were changed. Dosage-rates in the work area ranged from 500 mr/hr to 1.2 roentgens per hour. A gasket was replaced on the outlet flange of the 4-5 L stack jet at the base of the B-Plant Stack. Dosage-rate 4 inches from the flange was about 500 mr/hr.

200 Area Isolation Building

Air Monitoring

The maximum concentration found in a spot check air sample was 6×10^{-11} µg Pu/cc in Cell 4. Two hundred seventy-two spot samples were taken, and 247 of these had less than 10^{-11} µg Pu/cc. Fifty-four Little Sucker air samples run continuously by shifts had, as the highest result, 2×10^{-11} µg Pu/cc in Cell 4. Fourteen Big Sucker samples of the 903 exhaust system were taken; the highest result was 9×10^{-12} µg Pu/cc.

Surface Contamination

Two hundred thirty-seven non-regulated items were found contaminated in surveys made by "S" Department, Technical and H.I. personnel. Fourteen were greater than 20,000 d/m, but none was greater than 80,000 d/m. One hundred and sixty of these were in the laboratories, and sixty-two in the Process Areas. There were two cases of floor contamination, both in Room 35.

Two cases of hand contamination which could not be decontaminated for several days occurred. As a result, the procedure for skin decontamination was revised and a procedure for hand inspection inaugurated. Both instances of contamination occurred on chemists and would have been avoided by the use of surgical gloves. Some objections to the use of gloves, such as alleged increased hazard of acid burns, require to be carefully weighed against the risk of introduction of significant amounts of product into the skin. Recent results on animals have emphasized the danger of local tissue damage,* in addition to the problem of introduction of the material to the blood stream.

Gamma Radiation

P.R.Container	(maximum)	43 mr/hr
Process hood	(maximum)	10 mr/hr
S.C.	(maximum)	7.5 mr/hr

* Doc. #7-5377 (11/4/46) Parker, H.M.

300 Area

General

Special Work Permits	73
Routine and Special Surveys	59
Smear Samples for Alpha Counts	479
Smear Samples for Beta Counts	436
Air Monitoring Samples	52

Metal Fabrication Plant

Eighteen of 32 air samples were above the tolerance level of 1.5×10^{-4} ug U/cc. Following is a list of locations sampled in the Press Building with the maximum result in each location.

Location	Concentration ug U/cc
Near Knock-Off Block Hood	3×10^{-4}
Near Oxide Burner	2.6×10^{-3}*
Center of Building	4.1×10^{-4}
Near Straightener	4.1×10^{-4}
West of Boring Mill	3.4×10^{-4}
Opposite Die Cleaner	6.2×10^{-4}

The dust concentration in the Press Building was more widespread and higher this month due, possibly, to the special "Y" chips burned. One product analysis was made on "Y" chips and none was found.

Two air samples taken in the Machining Building at Chip Recovery were both above tolerance of 1.5×10^{-4} ug/cc.

Results:

Location	Concentration ug U/cc
Biscuit Press	6.2×10^{-4}
#2 Sorting Table	3.2×10^{-4}

An instrument survey of the operations lunch and locker rooms revealed that contamination was more widely spread and greater than previously indicated by smears.

* The average of six samples in this location was 8.5×10^{-4} ug U/cc.

Retention Pond

Maximum measurements reported on samples taken by Site Survey were as follows:

Location	
Inlet Water	9.8×10^{-4} uc/liter
Mud Sample	5 uc f.p./kg
Mud Sample (Alpha)	590 d/m/gm

Technical Building

One air sample was taken in room 13 while a uranium sample was sawed and another as the floor was swept.

	Concentration µg U/cc
Sawing	2×10^{-4}
Sweeping	2×10^{-5}

Seventeen of eighteen air samples were less than 2×10^{-11} µg Pu/cc. One taken in Room 58 was 3.7×10^{-11} µg Pu/cc.

About 3.5 µg Pu was found on items accumulated in Room 62 and stored on an open bench. About 11 µg Pu was reported in the West end of this room on the bench, sink, hood and equipment. This condition has not been corrected. About 4 µg Pu was reported in Room 57, 7 µg Pu in Room 64 and 3.5 µg Pu in Room 66. Most of the contamination in Rooms 64 and 66 was on the floor. About .07 µg Pu was found on the lid of the "Contaminated Waste Can" in the hallway.

Cold Semi-Works Building

Alpha contamination was detected on the inside of lead sink traps removed from the laboratory benches and on the floor. Floor contamination was found on a spot previously covered by a laboratory bench.

Laundry, Decontamination and Hand Counting

Items monitored in the Plant Laundry totaled 59,386 of which 43,597 were checked for both alpha and beta radiation. Included were 13,705 coveralls, 19,597 gloves and 15,641 overshoes. An "incoming hamper" from the 200-East Area read 5 mr/hr on the side. Investigation located one pair of coveralls which read 10 mr/hr at 5 inches. The garment was buried.

Of the 40 spot air samples taken 37 were greater than 10^{-11} µg Pu/cc and 14 were greater than 10^{-10} µg Pu/cc.

The maximum result of 1.4×10^{-9} µg Pu/cc * was taken in the receiving room while clothes from 100 and 300 Areas were sorted and the floor swept. Of the 20 continuous Big Sucker air samples eleven were greater than 10^{-11} µg Pu/cc. The maximum result was 1×10^{-10} µg Pu/cc obtained in the receiving room.

The totals of alpha and beta hand counts were respectively 20,895 and 26,652. About 0.4% of the alpha counts, and 0.4% of the beta counts were above the warning limit. There was no recorded attempt to reduce four high alpha scores and four high beta scores. Where decontamination was attempted it failed in two cases of alpha contamination and one case of beta contamination to reduce it to below the conservative standards.

Personnel Meters

Pencils	100-B 100-D	100-F	E&N 200	200-W	300	Total
Total Pencils Read:	10,056	10,956	25,931	24,970	12,392	84,305
No. of single readings: (100 to 200 mr)	25	38	90	121	40	314
No. of paired readings: (100 to 200 mr)	2	0	8	1	1	12
No. of single readings: (over 200 mr)	62	80	191	181	68	582
No. of paired readings: (over 200 mr)	0	2	2	2	0	6
Paired readings lost:	0	0	0	0	0	0

Badges

	100-B	100-D	100-F	200-E	200-N	200-W	300	Total
Badges Processed:	1,842	2,933	3,068	4,447	637	3,509	3,595	20,031
No. of readings: (100-300 mrep)	0	3[a]	0	15	0	0	57	75
No. of readings: (301 and over)	0	xx4[a]	0	0	0	0	0	4
No. of Lost Readings:	0	x1[b]	0	1[c]	0	0	0	2

a. Defective film, xx Insensitive read 0-0
b. Film stuck together, x Shielded portion read 0
c. No.packet in badge

* All alpha contamination is reported as plutonium contamination. Evidently in this case the expected uranium dust contamination was largely or entirely responsible for the observed results.

of the nine defective readings only one can be directly ascribed to faulty handling by the badge personnel.

Development Division*

Water Monitoring

The radioactive contamination in 139 test well and drinking water samples was again very low. A drinking water sample from Richland Durand well #12 had beta activity of 1.1×10^{-4} uc/liter. A resample from this source gave $< 5 \times 10^{-5}$ uc/liter. The only other positive beta result was 5×10^{-5} uc/liter from the Pasco H&R Point. Alpha activities of $5.2 \pm [2.0]$ d/m/liter** and $2.4 \pm [1.6]$ d/m/liter were found in the 3000 Area #1 well and in 100-D sanitary water respectively. Values of $3.6 \pm [2.0]$ d/m/liter were found in the two 300 Area wells and $2.0 \pm [1.6]$ d/m/liter were found in the 100-F sanitary water, Foster Ranch, and White Bluff wells. Resamples of all of these locations indicated <2.0 d/m/liter.

The maximum activities measured in any of the 95 river samples were 3.3×10^{-3} uc/liter at Hanford, 1.7×10^{-3} uc/liter at the 181D Building, and 1.4×10^{-3} uc/liter at Richland. Other values (including samples from these locations) ranged from 2×10^{-4} to 8×10^{-4} uc/liter. Possible traces of alpha activity were found in one sample from 181F which gave $2.4 \pm [1.6]$ d/m and in one sample from near the 300 Area which gave $5.2 \pm [2.8]$ d/m. A total of 14 other samples from 181F and four other samples from near the 300 Area did not confirm these results.

Atmospheric Monitoring

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

Location	Integrons (mrep/24 hr.)		C Chambers (mrep/24 hr.)	
	Oct.	Nov.	Oct.	Nov.
100-B	0.6	0.4	0.4	0.4
100-D	1.7 ***	0.6	0.4	0.5
100-F	0.4	0.5	0.4	0.4
200-W	0.9	0.6	0.4	0.6
200-E	1.7	0.7	0.9	0.7

* In the absence of C.C.Gamertsfelder, the Development Division report was prepared by J.W.Healy.

** All results show reliable error (90% confidence level). Many, if not all, can be considered to represent no contamination whatever.

*** This was incorrectly reported last month as 0.7

(Cont'd.)

Location	Integrons (mrep/24 hr.)		C Chambers (mrep/24 hr.)	
	Oct.	Nov.	Oct.	Nov.
Riverland	1.3	1.1	---	---
Hanford	1.0	0.2	---	---
300 Area	1.0	0.3	0.5	0.5
Richland	0.6	0.4	---	---
Benton City	0.2	0.5	---	---
Kennewick	0.6	0.2	---	---
Pasco	0.7	0.7	---	---

The constant iodine monitor at Benton City gave a maximum of 5×10^{-7} μc I^{131}/liter, over an eight-hour period which is slightly higher than the maximum of last month. The monitor at the 200-East Area gave a maximum of 4.6×10^{-7} μc/liter which is comparable to that of last month. One positive value of 2×10^{-6} μc/liter was found by a hand-pump sample in the 200-East Area. A total of 81 rain samples gave maximum values of 0.38 μc/liter, 0.098 μc/liter, and 7×10^{-4} μc/liter in the 200-East Area, 200-West Area, and outlying areas respectively. A series of 29 snow samples was obtained after the storm of November 22. Only six of the samples gave positive results with a maximum of 4×10^{-3} μc/liter at route 4S, Mi. 5.

Vegetation Contamination

A general increase in vegetation has been noted during the month. So far, the seasonal variation has followed rather satisfactorily, the predictions from the experience last year. In the outlying areas, Richland, Pasco, and Kennewick have averaged close to or above the tolerance value of 0.2 μc I^{131}/kg. A maximum sample of 13.4 μc/kg was found near the 200 Areas while a maximum of 1.2 μc/kg for the outlying areas was found in Pasco. The average readings for the last two months are:

	μc I^{131}/kg October	μc I^{131}/kg November
North of 200 Areas	0.13	0.21
Hanford	0.18	0.15
Near 200 Area	0.82	0.93
South of 200 Area	0.17	0.32
Richland	0.13	0.21
Benton City	0.09	0.06
Kennewick	0.09	0.19
Pasco	0.11	0.30

Bio-Assay Laboratory

The backlog of samples has been completely reduced and the group is running with current samples. The trend during the month has been to fewer high results because of improved cleaning techniques and more complete training of the new men. Of 260 samples collected during the month, two hundred

thirty-four were processed and eight showed greater than 0.6 d/m. These high results were probably due to contamination in the laboratory, and the individuals concerned will be resampled. Thirteen resamples were taken from individuals who had previously had high results. The maximum result from this group was 0.2 d/m, thus confirming the absence of significant quantities of plutonium in any of these individuals.

Miscellaneous

The water laboratory was found to be greatly contaminated in spots with plutonium. It is believed that this material is coming from cracks in the floor and benches. The entire laboratory has been cleaned and the critical cracks sealed. Floor plans of a new low level laboratory for this type of work are being made.

Six mice from the 3706 Building were dissected and the tissue analyzed for activity. The maximum alpha activity was 1.8×10^5 d/m/kg in the alimentary tract of one animal; the maximum beta activity was 23 uc/kg in the thyroid. A duck from the lower Yakima River had only traces of alpha activity in the gizzard and liver. The maximum beta activity was 10^{-2} uc/kg in the caecum. TTA analyses of tissue residue from animals caught in the 300-Area retention pond indicate that about 90% of the alpha activity arises from uranium.

Equipment for measuring the amount of plutonium on the outside of loaded product containers is being assembled. Investigation is being conducted into methods of balancing out the reading due to the gamma radiation. Recommendations for the construction of a direct reading portable fast neutron meter having ranges of 0-20, 0-100, and 0-500 mrep/hr were submitted to the Instrument Department. Work has been started on the construction of a battery operated scaling pair for the purpose of making a portable scaler.

Plans for the extension of the Fish Laboratory facilities have been completed and submitted for approval. The technical staff of the laboratory has been strengthened in anticipation of a vigorous fish study program in the coming growth season. Dr. E. C. Berry, who assists the biological program on a part-time basis has planned to culture algae to be used in the fish chain-feeding studies.

Completed also were plans to develop necessary information on the underground spread of radioactive contamination from waste disposal facilities. A projected array of some 75 wells may yield information that will eliminate the necessity for the construction of additional buried tank farms for second cycle wastes.

Other projects in the study stage are:

(1) a biological laboratory building proposed for the Separations Plant Area to permit direct treatment by stack gases.

(2) a subsidiary calibration building.

(3) construction of explosion proof H.I. Survey Meters and other H.I. test equipment for use in solvent extraction process areas.

(4) plans for the field coverage of a large group of construction workers.

Calibrations

A new field schedule to permit better coverage of the 100 Areas was instituted on November 11. The 200 KV x-ray machine has been out of operation since November 7 because of the failure of a filter condenser. The defective condenser is being repaired by the Electrical Department, since replacement units are unavailable on short notice.

The routine calibrations were:

RADIUM CALIBRATIONS

Type	Instrument	Number of Calibrations Last Month	This Month
Stationary:	Integron	430	478
	HM & GE Chamber	127	163
	Total	557 *	641 **
Portable	Beckman Survey Meter	178	169
	Lauritsen Electroscope	72	47
	Victoreen Survey Meter	110	92
	GM Survey Meter	51	45
	Miscellaneous	28	35
	Total	439	388
Personnel Meters:	Pencils	5,708	6,740
	Badges	720	720
	Total	6,428	7,460
Total Radium Calibrations		7,424	8,489
X-RAY AND INTERMEDIATE ENERGY GAMMA AND BETA CALIBRATIONS:			
Portable Instruments		37	33
Pencils		4,743	824
Miscellaneous film		658	1,034
Total		5,438	1,891
ALPHA CALIBRATION:			
Portable Instruments		41	55
GRAND TOTAL		12,903	10,435

* 283 Furnished by the Areas
** 339 Furnished by the Areas

[redacted]

H. I. SECTION FORCE REPORT

AS OF 11-30-46

	100-B	100-D	100-F	200-E	200-W	300	700	P.G.	Total
Supervisors	0	0	3	5	3	9	4	0	24
Engineers	0	5	4	8	6	10	0	0	33
Others	0	4	4	18	28	41	6	0	101
Total	0	9	11	31	37	60	10	0	158

GENERAL

A review of the current information on the hazards of plutonium deposition in the body and its rate of elimination led to the following proposed values:

1. Tolerable deposition of plutonium in the body = 0.5 ug.
2. Terminal elimination rate of uranium in the urine = 0.004% per day.
3. Daily elimination of uranium in a 24-hour urine sample = 2.8 disintegrations per minute.

Plans have been completed to offer training in the Health Instrument specialty to new engineers and potential supervisors for other departments. The training program will start in January.

Evening instruction courses organized by the H. I. Section have been quite successful. The courses include Physics, Mathematics, Electronics, and Medical Basic Science. The enrollment is 85 and the average class attendance to date has been 70.

There has been to date no evidence of occupational disease due to hazards of operation.

Dental treatments increased due to the addition of several dentists to the staff.

Out-patient clinic visits increased slightly while hospital days remained about constant, both as compared to the previous month and the same month last year.

ORGANIZATION

A senior member of the Health Instrument Section was transferred to Schenectady to assist in the development of a Health Instrument Section for the Nucleonic research program.

PLANT MEDICAL DIVISION

Physical Examinations	October	November	Year to date
Pre-employment	148	144	984
Annual	223	281	2833
Sub-contractors (food handlers, etc.)	15	15	347
Rechecks	148	67	1359
Interval Rechecks (Area)	985	913	10492
Terminations & Transfers	42	47	1125
Army & Government	35	48	430
Assist to Clinic, A & H Insurance, etc	0	0	64
Total	1596	1515	17634

Laboratory Examinations

Clinical Laboratory	October	November	Year to date
Pre-employment, terminations, transfers	1255	1244	13965
Annual	1702	2056	19573
Rechecks (Area)	4985	4336	54487
First Aid	28	12	397
Plant Visitors	84	88	1043
Clinic	2127	2270	23721
Hospital	1854	1647	18926
Public Health (including food handlers)	145	103	2010
Military	51	21	677
Total	12231	11777	134799

X-Ray

Pre-employment, terminations, transfers	216	213	2310
Annual	233	295	3033
First Aid	58	36	674
Clinic	209	201	2628
Hospital	116	132	1080
Public Health (including food handlers)	19	17	409
Military	17	12	180
Tuberculosis Survey	0	0	1818
Total	868	906	12132

Electrocardiographs

Industrial	110	127	1258
Clinic	5	9	119
Hospital	7	8	110
Military	4	0	12
Total	126	144	1499

Allergy

Skin tests	9	20	115

First Aid Treatments

Occupational Treatments	326	265	3510
Occupational Retreatments	927	785	9768
Non-occupational (welfare) Treatments	3601	3105	34793
Total	4854	4155	48071

Absentee Investigation Report

Total number calls requested	41	52	587
Total number calls made	41	52	587
Number absent due to illness in family	1	1	43
Number not at home when call was made	2	3	54

2

General

The Health Topic for the month of November was "Eyes and Glasses". This subject was discussed throughout the plant at health meetings and a prepared bulletin was distributed to each employee.

Another industrial physician was employed during the month and is being trained in the special hazards peculiar to this plant.

The most serious injury which occurred during the month was to a Maintenance Dept. employee, who received a fractured finger which required external pin fixation.

The hydrofluoric acid burn case, which occurred during the previous month, was skin grafted, but has not yet returned to work.

There was no evidence of occupational disease due to hazards of operation.

VILLAGE MEDICAL DIVISION

CLINIC SECTION	Men	Women	Children	October	November	Year to date
First Visits	304	434	242	848	980	7839
Retreatments	809	1286	493	2429	2588	30811
Total				3277	3568	38650
Seen in Well-Baby Clinic				160	181	2105

Clinic Visits

Medical	546	568	6285
Pediatrics	340	439	5179
Surgical	549	525	6803
Gynecological	312	272	3162
Obstetric (new)	57	48	498
Obstetric (recheck)	446	432	4791
Venereal Disease	51	85	742
Ear, Nose & Throat	241	248	2613
Eye	203	179	2250
Visits handled by nurses (hypo., dressings)	242	370	3423
Night Clinic Visits	290	402	2904
Total	3277	3568	38650

Home Visits

Doctors	140	170	1620
Nurses	28	63	614
Total	168	233	2234

General

There was an increase in the number of out-patient clinic visits.

DENTAL DIVISION

TREATMENT SUMMARY	October	November	Year to date
Patients treated	1090	1136	16028

General

We now have a full complement of dentists, which is eight, and one dental hygienist. There is also one dentist on emergency every day.

KADLEC HOSPITAL SECTION

Census	October	November	Year to date
Admissions	289	282	3304
Discharges:			
Surgical	47	55	762
Medical	45	42	432
Obstetric & Gynecologic	76	68	732
Eye, Ear, Nose & Throat	45	58	554
Pediatrics:			
Children	26	25	401
Newborn	43	38	409
Total	282	286	3290
Patient Days	2031	1897	21068
Average Stay	7.2	6.6	6.7
Average Daily Census	65.5	63.2	63.2
Discharged against advice	1	1	12
One-day Cases	43	44	496

Operations

Transfusions	26	15	187
Eye, Ear, Nose & Throat	37	38	411
Dental	1	0	19
Casts	12	6	118
Minors	50	50	721
Majors	18	22	274
Deaths	3	2	26
Deliveries	45	39	411
Stillborn	0	0	5

Physiotherapy Treatments

Clinic	108	112	972
Hospital	46	16	315
Army	2	9	140
Industrial:			
Plant	60	52	746
Personal	40	25	410
Total	256	214	2583

Pharmacy	October	November	Year to date
Number of prescriptions filled	1856	2056	18024

Patient Meals

Regulars	2444	2404	23591
Lights	124	192	2963
Softs	1052	937	11583
Surgical Liquids	79	37	1151
Tonsils & Adenoids	138	191	1279
Specials	407	264	4067
Liquids	324	275	3331
Total	4568	4300	47965

Cafeteria Meals

Noon	1193	1262	14631
Night	114	123	2150
Total	1307	1385	16781

Nursing Personnel

First Aid Nurses	23	22
Clinic Nurses	12	12
Public Health Nurses	4	5
Hospital General Nurses	58	54
Aides & Orderlies	36	36
Total	133	129

General

There were approximately the same number of admissions and discharges this month as last, but a few less patient days. The average daily census also was a little lower than in October. Altogether, there was not much difference in the amount of work done in the two months. As compared to a year ago, it was also about the same.

PUBLIC HEALTH SECTION

Immunizations	October	November	Year to date
Smallpox	1	0	11471
Diphtheria	18	38	336
Whooping Cough	16	40	334
Schick Test	5	6	70
Tetanus	21	38	360
Typhoid	0	0	2
Total	61	122	12573

Communicable Diseases Reported	October	November	Year to date
Amoebic Dysentery	1	0	1
Poliomyelitis	0	0	8
Whooping Cough	3	1	18
Meningococcic Meningitis	0	0	1
Diphtheria	0	0	0
Chickenpox	1	15	92
German Measles	3	4	26
Measles	0	2	112
Mumps	3	0	41
Scarlet Fever	12	10	40
Pinkeye	0	0	3
Influenza	0	9	127
Impetigo	3	2	36
Ringworm	1	2	33
Scabies	4	2	36
Vincent's Infection	3	2	58
Syphilis	4	1	19
Gonorrhea	1	5	29
Tuberculosis	2	0	10
Total	41	55	690

Administration			
Newspaper Articles	2	10	34
Committee Meetings	0	0	6
Attendance	0	0	95
Staff Meetings	2	0	14
Lectures & Talks	1	1	31
Attendance	350	12	1075
Sanitation Inspections	216	123	1632

Bacteriological Laboratory			
G. C. Smear	25	38	417
G. C. Culture	17	37	366
Fungus Culture	22	13	203
Trichomonas Examinations	14	13	246
Vincent's Examinations	3	3	157
Sputum for T. B. Organisms	6	12	131
Bacterial Cultures	57	64	488
Examinations for Parasites	9	21	254
Throat Smear & Culture	17	14	212
Blood Culture	4	5	47
Stool Culture	11	3	71
Eye Smears	2	2	39
Examinations for spermatozoa	0	0	9
Quantitative determination of blood alcohol	6	2	12
Type for pneumococcus	0	0	3

Bacteriological Laboratory (continued)	October	November	Year to date
Treated water samples	90	83	915
Untreated (raw water) samples	93	93	997
Milk samples (includes milk, cream, ice cream)	90	122	937
Sewage samples	10	8	100
Examinations for eosinophiles	15	3	99
Dark field examinations	1	0	12
Total	492	536	5715

General

The communicable disease picture shows that the level of scarlet fever remains approximately the same, while there has been a rise in chicken-pox. To continue our immunization level among the school population, vaccine was offered to all school children for smallpox, diphtheria and whooping cough.

Some time was spent at the high school in an epidemiological investigation of V. D., and approximately 45 students were examined, resulting in the discovery of five cases of gonorrhea. Contacts were found and examined. Arrangements have been made for the psychiatric study of the girl involved. An intensive educational program will be carried out.

Appointments were made for three post-polio cases to be examined at the orthopedic clinic to be held in Yakima in December, sponsored by the State Department of Health.

A meeting attended by representatives from Housing and the Medical Department was held the first part of the month relative to the food-handling establishments. The main point of discussion was concerning renovation and replacement or repair of dilapidated equipment. A plan for renovation has been developed and is in the process of being effected at the present time.

The school inspections thus far have indicated a definite improvement in all schools except the high school. The difficulty here appears to be in the lack of sufficient janitorial personnel. The addition of another janitor is being contemplated in the near future, which should improve this situation.

Bacteriological analyses of the milk supply received in Richland during the fore part of November indicated a breakdown in sanitary operations within the plant. This matter was discussed with the milk plant superintendent and inspections by this section revealed the need for stricter supervision of operators as well as the introduction of new steps in the overall operation. Since the above changes were made, analyses have proven satisfactory.

Producer milk supplies in the past month have been satisfactory with the exception of one, the product of which was eliminated due to the lack of cooperation in making recommended structural changes.

The Mosquito Control Committee discussed the program for the 1947 season and assignments were made to this section and the Transportation Dept. to present specific control recommendations at the next meeting in January.

[redacted]

MEDICAL DEPARTMENT PERSONNEL

November 30, 1946

AREAS	Physicians	Dentists	Nurses	Aides & Orderlies	H. I. Specialists	Technicians	Others
100-B			)			)	
			)			)	
100-D			4)		9	2)	
			)			)	
100-F			)		11	)	
200-E			3		31	)	
						2)	
200-W			3		37	)	
200-N							
300			1		60	1	
Plant General	6		7				
700-1100	12	8	75	36	10	20	31
Total	18	8	93	36	158	25	31

Grand Total - 369

Note: This report includes persons on leave of absence.

ACCOUNTING DEPARTMENT

NOVEMBER 1946

GENERAL

Activities of the Accounting Department during the month included the following in addition to regular scheduled work:

(a) Conferences were held with Government representatives relative to routines and reports on accountability of classified materials, property records, reimbursement of disbursements, inventory routine for containers, and pro ration of vacation payments.

(b) Activities included large amount of work preparatory for transition from Du Pont to General Electric employee benefit plans.

(c) Arrangements and follow-up of scheduled office moves in the 700 Area, which started for the purpose of having employees of one division all in the same wing or building, were continued during the month.

Statistics

General	October	November
H.E.W. Instructions Letters issued	5	6
Office Letters issued	2	4
Organization Announcements issued	2	8

Employees and Payrolls	Total	Monthly Payroll	Weekly Payroll
Employees on payroll at beginning of month	4300	712	3588
Additions and transfers in	128	34	94
Removals and transfers out	(43)	(3)	(40)
Transfers from Weekly to Monthly Payroll	-	38	(38)
Employees on payroll at end of month	4385	781	3604
Gross amount of payroll	$ 1,234,723	$ 311,843	$ 922,880
Average salary rate per hour	$ 1.759	$ 2.315	$ 1.635
Average salary rate previous month	$ 1.766	$ 2.378	$ 1.637

Employee Plans	October	November
U. S. Savings Bonds		
Number participating at beginning of month	1955	1942
New authorizations and transfers in	55	59
Voluntary cancellations	(55)	(54)
Removals and transfers out	(13)	(8)
Number participating at end of month	1942	1939

Accounting Department

	October	November
U. S. Savings Bonds (continued)		
% participating	45.1%	44.2%
Bonds issued - maturity value	$ 132,250	$ 111,175
- number	3615	3029
Refunds issued	41	57
Revisions in authorizations	35	17
Group Life Insurance		
Number participating at beginning of month	2757	2888
New participants and transfers in	160	79
Cancellations	(6)	(12)
Removals and transfers out	(23)	(14)
Number participating at end of month	2888	2941
% of eligible employees participation	79.5%	80.2%
Group Disability Insurance - Personal		
Number participating at beginning of month	3626	3662
New participants and transfers in	65	17
Cancellations	(1)	(2)
Removals and transfers out	(28)	(24)
Number participating at end of month	3662	3653
% of eligible employees participation	95.0%	95.9%
Group Disability Insurance - Dependents		
Number participants at beginning of month	2487	2490
Additions and transfers in	64	36
Cancellations	(1)	(2)
Removals and transfers out	(60)	(8)
Number participating at end of month	2490	2516
Group Disability Insurance - Claims		
Number of claims paid by insurance company:		
Employee Benefits		
Weekly Sickness and Accident	17	60
Daily Hospital Expense Benefits	21	67
Special Hospital Services	22	60
Surgical Operation Benefits	13	40
Dependent Benefits Paid		
Daily Hospital Expense Benefits	49	129
Special Hospital Services	50	129
Amount of claims paid by insurance company:		
Employee Benefits	$ 1,463.24	$ 6,459.91
Dependent Benefits	1,572.18	4,504.33
Total	$ 3,035.42	$10,964.24

[redacted]

Accounting Department

	October	November
General Accounting		
Number of Accounts Payable Vouchers Entered		
G. E.	1751	1744
Du Pont	1051	487
Total	2802	2231
Amount of Cash Disbursements (Accounts Payable)		
G. E.	$ 431,927.76	$ 919,397.93
Du Pont	1,369,608.17*	84,831.91
Total	$1,801,535.93	$1,004,229.84
*Includes $1,000,000.00 returned to Government by Du Pont as a reduction of advance.		
Number of checks issued		
G. E.	1140	1140
Du Pont	674	340
Total	1814	1480
Public Vouchers submitted to Area Engineer - G.E.		
Amount of 1034 Public Vouchers not reimbursed at beginning of month	-0-	$ 848,862.88
Amount of 1034 Public Vouchers submitted during month	$ 864,959.52	1,198,148.03
Total	$ 864,959.52	$2,047,010.91
Amount of 1034 Public Vouchers reimbursed during month	16,096.64	1,536,729.08
Amount of 1034 Public Vouchers not reimbursed at end of month	$ 848,862.88	$ 510,281.83
Number not reimbursed at beginning of month	-0-	42
Number submitted during month	47	52
Total	47	94
Number reimbursed during month	5	66
Number not reimbursed at end of month	42	28
Amounts for which 1034 Public Vouchers have not been submitted to Area Engineer - G. E.		
1035 Pre-Audit Vouchers Issued and Outstanding	$ 324,959.85	$ 814,194.40
1035 Pre-Audit Vouchers not Issued	1,523,911.48	1,814,977.88
Total (unbilled Items)	$1,848,871.33	$2,629,172.28
Number of Pre-Audit Vouchers Issued and Outstanding	19	48

Accounting Department

	October	November
Public Vouchers submitted to Area Engineer - du Pont		
Amount of 1034 Public Vouchers not reimbursed at beginning of month	$ 929,852.43	$ 206,323.11
Amount of 1034 Public Vouchers submitted during month	398,725.87	581,492.15
Total	$1,328,578.30	$ 787,815.26
Amount of 1034 Public Vouchers reimbursed during month	1,122,255.19	530,575.14
Amount of 1034 Public Vouchers not reimbursed at end of month	$ 206,323.11	$ 257,240.12
Number not reimbursed at beginning of month	58	64
Number submitted during month	93	72
Total	151	136
Number reimbursed during month	87	80
Number not reimbursed at end of month	64	56
Amounts for which 1034 Public Vouchers have not been submitted to Area Engineer - du Pont		
1035 Pre-Audit Vouchers Issued and Outstanding	$ 311,004.60	$ 3,633.45
1035 Pre-Audit Vouchers Not Issued	314,970.31	80,715.14
Total (Unbilled Items)	$ 625,974.91	$ 84,348.59
Number of Pre-Audit Vouchers Issued and Outstanding	22	3
Cash Receipts - General Electric		
Accounts Receivable		
U. S. Government	$ 16,096.64	$ 1,536,729.08
Rent	50,329.01	47,081.14
Hospital	26,150.26	29,611.42
Telephone	3,227.99	2,700.88
Miscellaneous	466.40	1,251.33
Community Chest	8,212.25	-
Employees Sales	1,289.46	1,650.95
Bus Fares	6,993.45	6,730.60
All Other	1,182.22	3,068.25
Total	$ 113,947.68	$ 1,628,823.65
Cash Receipts - Du Pont		
Accounts Receivable		
U. S. Government	1,122,255.19	530,575.14
Hospital	8,356.07	3,632.12
Rent	313.40	260.50
Telephone	377.44	48.82
Miscellaneous	3,162.72	2,072.75
Collateral Fund - Insurance Companies	28,013.53	-
All Other	4,904.48	32,842.76
Total	$ 1,167,382.83	$ 569,432.09

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Accounting Department

	October	November
Property Inventory Transfers		
Number received	298	345
Number of items affected	725	959
Inventories		
Essential Materials	$ 1,340,376.22	$ 1,452,747.23
Excess Materials	650,489.26	654,440.81
Memo Employees Sales	7,426.20	5,995.85
Precious Metals	40,602.97	40,602.97
Returnable Containers	10,756.57	11,794.27
Spare Parts	1,443,482.56	1,440,520.41
Special Process Materials	476,426.00	477,231.00
Stores for Cash Sales to Employees	12,290.74	11,489.57
Stores Stock (general)	973,468.77	983,577.14
Inventory Disbursements		
Essential Materials	330,075.86	340,699.79
Excess Materials	417,958.67	9,989.35
Memo Employees Sales	1,052.39	1,446.79
Precious Metals	0	0
Returnable Containers	1,224.00	765.20
Spare Parts	8,450.06	8,162.69
Special Process Materials	2,138.40	0
Stores for Cash Sales to Employees	1,247.08	1,658.04
Stores Stock (general)	93,139.23	91,120.05
Stores		
Number of items added to stores stock	281	331
Number of items deleted from stores stock	47	60
Items in stores stock at month end	41,359	41,630
Receiving Reports issued	2,270	2,554
Shipments on hand not checked	7	85
Material Exception Reports issued	159	81
Material Exception Reports cleared	167	78
Material Exception Reports open at month end	21	24
Certificates of Inspection issued	8	5
Certificates of Inspection cleared	7	7
Certificates of Inspection open at month end	27	25
Store Orders filled	7,706	6,713
Emergency Stores Orders filled	1	1
Returnable Containers received	487	315
Returnable Containers shipped	463	212
Returnable Containers on hand at month end	3,728	3,831
Returnable Containers on hand over six months	1,424	1,361
Returnable Container Return Orders received	11	10
Returnable Container Return Orders closed	27	13
Returnable Container Return Orders on hand at month end	213	210
Shipping Orders received	61	32
Shipping Orders closed	60	27
Shipping Orders on hand at month end	8	13

Accounting Department

	October	November
Purchasing		
Requisitions received	1,962	2,231
Requisitions placed	1,965	2,087
Requisitions on hand at month end	488	632
MW Orders placed	1,247	1,286
CHEW Orders placed	138	117
MC Orders placed	95	108
OGT Orders placed	22	6
Alterations issued	68	64
Requests to expedite received	56	107
Scrap Sales completed	0	0
Value of scrap sold	0	0
Miscellaneous Clerical		
Office Machines repaired in shop	139	105
Office Machines service calls	124	124
Lines working as Class A Telephones	161	164
Lines working as Class C Telephones	224	230
Lines working as Class C Party Telephones	10	10
Total Official Telephones	395	404
Lines working as Class B 2 Single Telephones	73	74
Lines working as Class B 1 Single Telephones	169	163
Lines working as Class B Party Telephones	1,116	1,128
Total Residence Telephones	1,358	1,365
Vacant lines	47	31
Items of First Class Mail received	15,778	16,602
Items of Parcel Post received	730	579
Items of Registered Mail received	87	70
Items of Insured Mail received	65	57
Items of Special Delivery Mail received	19	28
Amount of money used on postage meter machine	$664.60	$521.46
Multilith Orders received	589	196
Multilith orders completed	575	253
Balance of multilith orders on hand at month end	69	12
Mimeograph orders received	1215	1396
Mimeograph orders completed	1214	1402
Mimeograph orders on hand at month end	6	0
Ditto orders received	3,305	2,702
Ditto orders closed	3,305	2,702
Ditto orders on hand at month end	0	0
Accounting Department		
%of absenteeism	2.26	3.37
Number of employees on roll at the end of the month	622	619
Terminations	11	18
New hires	37	15
% of termination	1.85	2.89
Major injuries	0	0
Minor injuries	17	13

Accounting Department

ORGANIZATION AND PERSONNEL

K. C. Weld, who was assigned on loan from General Office as of October 15, 1946, to assist Works Accountant on transitional work, returned to General Office on November 23, 1946.

On November 1 thirty-two Accounting Department employees were transferred from weekly payroll to monthly payroll and reclassified from non-exempt to exempt.

Weekly payroll offices were moved from Building 705 to the first floor of the third wing in Administration Building 703 as of November 16, 1946.

All shift work in Stores Section was discontinued during month and emergency procedure established for off shift requests.

SECTIONAL ACTIVITIES

Assigned, Field & Miscellaneous Clerical

On November 20, 1946, a stationery supply room was opened in Building 703. Fast moving supplies may be obtained from 10:00 A.M. to 12:00 noon and from 12:45 P.M. to 3:00 P.M. Arrangements were completed at the same time to pick up from the storeroom items not stocked in Building 703 and have them available in the new stock room on the following working day.

The stock of usable office furniture available for disbursement has been practically depleted. Steps were taken to have some of the older equipment repaired and refinished pending receipt of furniture on order.

A survey of the works was made to ascertain if there were any excess typewriters or calculators not being used. Twenty typewriters and one calculator were returned to the Office Equipment Section, however, only six of the typewriters were in a usable condition. The Purchasing Section renewed efforts to expedite shipment through Government channels of fifty typewriters which have been on order.

One week's production in the Multilith press shop was lost during the month due to equipment failure.

Accounting Department personnel assigned to the Maintenance and Electrical Departments were transferred from 100-D Area to 100-F Area during the month as a part of the 100 Area work centralization program.

An agreement was reached with the "P" Department and the Government to revise certain aspects of the Metals Accountability Report as of December 1, 1946.

Accounting Department

A study of the duties of Accounting Department personnel assigned to the Instrument Department was completed. It was mutually agreed that, by a rearrangement of work assignments, a typist and clerk could be made available for reassignment elsewhere.

Cost

Plans were completed to have the personnel, supplies, and equipment required to operate the proposed central work order control cost system available by January 1, 1947.

A general control code (9000), complete with supplemental detail codes, was opened in the Operations Cost Ledger to record expenses incurred by the Design and Construction Department.

Stores

Shift work in the Stores Section was discontinued as of November 18. Arrangements were made to provide emergency service by having a member of Stores Supervision on call during hours that an attendant would not be on duty at the Central warehouse.

In order to have a better basis for ordering stores material for project use as far in advance as possible, arrangements were made to secure a project bill of materials from the Maintenance Department as soon as their estimate was completed. Stores will use this as their authority to effect a temporary increase in stock. This should permit maintenance of minimum stocks in spite of withdrawals of material in sizable quantities for use on approved projects.

The Housing Section of the Service Department released plans during the month whereby Village tenants could procure paint free of charge to tint residence interiors. In connection with this program, the Stores Section provided warehousing for this paint and the manpower for disbursing paint to works personnel presenting a duly authorized store ticket.

Purchasing

Arrangements were completed to have the Maintenance Department contact vendors direct to obtain technical or routine data not relating directly to the procurement of materials. Heretofore, such requests have been handled by the Purchasing Section. This change in procedure will enable the Maintenance Department to obtain information quicker and at the same time permit the Purchasing Section to apply additional time to the procurement of material which they have been authorized to buy.

Accounting Department

Purchasing (continued)

The buyer assigned to expedite Du Pont orders had closed all open orders as of November 30. This buyer will be reassigned to active buying and this should help cut down the backlog of requisitions on hand at month end.

Through the mutual efforts of the Government Procurement, Purchasing and Stores Sections, approximately 700,000 board feet of lumber was acquired from the Army Holding & Reconsignment Depot at Pasco, Washington. It would have been practically impossible to have obtained some of this lumber in the open market at this time.

One buyer devoted most of his time for several days to procuring batteries required for continued operation of health instruments by the Medical Department.

There were some indications during the month that market conditions were returning to normal. However, the coal strike, if continued much longer, will adversely effect procurement of many items.

None of the essential material stocks reached a critical condition during the month and slight gains were made in most instances toward attainment of a six months minimum stock except where limited by storage capacity.

PATENT AGREEMENTS WITH EMPLOYEES

Under the provisions of Contract W-31-109 Eng-52, General Electric Company agreed to secure the execution of agreements covering inventions and patents by such of the personnel assigned to the work under the contract as the Company customarily would require to execute such an agreement as a condition of employment in the regular course of its business.

After obtaining recommendations of the Patent Department at General Office, the matter was discussed with Superintendents at Hanford Engineer Works and it was decided that employees in the following classifications should be required to sign a patent agreement:

1. All exempt employees (regardless of job classification)

2. Non-exempt employees in the following job classifications:

Chemist	Inspector (Health Instrument only)
Chemist (Water)	Instrument Mechanic
Chief Operator	Junior Engineer
Draftsman	Laboratorian (Health Instrument only)
Engineer	Metallurgist
Estimator	Physicist

Lists were prepared of employees in these classifications and patent agreement forms were prepared in duplicate for each employee then turned over to the Personnel Division, which has arranged to contact the employees and secure their signatures on the forms. Arrangements have been made so that a Notary Public will witness the signature of the employee.

Completed forms will be returned by the Personnel Division to the Accounting Department where a card record will be maintained on all employees who have signed a patent agreement. One copy of the patent agreement will then be forwarded to the Patent Department at General Office. The other copy of the patent agreement is returned to the employee at the time it is notarized.

JOB DESCRIPTIONS AND SALARY RATE SCHEDULES - DESIGN AND CONSTRUCTION DEPARTMENT

In connection with the establishment of the Design and Construction Department at Hanford Engineer Works, which was approved by the Area Engineer on September 10, 1946, job descriptions and salary rate schedules were prepared covering work to be performed in that department.

These job descriptions and salary rate schedules have been submitted to the Area Engineer for approval, and in the meantime are being used in the case of individuals now being employed.

MORRISON-KNUDSEN PAYROLL

Approval was granted by the National Wage Stabilization Board to increase the rate for laborers of the Morrison-Knudsen Company retroactive to July 8, 1946. Approximately 150 laborers will receive adjustment checks.

INVENTORY ROUTINE FOR RETURNABLE CONTAINERS

A conference was held with the Area Engineer's organization and representatives of the General Accounting Office on November 15, 1946, for the purpose of discussing inventory routine on returnable containers and to familiarize Government representatives with records and controls maintained by the Company.

For the period from January 3, 1944 until the present time, reimbursement from the Government covering loss or damage of returnable containers has amounted to only $174.60. It was agreed that this loss was only a small fraction of 1% of the value of deposits on containers and could be considered as a reasonable amount representing loss or damage of containers.

Accounting Department

Further discussion on this subject was postponed until such time as we obtain further information from the Government representatives as they indicated that a new procedure had been received by them, but to date we have received no further information.

SUPERIOR AIR LINES SUB-CONTRACT

We have paid the Superior Air Lines $82,315.77 for services performed by them from June 15, 1946 to November 15, 1946 in accordance with Sub-contract #1 under Prime Contract. None of the paid invoices have been submitted to the Government on Public Voucher. The detail necessary as required by Government to support these billings was not received from Superior Air Lines until after November 30th.

PROPERTY

General

A meeting was held November 13, 1946 with representatives of the Army to discuss various phases of Property Accountability on this project. The Army representatives formed an investigating unit whose responsibility it was to verify the report of the recent Property Audit of Government records and to make recommendations regarding Property Accountability on the project. The principal points of discussion involved the fact that the General Electric Company Property Records are a location record only on Class B Property, such record being in existence as a result of an inventory begun in October, 1944 and completed on July 15, 1945. This record has been rechecked at least twice since that period and has proven to be at least 96% accurate. Property located in Village residences was pointed out to be covered by leases maintained by the Village Organization, and the record of such property is maintained by Accounting Department in total only, charged to the Village Organization. Class A and Class C Property Records are not maintained in our Property Section but the control of such items was considered adequate.

Results of Investigations by Army Officials

The Army officials have examined our location record and believe it to be sufficiently accurate to use as a basis for an accountability record.

Our Property Supervisor, R. L. Warburton, was called before the Investigating Board and, after being placed under oath, was questioned at some length regarding the Construction Property Records. They inquired into procedure in maintaining Property Records; the manner in which overages and shortages were arrived at. They also questioned the extent the Army cooperated in maintaining records.

Accounting Department

The Investigating Board has been making tests in order to determine the accuracy of our Location Records. The tests were made by selecting cards at random from the Property Section file and then attempting to locate the property at the location designated on the card. In a converse manner, identifying numbers of property items were secured in the field and checked back with the Property Section Record. At the present time they are making a test by taking forty items out of the Property Section files for each area and attempting to trace them to the location specified. They will also take forty items from each area and attempt to check them back to the Property Section record.

In a number of their original tests our Property Section records were 100% accurate and in no case did the Investigating Board appear dissatisfied. They are of the opinion that the record as maintained by the Army Engineers is of such little value and may recommend that the contractor's records be considered as accountability record as well as a location record.

Facility Property Records

Several discussions were held with representatives of the Village Organization relative to the handling of the property in connection with the Facility Operations Contracts. It is the opinion of the Accounting Department that we are not concerned primarily with Class B property when it is covered by the various contracts between the Village and the Facility Operators. In the future the Village Organization will be responsible for accounting for Class B property items in the possession of the Facility Operators. Prior to this date we have assisted in taking an inventory on Facility Locations and have also assisted in determining shortages of property items. In the future the Property Section will consider the Village Organization to be entirely responsible for Property Accounting in connection with Facility Contractors, and those property items will be charged to the Village Organization.

Permanent Property Tags

Metal property tags have been ordered which will replace the present decals. Delivery of these metal tags is expected in late January or the first part of February. As soon as received, a retagging program will be instituted.

DU PONT ACTIVITIES

Nine employees of the General Accounting Section are still assigned to work on Du Pont "Clean-up" activities. Seven are preparing records for shipment and two are acting in the capacity of a final audit group. This is in addition to work performed by the Section in handling payments for their account and related accounting work.

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PROJECT AND RELATED PERSONNEL

HW-7-5505-De1

GOVERNMENT EMPLOYEES	10-31-46		11-30-46	
Civilian Personnel - Corps of Engineers	323		327	
Civilian Personnel - G.A.O.	4		4	
Commissioned Officers (Exc. of MP's and MI)	14		12	
MP Company (Including C.O.)	233		234	
MI Detachment (Including C.O.)	29		25	
Military Personnel (Other than above)	-		-	
Total		603		602
PRISON INDUSTRIES		201		191
MOHAWK WRECKING & LUMBER CO.		240		210
RICHLAND VILLAGE PERSONNEL				
Facilities	668		656	
Schools and Churches	208		210	
Total		876		866
MORRISON KNUDSEN PERSONNEL		82		74
GENERAL ELECTRIC PERSONNEL		4,305		4,387
GRAND TOTAL		6,307		6,320